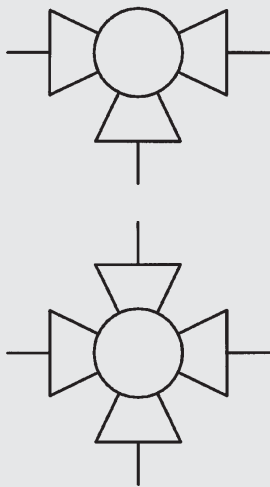
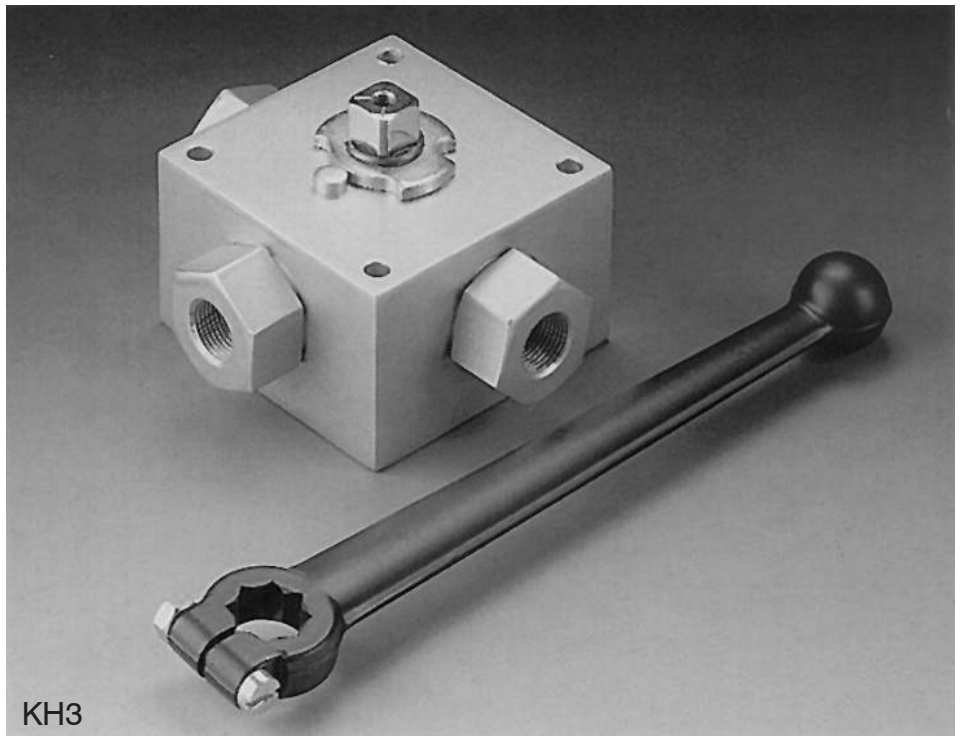


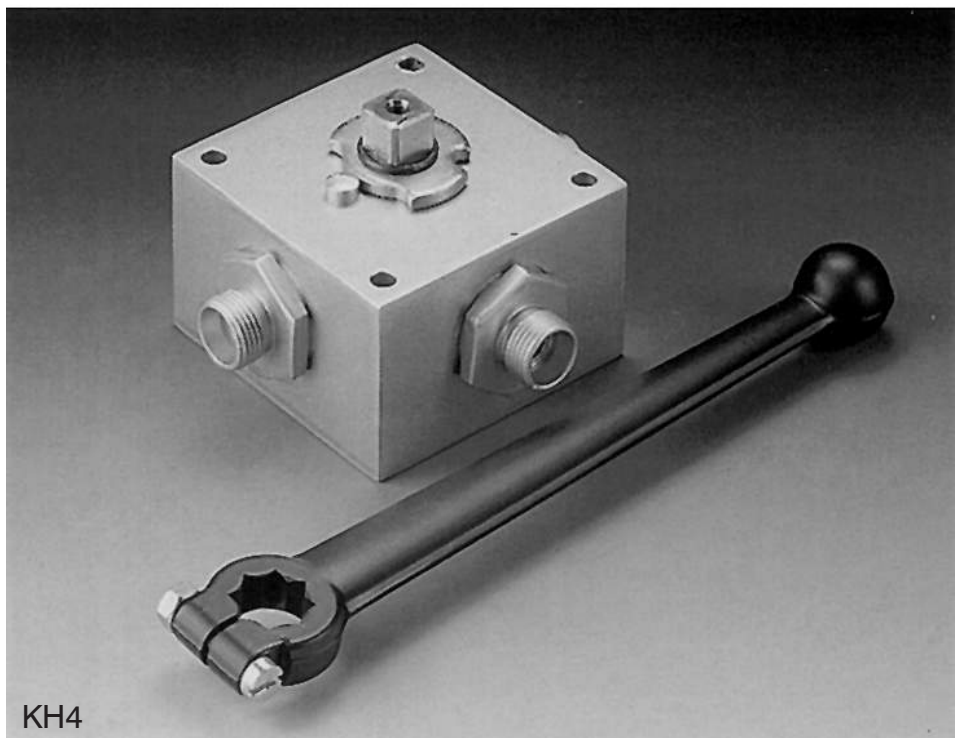
3- and 4-Way Ball Valves KH3/KH4



up to 500 bar
up to DN 20



KH3



KH4

1. DESCRIPTION

1.1. GENERAL

According to DIN 2429, HYDAC 3/2 and 4/2 way ball valves are units which shut off and divert the flow of an operating medium.

They are available in two models:

KH3 - DN 04 - 20

KH4 - DN 04 - 20

These ball valves have the following advantages:

- Visual indication of the switching position by means of a slot on the control spindle
- Switching limited by means of stop pin and stop disc
- Completely leak-proof due to pressurised seals
- No glands, therefore no manual re-adjustment of seals required
- Surface phosphate-plated

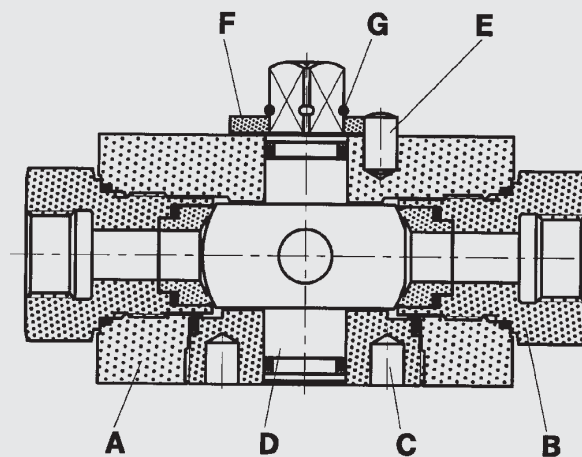
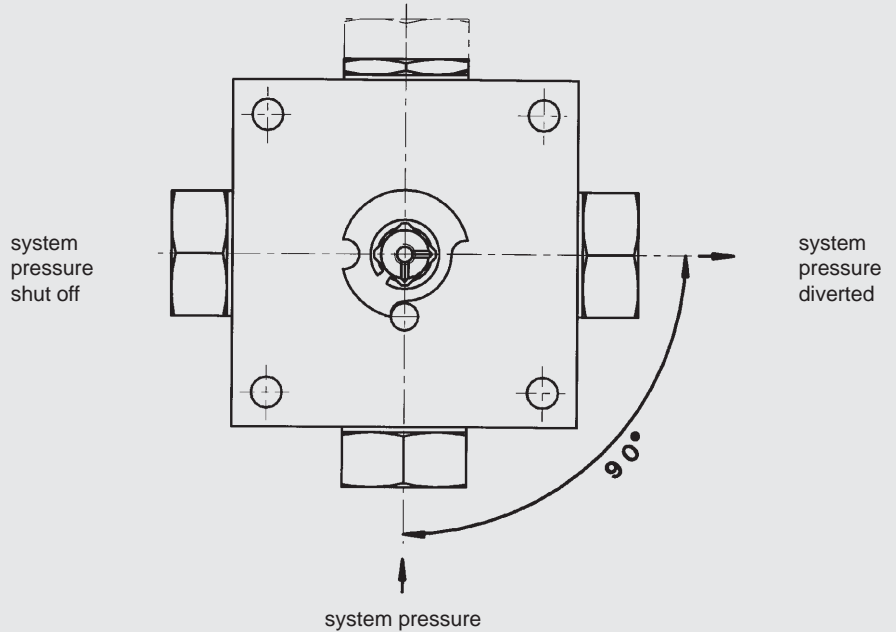
HYDAC ball valves are also available in stainless steel Nirossta version.

HYDAC handle, for full details see brochure no. E 5.515../..

On request we can supply other models to cover nearly all applications, e.g. for aggressive or gaseous media as well as certificates for material tests to EN 10204 and quality test certificates to DIN 55350, Part 18.

1.2. FUNCTION

By turning the ball spindle the flow is diverted, distributed or shut off leakage-free, according to the ball bore. The pressurised sealing cups seal off the flow to the ball on the inlet side.



A	Housing	D	Ball spindle
B	Connection adaptor	E	Stop pin
C	Tool locating hole in the locking screw	F	Limit disc
		G	Ring retainer

1.3. APPLICATION

HYDAC 3- and 4-way ball valves KH3/KH4 are used to direct or shut off flow in hydraulic circuits. Areas of application are for example:

- Machine tools
- System engineering
- Mobile hydraulics
- Agricultural machinery
- Loading cranes

1.4. NOTES

Ball valves are not designed to be used as flow control valves; therefore they should always be either fully open or fully closed in order to avoid damaging the sealing cups.

To ensure correct functioning, pressure and temperature specifications must be observed.

The permissible operating pressure of the threaded pipe connection must be taken into account. The cap nuts and cutting rings for threaded pipe connections are not supplied with the ball valve.

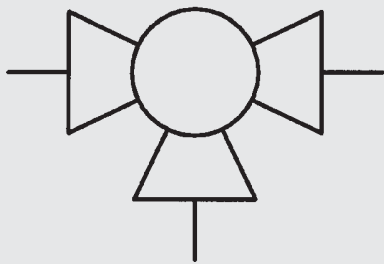
The handles are supplied loose with the ball valves.

2. TECHNICAL SPECIFICATIONS

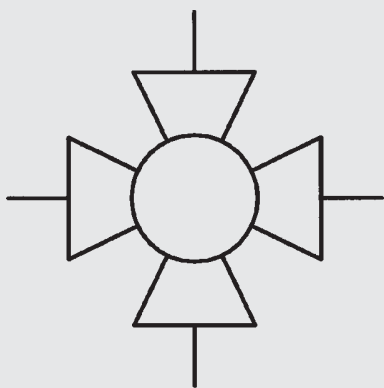
2.1 GENERAL

2.1.1 Designation and symbol

3-way ball valve KH3
4-way ball valve KH4



3/2 way



4/2 way

2.1.2 Model code (also order example)

KH3 - G1/2 - L - 1112 - 01 X

Designation
KH3 = 3-way ball valve
KH4 = 4-way ball valve

Type of connection
Thread size or outside diameter of pipe and type of connection (see table 2.1.12)

Ball bore
KH3 - L
KH3 - T
KH4 - T
KH4 - X

Materials

Housing, connection adaptor and locking screw (steel)

Ball spindle (steel)

Sealing cups (POM)

Control spindle seal and connection seal

Perbunan (NBR)

4 = Viton (FKM)

Material code

1

1

1

2

Handle

01 = aluminium clamped handle, straight (AG)

09 = without handle

Series

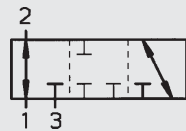
(determined by manufacturer)

Please quote stock number when ordering (see table 2.1.12)
Delivery for non-standard valves is longer and the price is higher.

2.1.3 Standard model functions (positive switching overlap)

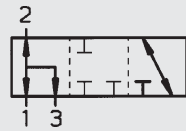
3-way ball valve L-bore

90° switch



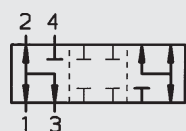
3-way ball valve T-bore

90° switch



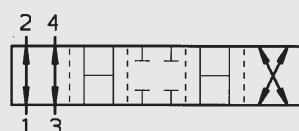
4-way ball valve T-bore

90° switch



4-way ball valve X-bore

90° switch



— — — undefined switching position

2.1.4 Non-standard model functions (positive switching overlap)

To cover further applications, it is possible to produce other non-standard models by using special limit discs and detent pins.

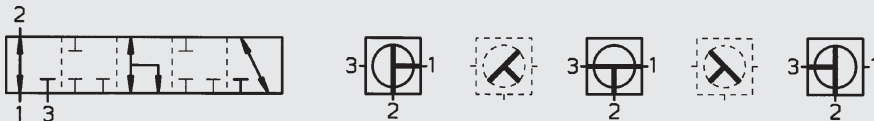
3-way ball valve L-bore, 90° switch, with detent position at 45°, SO 378



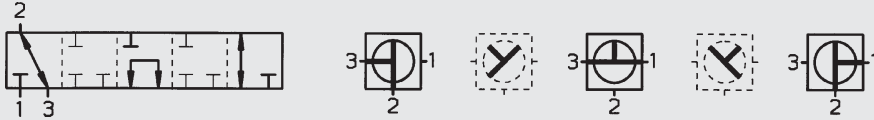
3-way ball valve T-bore, 90° switch, with detent position at 45°, SO 379



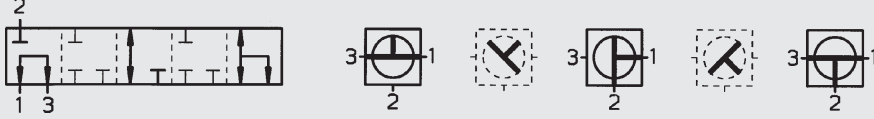
3-way ball valve T-bore, 180° switch, no detent on centre setting



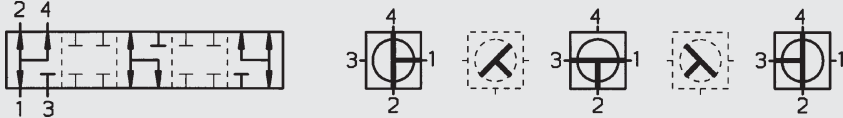
3-way ball valve T-bore, 180° switch, SO 926.1, no detent on centre setting



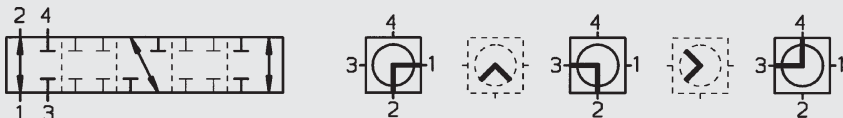
3-way ball valve T-bore, 180° switch, SO 926.2, no detent on centre setting



4-way ball valve T-bore, 180° switch, no detent on centre setting



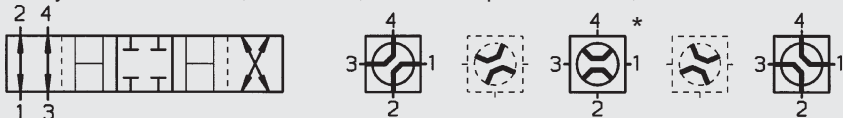
4-way ball valve L-bore, 180° switch, no detent on centre setting



4-way ball valve X-bore, 45° switch, SO 384



4-way ball valve X-bore, 90° switch, with detent position at 45°, SO 385



4-way ball valve T-bore, 90° switch, with detent position at 45°, SO 389



2.1.5 Type of construction

The shut-off and/or diverting device is a ball spindle

2.1.6 Type of connection

Pipe connection Whitworth thread to ISO 228

Light and heavy threaded pipe connection to DIN 2353

2.1.7 Mounting position

Optional

2.1.8 Weight

(see table 2.1.12)

2.1.9 Flow direction

Optional

2.1.10 Ambient temperature

- 10 °C to + 80 °C

2.1.11 Materials

Housing, connection adaptors and locking screw in steel, surface phosphate-plated.

Ball spindle in steel, hard chromed

Ball seals in high quality synthetic material (POM)

Soft seals in Perbunan (NBR) or Viton (FKM)

Handle in aluminium, red anodised

--- undefined switching position

* the centre setting is held by a detent pin

2.1.12 Standard valves

Type of connection	Thread designation or outside diameter of pipe RA	Nominal bore DN	Ball bore	Nominal pressure PN (bar) ¹⁾	Order no. = stock no.	Weight kg		
G	Whitworth internal thread to ISO 228	KH3-G 1/8-L-1112-01X	04	L	500	701902	1.6	
		KH3-G 1/8-T-1112-01X	04	T	500	701905	1.6	
		KH4-G 1/8-T-1112-01X	04	T	500	701914	1.6	
		KH4-G 1/8-X-1112-01X	04	X	500	701917	1.6	
		KH3-G 1/4-L-1112-01X	06	L	500	701920	1.6	
		KH3-G 1/4-T-1112-01X	06	T	500	852904	1.6	
		KH4-G 1/4-T-1112-01X	06	T	500	701932	1.6	
		KH4-G 1/4-X-1112-01X	06	X	500	701935	1.6	
		KH3-G 3/8-L-1112-01X	10	L	500	701938	2.4	
		KH3-G 3/8-T-1112-01X	10	T	500	701941	2.4	
		KH4-G 3/8-T-1112-01X	10	T	500	701950	2.4	
		KH4-G 3/8-X-1112-01X	10	X	500	701953	2.4	
		KH3-G 1/2-L-1112-01X	16	L	400	701956	4.3	
		KH3-G 1/2-T-1112-01X	16	T	400	701959	4.3	
		KH4-G 1/2-T-1112-01X	16	T	400	701968	4.3	
		KH4-G 1/2-X-1112-01X	16	X	400	701971	4.3	
		KH3-G 3/4-L-1112-01X	20	L	315	701974	6.0	
		KH3-G 3/4-T-1112-01X	20	T	315	701977	6.0	
		KH4-G 3/4-T-1112-01X	20	T	315	701986	6.0	
		KH4-G 3/4-X-1112-01X	20	X	315	701989	6.0	
	LR	Threaded pipe connection light range to DIN 2353	KH3-06LR-L-1112-01X	04	L	500	701650	1.6
			KH3-06LR-T-1112-01X	04	T	500	701653	1.6
			KH4-06LR-T-1112-01X	04	T	500	701662	1.6
			KH4-06LR-X-1112-01X	04	X	500	701665	1.6
			KH3-08LR-L-1112-01X	06	L	500	701668	1.6
			KH3-08LR-T-1112-01X	06	T	500	701671	1.6
			KH4-08LR-T-1112-01X	06	T	500	701680	1.6
			KH4-08LR-X-1112-01X	06	X	500	701683	1.6
		KH3-10LR-L-1112-01X	08	L	500	701686	2.4	
		KH3-10LR-T-1112-01X	08	T	500	701689	2.4	
		KH4-10LR-T-1112-01X	08	T	500	701698	2.4	
		KH4-10LR-X-1112-01X	08	X	500	701701	2.4	
		KH3-12LR-L-1112-01X	10	L	500	701704	2.4	
		KH3-12LR-T-1112-01X	10	T	500	701707	2.4	
		KH4-12LR-T-1112-01X	10	T	500	701716	2.4	
		KH4-12LR-X-1112-01X	10	X	500	701719	2.4	
		KH3-15LR-L-1112-01X	12	L	400	701722	4.3	
		KH3-15LR-T-1112-01X	12	T	400	701725	4.3	
		KH4-15LR-T-1112-01X	12	T	400	701734	4.3	
		KH4-15LR-X-1112-01X	12	X	400	701737	4.3	
		KH3-18LR-L-1112-01X	16	L	400	701740	4.3	
		KH3-18LR-T-1112-01X	16	T	400	701743	4.3	
		KH4-18LR-T-1112-01X	16	T	400	701752	4.3	
		KH4-18LR-X-1112-01X	16	X	400	701755	4.3	
		KH3-22LR-L-1112-01X	20	L	315	701758	6.0	
		KH3-22LR-T-1112-01X	20	T	315	701761	6.0	
		KH4-22LR-T-1112-01X	20	T	315	701770	6.0	
		KH4-22LR-X-1112-01X	20	X	315	701773	6.0	
SR		Threaded pipe connection heavy range to DIN 2353	KH3-08SR-L-1112-01X	04	L	500	701776	1.6
			KH3-08SR-T-1112-01X	04	T	500	701779	1.6
			KH4-08SR-T-1112-01X	04	T	500	701788	1.6
			KH4-08SR-X-1112-01X	04	X	500	701791	1.6
		KH3-10SR-L-1112-01X	06	L	500	701794	1.6	
		KH3-10SR-T-1112-01X	06	T	500	701797	1.6	
		KH4-10SR-T-1112-01X	06	T	500	701806	1.6	
		KH4-10SR-X-1112-01X	06	X	500	701809	1.6	
		KH3-12SR-L-1112-01X	08	L	500	701812	2.4	
		KH3-12SR-T-1112-01X	08	T	500	701815	2.4	
		KH4-12SR-T-1112-01X	08	T	500	701824	2.4	
		KH4-12SR-X-1112-01X	08	X	500	701827	2.4	
		KH3-14SR-L-1112-01X	10	L	500	701830	2.4	
		KH3-14SR-T-1112-01X	10	T	500	701833	2.4	
		KH4-14SR-T-1112-01X	10	T	500	701842	2.4	
		KH4-14SR-X-1112-01X	10	X	500	701845	2.4	
		KH3-16SR-L-1112-01X	12	L	400	701848	4.3	
		KH3-16SR-T-1112-01X	12	T	400	701851	4.3	
		KH4-16SR-T-1112-01X	12	T	400	701860	4.3	
		KH4-16SR-X-1112-01X	12	X	400	701863	4.3	
		KH3-20SR-L-1112-01X	16	L	400	701866	4.3	
		KH3-20SR-T-1112-01X	16	T	400	701869	4.3	
		KH4-20SR-T-1112-01X	16	T	400	701878	4.3	
		KH4-20SR-X-1112-01X	16	X	400	701881	4.3	
		KH3-25SR-L-1112-01X	20	L	315	701884	6.0	
		KH3-25SR-T-1112-01X	20	T	315	701887	6.0	
		KH4-25SR-T-1112-01X	20	T	315	701896	6.0	
		KH4-25SR-X-1112-01X	20	X	315	701899	6.0	

¹⁾ The permissible operating pressure of the threaded pipe connection must be taken into account.

2.2. HYDRAULIC DETAILS

2.2.1 Nominal pressure

PN 315 bar to PN 500 bar
(see table 2.1.12)

2.2.2 Operating fluids

Mineral oil to DIN 51524,
Part 1 and Part 2
(other fluids on request)

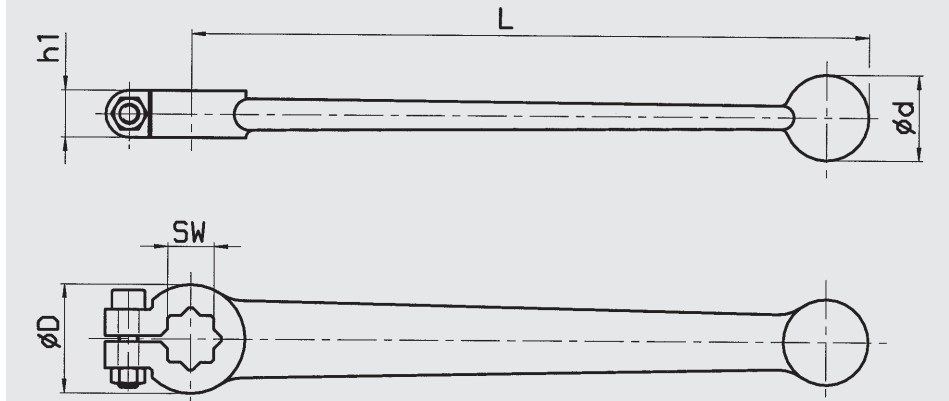
2.2.3 Temperature of operating fluid

- 10 °C to + 80 °C

3. DIMENSIONS

3.1. HANDLE

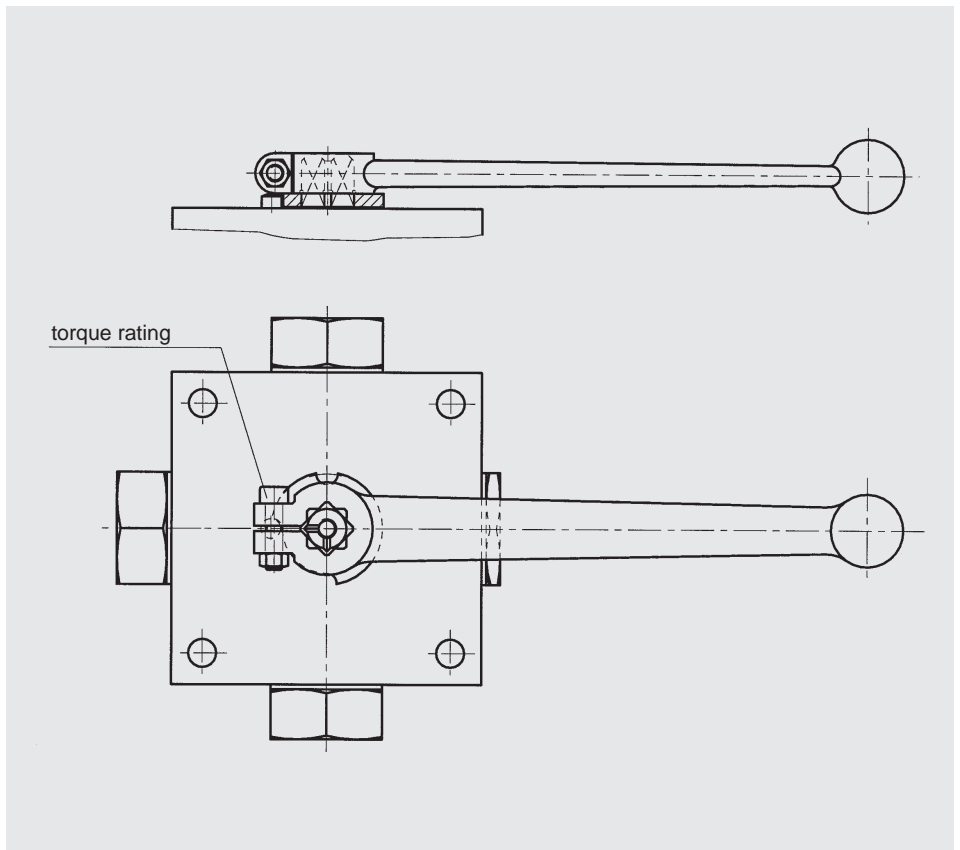
Straight clamped handle



L	ϕD	ϕd	h1	SW	Ball valve nominal bore	Type	Order no. = stock no.
197	28	22	12	12	04-06	01 (AG)	270100
220	32	24	12	14	08-16	01 (AG)	270101
263	36	26	14	17	20	01 (AG)	270311

3.1.1 Notes on assembly

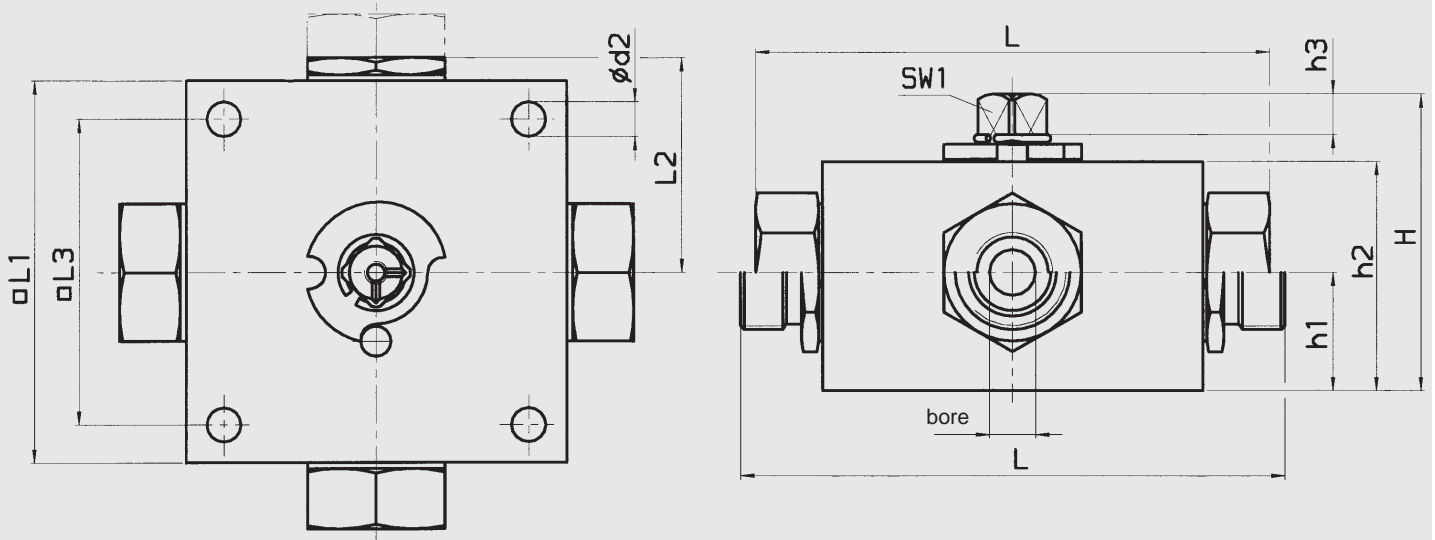
The clamped handle is pushed onto the square end of the ball valve spindle and clamped to the square by means of a screw through the end of the handle.



	SW 12	SW 14	SW 17
	M 5 x 20	M 6 x 30	M 6 x 30
Torque rating	3 Nm	5 Nm	7 Nm

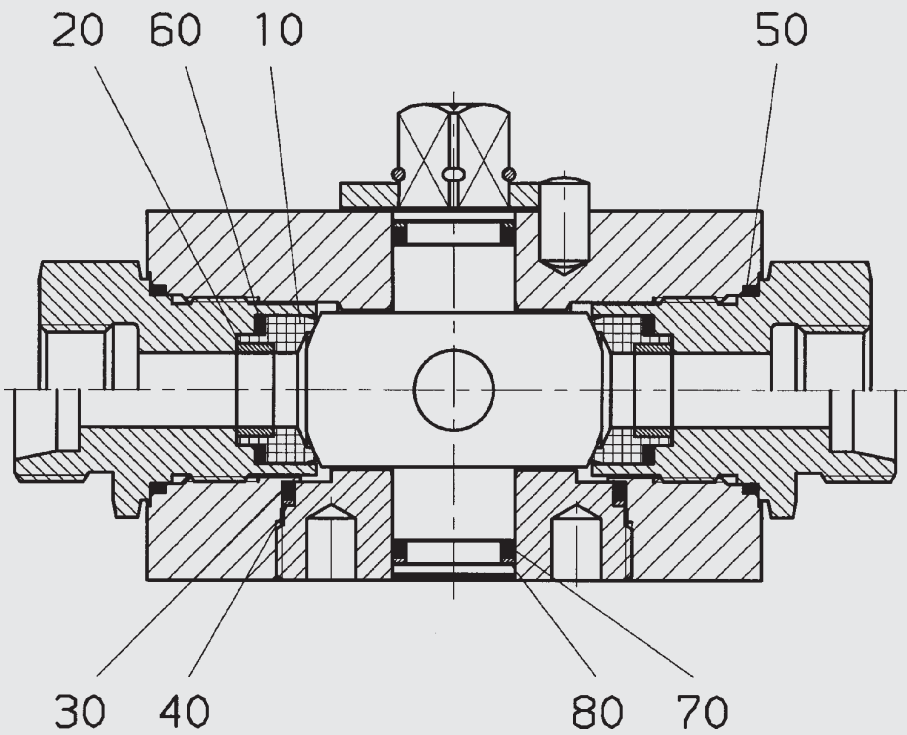
The handles can be displaced by 45°.

3.2. 3-AND 4-WAY BALL VALVES



Types of connection	Type	D	Bore int. diam.			RA	d1	i	L	L1	L2	L3	H	h1	h2	h3	d2	SW1	SW2
			L	T	X														
	KH3/4 - G1/8	04	5	5	4.5	-	G 1/8	10	100	70	42.5	55	57.0	22	40	11.0	6.5	12	24
	KH3/4 - G1/4	06	5	5	4.5	-	G 1/4	14	100	70	42.5	55	57.0	22	40	11.0	6.5	12	24
	KH3/4 - G3/8	10	9	9	6	-	G 3/8	14	115	80	46	65	67.5	27	50	11.5	6.5	14	30
	KH3/4 - G1/2	16	12	12	10	-	G 1/2	16	135	100	56	80	77.5	31	60	11.5	9	14	36
	KH3/4 - G3/4	20	18	18	14	-	G 3/4	18	144	100	58	85	92.0	36	73	11.5	9	17	46
	KH3/4 - 06LR	04	5	5	4.5	6	M12x1.5	10	105	70	42.5	55	57.0	22	40	11.0	6.5	12	24
	KH3/4 - 08LR	06	5	5	4.5	8	M14x1.5	10	105	70	42.5	55	57.0	22	40	11.0	6.5	12	24
	KH3/4 - 10LR	08	9	9	6	10	M16x1.5	11	114	80	46	65	67.5	27	50	11.5	6.5	14	30
	KH3/4 - 12LR	10	9	9	6	12	M18x1.5	11	114	80	46	65	67.5	27	50	11.5	6.5	14	30
	KH3/4 - 15LR	12	12	12	10	15	M22x1.5	12	136	100	56	80	77.5	31	60	11.5	9	14	36
	KH3/4 - 18LR	16	12	12	10	18	M26x1.5	12	136	100	56	80	77.5	31	60	11.5	9	14	36
	KH3/4 - 22LR	20	18	18	14	22	M30x2	14	143	100	58	85	92.0	36	73	11.5	9	17	46
	KH3/4 - 08SR	04	5	5	4.5	8	M16x1.5	12	105	70	42.5	55	57.0	22	40	11.0	6.5	12	24
	KH3/4 - 10SR	06	5	5	4.5	10	M18x1.5	12	105	70	42.5	55	57.0	22	40	11.0	6.5	12	24
	KH3/4 - 12SR	08	9	9	6	12	M20x1.5	12	116	80	46	65	67.5	27	50	11.5	6.5	14	30
	KH3/4 - 14SR	10	9	9	6	14	M22x1.5	14	120	80	46	65	67.5	27	50	11.5	6.5	14	30
	KH3/4 - 16SR	12	12	12	10	16	M24x1.5	14	140	100	56	80	77.5	31	60	11.5	9	14	36
	KH3/4 - 20SR	16	12	12	10	20	M30x2	16	144	100	56	80	77.5	31	60	11.5	9	14	36
	KH3/4 - 25SR	20	18	18	14	25	M36x2	18	151	100	58	85	92.0	36	73	11.5	9	17	46

4. SPARE PARTS (SEAL KIT)



Seal kit	Order no. = stock no.
DN 04/06	703 028
DN 08/10	703 017
DN 12/16	703 129
DN 20	703 029

The parts indicated by numbers on the drawing are all included in the seal kit.

5. NOTE

The information in this brochure relates to the operating conditions and applications described.
For applications or operating conditions not described, please contact the relevant technical department.
Subject to technical modifications.