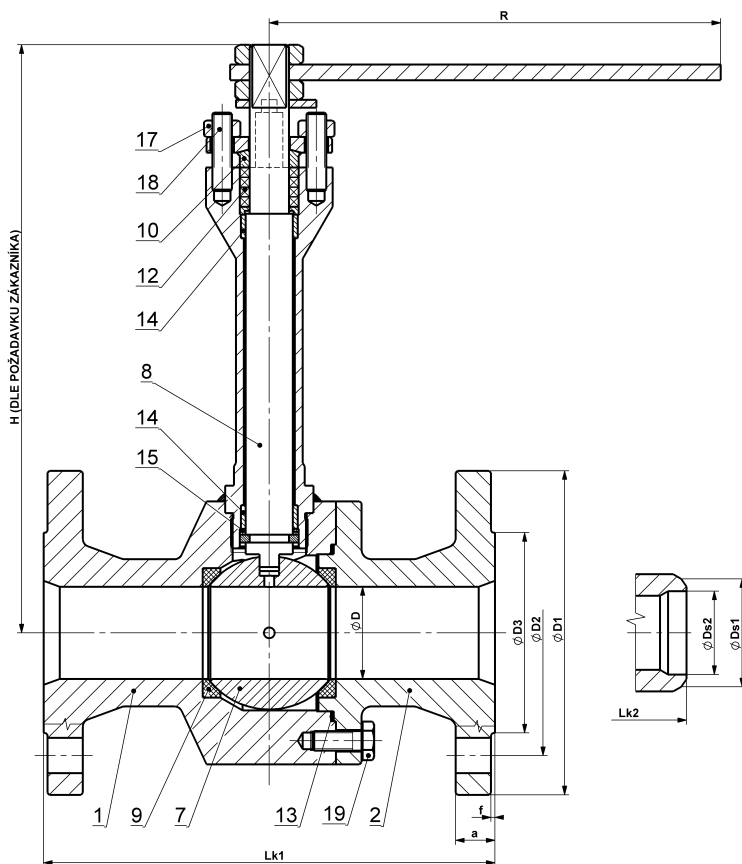


## BALL VALVE FOR VERY LOW TEMPERATURES (cryogenic)

with extended stuffing box, for low temperatures (from  $-196\text{ }^{\circ}\text{C}$  up to  $+70\text{ }^{\circ}\text{C}$ )  
KM 9108.X-04 (flanged ends) and KM 9103.X-04 (butt welding ends)  
DN 10–100 PN 16, 25, 40, 63, 100



### Materials

Type KM 9103(8).X-04		Material
		Stainless steel
		X=3
		For temperatures from $-196\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$
Position	Component	
1	Body with extension	1.4541, A182 F321
2	Cover	
7	Ball	1.4541, A182 F321
8	Stem	1.4541, A182 F321
9	Seat	PTFE, RPTFE
10	Gland cover	1.4021, ČSN 17 027
12	Packing	PTFE, graphite
13	Sealing	PTFE, PTFE+C, graphite
14	Bearing	Nitronic 60
15	Bearing	PTFE, PTFE+C
17	Nut	A2-70, A194 Gr. 8
18	Stud bolt	A2-70, A193 B8
19	Bolt	A2-70, A193 B8

## Dimensions and weights

PN 16, 25, 40	DN	∅D	∅D1	∅D2	∅D3	Lk1	Lk2	f	a	n	∅d	∅Ds1	∅Ds2	Trubka/Pipe
	10	9,5	90	60	40	150	270	2	16	4	14	18	13	17,1×2
	15	14	95	65	45	155	270	2	16	4	14	22	16	21,3×2,6
	20	19	105	75	58	160	270	2	18	4	14	27,5	21,5	26,9×2,6
	25	25	115	85	68	160	270	2	18	4	14	34	28,5	33,7×2,6
	32	30	140	100	78	180	270	2	18	4	18	43	37	42,4×2,6
	40	38	150	110	88	200	270	2	18	4	18	49	42,5	48,3×2,9
	50	47	165	125	102	230	300	2	20	4	18	61	53,5	60,3×3,2
	65	62	185	145	122	290	360	2	22	8	18	77	69,5	76,1×3,2
80	76	200	160	138	310	390	2	24	8	18	90	81,5	88,9×3,6	
PN 16	DN	∅D	∅D1	∅D2	∅D3	Lk1	Lk2	f	a	n	∅d	∅Ds1	∅Ds2	Trubka/Pipe
	100	98	220	180	158	350	450	2	20	8	18	115	106	114,3×4
PN 25 PN 40	DN	∅D	∅D1	∅D2	∅D3	Lk1	Lk2	f	a	n	∅d	∅Ds1	∅Ds2	Trubka/Pipe
	100	98	235	190	162	350	450	2	24	8	22	116	106	114,3×4
PN 63 PN 100	DN	∅D	∅D1	∅D2	∅D3	Lk1	Lk2	f	a	n	∅d	∅Ds1	∅Ds2	Trubka/Pipe
	10	9,5	100	70	40	150	270	2	20	4	14	18	13	17,1×2
	15	14	105	75	45	155	270	2	20	4	14	22	16	21,3×2,6
PN 63	DN	∅D	∅D1	∅D2	∅D3	Lk1	Lk2	f	a	n	∅d	∅Ds1	∅Ds2	Trubka/Pipe
	25	25	140	100	68	160	270	2	24	4	18	34	28,5	33,7×2,6
	32	30	155	110	78	180	270	2	24	4	22	43	37	42,4×2,6
	40	38	170	125	88	200	270	2	26	4	22	49	42,5	48,3×2,9
	50	47	180	135	102	230	300	2	26	4	22	61	53,5	60,3×3,2
	65	62	205	160	122	290	360	2	26	8	22	77	68,5	76,1×3,6
	80	76	215	170	138	310	390	2	28	8	22	90	80,5	88,9×4
100	98	250	200	162	350	450	2	30	8	26	115	104	114,3×5	
PN 100	DN	∅D	∅D1	∅D2	∅D3	Lk1	Lk2	f	a	n	∅d	∅Ds1	∅Ds2	Trubka/Pipe
	25	25	140	100	68	160	270	2	24	4	18	34	27,5	33,7×2,9
	32	30	155	110	78	180	270	2	24	4	22	43	36	42,4×3,2
	40	38	170	125	88	200	270	2	26	4	22	49	41	48,3×3,6
	50	47	195	145	102	230	300	2	28	4	26	61	51	60,3×4,5
	65	62	220	170	122	290	360	2	30	8	26	77	66	76,1×5
	80	76	230	180	138	310	390	2	32	8	26	90	77,5	88,9×5,6
100	98	265	210	162	350	450	2	36	8	30	115	100	114,3×7	

Dimensions of welding ends according to the dimensional table or customer requirement. Dimensions in [mm], weights in [kg].

## Application

Butt weld end ball valves type KM 9103.X-04 and with flanged ends type KM 9108.X-04 are isolating valves designed to fully open or close the service fluid flow. They are not designed to be used for throttling or regulating purposes. The scope of application of the ball valves depends directly on their materials and on the properties and temperature of the service fluid. The standard materials are specified in the table of materials. By agreement and based on service conditions, also other materials than those specified in the table may be used.

The ball valves are designated for both corrosive and non-corrosive liquids and gases without mechanical impurities. Service temperature range can be from  $-196\text{ °C}$  to  $+70\text{ °C}$ . Allowable service pressures are in compliance with the pressure-temperature ratings (graphs B1, S1, S2, S4). For temperatures lower than  $-50\text{ °C}$  the pressure of PN is valid.

### **Technical description**

Ball valve design meets the requirements of EN 1626 and EN 1983. The ball valve is with floating ball. The stem design ensures that the stem can not be ejected from the valve body by pressure of the fluid (anti-blow-out stem), internal components are connected to provide conductivity and resistance to formation of electrostatic discharges (anti-static design).

For liquids and gases of temperature lower than  $-60\text{ }^{\circ}\text{C}$ , the ball of valve is equipped with upstream vent hole which ensures balancing of overpressure from valve cavity into upstream pipeline. In such case the valve is unidirectional and is equipped with label showing the fluid flow on the body.

### **Operation**

By lever, gear box with a hand wheel, pneumatic actuator, electric actuator. Dimensions of flanges for actuator installation are in accordance with ISO 5211. The actuator size depends on the maximum service pressure drop through the ball.

The method of operation is indicated by the third digit of the type designation, which is "0" for lever and "3" for actuator (e.g. KM 9133(8).X-04).

### **Connection to piping**

Overall dimensions are shown in the tables of dimensions.

- connection according to EN 1092-1
- face-to-face dimensions of flanged valves acc. to EN 558-1 – series 1 (corresponding to DIN 3202 series F1)
- dimension of ball bore according to EN 1983
- shapes of welding ends according to EN ISO 17292
- end-to-end dimensions of valves with welding ends according to ČSN EN 12982

### **Testing**

According to EN 12 266-1 as a standard, i.e. shell strength test P10, P11, seat tightness test P12 (water pressure  $1,1 \times \text{PN}$  and air pressure 0,6 MPa), leakage rate A – zero leakage. If required by the Customer, additional tests may be performed as well.

### **Installation, service and maintenance**

The ball valves are intended for horizontal pipelines. The stem must point upwards and its upper third must not be insulated. They require no special adjustments or maintenance. They are operable at the full pressure drop which equals to PN.

### **Optional accessories, adjustments and services**

- fire-safe design – fire resistance in accordance with EN ISO 10497 (API 607)
- lockable handle with a padlock – for locking opened / closed position of the valve
- limit switches
- documentation according to EN 10204 3.1 or 3.2
- special adjustments according to customer requests
- execution according to standard NACE MR 0175 or ISO 15156
- special execution of valve for liquid oxygen