

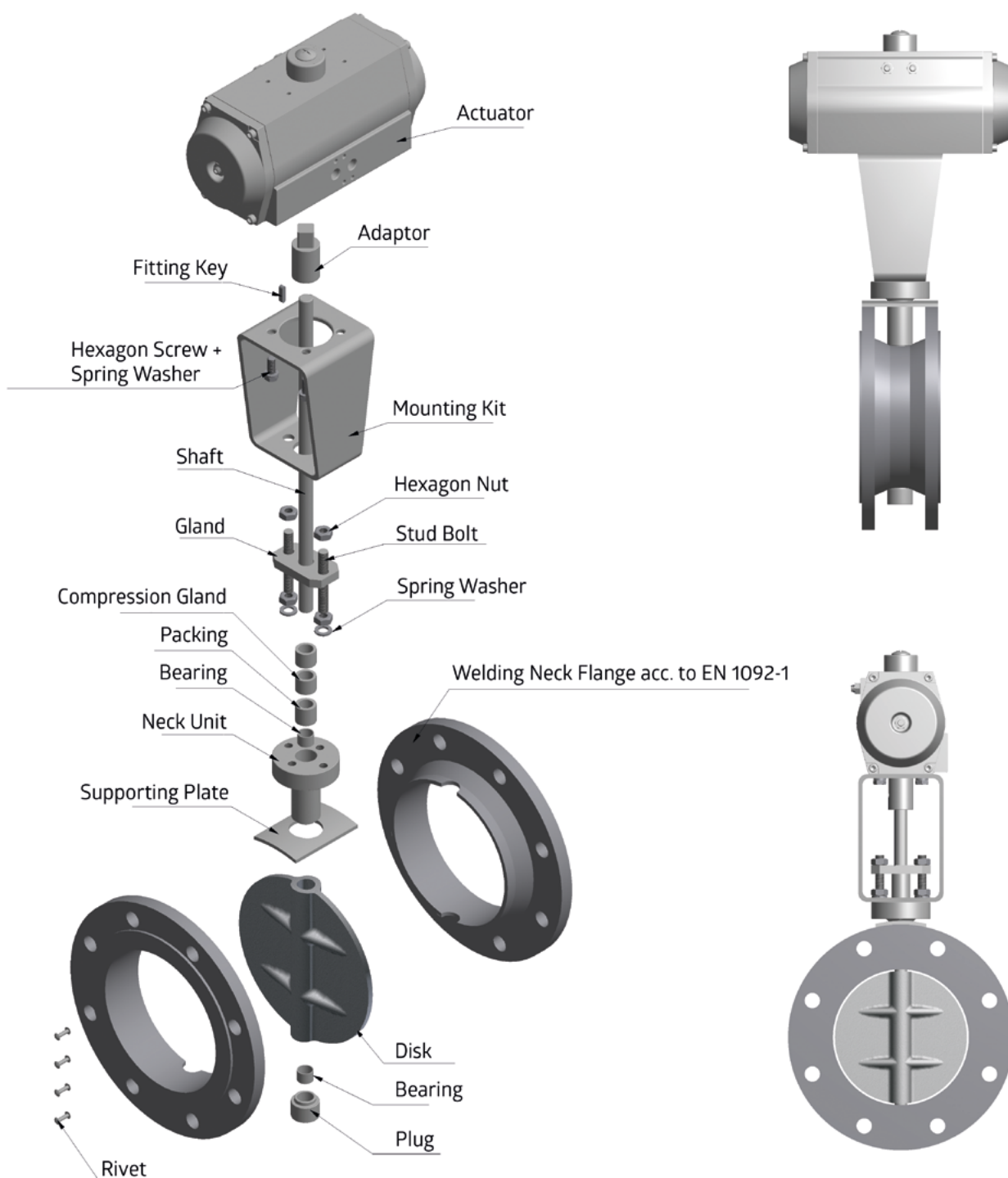
Flange Throttle Valve

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# Type FLD-16

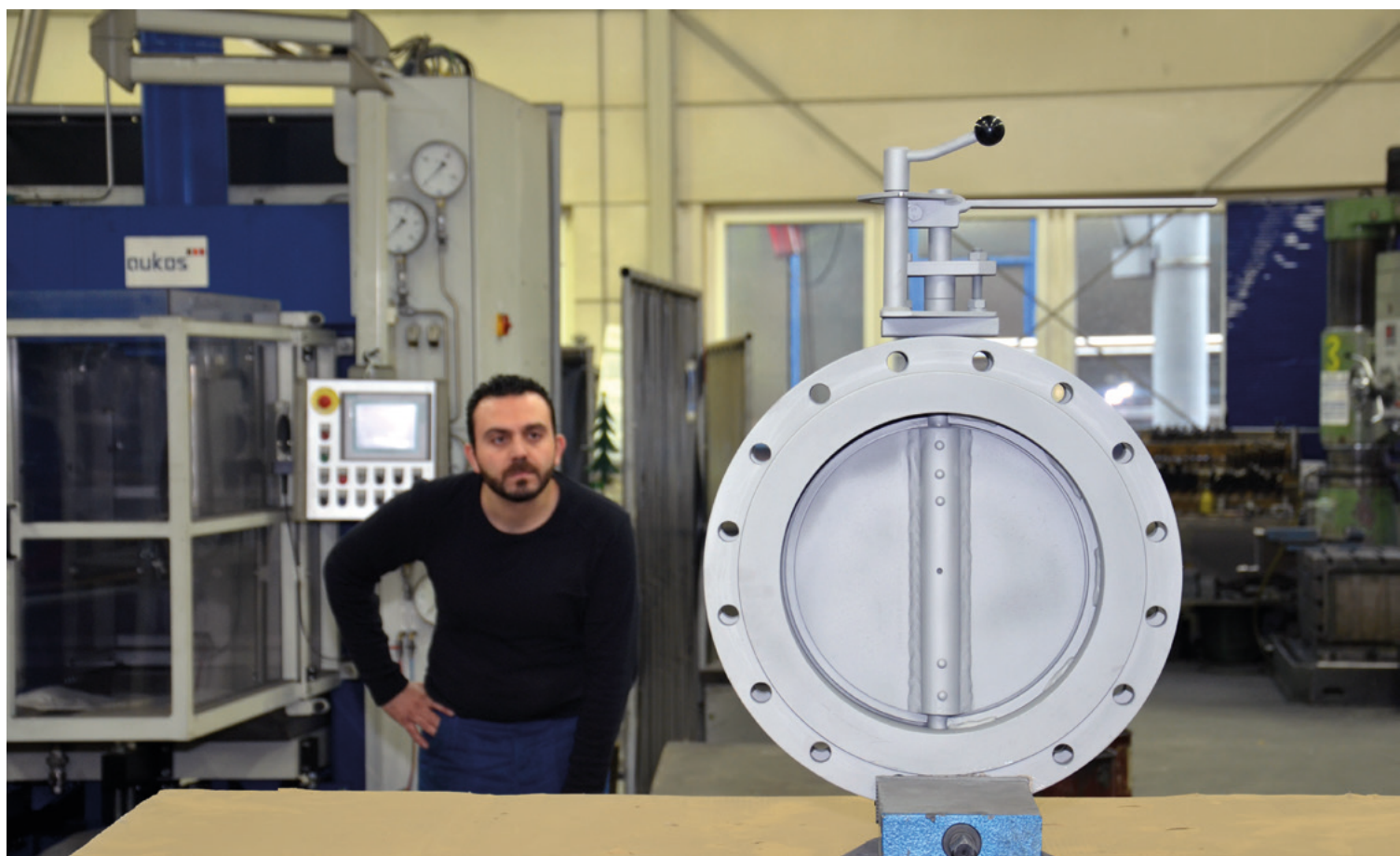
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## Flange Throttle Valve Type FLD-16 with flanges drilled according to DIN 1092-1 (PN6-16) and pneumatic actuator



Exploded view of a standard FLD-16 with a swing through steel disk and a pneumatic actuator.

### FLD-16



## General Description of the Flange Throttle Valve Type FLD-16

The flange throttle valve type FLD-16 with flanges drilled according to DIN 1092-1 PN-6, PN-10 or PN-16, is installed in pipelines. This valve is characterized by its robust and heavy construction and works reliably even in difficult environments.

Depending on the application (temperature, medium, pressure), we can customize this valve of any material available on the market. Special designs of this valve are possible at any time. We have implemented for example a variant lined with refractory concrete or an armored valve for ingress control of water flow at a power plant.

With our three sided coated sealing gasket we can offer an impermeability of at least 99,95% as compared to the fully opened disc even at high pressure. To achieve a leakage rate of 0%, the valve will be charged with sealing air.

We do not only offer our valves with free shaft ends, but can also upon requests offer the valves either as manually operated (with grid handle or continuously variable fine adjustment) or an actuator. Any actuator available on the market, whether electric or pneumatic, can be fitted with our standardized mounting kit.

## Advantages at a glance

Handling	Easy, depending on the accessories
Impermeability	99%, 99,5% and 99,95% compared to fully opened disk
Operating Temperature	-100°C to +1100°C
Medium Compatibility	Design and material selection according to your medium and further operating conditions, including: (aggressive) flue gas, dust-laden mediums, biogas or exhaust gases from biomass burning
Reliability	Very low possibility of failure
Maintenance Characteristics	Low maintenance

## Basic Information

### Sizes: DN 15 – DN 2000 (intermediate sizes viable)

- Up to DN 5000 possible as a custom order

### FLD-16 as a flange valve with flanges drilled according to

- DIN 1092-1 PN6 – PN16 as a standard up to PN 100 viable
- Every pattern of drilling available upon request

### Operation

- With free shaft-end
- Manual operation with a grid handle with locking mechanism or continuously variable fine adjustment
- A corresponding shaft adaption with the DIN ISO 5211 mounting kit
- With a mounted actuator (pneumatic, electric or hydraulic)

### Shaft Seal

- Gland seal
- O-Rings or shaft seals (EPDM, FPM, NBR, PTFE)
- Smooth running seal
- TA-Luft

### Shaft Bearing

- Friction bearing (RG7, Rhyolite, PTFE, DU)
- External fitting through flange bearings for smooth operating
- External fitting over a friction bearing (EN-GJL-250CrNi) for high temperatures up to 1100°C

### Impermeability Classes

- Approx. 99% impermeability in a disk swing through design
- Approx. 99,5% impermeability (metallic sealing) compared to fully opened valve disk in a design with a stop bar in the body
- Approx. 99,95% impermeability (with flexible seal) in designs with a stop bar and three sided jacketed gasket in the body

### Operating Temperature

- From -100°C to +1100°C

### Material

- Steel (e.g. S235JR, S355JR; C22.8)
- Stainless steel (e.g. X5CrNi18-10, X6CrNiTi18-10, X6CrNiMoTi17-12-2, NiMo16Cr16Ti)
- Heat resistant steel (e.g. X15CrNiSi20-12, X15CrNiSi25-21)

## Closing Types

Disk swing through	99% impermeability compared to fully opened disk
With a stop bar in the body	99,5% impermeability compared to fully opened disk
With stop bar and gasket seal	99,95% impermeability compared to fully opened disk
With sealing air	Up to 100% impermeability

## Material Combinations

Temperature	up to 350°C	up to 550°C	up to 850°C	up to 1100°C
Body	S235JR; C22.8	X5CrNi18-10	X15CrNiSi20-12	X15CrNiSi25-21
Disk	S235JR; X5CrNi18-10; GG-25	X5CrNi18-10	X15CrNiSi20-12	X15CrNiSi25-21
Shaft	S235JR; X20Cr13	X8CrNiS18-9; X6CrNiTi18-10; X20Cr13	X15CrNiSi20-12	X15CrNiSi25-21
Subject to modification				

Note: The material combinations listed here are standard combinations. The exact selection is made for customized designs and special requests in accordance with specifications or after consulting with you.

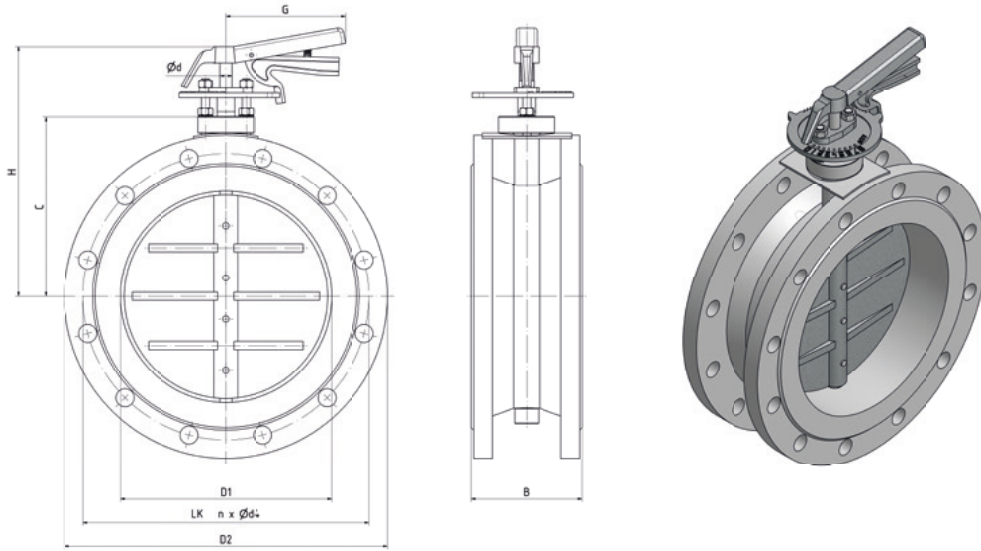
## Actuators and Actuator Accessories

Operation	Accessory
Manual operation	Grid handle, fine adjustment, worm gear
Pneumatic actuator	Magnet valve, electro-mechanical end switch, inductive proximity switch positioner 4...20mA, PROFIBUS, HART, etc.
Elektric actuator	End switch, revolution off-switch, position encoder 4...20mA, positioner, PROFIBUS, HART
Security functions	Fast closing and opening <1 sec through express airing or drop weights
Cylinder	Magnet valve, End position control
Subject to modification	

## Advantages of the FLD-16

- The FLD is a heavy industrial design of a flange throttle valve.
- Works reliably, even with dust-laden medium and at high frequency of operation.
- The dismantling of the pipeline is, as opposed to ring throttle valves, on one side of the valve possible without it to be affected.

## FLD-16 with Grid Handle

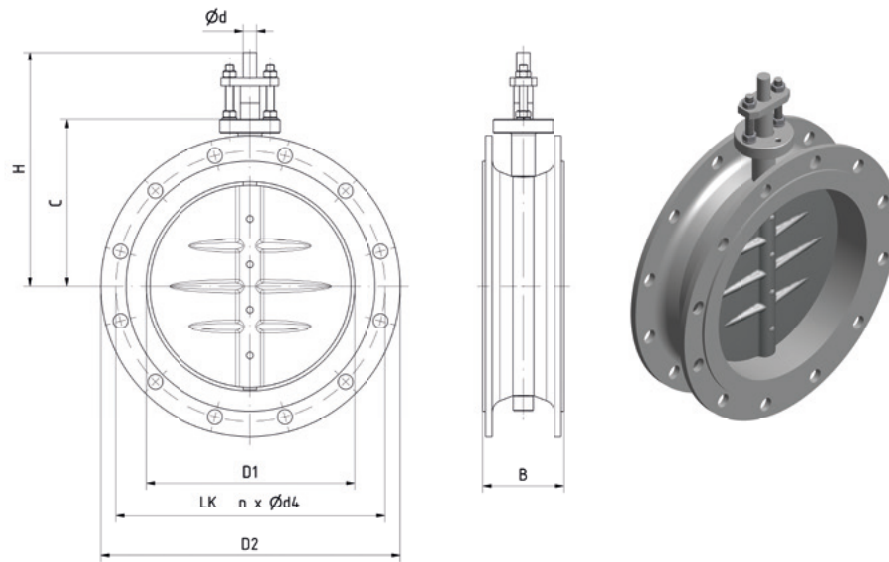


DN	C	D1	Ø d	G	H
25	93,8	29,5	10	100	173,8
32	97,6	38	10	100	177,6
40	101,0	44	10	100	181
50	106,8	55,5	10	100	186,8
65	114,5	71	12	120	194,5
80	120,8	83,5	12	120	200,8
100	133,0	108	12	120	213
125	145,5	133	12	120	225,5
150	159,3	160,5	15	145	244,3
200	183,8	209,5	15	145	268,8
250	209,8	261,5	15	145	294,8
300	244,5	311	20	155	329,5
350	275,3	342,5	25	210	395,3
350 PN-16	274,5	341	25	210	394,5
400	322	394	30	210	442
400 PN-16	321	392	30	210	441
450	347,5	445	30	210	467,5
450 PN-16	346,5	443	30	210	466,5
500	373	496	30	210	493
500 PN-16	372	494	30	210	492
600	424	598	30	210	544
600 PN-16	422,5	595	30	210	542,5
700	471,5	693	35		
800	556,5	793	40		
900	607	894	40		
1000	658	996	40		
1200	757,5	1195	45		

## FLD-16 with Grid Handle

DN	PN-6 B	n x Ød4 Lk	PN-6 Mass [kg]	PN-6 D2	PN-10 B	n x Ød4 Lk	PN-10 Mass [kg]	PN-10 D2	PN-16 B	n x Ød4 Lk	PN-16 Mass [kg]	PN-16 D2
25	70	4 x 11, LK-75	2,4	100	80	4 x 14, LK-85	3,3	115	80	4 x 14, LK-85	3,3	115
32	70	4 x 14, LK-90	3,1	120	80	4 x 18, LK-100	4,3	140	80	4 x 18, LK-100	4,3	140
40	75	4 x 14, LK-100	3,4	130	85	4 x 18, LK-110	4,7	150	85	4 x 18, LK-110	4,7	150
50	75	4 x 14, LK-110	3,7	140	90	4 x 18, LK-125	6	165	90	4 x 18, LK-125	6	165
65	75	4 x 14, LK-130	4,9	160	90	8 x 18, LK-145	7,6	185	90	8 x 18, LK-145	7,6	185
80	85	4 x 18, LK-150	6,8	190	100	8 x 18, LK-160	9	200	100	8 x 18, LK-160	9	200
100	90	4 x 18, LK-170	7,9	210	105	8 x 18, LK-180	10,3	235	105	8 x 18, LK-180	10,3	220
125	95	8 x 18, LK-200	10,9	240	110	8 x 18, LK-210	14,2	270	110	8 x 18, LK-210	14,2	250
150	95	8 x 18, LK-225	12,7	265	110	8 x 22, LK-240	17,4	300	110	8 x 22, LK-240	17,4	285
200	110	8 x 18, LK-280	18,9	320	125	8 x 22, LK-295	25,2	340	125	12 x 22, LK-295	25,5	340
250	120	12 x 18, LK-335	25,3	375	135	12 x 22, LK-350	33,4	395	140	12 x 26, LK-355	35,3	405
300	125	12 x 22, LK-395	39,1	440	135	12 x 22, LK-400	45,6	445	155	12 x 26, LK-410	53,1	460
350	125	12 x 22, LK-445	46,7	490	135	16 x 22, LK-460	63,5	505				
350 PN-16									165	16 x 26, LK-470	78,9	520
400	130	16 x 22, LK-495	65,5	540	145	16 x 26, LK-515	80,5	565				
400 PN-16									170	16 x 30, LK-525	101,7	580
450	130	16 x 22, LK-550	72,5	595	145	20 x 26, LK-565	89	615				
450 PN-16									165	20 x 30, LK-585	116	640
500	135	20 x 22, LK-600	93	645	145	20 x 26, LK-620	112	670				
500 PN-16									170	20 x 33, LK-650	157	715
600	140	20 x 26, LK-705	137	755	160	20 x 30, LK-725	156	780				
600 PN-16									175	20 x 36, LK-770	237	840
700	200	24 x 26, LK-810	180	860	200	24 x 30, LK-840	223	895	200	24 x 36, LK-840	267	910
800	200	24 x 30, LK-920	242	975	200	24 x 33, LK-950	319	1015	200	24 x 39, LK-950	359	1025
900	200	24 x 30, LK-1020	308	1075	200	28 x 33, LK-1050	395	1115	200	28 x 39, LK-1050	463	1125
1000	200	28 x 30, LK-1120	377	1175	200	28 x 36, LK-1160	506	1230	200	28 x 42, LK-1170	652	1255
1200	200	32 x 33, LK-1340	557	1405	200	32 x 39, LK-1380	770	1455	200	32 x 48, LK-1390	1034	1485

## FLD-16 with Free Shaft



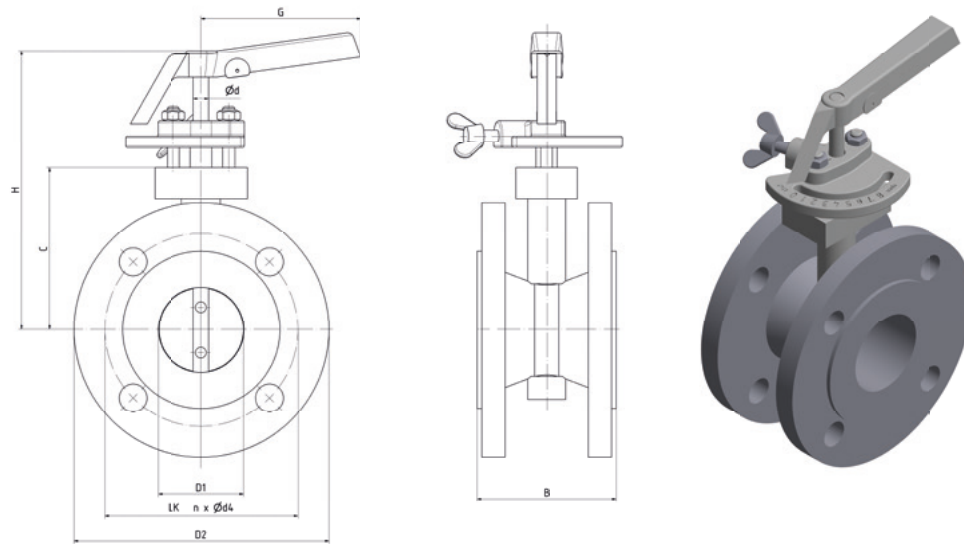
DN	C	D1	Ø d	H
25	93,8	29,5	10	173,8
32	97,6	38	10	177,6
40	101,0	44	10	181,0
50	106,8	55,5	10	186,8
65	114,5	71	12	194,5
80	120,8	83,5	12	200,8
100	133,0	108	12	213,0
125	145,5	133	12	225,5
150	159,3	160,5	15	249,3
200	183,8	209,5	15	273,8
250	209,8	261,5	15	309,8
300	244,5	311	20	344,5
350	275,3	342,5	25	405,3
350 PN-16	274,5	341	25	404,5
400	322	394	30	452,0
400 PN-16	321	392	30	451,0
450	347,5	445	30	477,5
450 PN-16	346,5	443	30	476,5
500	373	496	30	503,0
500 PN-16	372	494	30	502,0
600	424	598	30	554,0
600 PN-16	422,5	595	30	552,5
700	471,5	693	35	601,5
800	556,5	793	40	686,5
900	607	894	40	737,0
1000	658	996	40	808,0
1200	757,5	1195	45	907,5



## FLD-16 with Free Shaft

DN	PN-6 B	n x Ød4 Lk	PN-6 Mass [kg]	PN-6 D2	PN-10 B	n x Ød4 Lk	PN-10 Mass [kg]	PN-10 D2	PN-16 B	n x Ød4 Lk	PN-16 Mass [kg]	PN-16 D2
25	70	4 x 11, LK-75	1,9	100	80	4 x 14, LK-85	2,8	115	80	4 x 14, LK-85	2,8	115
32	70	4 x 14, LK-90	2,6	120	80	4 x 18, LK-100	3,8	140	80	4 x 18, LK-100	3,8	140
40	75	4 x 14, LK-100	2,9	130	85	4 x 18, LK-110	4,2	150	85	4 x 18, LK-110	4,2	150
50	75	4 x 14, LK-110	3,2	140	90	4 x 18, LK-125	5,5	165	90	4 x 18, LK-125	5,5	165
65	75	4 x 14, LK-130	4,4	160	90	8 x 18, LK-145	7,1	185	90	8 x 18, LK-145	7,1	185
80	85	4 x 18, LK-150	6,3	190	100	8 x 18, LK-160	8,5	200	100	8 x 18, LK-160	8,5	200
100	90	4 x 18, LK-170	7,4	210	105	8 x 18, LK-180	9,8	235	105	8 x 18, LK-180	9,8	220
125	95	8 x 18, LK-200	10,4	240	110	8 x 18, LK-210	13,7	270	110	8 x 18, LK-210	13,7	250
150	95	8 x 18, LK-225	11,7	265	110	8 x 22, LK-240	16,4	300	110	8 x 22, LK-240	16,4	285
200	110	8 x 18, LK-280	17,9	320	125	8 x 22, LK-295	24,2	340	125	12 x 22, LK-295	24,5	340
250	120	12 x 18, LK-335	24,3	375	135	12 x 22, LK-350	32,4	395	140	12 x 26, LK-355	34,3	405
300	125	12 x 22, LK-395	37,6	440	135	12 x 22, LK-400	44,1	445	155	12 x 26, LK-410	51,6	460
350	125	12 x 22, LK-445	43,7	490	135	16 x 22, LK-460	60,5	505				
350 PN-16									165	16 x 26, LK-470	75,9	520
400	130	16 x 22, LK-495	62,5	540	145	16 x 26, LK-515	77,5	565				
400 PN-16									170	16 x 30, LK-525	98,7	580
450	130	16 x 22, LK-550	69,5	595	145	20 x 26, LK-565	86	615				
450 PN-16									165	20 x 30, LK-585	113	640
500	135	20 x 22, LK-600	90	645	145	20 x 26, LK-620	109	670				
500 PN-16									170	20 x 33, LK-650	154	715
600	140	20 x 26, LK-705	134	755	160	20 x 30, LK-725	153	780				
600 PN-16									175	20 x 36, LK-770	234	840
700	200	24 x 26, LK-810	177	860	200	24 x 30, LK-840	220	895	200	24 x 36, LK-840	264	910
800	200	24 x 30, LK-920	239	975	200	24 x 33, LK-950	316	1015	200	24 x 39, LK-950	356	1025
900	200	24 x 30, LK-1020	305	1075	200	28 x 33, LK-1050	392	1115	200	28 x 39, LK-1050	460	1125
1000	200	28 x 30, LK-1120	374	1175	200	28 x 36, LK-1160	503	1230	200	28 x 42, LK-1170	649	1255
1200	200	32 x 33, LK-1340	554	1405	200	32 x 39, LK-1380	767	1455	200	32 x 48, LK-1390	1031	1485

## FLD-16 with Fine Adjustment SFD-6

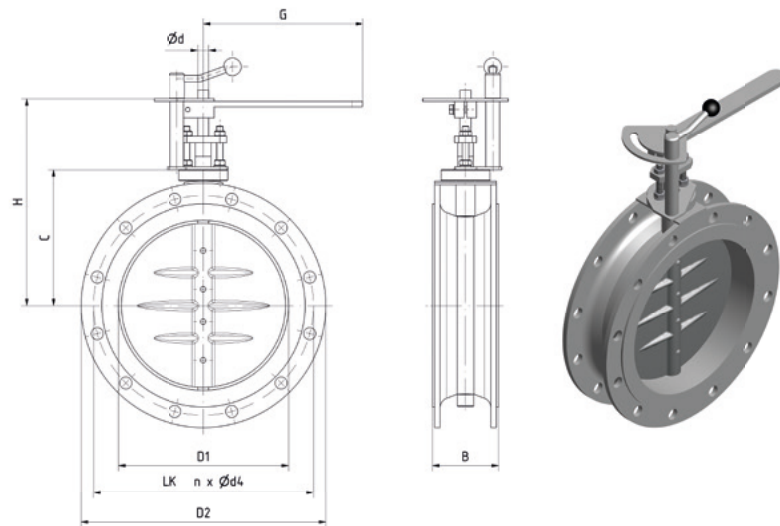


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25	93,8	29,5	10	100	173,8
32	97,6	38	10	100	177,6
40	101,0	44	10	100	181
50	106,8	55,5	10	100	186,8
65	114,5	71	12	120	194,5
80	120,8	83,5	12	120	200,8
100	133,0	108	12	120	213
125	145,5	133	12	120	225,5
150	159,3	160,5	15	145	244,3
200	183,8	209,5	15	145	268,8
250	209,8	261,5	15	145	294,8
300	244,5	311	20	155	329,5
350	275,3	342,5	25	210	395,3
350 PN-16	274,5	341	25	210	394,5
400	322	394	30	210	442
400 PN-16	321	392	30	210	441
450	347,5	445	30	210	467,5
450 PN-16	346,5	443	30	210	466,5
500	373	496	30	210	493
500 PN-16	372	494	30	210	492
600	424	598	30	210	544
600 PN-16	422,5	595	30	210	542,5
700	471,5	693	35		
800	556,5	793	40		
900	607	894	40		
1000	658	996	40		
1200	757,5	1195	45		

## FLD-16 with Fine Adjustment SFD-6

DN	PN-6 B	n x Ød4 Lk	PN-6 Mass [kg]	PN-6 D2	PN-10 B	n x Ød4 Lk	PN-10 Mass [kg]	PN-10 D2	PN-16 B	n x Ød4 Lk	PN-16 Mass [kg]	PN-16 D2
25	70	4 x 11, LK-75	2,4	100	80	4 x 14, LK-85	3,3	115	80	4 x 14, LK-85	3,3	115
32	70	4 x 14, LK-90	3,1	120	80	4 x 18, LK-100	4,3	140	80	4 x 18, LK-100	4,3	140
40	75	4 x 14, LK-100	3,4	130	85	4 x 18, LK-110	4,7	150	85	4 x 18, LK-110	4,7	150
50	75	4 x 14, LK-110	3,7	140	90	4 x 18, LK-125	6	165	90	4 x 18, LK-125	6	165
65	75	4 x 14, LK-130	4,9	160	90	8 x 18, LK-145	7,6	185	90	8 x 18, LK-145	7,6	185
80	85	4 x 18, LK-150	6,8	190	100	8 x 18, LK-160	9	200	100	8 x 18, LK-160	9	200
100	90	4 x 18, LK-170	7,9	210	105	8 x 18, LK-180	10,3	235	105	8 x 18, LK-180	10,3	220
125	95	8 x 18, LK-200	10,9	240	110	8 x 18, LK-210	14,2	270	110	8 x 18, LK-210	14,2	250
150	95	8 x 18, LK-225	12,7	265	110	8 x 22, LK-240	17,4	300	110	8 x 22, LK-240	17,4	285
200	110	8 x 18, LK-280	18,9	320	125	8 x 22, LK-295	25,2	340	125	12 x 22, LK-295	25,5	340
250	120	12 x 18, LK-335	25,3	375	135	12 x 22, LK-350	33,4	395	140	12 x 26, LK-355	35,3	405
300	125	12 x 22, LK-395	39,1	440	135	12 x 22, LK-400	45,6	445	155	12 x 26, LK-410	53,1	460
350	125	12 x 22, LK-445	46,7	490	135	16 x 22, LK-460	63,5	505				
350 PN-16									165	16 x 26, LK-470	78,9	520
400	130	16 x 22, LK-495	65,5	540	145	16 x 26, LK-515	80,5	565				
400 PN-16									170	16 x 30, LK-525	101,7	580
450	130	16 x 22, LK-550	72,5	595	145	20 x 26, LK-565	89	615				
450 PN-16									165	20 x 30, LK-585	116	640
500	135	20 x 22, LK-600	93	645	145	20 x 26, LK-620	112	670				
500 PN-16									170	20 x 33, LK-650	157	715
600	140	20 x 26, LK-705	137	755	160	20 x 30, LK-725	156	780				
600 PN-16									175	20 x 36, LK-770	237	840
700	200	24 x 26, LK-810	180	860	200	24 x 30, LK-840	223	895	200	24 x 36, LK-840	267	910
800	200	24 x 30, LK-920	242	975	200	24 x 33, LK-950	319	1015	200	24 x 39, LK-950	359	1025
900	200	24 x 30, LK-1020	308	1075	200	28 x 33, LK-1050	395	1115	200	28 x 39, LK-1050	463	1125
1000	200	28 x 30, LK-1120	377	1175	200	28 x 36, LK-1160	506	1230	200	28 x 42, LK-1170	652	1255
1200	200	32 x 33, LK-1340	557	1405	200	32 x 39, LK-1380	770	1455	200	32 x 48, LK-1390	1034	1485

## FLD-16 with Fine Adjustment RDST-32

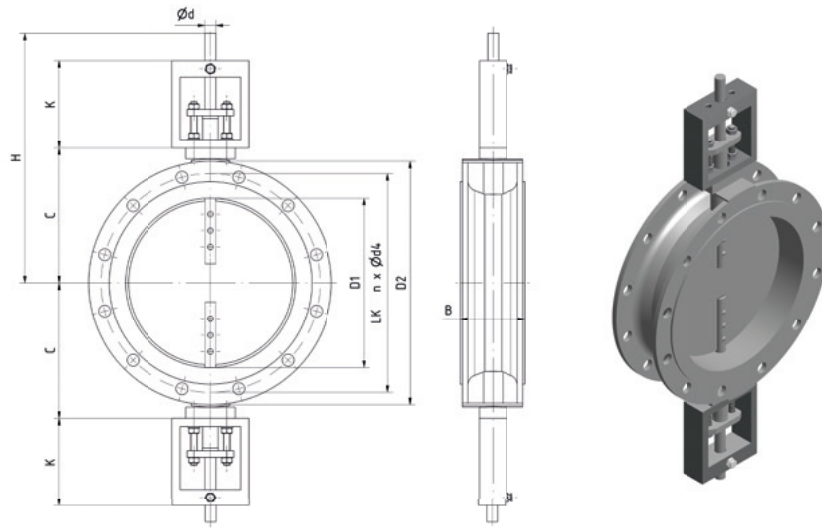


DN	C	D1	Ø d	G	H
25	93,8	29,5	10	255	173,8
32	97,6	38	10	255	177,6
40	101,0	44	10	255	181,0
50	106,8	55,5	10	255	186,8
65	114,5	71	12	255	194,5
80	120,8	83,5	12	255	200,8
100	133,0	108	12	255	213,0
125	145,5	133	12	255	225,5
150	159,3	160,5	15	255	249,3
200	183,8	209,5	15	255	273,8
250	209,8	261,5	15	255	309,8
300	244,5	311	20	290	344,5
350	275,3	342,5	25	290	405,3
350 PN-16	274,5	341	25	290	404,5
400	322	394	30	290	452,0
400 PN-16	321	392	30	290	451,0
450	347,5	445	30	290	477,5
450 PN-16	346,5	443	30	290	476,5
500	373	496	30	290	503,0
500 PN-16	372	494	30	290	502,0
600	424	598	30	290	554,0
600 PN-16	422,5	595	30	290	552,5
700	471,5	693	35	400	601,5
800	556,5	793	40	400	686,5
900	607	894	40	400	737,0
1000	658	996	40	400	808,0
1200	757,5	1195	45	400	907,5

## FLD-16 with Fine Adjustment RDST-32

DN	PN-6 B	n x Ød4 Lk	PN-6 Mass [kg]	PN-6 D2	PN-10 B	n x Ød4 Lk	PN-10 Mass [kg]	PN-10 D2	PN-16 B	n x Ød4 Lk	PN-16 Mass [kg]	PN-16 D2
25	70	4 x 11, LK-75	3,9	100	80	4 x 14, LK-85	4,8	115	80	4 x 14, LK-85	4,8	115
32	70	4 x 14, LK-90	4,6	120	80	4 x 18, LK-100	5,8	140	80	4 x 18, LK-100	5,8	140
40	75	4 x 14, LK-100	4,9	130	85	4 x 18, LK-110	6,2	150	85	4 x 18, LK-110	6,2	150
50	75	4 x 14, LK-110	5,2	140	90	4 x 18, LK-125	7,5	165	90	4 x 18, LK-125	7,5	165
65	75	4 x 14, LK-130	6,4	160	90	8 x 18, LK-145	9,1	185	90	8 x 18, LK-145	9,1	185
80	85	4 x 18, LK-150	8,3	190	100	8 x 18, LK-160	10,5	200	100	8 x 18, LK-160	10,5	200
100	90	4 x 18, LK-170	9,4	210	105	8 x 18, LK-180	11,8	235	105	8 x 18, LK-180	11,8	220
125	95	8 x 18, LK-200	12,4	240	110	8 x 18, LK-210	15,7	270	110	8 x 18, LK-210	15,7	250
150	95	8 x 18, LK-225	14,2	265	110	8 x 22, LK-240	18,9	300	110	8 x 22, LK-240	18,9	285
200	110	8 x 18, LK-280	20,4	320	125	8 x 22, LK-295	26,7	340	125	12 x 22, LK-295	26,7	340
250	120	12 x 18, LK-335	26,8	375	135	12 x 22, LK-350	34,9	395	140	12 x 26, LK-355	34,9	405
300	125	12 x 22, LK-395	41,7	440	135	12 x 22, LK-400	48,2	445	155	12 x 26, LK-410	55,7	460
350	125	12 x 22, LK-445	49,3	490	135	16 x 22, LK-460	66,1	505				
350 PN-16									165	16 x 26, LK-470	81,5	520
400	130	16 x 22, LK-495	68,1	540	145	16 x 26, LK-515	83,1	565				
400 PN-16									170	16 x 30, LK-525	104,3	580
450	130	16 x 22, LK-550	75,1	595	145	20 x 26, LK-565	91,6	615				
450 PN-16									165	20 x 30, LK-585	118,6	640
500	135	20 x 22, LK-600	95,6	645	145	20 x 26, LK-620	114,6	670				
500 PN-16									170	20 x 33, LK-650	159,6	715
600	140	20 x 26, LK-705	139,6	755	160	20 x 30, LK-725	158,6	780				
600 PN-16									175	20 x 36, LK-770	239,6	840
700	200	24 x 26, LK-810	183	860	200	24 x 30, LK-840	225	895	200	24 x 36, LK-840	270	910
800	200	24 x 30, LK-920	245	975	200	24 x 33, LK-950	321	1015	200	24 x 39, LK-950	362	1025
900	200	24 x 30, LK-1020	311	1075	200	28 x 33, LK-1050	397	1115	200	28 x 39, LK-1050	466	1125
1000	200	28 x 30, LK-1120	380	1175	200	28 x 36, LK-1160	508	1230	200	28 x 42, LK-1170	655	1255
1200	200	32 x 33, LK-1340	560	1405	200	32 x 39, LK-1380	772	1455	200	32 x 48, LK-1390	1037	1485

## FLD-16 with Double External Bearing LB and Free Shaft

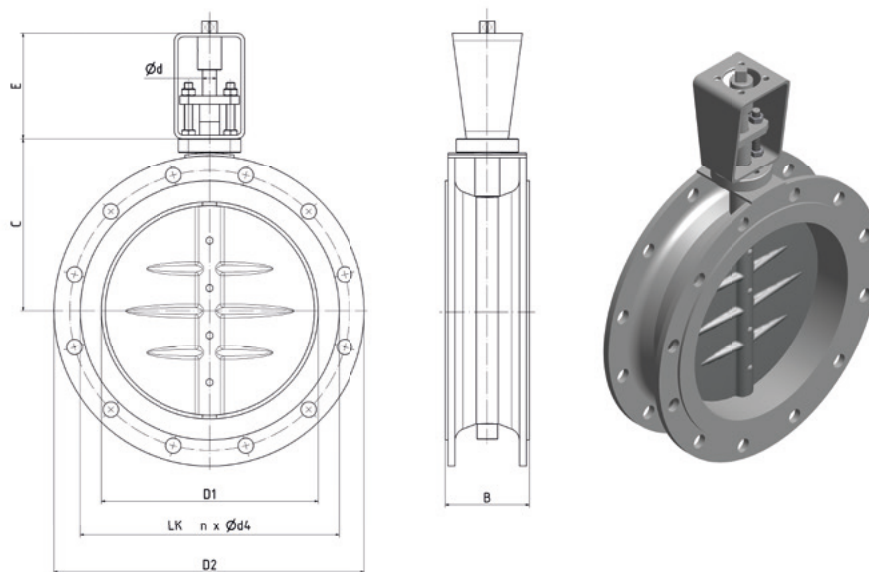


DN	C	D1	Ø d	K	H
25	93,8	29,5	10	160	173,8
32	97,6	38	10	160	177,6
40	101,0	44	10	160	181,0
50	106,8	55,5	10	160	186,8
65	114,5	71	12	160	194,5
80	120,8	83,5	12	160	200,8
100	133,0	108	12	160	213,0
125	145,5	133	12	160	225,5
150	159,3	160,5	15	160	249,3
200	183,8	209,5	15	160	273,8
250	209,8	261,5	15	160	309,8
300	244,5	311	20	160	344,5
350	275,3	342,5	25	160	405,3
350 PN-16	274,5	341	25	160	404,5
400	322	394	30	160	452,0
400 PN-16	321	392	30	160	451,0
450	347,5	445	30	160	477,5
450 PN-16	346,5	443	30	160	476,5
500	373	496	30	160	503,0
500 PN-16	372	494	30	160	502,0
600	424	598	30	160	554,0
600 PN-16	422,5	595	30	160	552,5
700	471,5	693	35	160	601,5
800	556,5	793	40	160	686,5
900	607	894	40	160	737,0
1000	658	996	40	160	808,0
1200	757,5	1195	45	160	907,5

## FLD-16 with Double External Bearing LB and Free Shaft

DN	PN-6 B	n x Ød4 Lk	PN-6 Mass [kg]	PN-6 D2	PN-10 B	n x Ød4 Lk	PN-10 Mass [kg]	PN-10 D2	PN-16 B	n x Ød4 Lk	PN-16 Mass [kg]	PN-16 D2
25	70	4 x 11, LK-75	10	100	80	4 x 14, LK-85	10,9	115	80	4 x 14, LK-85	10,9	115
32	70	4 x 14, LK-90	10,7	120	80	4 x 18, LK-100	11,9	140	80	4 x 18, LK-100	11,9	140
40	75	4 x 14, LK-100	11	130	85	4 x 18, LK-110	12,3	150	85	4 x 18, LK-110	12,3	150
50	75	4 x 14, LK-110	11,3	140	90	4 x 18, LK-125	13,6	165	90	4 x 18, LK-125	13,6	165
65	75	4 x 14, LK-130	12,5	160	90	8 x 18, LK-145	15,2	185	90	8 x 18, LK-145	15,2	185
80	85	4 x 18, LK-150	14,4	190	100	8 x 18, LK-160	16,6	200	100	8 x 18, LK-160	16,6	200
100	90	4 x 18, LK-170	15,5	210	105	8 x 18, LK-180	17,9	235	105	8 x 18, LK-180	17,9	220
125	95	8 x 18, LK-200	18,5	240	110	8 x 18, LK-210	21,8	270	110	8 x 18, LK-210	21,8	250
150	95	8 x 18, LK-225	19,8	265	110	8 x 22, LK-240	24,5	300	110	8 x 22, LK-240	24,5	285
200	110	8 x 18, LK-280	26	320	125	8 x 22, LK-295	32,3	340	125	12 x 22, LK-295	32,6	340
250	120	12 x 18, LK-335	32,4	375	135	12 x 22, LK-350	40,5	395	140	12 x 26, LK-355	42,4	405
300	125	12 x 22, LK-395	46,1	440	135	12 x 22, LK-400	52,6	445	155	12 x 26, LK-410	60,1	460
350	125	12 x 22, LK-445	59,5	490	135	16 x 22, LK-460	76,3	505				
350 PN-16									165	16 x 26, LK-470	91,7	520
400	130	16 x 22, LK-495	78,3	540	145	16 x 26, LK-515	93,3	565				
400 PN-16									170	16 x 30, LK-525	114,5	580
450	130	16 x 22, LK-550	86,1	595	145	20 x 26, LK-565	102,6	615				
450 PN-16									165	20 x 30, LK-585	129,6	640
500	135	20 x 22, LK-600	106,6	645	145	20 x 26, LK-620	125,6	670				
500 PN-16									170	20 x 33, LK-650	170,6	715
600	140	20 x 26, LK-705	150,6	755	160	20 x 30, LK-725	169,6	780				
600 PN-16									175	20 x 36, LK-770	250,6	840
700	200	24 x 26, LK-810	193	860	200	24 x 30, LK-840	237	895	200	24 x 36, LK-840	280	910
800	200	24 x 30, LK-920	255	975	200	24 x 33, LK-950	333	1015	200	24 x 39, LK-950	372	1025
900	200	24 x 30, LK-1020	321	1075	200	28 x 33, LK-1050	409	1115	200	28 x 39, LK-1050	476	1125
1000	200	28 x 30, LK-1120	390	1175	200	28 x 36, LK-1160	520	1230	200	28 x 42, LK-1170	665	1255
1200	200	32 x 33, LK-1340	570	1405	200	32 x 39, LK-1380	784	1455	200	32 x 48, LK-1390	1047	1485

## FLD-16 with Mounting Kit



DN	C	D1	Ø d	E	H
25	93,8	29,5	10	Contract specific	173,8
32	97,6	38	10	Contract specific	177,6
40	101,0	44	10	Contract specific	181,0
50	106,8	55,5	10	Contract specific	186,8
65	114,5	71	12	Contract specific	194,5
80	120,8	83,5	12	Contract specific	200,8
100	133,0	108	12	Contract specific	213,0
125	145,5	133	12	Contract specific	225,5
150	159,3	160,5	15	Contract specific	249,3
200	183,8	209,5	15	Contract specific	273,8
250	209,8	261,5	15	Contract specific	309,8
300	244,5	311	20	Contract specific	344,5
350	275,3	342,5	25	Contract specific	405,3
350 PN-16	274,5	341	25	Contract specific	404,5
400	322	394	30	Contract specific	452,0
400 PN-16	321	392	30	Contract specific	451,0
450	347,5	445	30	Contract specific	477,5
450 PN-16	346,5	443	30	Contract specific	476,5
500	373	496	30	Contract specific	503,0
500 PN-16	372	494	30	Contract specific	502,0
600	424	598	30	Contract specific	554,0
600 PN-16	422,5	595	30	Contract specific	552,5
700	471,5	693	35	Contract specific	601,5
800	556,5	793	40	Contract specific	686,5
900	607	894	40	Contract specific	737,0
1000	658	996	40	Contract specific	808,0
1200	757,5	1195	45	Contract specific	907,5



## FLD-16 with Mounting Kit

DN	PN-6 B	n x Ød4 Lk	PN-6 Mass [kg]	PN-6 D2	PN-10 B	n x Ød4 Lk	PN-10 Mass [kg]	PN-10 D2	PN-16 B	n x Ød4 Lk	PN-16 Mass [kg]	PN-16 D2
25	70	4 x 11, LK-75	3,3	100	80	4 x 14, LK-85	4,2	115	80	4 x 14, LK-85	4,2	115
32	70	4 x 14, LK-90	4	120	80	4 x 18, LK-100	5,2	140	80	4 x 18, LK-100	5,2	140
40	75	4 x 14, LK-100	4,3	130	85	4 x 18, LK-110	5,6	150	85	4 x 18, LK-110	5,6	150
50	75	4 x 14, LK-110	4,6	140	90	4 x 18, LK-125	6,9	165	90	4 x 18, LK-125	6,9	165
65	75	4 x 14, LK-130	5,8	160	90	8 x 18, LK-145	8,5	185	90	8 x 18, LK-145	8,5	185
80	85	4 x 18, LK-150	7,7	190	100	8 x 18, LK-160	9,9	200	100	8 x 18, LK-160	9,9	200
100	90	4 x 18, LK-170	8,8	210	105	8 x 18, LK-180	11,2	235	105	8 x 18, LK-180	11,2	220
125	95	8 x 18, LK-200	11,8	240	110	8 x 18, LK-210	15,1	270	110	8 x 18, LK-210	15,1	250
150	95	8 x 18, LK-225	13,1	265	110	8 x 22, LK-240	17,8	300	110	8 x 22, LK-240	17,8	285
200	110	8 x 18, LK-280	19,3	320	125	8 x 22, LK-295	25,6	340	125	12 x 22, LK-295	25,6	340
250	120	12 x 18, LK-335	25,7	375	135	12 x 22, LK-350	33,8	395	140	12 x 26, LK-355	35,7	405
300	125	12 x 22, LK-395	39	440	135	12 x 22, LK-400	45,5	445	155	12 x 26, LK-410	53	460
350	125	12 x 22, LK-445	45,1	490	135	16 x 22, LK-460	61,9	505				
350 PN-16									165	16 x 26, LK-470	77,3	520
400	130	16 x 22, LK-495	63,9	540	145	16 x 26, LK-515	78,9	565				
400 PN-16									170	16 x 30, LK-525	100,1	580
450	130	16 x 22, LK-550	71	595	145	20 x 26, LK-565	87,4	615				
450 PN-16									165	20 x 30, LK-585	114,4	640
500	135	20 x 22, LK-600	91,5	645	145	20 x 26, LK-620	110	670				
500 PN-16									170	20 x 33, LK-650	155	715
600	140	20 x 26, LK-705	135,5	755	160	20 x 30, LK-725	154	780				
600 PN-16									175	20 x 36, LK-770	235	840
700	200	24 x 26, LK-810	178	860	200	24 x 30, LK-840	221	895	200	24 x 36, LK-840	265	910
800	200	24 x 30, LK-920	240	975	200	24 x 33, LK-950	317	1015	200	24 x 39, LK-950	357	1025
900	200	24 x 30, LK-1020	306	1075	200	28 x 33, LK-1050	393	1115	200	28 x 39, LK-1050	461	1125
1000	200	28 x 30, LK-1120	375	1175	200	28 x 36, LK-1160	504	1230	200	28 x 42, LK-1170	650	1255
1200	200	32 x 33, LK-1340	555	1405	200	32 x 39, LK-1380	768	1455	200	32 x 48, LK-1390	1032	1485

## Kv-values of the FLD-16

$\alpha$ [°]	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300
5 °	1	2	3	4	6	9	16	26	37
10 °	2	3	5	8	12	18	31	49	70
15 °	4	6	9	14	22	32	57	88	127
20 °	6	9	14	22	35	50	89	139	201
25 °	8	14	21	32	50	72	128	201	289
30 °	11	18	28	44	68	98	175	273	393
35 °	14	24	37	58	90	130	231	361	520
40 °	19	32	48	76	118	170	302	472	680
45 °	25	42	63	98	154	222	394	616	886
50 °	32	54	82	129	201	290	515	804	1158
55 °	42	71	108	169	263	379	674	1054	1518
60 °	55	93	142	221	346	498	885	1383	1991
65 °	73	123	186	290	453	653	1160	1813	2610
70 °	95	160	243	380	593	854	1519	2373	3417
75 °	123	208	315	492	769	1108	1969	3077	4431
80 °	166	281	425	665	1039	1496	2659	4155	5984
85 °	207	349	529	827	1292	1861	3308	5169	7443
90 °	227	384	582	909	1420	2045	3635	5680	8179

$\alpha$ [°]	DN 350	DN 400	DN 450	DN 500	DN 600	DN 700	DN 800	DN 900	DN 1000
5 °	50	65	83	102	147	200	261	331	408
10 °	96	125	158	196	282	384	501	634	783
15 °	173	226	286	353	509	693	905	1145	1414
20 °	273	357	452	558	803	1093	1428	1807	2231
25 °	393	514	650	803	1156	1573	2055	2600	3210
30 °	536	699	885	1093	1574	2142	2798	3541	4372
35 °	708	925	1171	1446	2082	2833	3701	4684	5782
40 °	926	1209	1530	1889	2720	3702	4835	6120	7555
45 °	1206	1576	1994	2462	3546	4826	6303	7977	9849
50 °	1576	2059	2606	3217	4632	6305	8235	10423	12867
55 °	2066	2698	3414	4215	6070	8262	10791	13658	16861
60 °	2711	3540	4481	5532	7966	10842	14161	17923	22127
65 °	3553	4641	5874	7251	10442	14213	18564	23494	29005
70 °	4651	6075	7688	9491	13668	18603	24298	30752	37966
75 °	6031	7878	9970	12309	17725	24126	31511	39881	49236
80 °	8144	10637	13463	16621	23934	32577	42549	53852	66483
85 °	10131	13232	16746	20675	29771	40522	52927	66986	82699
90 °	11132	14540	18402	22718	32714	44527	58158	73607	90872

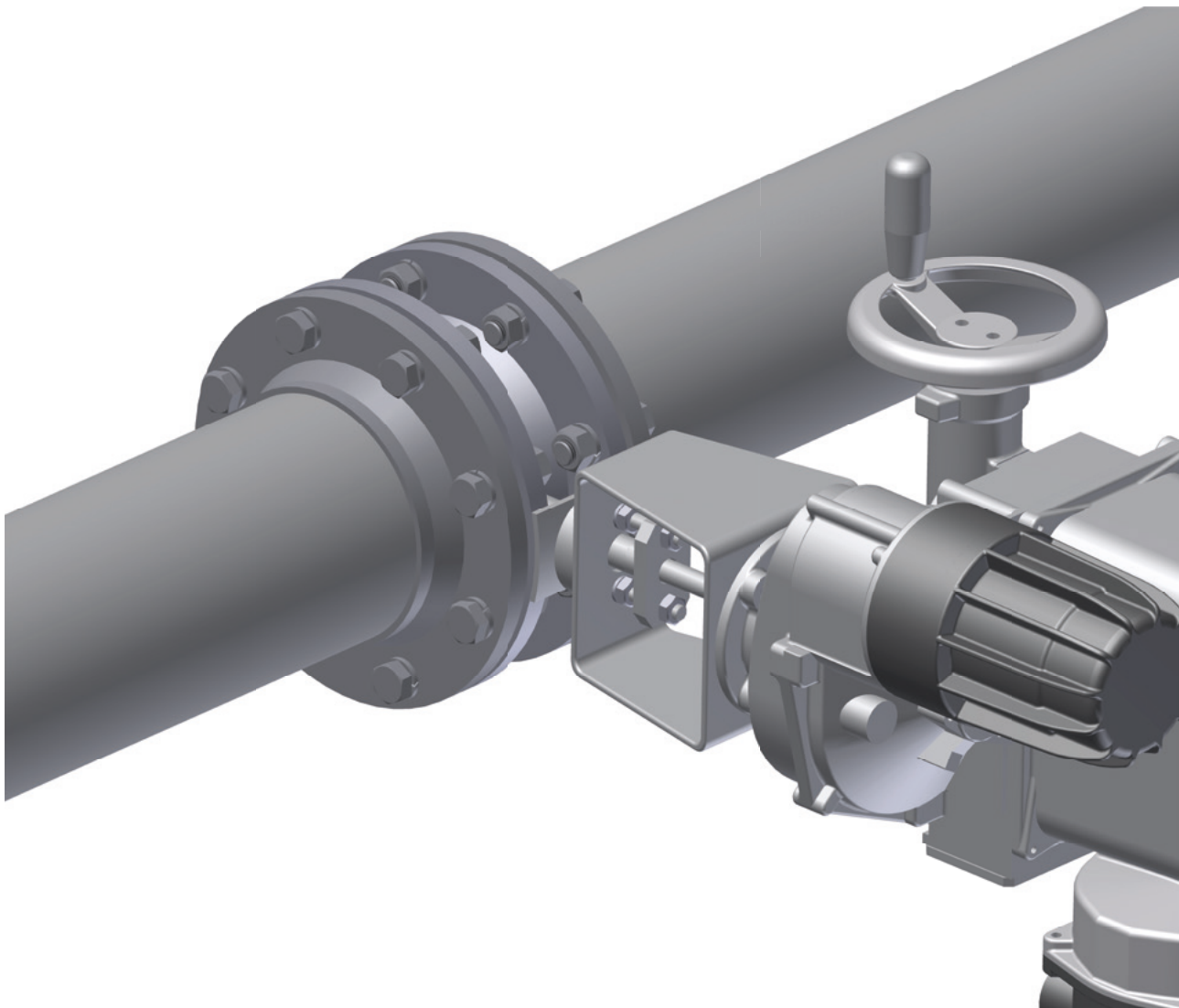
Please contact us in case you need the values for valves in larger sizes.

## References

- HERING AG, Gunzenhausen
- HESCH Industrietechnik GmbH, Fürth
- Ventilatorenfabrik Oelde GmbH, Oelde

## Application Areas

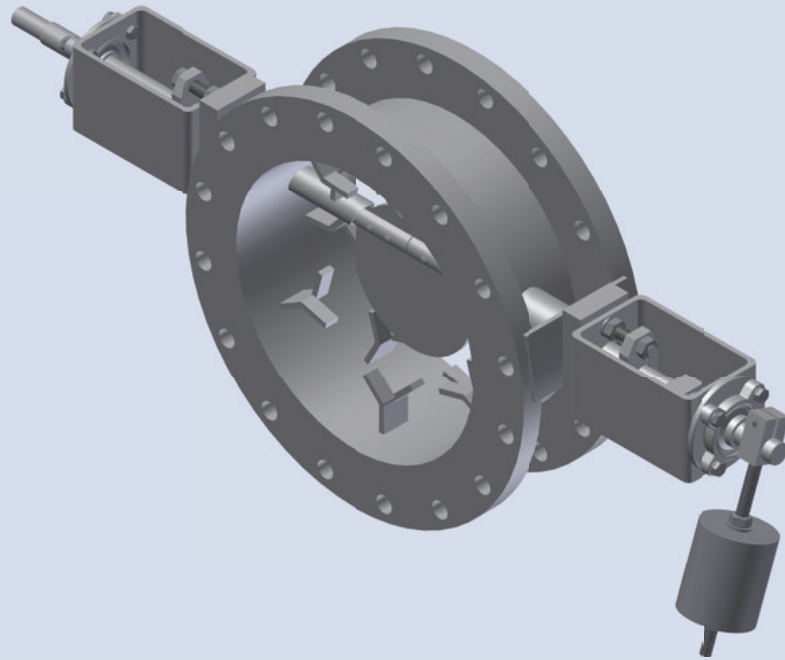
Smelters, foundries, cement factories, crematoriums, industrial furnaces (for iron, steel, aluminium and stainless steel), glass factories, factories (for Rockwool, autoclaved aerated concrete etc.), ceramic kilns, drying and dust extractors, gas turbines, heat treatment, and high temperature furnace construction, power plants



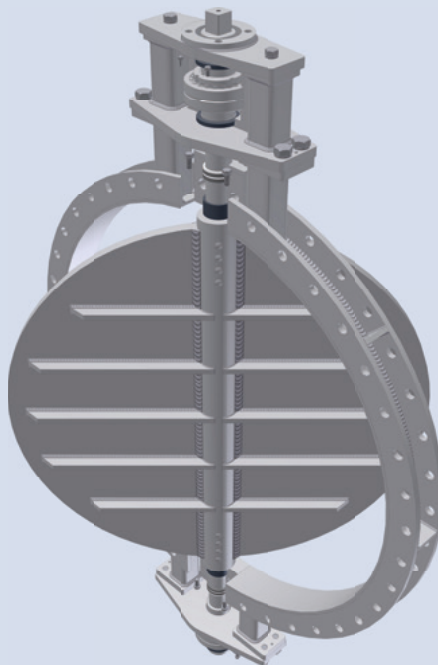
Our delivery supply range: Sensors according to determination of the mass flows. Our flow measurement sensors measure independently from pressure, temperature and medium. Further information upon request.

## Custom Designs

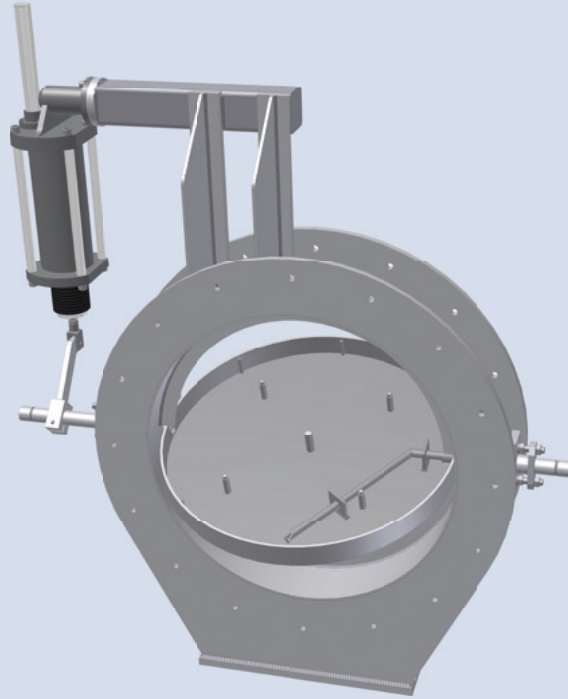
According to your individual needs, we produce the FLD-16 in different material combinations and for different actuators and applications.



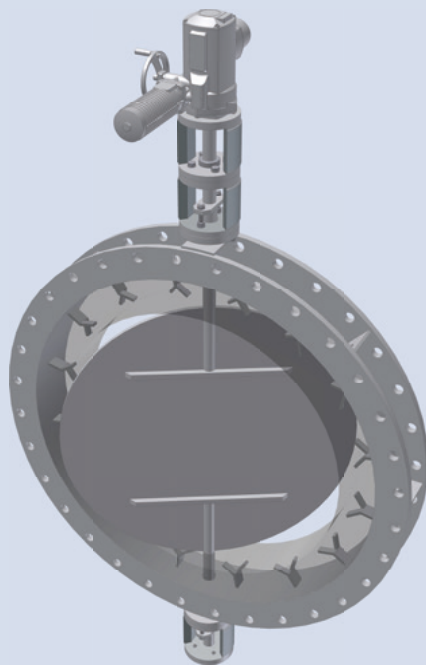
Valve for high temperatures. Prepared for lining with refractory concrete at the construction site. Designed as a check valve with double flange bearing and adjustable weight.



Valve in a compact design for the regulation of cooling water in a power plant. Double spherical roller bearings and demountable consoles, because the space for the installation of the valve was the same as its overall length.



Valve with water-cooled disk and cooled housing for use at high temperatures. The cooling allows to apply a material that is preferentially used for lower temperatures.



Valve with refractory concrete lining for high to very high temperatures. The refractory concrete lining allows to use a material from P265GH for the housing. Only disk and shaft have to be designed for higher temperatures.

## Glossary

<b>Butterfly Valve</b>	A butterfly valve consists of a body and is for flow regulation. Clamped between flanges.
<b>Centering Aid</b>	Lugs right and left of the operating side shaft outlet of the valve. They ensure easier and more precise installation into a pipeline.
<b>Closing</b>	Contact of the valve disk with the body. Possible seals: Striking, swing through, with stop bar and stop bar with seals.
<b>Coupling</b>	Connection between the actuator and the valve shaft.
<b>Electric Operation</b>	Electric operation of the valve. Control over 4 .. 20 mA-signal possible. Wide ranging optional accessories available.
<b>Element</b>	Element flowing through the valve. (Gas, liquid, etc.)
<b>External Seal</b>	Used at high temperatures to guarantee the turning of the valve at all operating conditions.
<b>Fine Adjustment</b>	Lever which has a free swing variance of 90° and is movable per wing screw or clamp lever into any position.
<b>Fitting Key</b>	Metallic adaption of the shaft to the actuator. This is a side connected metal lug on the shaft. Serves for power transfer from the actuator to the shaft.
<b>Flange Bearing</b>	Serves as transmission of high torques.
<b>Four Cornered Shaft</b>	Serves for the adaption of the shaft to the required connection of the actuator.
<b>Grid Handle</b>	Gear teeth on a nut screwed scale provides the possibility of a gradual adjustment of the valve disk. The catch of the hand lever locks into the teeth. 16 positions between 0 and 90 ° are fixed.
<b>Hand Operation</b>	With grid handle, fine adjustment or worm gear. Depending on installation.
<b>Hydraulic Operation</b>	Operates with a hydraulic cylinder. Special: Good power distribution in limited spaces.
<b>Impermeability</b>	Shows how impermeable the flow is inside the valve. (Dependant on construction, classified in leakage rates).
<b>Inner Sizing</b>	Internal flow area of the valve.
<b>Installation Position</b>	Describes the horizontal or vertical position of the shafts of the valve once installed.
<b>ISO 5211</b>	Norm regulates the attachment measurements for actuators to attachment parts onto valves.
<b>Kv 90°</b>	Flow in a fully open valve disk.
<b>Lever System</b>	It regulates two or more valves with an actuator.
<b>Mounting Kit</b>	Normed part for mounting actuators.
<b>Nominal Size</b>	Size of the inner measurement of the valve.
<b>Operation</b>	Operation of the valve. Possible operation: manual, pneumatic- und electric actuators (as standard). All further adaptations available as per customer needs.
<b>Operating Pressure</b>	Pressure in the pipeline which works on the valve.
<b>Operating Temperature</b>	Temperature of the medium in the pipeline.

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<b>Packing Gasket</b>	Serves as the seal between the valve and shaft exit from the valve body. Can be produced in various ways. (EPDM, PTFE, TA-Luft eg.)
<b>Pneumatic Operation</b>	Opening of the disk in the valve with a pneumatic actuator. With or without a spring setting. Control possible with a positioner.
<b>RDST-32</b>	Infinitely adjustable fine adjustment for larger valves.
<b>Safety Position</b>	This is decided by the customer. Defines the position of the valve in an emergency.
<b>Seal</b>	Flexible material in the valve. To improve the impermeability.
<b>Sealing Air</b>	Used to seal the shaft up to 100%.
<b>Service</b>	Defines the regular necessary readjustments (readjustment of the packaging, etc.). For the maintenance plan please see operating and maintenance manual.
<b>SFD-6</b>	Infinitely adjustable fine adjustment with a manual handle, used in smaller valves.
<b>Shaft Bearing</b>	Bears of the shafts in the body.
<b>Slide Bearing</b>	Turned sleeve, e.g. from red brass.
<b>Step-seated</b>	Disk valve fitted in the body of the valve and stops the flow.
<b>Stop bar</b>	Metallic valve stop in the valve. Serves to seal the valve.
<b>Swing-through</b>	Valve without seals between the disk and body with defined ring gap.
<b>TA-Luft</b>	German Clean Air Act (§48 BImSchG). Using a TA-Luft packing ensures 100% seal of the shaft bushing to the outside.

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## Certificates

We are certified for the following processes:

- ISO 9001
- AD 2000 HPO
- EN 3834-2
- SIL
- ATEX

## Services for the Valves

We are happy to support you with various services to optimize the use of the valve.

- Determination of sound level
- Expertise on earthquake safety
- Strength calculation
- FEM calculation
- Leakage calculation
- Flow simulations
- Assembly and test run of your actuator
- Lacquering to your liking



Test station at JASTA-ARMATUREN

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