Releasable check valve type RHC, RHCE

Product documentation

Screw-in valve

Operating pressure p_{max}:	700 bar
Flow rate Q_{max}:	200 l/min

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1 Overview of releasable check valve types RHC, RHCE

Check valves with hydraulic release are a type of check valve. They block one or both hydraulic consumer lines or are used as a hydraulically actuated drain or idle circulation valve.

The check valve type RHC has zero leakage when closed. It has a screw-in design and can be integrated into control blocks. The necessary mounting holes can be easily drilled.

Features and advantages

- Minimal installation space required
- Easy to install and to remove
- Robust and dirt resistant

Applications

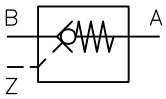
- Industrial hydraulics
- Construction machines

Releasable check valve type RHC, RHCE

2 Available versions

2.1 Releasable check valve type RHC

Circuit symbol



Ordering example

RHC 4 V

2.1.1 "Basic type and size"

2.1.1 Basic type and size

Standard version

Type	Flow rate Q_{max} (l/min)	Pressure p_{max} (bar)	real pilot ratio ψ		Control oil volume (cm³)
		with port A, B, Z	Main valve	Hydraulic release	
without hydraulic release, nominal pilot ratio 2.5: 1					
RHC 1	15	700	2.6: 1	--	0.1
RHC 2	35				0.2
RHC 3	55		2.5: 1		0.4
RHC 4	100	500			0.8
RHC 5	150		2.8: 1		1.5
RHC 6	200		2.5: 1		2.65
without hydraulic release, nominal pilot ratio 4.5: 1					
RHC 1/0	8	700	4.2: 1	--	0.1
RHC 2/1	15		4.3: 1		0.2
RHC 3/2	35		4.5: 1		0.4
RHC 4/3	55	500	4.3: 1		0.8
RHC 5/4	100				1.5
with hydraulic release, nominal pilot ratio 2.5: 1					
RHC 1 V	15	700	2.6: 1	10 : 1	0.1
RHC 3 V	55		2.5: 1		0.4
RHC 4 V	100	500		12 : 1	0.8
RHC 5 V	150		2.8: 1	19 : 1	1.5
RHC 6 V	200		2.5: 1	12.9: 1	2.65
with hydraulic release, nominal pilot ratio 4.5: 1					
RHC 4/3 V	55	500	4.3: 1	26 : 1	0.8
RHC 5/4 V	100			21 : 1	1.5

Version with thread and control piston sealing

(can be exchanged with standard version)

Type	Flow rate Q_{max} (l/min)	Pressure p_{max} (bar)	real pilot ratio ψ		Control oil volume (cm^3)
		with port A, B, Z	Main valve	Hydraulic release	
without hydraulic release, nominal pilot ratio 2.5: 1					
RHC 11	15	700	2.6: 1	--	0.1
RHC 21	35				0.2
RHC 31	55		2.5: 1		0.4
RHC 41	100	500			0.8
RHC 51	150		2.8: 1		1.5
without hydraulic release, nominal pilot ratio 4.5: 1					
RHC 11/0	8	700	4.2: 1	--	0.1
RHC 21/1	15		4.3: 1		0.2
RHC 31/2	35		4.5: 1		0.4
RHC 41/3	55	500	4.3: 1		0.8
RHC 51/4	100				1.5
with hydraulic release, nominal pilot ratio 2.5: 1					
RHC 11 V	15	700	2.6: 1	10 : 1	0.1
RHC 31 V	55		2.5: 1		0.4
RHC 41 V	100	500		12 : 1	0.8
RHC 51 V	150		2.8: 1	19 : 1	1.5
with hydraulic release, nominal pilot ratio 4.5: 1					
RHC 41/3 V	55	500	4.3: 1	26 : 1	0.8
RHC 51/4 V	100			21 : 1	1.5

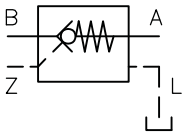
Version with thread and control piston sealing

(easy mounting, different mounting hole arrangement compared with standard version)

Type	Flow rate Q_{max} (l/min)	Pressure p_{max} (bar)	real pilot ratio ψ		Control oil volume (cm^3)
		with port A, B, Z	Main valve	Hydraulic release	
without hydraulic release, nominal pilot ratio 2.5: 1					
RHC 13	15	700	2.6: 1	--	0.1
RHC 23	35				0.2
RHC 33	55		2.5: 1		0.4
RHC 43	100	500			0.8
RHC 53	150		2.8: 1		1.5
without hydraulic release, nominal pilot ratio 4.5: 1					
RHC 13/0	8	700	4.2: 1	--	0.1
RHC 23/1	15		4.3: 1		0.2
RHC 33/2	35		4.5: 1		0.4
RHC 43/3	55	500	4.3: 1		0.8
RHC 53/4	100				1.5
with hydraulic release, nominal pilot ratio 2.5: 1					
RHC 13 V	15	700	2.6: 1	10 : 1	0.1
RHC 33 V	55		2.5: 1		0.4
RHC 43 V	100	500		12 : 1	0.8
RHC 53 V	150		2.8: 1	19 : 1	1.5
with hydraulic release, nominal pilot ratio 4.5: 1					
RHC 43/3 V	55	500	4.3: 1	26 : 1	0.8
RHC 53/4 V	100			21 : 1	1.5

2.2 Releasable check valve type RHCE with control piston relief via additional drain port

Circuit symbol



Ordering example

RHCE 33 V

2.2.1 "Basic type and size"

2.2.1 Basic type and size

Standard version

Type	Flow rate Q_{max} (l/min)	Pressure p_{max} (bar)		real pilot ratio ψ		Control oil volume (cm^3)
		with port		Main valve	Hydraulic release	
		A, B, Z	L			
without hydraulic release, nominal pilot ratio 2.5: 1						
RHCE 1	15	700	unpressurised to the tank	2.6: 1	--	0.1
RHCE 2	35					0.2
RHCE 3	55			2.5: 1		0.4
RHCE 4	100	500				0.8
RHCE 5	150			2.8: 1		1.5
RHCE 6	200			2.5: 1		2.65
with hydraulic release, nominal pilot ratio 2.5: 1						
RHCE 1 V	15	700	unpressurised to the tank	2.6: 1	10 : 1	0.1
RHCE 3 V	55			2.5: 1		0.4
RHCE 4 V	100	500			12 : 1	0.8
RHCE 5 V	150			2.8: 1	19 : 1	1.5
RHCE 6 V	200			2.5: 1	12.9: 1	2.65

Version with thread and control piston sealing

(easy mounting, different mounting hole arrangement compared with standard version)

Type	Flow rate Q_{max} (l/min)	Pressure p_{max} (bar)		real pilot ratio ψ		Control oil volume (cm^3)
		with port		Main valve	Hydraulic release	
		A, B, Z	L			
without hydraulic release, nominal pilot ratio 2.5: 1						
RHCE 13	15	700	unpressurised to the tank	2.6: 1	--	0.1
RHCE 23	35					0.2
RHCE 33	55			2.5: 1		0.4
RHCE 43	100	500				0.8
RHCE 53	150			2.8: 1		1.5
RHCE 63	200			2.5: 1		2.65
with hydraulic release, nominal pilot ratio 2.5: 1						
RHCE 13 V	15	700	unpressurised to the tank	2.6: 1	10 : 1	0.1
RHCE 33 V	55			2.5: 1		0.4
RHCE 43 V	100	500			12 : 1	0.8
RHCE 53 V	150			2.8: 1	19 : 1	1.5
RHCE 63 V	200			2.5: 1	12.9: 1	2.65
with hydraulic release, nominal pilot ratio 4.5: 1						
RHCE 23/1 V	15	700	unpressurised to the tank	4.1: 1	14.7: 1	0.2

3 Parameters

3.1 General data

Designation	Releasable check valves
Design	Spring-loaded ball seated valve
Model	Screw-in valve
Material	▪ Balls made of rolling bearing steel ▪ All-steel version; valve-controlled housing part hardened, valve seat polished
Attachment	Screwed into the mounting hole of a housing body. Observe the dimensional tolerances for the core drill hole of threads and general tolerances, see Chapter 4, "Dimensions".
Tightening torque	see Chapter 4, "Dimensions"
Installation position	As desired
Ports/connections	▪ **A, B** = Main passage ▪ **Z** = Control port ▪ **L** = Drain port unpressurised to the tank
Flow direction	B → A free A → B blocked with zero-leakage in idle position (Z port depressurised) if there is no pressure at B or the pressure is lower than at A A → B free, if the valve is released with pilot pressure on Z (see also pilot pressure p_{St})
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 Pressure and flow rate

Opening pressure	B → A	approx. 0.5 bar
	with RHC 1/0	approx. 1 bar
Pilot pressure p_{St} (bar) (reference value calculation)	for releasing	$p_{St} = \frac{p_A}{\Psi} + 2.5$
	for holding open	$p_{St} \approx k p_B + \frac{\Delta p}{\Psi} + 4.5$

Ψ = Pilot ratio, see tables Chapter 2, "Available versions"

p_A = Pressure at A

p_B = Pressure at B

Δp = see Chapter 3.4, "Characteristic lines"

k = 1 with type RHC
= 0.05 ... 0.1 with type RHCE

3.3 Weight

Type	
RHC 1, RHC 11, RHC 13	= 20 g
RHC 1 V, RHC 11 V, RHC 13 V	= 20 g
RHC 1/0, RHC 11/0, RHC 13/0	= 20 g
RHC 2, RHC 21, RHC 23	= 40 g
RHC 2/1, RHC 21/1, RHC 23/1	= 40 g
RHC 3, RHC 31, RHC 33	= 70 g
RHC 3/2, RHC 31/2, RHC 33/2	= 70 g
RHC 3 V, RHC 31 V, RHC 33 V	= 70 g
RHC 4, RHC 41, RHC 43	= 140 g
RHC 4/3, RHC 41/3, RHC 43/3	= 140 g
RHC 4 V, RHC 41 V, RHC 43 V	= 140 g
RHC 4/3 V, RHC 41/3 V, RHC 43/3 V	= 140 g
RHC 5, RHC 51, RHC 53	= 250 g
RHC 5/4, RHC 51/4, RHC 53/4	= 250 g
RHC 5 V, RHC 51 V, RHC 53 V	= 250 g
RHC 5/4 V, RHC 51/4 V, RHC 53/4 V	= 250 g
RHC 6	= 500 g
RHC 6 V	= 500 g
RHCE 1, RHCE 13	= 20 g
RHCE 2, RHCE 23, RHCE 23/1 V	= 40 g
RHCE 3, RHCE 33	= 70 g
RHCE 3 V, RHCE 33 V	= 70 g
RHCE 4, RHCE 43	= 140 g
RHCE 4 V, RHCE 43 V	= 140 g
RHCE 5, RHCE 53	= 250 g
RHCE 5 V, RHCE 53 V	= 250 g
RHCE 6, RHCE 63	= 500 g
RHCE 6 V, RHCE 63 V	= 500 g

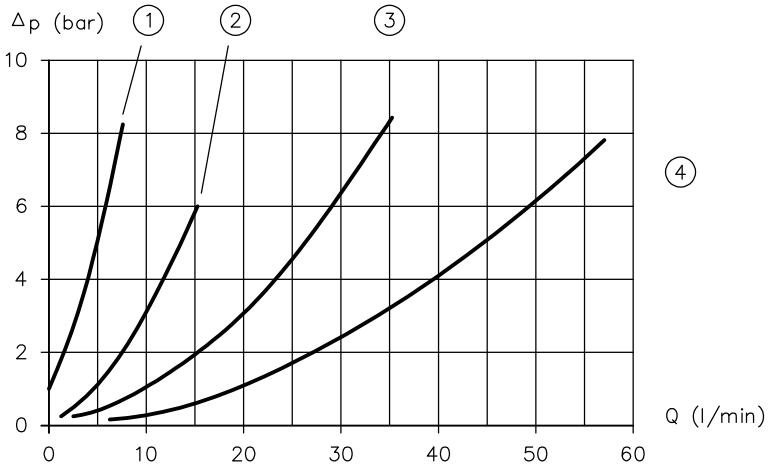
3.4 Characteristic lines

Viscosity of the hydraulic fluid approx. 60 mm²/s

Δp-Q characteristic lines

Valid for flow direction B → A and released direction A → B

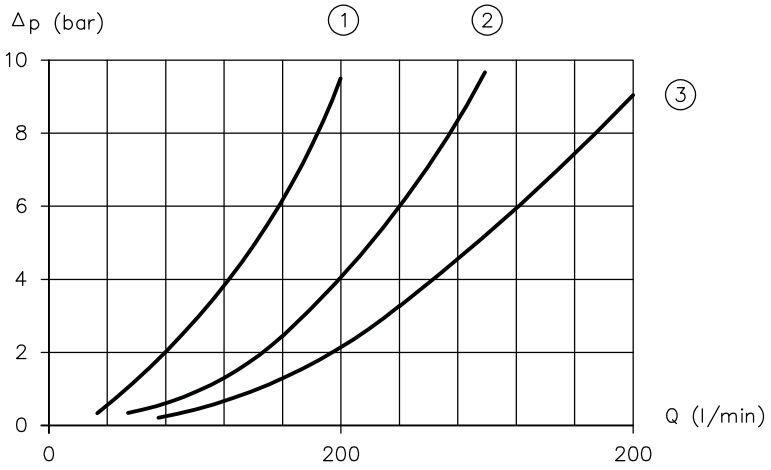
RHC 1 ... RHCE 3



Q flow rate (l/min); Δp flow resistance (bar)

1 RHC 1./0
2 RHC 1., RHC 2./1, RHCE 1.
3 RHC 2., RHC 3./1, RHCE 2.
4 RHC 3.(V), RHC 4./3(V), RHCE 3.(V)

RHC 4 ... RHCE 6



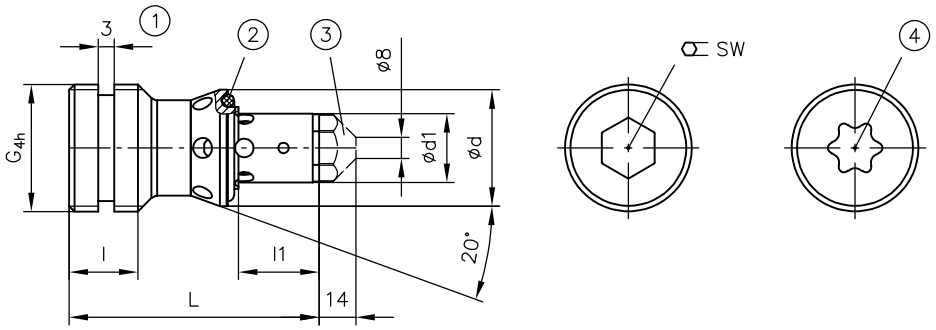
Q flow rate (l/min); Δp flow resistance (bar)

1 RHC 4.(V), RHC 5./4(V), RHCE 4.(V)
2 RHC 5.(V), RHCE 5.(V)
3 RHC 6.(V), RHCE 6.(V)

4 Dimensions

All dimensions in mm, subject to change.

4.1 Releasable check valves type RHC 1 ... 6(V)



SW = Width across flats

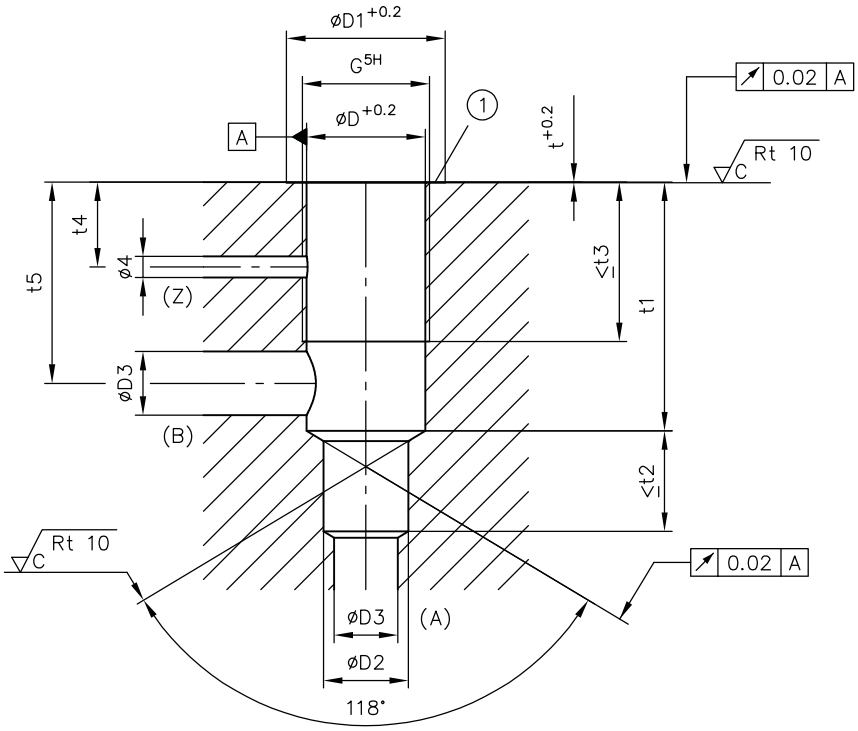
1 Sealing ring with type RHC 11 ... 51(V)
2 O-ring NBR 90 Shore
3 only with type RHC 6(V)
4 Hexalobular socket ISO 10664-70 (Torx ®TX70), only with type RHC 5(V)

Type	G	L	l	l1	∅d	∅d1	SW	Tightening torque (Nm)*	O-ring
RHC 1(V) RHC 11(V)	M16x1.5	32.2	10	10.7	14	9	6	40	10x1.5
RHC 1/0 RHC 11/0		29.5		7.7					
RHC 2 RHC 21	M20x1.5	37.9	12	12.9	18	11	8	75	12.42x1.78
RHC 2/1 RHC 21/1		36.2		11.2		10			
RHC 3(V) RHC 31(V)	M24x1.5	47.2	13.5	15.2	22	13	10	100	15.3x2.4
RHC 3/2 RHC 31/2		45.4		13.4		11			
RHC 4(V) RHC 41(V)	M30x1.5	56	15	20.5	28	17.5	12	140	20.29x2.62
RHC 4/3(V) RHC 41/3(V)		51.7		16.2		16			
RHC 5(V) RHC 51(V)	M36x1.5	67.5	18.5	24	34	21.5	Torx ®TX70	200	25.07x2.62
RHC 5/4(V) RHC 51/4(V)		64.2		20.7		20			
RHC 6(V)	M42x1.5	83	23	29	39.5	27	19	350	31.42x2.62

NOTICE
* Tightening torques validated using steel / steel combination.

Mounting hole

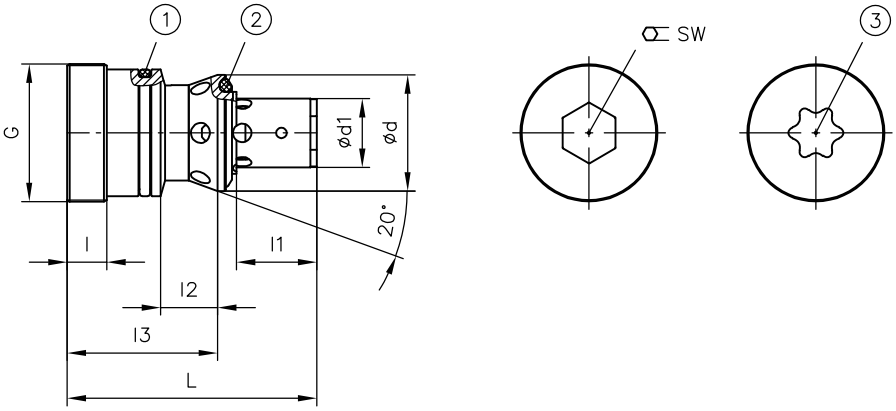
For dimensions not covered by specific tolerances, the general tolerances set out in DIN ISO 2768-mK-E apply.



1 Sealing ring

Type	G	∅D	∅D1	∅D2	∅D3	t	t1	t2	t3	t4	t5	Sealing ring
RHC 1(V) RHC 11(V) RHC 1/0 RHC 11/0	M16x1.5	14.4	20	11	8	0.1	36	13	28	14	31	16x20x1.5
RHC 2 RHC 21 RHC 2/1 RHC 21/1	M20x1.5	18.4	26	14	10	0.1	41	16	34	16	31	20x24x1.5
RHC 3(V) RHC 31(V) RHC 3/2 RHC 31/2	M24x1.5	22.4	30	16	12	0.1	47	19	30	16	38	24x29x2
RHC 4(V) RHC 41(V) RHC 4/3(V) RHC 41/3(V)	M30x1.5	28.4	38	22	15	0.1	53	24	38	18	42	30x36x2
RHC 5(V) RHC 51(V) RHC 5/4(V) RHC 51/4(V)	M36x1.5	34.4	42	27	18	0.5	58	27	40.5	16	46	36x42x2
RHC 6(V)	M42x1.5	40.4	50	32	20	0.5	72	42	44.5	17	59	42x49x2

4.2 Releasable check valves type RHC 13 ... 53/4(V)



SW = Width across flats

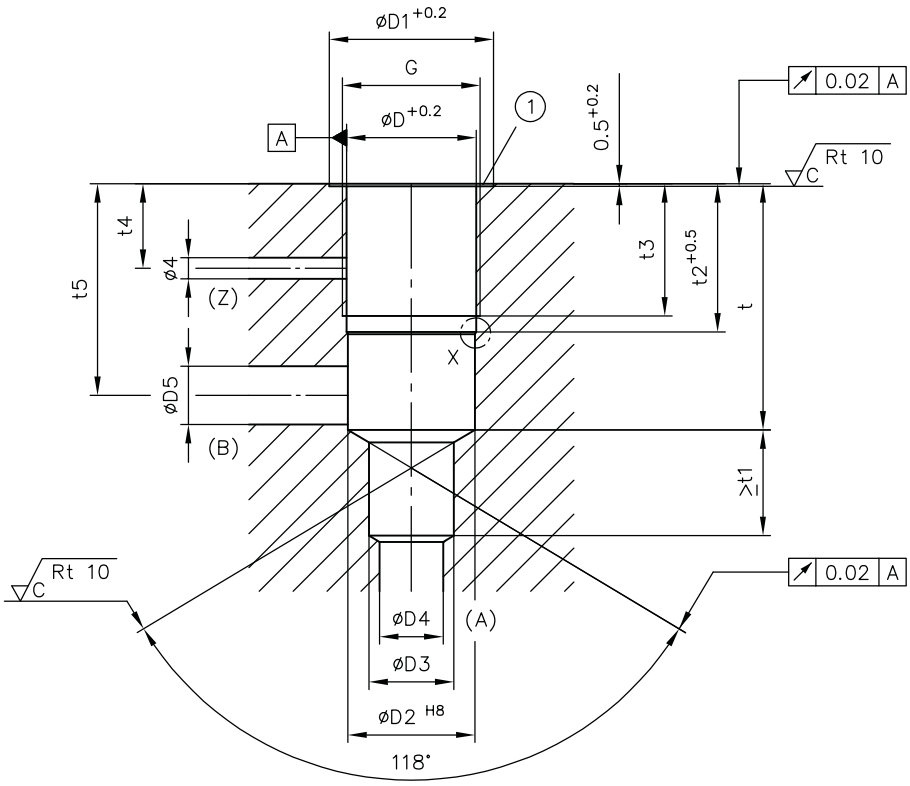
1 O-ring 1 AU 90 Shore (type RHC 43.. NBR 90 Shore)
2 O-ring NBR 90 Shore
3 Hexalobular socket ISO 10664-70 (Torx ®TX70), only with type RHC 53(V)

Type	G	L	l	l1	l2	l3	∅d	∅d1	SW	Tightening torque (Nm)*	O-ring	
											1	2
RHC 13(V)	M20x1.5	33	5.5	10.5	7.5	21.5	14	9	6	40	14x1.78	10x1.5
RHC 13/0		29	5	7	6.5	20.5						
RHC 23	M22x1.5	38.5	6.5	13	9	25	18	11	8	75	15.6x1.78	12.42x1.78
RHC 23/1		36	5.5	11	8.5	23		10				
RHC 33(V)	M26x1.5	47	7.5	15	12	30	22	13	10	100	20.35x1.78	15.4x2.4
RHC 33/2		46		13.5	11	28.5		11				
RHC 43(V)	M36x1.5	55.5	9	20.5	14	33	28	17.5	12	140	28.3x1.78	20.29x2.62
RHC 43/3(V)		52		16	13	32.5		16				
RHC 53(V)	M38x1.5	67.5	12	24	18.5	41.5	34	21.5	Torx ®TX70	200	29.82x2.62	25.07x2.62
RHC 53/4(V)		65		21	16	40		20				

NOTICE
* Tightening torques validated using steel / steel combination.

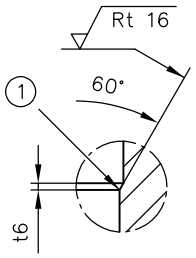
Mounting hole

For dimensions not covered by specific tolerances, the general tolerances set out in DIN ISO 2768-mK-E apply.



1 Sealing ring

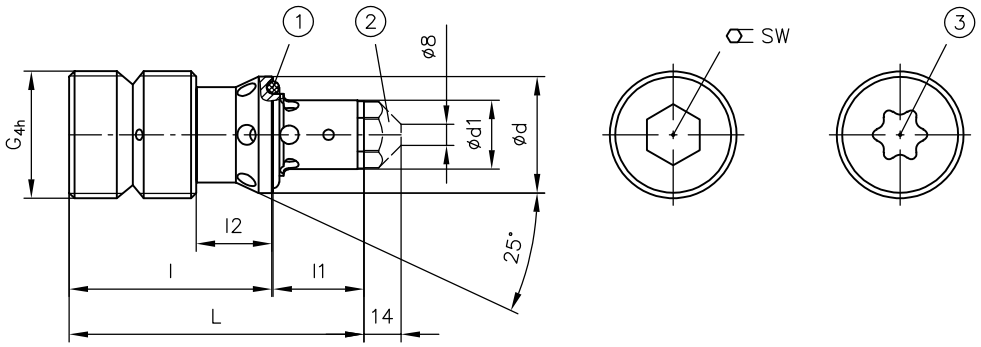
Detail **X**



1 Edge burr-free!
max. R 0.3 rounded

Type	G	∅D	∅D1	∅D2	∅D3	∅D5	t	t1	t2	t3	t4	t5	t6	Sealing ring
RHC 13(V) RHC 13/0	M20x1.5	18.5	24	18	11	6	36	13.5	24	21	15	33	0.5	20x24x1.5
RHC 23	M22x1.5	20.5	27	19	14	8.5	39	17	24	21	14	34	1	22x27x1.5
RHC 23/1							38		23	20	13	33		
RHC 33(V) RHC 33/2	M26x1.5	24.5	31	24	16	11	46.5	20	28	25	16	40	0.5	26x31x2
RHC 43(V)	M36x1.5	34.5	42	32	22	13	52	28	32	29	18	45	1	36x42x2
RHC 43/3(V)								24						
RHC 53(V) RHC 53/4(V)	M38x1.5	36.5	44	35	27	15	58	27	32	29	16	49.5	1	38x44x2

4.3 Releasable check valves type RHCE 1 ... 6(V)



SW = Width across flats

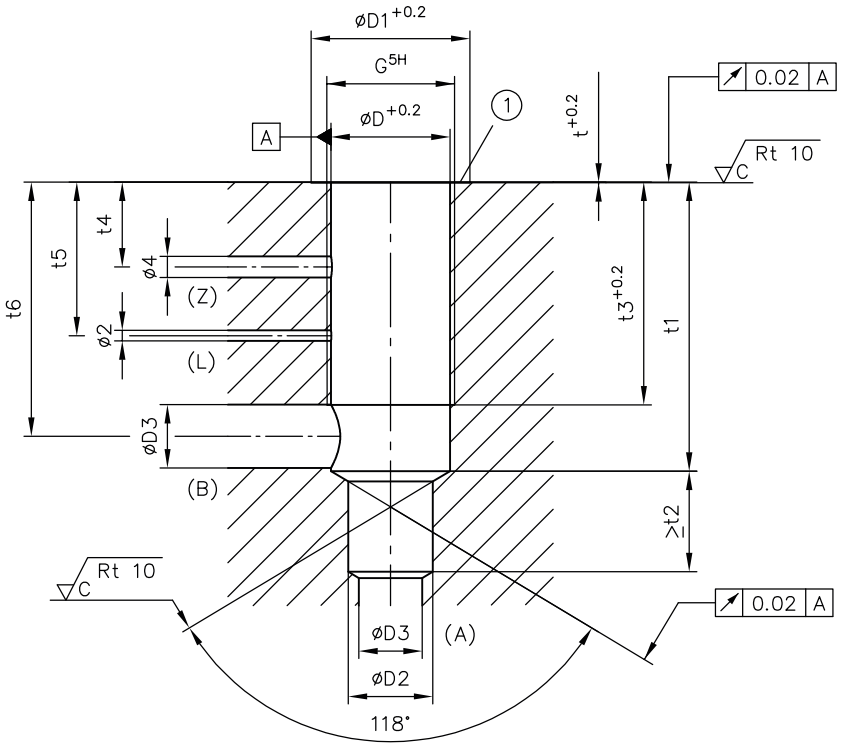
1 O-ring NBR 90 Shore
2 only with type RHCE 6(V)
3 Hexalobular socket ISO 10664-70 (Torx ®TX70), only with type RHCE 5(V)

Type	G	L	l	l1	l2	∅d	∅d1	SW	Tightening torque (Nm)*	O-ring
RHCE 1(V)	M16x1.5	38	26	11	8.5	14	9	6	40	10x1.5
RHCE 2	M20x1.5	45	30.5	12	10.5	18	11	8	75	12x1.5
RHCE 3(V)	M24x1.5	56	38	16	14	22	13	10	100	15.3x2.4
RHCE 4(V)	M30x1.5	63	40.5	20	14.5	28	17.5	12	140	20.29x2.62
RHCE 5(V)	M36x1.5	77	50.5	25	16.5	34	21.5	Torx ®TX70	200	25.07x2.62
RHCE 6(V)	M42x1.5	99	59	29	15	39.5	27	19	350	31.42x2.62

NOTICE
* Tightening torques validated using steel / steel combination.

Mounting hole

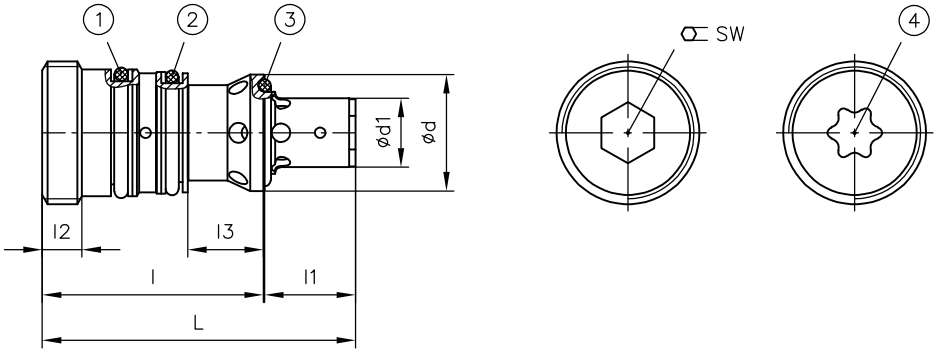
For dimensions not covered by specific tolerances, the general tolerances set out in DIN ISO 2768-mK-E apply.



1 Sealing ring

Type	G	∅D	∅D1	∅D2	∅D3	t	t1	t2	t3	t4	t5	t6	Sealing ring
RHCE 1(V)	M16x1.5	14.4	23	11	8	0.1	41	13	33.5	14	24	37	16x20x1.5
RHCE 2	M20x1.5	18.4	26	14	10	0.1	48	16	38	16	26	43	20x24x1.5
RHCE 3(V)	M24x1.5	22.5	30	16	12	0.1	55	19	42	16	29	48	24x29x2
RHCE 4(V)	M30x1.5	28.4	36	22	14	0.1	58	24	45.5	18	33	52	30x36x2
RHCE 5(V)	M36x1.5	34.4	42	27	18	0.5	68.5	28	52.5	16	36.5	59	36x42x2
RHCE 6(V)	M42x1.5	40.4	50	32	20	0.5	77.5	42	60	16	43	67	42x49x2

4.4 Releasable check valves type RHCE 13 ... 63/4(V)



SW = Width across flats

1 O-ring 2 NBR 90 Shore
2 O-ring 3 NBR 90 Shore
3 O-ring 1 NBR 90 Shore
4 Hexalobular socket ISO 10664-70 (Torx ®TX70), only with type RHCE 53(V)

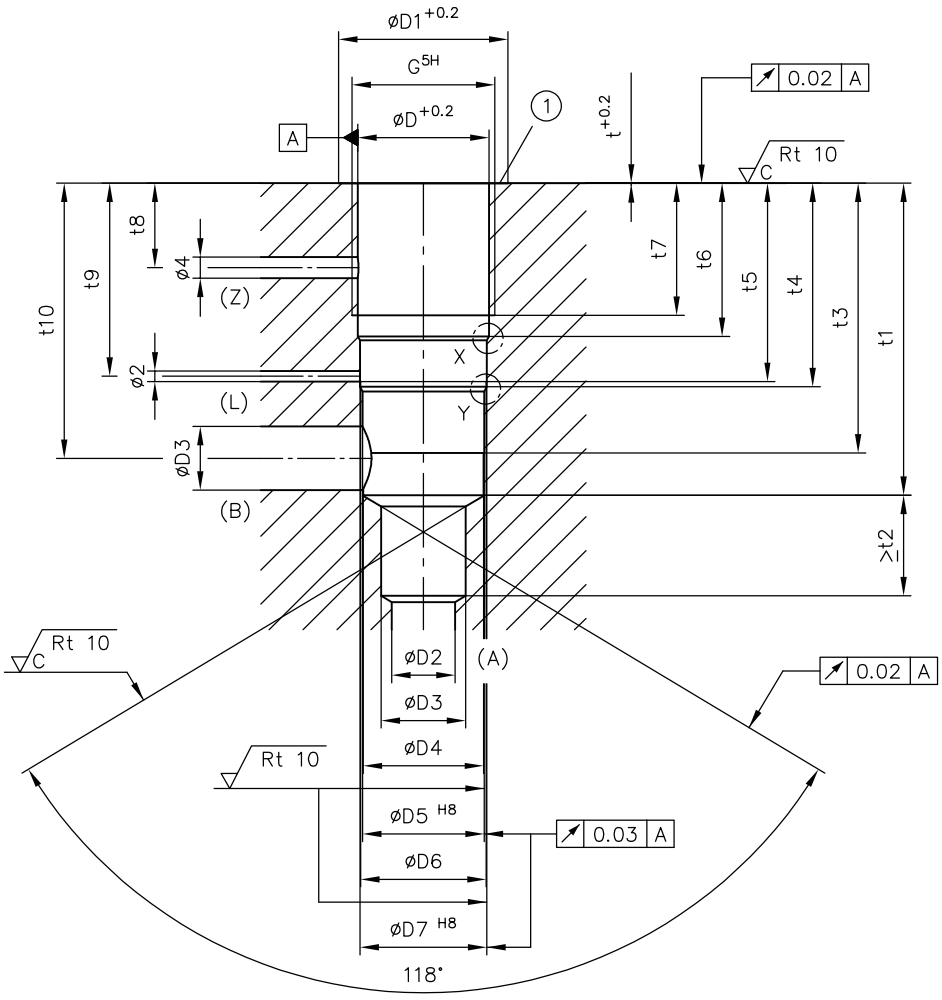
Type	G	L	l	l1	l2	l3	∅d	∅d1	SW	Tightening torque (Nm)*
RHCE 13(V)	M20x1.5	45	32.5	11	7	8.5	14	9	8	40
RHCE 23	M24x1.5	52	37	12	7.5	10.5	18	11	8	75
RHCE 23/1(V)								10		
RHCE 33(V)	M27x2	59	41.5	16	7.5	14	22	13	10	100
RHCE 43(V)	M33x2	65	43.5	20	8	14.5	28	17.5	12	140
RHCE 53(V)	M42x1.5	78	50	25	11	16.5	34	21.5	Torx ®TX70	200
RHCE 63(V)	M45x1.5	103	59	41	15.5	15	39.5	27	19	350

Type	O-ring		
	1	2	3
RHCE 13(V)	10x1.5	14x1.78	12x1.5
RHCE 23	12x2	15.55x2.62	15.6x1.78
RHCE 23/1(V)			
RHCE 33(V)	15.3x2.4	18.72x2.62	18x2.5
RHCE 43(V)	20.29x2.62	25.07x2.62	23.47x2.62
RHCE 53(V)	25.07x2.62	31.42x2.62	29.82x2.62
RHCE 63(V)	31.42x2.62	36x3	34x3

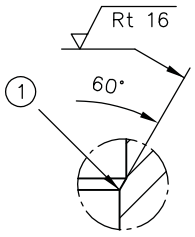
NOTICE
* Tightening torques validated using steel / steel combination.

Mounting hole

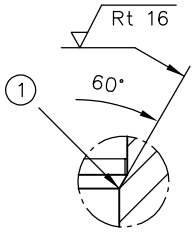
For dimensions not covered by specific tolerances, the general tolerances set out in DIN ISO 2768-mK-E apply.



Detail **X**



Detail **Y**



1 Edge burr-free!
max. R 0.3 rounded

1 Sealing ring

Type	G	∅D	∅D1	∅D2	∅D3	∅D4	∅D5	∅D6	∅D7
RHCE 13(V)	M20x1.5	18.4	26	8	11	14.7	15	16.7	17
RHCE 23 RHCE 23/1(V)	M24x1.5	22.5	29	10	14	18.7	19	20.7	21
RHCE 33(V)	M27x2	24.8	32	12	16	22.7	23	23.7	24
RHCE 43(V)	M33x2	30.8	39	14	22	27.7	28	29.7	30
RHCE 53(V)	M42x1.5	40.4	49	18	27	34.7	35	36.7	37
RHCE 63(V)	M45x1.5	42.4	52	20	32	39.7	40	41.7	42

Type	t	t1	t2	t3	t4	t5	t6	t7	t8	t9	t10	Sealing ring
RHCE 13(V)	0.5	48	13	40	33	32	25.5	22.5	14	32.5	43.5	20x24x1.5
RHCE 23 RHCE 23/1(V)	0.1	52	16	43	35	34	26.5	22.5	14	34	47	24x29x2
RHCE 33(V)	0.1	59	19	46	38.5	37.5	29	25	16	36.5	52	27x32x2
RHCE 43(V)	0.1	60	24	48	38	37	30	25.5	16	37	53	33x39x2
RHCE 53(V)	0.5	68.5	28	52	43	41	31	28	16	42	59	42x49x2
RHCE 63(V)	0.1	77.5	42	59	49	47.5	38.5	33.5	16	48	67	52x45x2

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.

Minor injuries. Flyaway or bursting parts 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

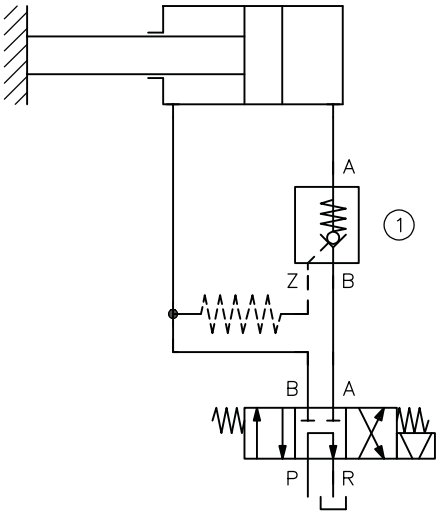
Check regularly (at least once a year) by visual inspection whether the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

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

6 Other information

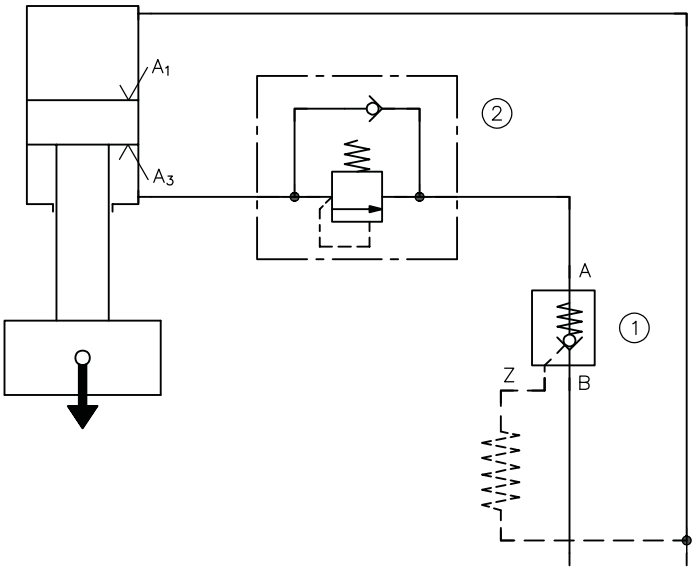
6.1 Typical application examples

Zero-leakage blockage of hydraulic cylinders
(Shown here with dampened control line)



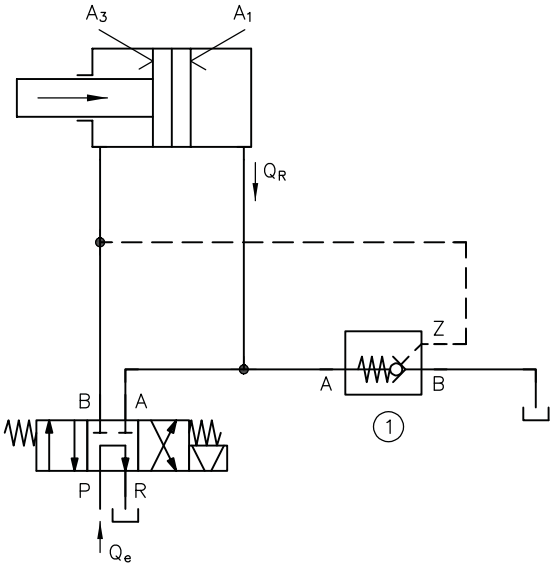
1 Type RHC

Use for pulling loads



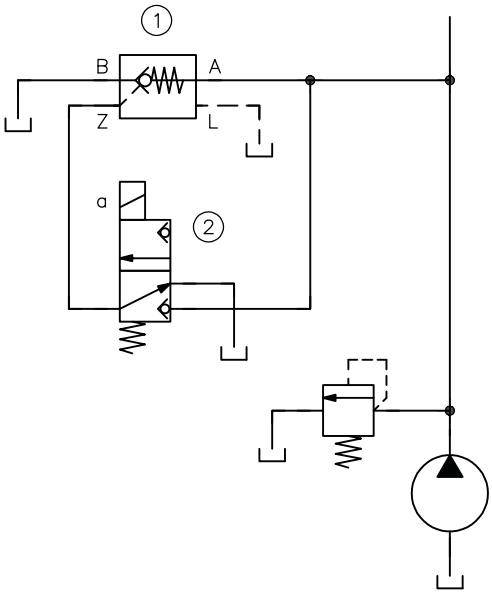
1 Type RHC
2 e.g. type SVC in accordance with D 7000/1

Additional return flow relief for large flow rates
(A_1/A_3 is very high)



1 Type RHC

Use as idle circulation valve



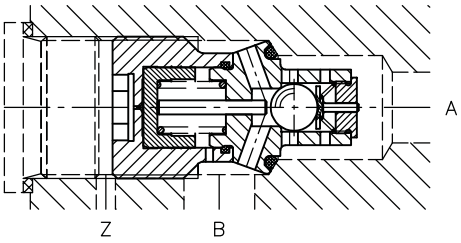
1 Type RHCE
2 e.g. type WN 1H-G 24 in accordance with D 7470 A/1

6.2 Planning information

Versions

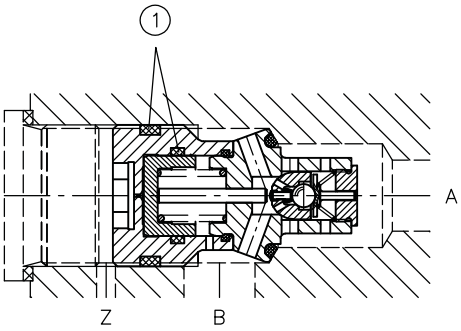
- Valves without hydraulic release (type RHC..)

The valve element is a ball. Quick release of the full flow cross section A → B during release. The switching speed of the piston is dampened. This largely prevents an abrupt opening and possible decompression surges. If they do still occur during the test run, install an additional throttling point in the control oil supply line or use a valve with hydraulic release.



- Valves with hydraulic release (type RHC..V)

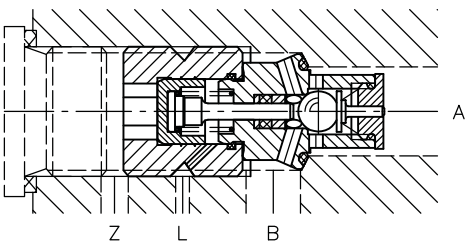
The valve element is a spherical ground piston (ball seat) with installed ball check valve, which is opened during release before the main piston and releases a throttling cross-section for the surge-free decompression of the consumer volume. To be used mainly for high operating pressures and large consumer volumes. Additional throttling of the control oil line increases the effectiveness of the hydraulic release.



1 Additional sealing of the pilot pressure side

- Valves with control piston relief (type RHCE..)

Available with or without hydraulic release (see above).
This version enables an opening pressure that is largely independent of the return pressure (p_B). This is achieved via an additional control piston relief via the drain port L.



References

Additional versions

- Check valve type CRK, CRB and CRH: D 7712
- Releasable check valve type HRP: D 5116

HAWE Hydraulik SE
Einsteinring 17 | 85609 Aschheim/Munich | P.O. Box 11 55 | 85605 Aschheim | Germany
Phone +49 89 379100-1000 | info@hawe.de | www.hawe.com

hawe.com/contact

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