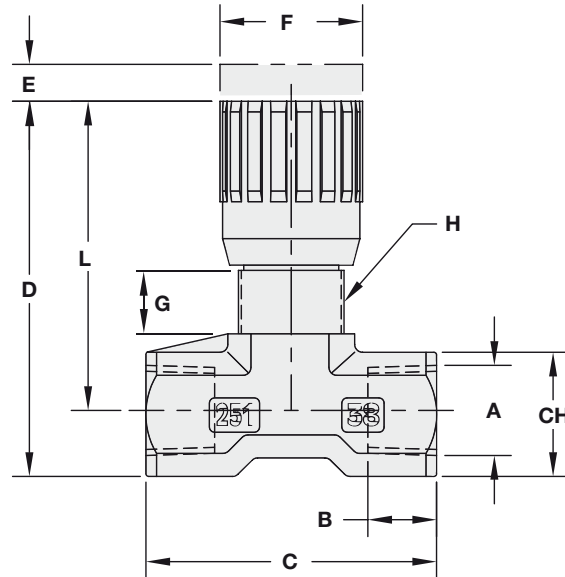


Medium-Pressure Brass Throttle / Shut-Off Valve - Type NVM (In-Line Assembly)



Characteristics

Throttle and shut-off the flow of liquid media in both directions

Features

- Designed for in-line assembly with female NPT, SAE and BSP threaded connections
- Ideal for medium-pressure applications
- Panel mounting kits available on request
- Graduated turning knob to accurately control flow
- Set-screw located on side of turning knob to lock valve in position

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

Materials

- Body made of Brass, nickel-plated
- Internal components made of Stainless Steel
- O-rings made of NBR (Buna-N®); FPM (Viton®) sealed version available
- Anti-extrusion ring made of PTFE

Consult STAUFF for alternative materials.

Technical Data

- Maximum working pressure: 200 bar / 3000 PSI (for all sizes)
- Operating temperature range: -34°C ... +121°C / -30°F ... +250°F

Accessories / Spare Parts

Panel Mounting Kits

- for NVH/FCH/NVW/FCM-08 (thread size M17x1): **PMK-8-T**
- for NVH/FCH/NVW/FCM-10 (thread size M20x1): **PMK-810-T**
- for NVH/FCH/NVW/FCM-12 (thread size M25x1,5): **PMK-1012-T**

Dimensions

Type + Nominal Size	Thread Options A	Dimensions (mm/in)								Weight (kg/lbs)	
		B	C	D	E	F	Thread H	L	CH		
NVM-8	1/4 NPT										
	7/16-20 UNF (1/4" SAE)	12 .47	46 1.81	57 2.24	4,5 .18	22 .87	M17x1	11 .43	17 .67	0,12 .26	
	1/4 BSP										
NVM-10	3/8 NPT										
	9/16-18 UNF (3/4" SAE)	13 .51	55 2.17	69 2.72	7 .28	27 1.06	M20x1	15 .59	22 .97	0,23 .51	
	3/8 BSP										
NVM-12	1/2 NPT										
	3/4-16 UNF (1/2" SAE)	16 .63	70 2.76	82 3.23	10 .39	33 1.30	M25x1,5	19 .75	27 1.06	0,45 1.00	
	1/2 BSP										

Order Codes

NVM - 8 N

①

1 Type

Medium-Pressure Throttle / Shut-Off Valve (In-Line Assembly) **NVM**

②

2 STAUFF Size

08	10	12
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③

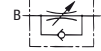
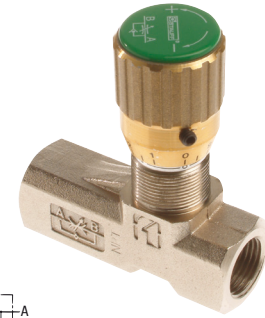
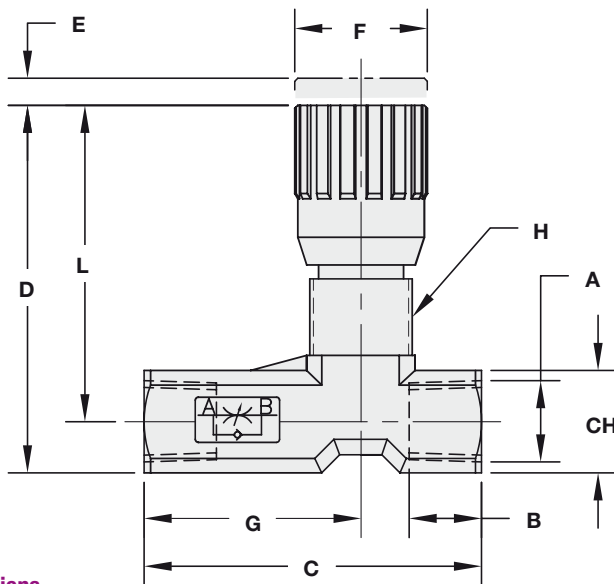
3 Connection

Female NPT threads (ANSI B1.20.1) (standard option) **N**

Female UN/UNF thread (SAE J514) **S**

Female BSP threads (ISO 228) **B**

Medium-Pressure Brass Flow Control Valve - Type FCM (In-Line Assembly)



Dimensions

Type + Nominal Size	Thread Options A	Dimensions (mm/in)						Thread H	L	□ CH	Weight (kg/lbs)			
		B	C	D	E	F	G							
FCM-8	1/4 NPT							M17x1	11	17	0,14			
	7/16-20 UNF (1/4" SAE)	12 .47	56 2.20	61 2.40	4,5 .18	22 .87	11,5 .45					.43	.67	.31
	1/4 BSP													
FCM-10	3/8 NPT							M20x1	15	22	0,26			
	9/16-18 UNF (3/4" SAE)	13 .51	64,5 2.54	74 2.91	7 .28	27 1.06	12,5 .49					.59	.97	.57
	3/8 BSP													
FCM-12	1/2 NPT							M25x1,5	19	27	0,49			
	3/4-16 UNF (1/2" SAE)	16 .63	87 3.42	82 3.23	10 .39	33 1.30	13 .51					.75	1.06	1.08
	1/2 BSP													

Characteristics

Throttle and shut-off the flow of liquid media in direction A-B (free flow in reverse direction)

Features

- Designed for in-line assembly with female NPT, SAE and BSP threaded connections
- Ideal for medium-pressure applications
- Panel mounting kits available on request
- Graduated turning knob to accurately control flow
- Set-screw located on side of turning knob to lock valve in position

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

Materials

- Body made of Brass, nickel-plated
- Internal components made of Stainless Steel
- O-rings made of NBR (Buna-N®); FPM (Viton®) sealed version available
- Anti-extrusion ring made of PTFE

Consult STAUFF for alternative materials.

Technical Data

- Maximum working pressure: 200 bar / 3000 PSI (for all sizes)
- Operating temperature range: -34 °C ... +121 °C / -30 °F ... +250 °F

Order Codes

FCM - 8 N



① Type

Medium-Pressure Flow Control Valve
(In-Line Assembly)

FCM

② STAUFF Size

08 10 12

③ Connection

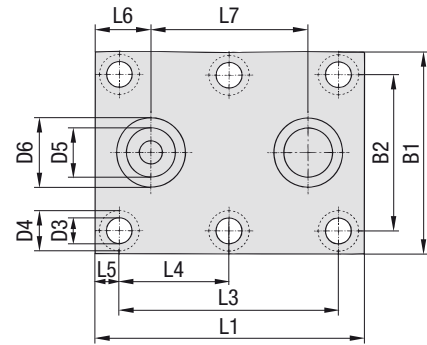
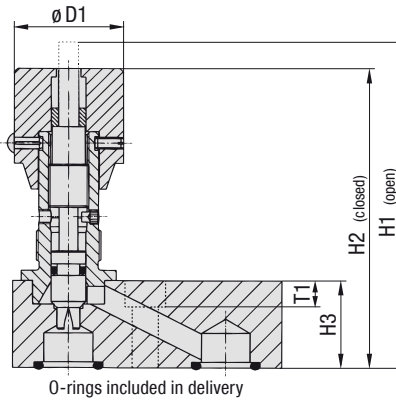
Female NPT threads (ANSI B1.20.1) (standard option) **N**
 Female UN/UNF thread (SAE J514) **S**
 Female BSP threads (ISO 228) **B**

Accessories / Spare Parts

Panel Mounting Kits

- for NVH/FCH/NVW/FCM-08 (thread size M17x1): **PMK-8-T**
- for NVH/FCH/NVW/FCM-10 (thread size M20x1): **PMK-810-T**
- for NVH/FCH/NVW/FCM-12 (thread size M25x1,5): **PMK-1012-T**

Throttle / Shut-Off Valve - Type DVP (Manifold Assembly)



Characteristics

Throttle and shut-off the flow of liquid media in both directions

Features

- Designed for manifold mounting
- Panel mounting nuts available on request
- Graduated turning knob and coded spindle to accurately control flow
- Set-screw located on side of turning knob to lock valve in position

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

Materials

- Body and spindle made of Steel (1.0715), zinc/iron-plated (Fe/Zn Fe Co 8 C) and free of hexavalent chromium CrVI (standard option); Stainless Steel (1.4571) version available
- Turning knob made of Polyamide (PA)
- O-rings made of FPM (Viton®); NBR (Buna-N®) and EPDM sealed version available

Consult STAUFF for alternative materials.

Technical Data

- Maximum working pressure: 350 bar / 5000 PSI (for all sizes)
- Operating temperature range: -20°C ... +100°C / -4°F ... +212°F

Please see page F94 for detailed flow characteristics.

Recommended Bolts / Tightening Torques

- Socket cap screws according to ISO 4762 or ANSI / ASME B18.3 recommended for installation (not included in delivery):

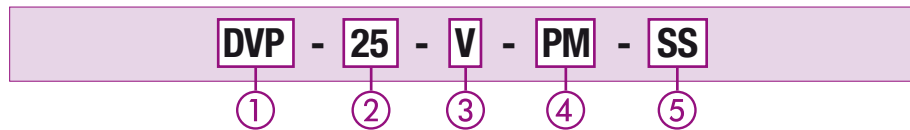
DVP-06	M6 x 20 - 8.8 (9 N·m) 1/4-20 UNC x 3/4 - Gr. 5 (10 ft·lb)
DVP-08	M6 x 25 - 8.8 (9 N·m) 1/4-20 UNC x 1 - Gr. 5 (10 ft·lb)
DVP-10	M6 x 30 - 10.9 (12 N·m) 1/4-20 UNC x 1-1/4 - Gr. 8 (12 ft·lb)
DVP-12	M6 x 30 - 12.9 (15 N·m) 1/4-20 UNC x 1-1/4 - Gr. 10 (14 ft·lb)
DVP-16	M8 x 35 - 10.9 (30 N·m) 5/16-18 UNC x 1-1/2 - Gr. 8 (24 ft·lb)
DVP-20	M8 x 50 - 12.9 (35 N·m) 5/16-18 UNC x 2 - Gr. 10 (29 ft·lb)
DVP-25	M10 x 50 - 12.9 (70 N·m) 3/8-16 UNC x 2 - Gr. 10 (58 ft·lb)
DVP-30	M12 x 60 - 10.9 (100 N·m) 7/16-14 UNC x 2-1/2 - Gr. 8 (63 ft·lb)

Dimensions

For panel mounting, please see dimensions G2, D2 and S (Max.) on page F82.

Type + Nom. Size	Dimensions (mm/in)															O-ring	Weight (kg/lbs)		
	ØD1	ØD3	ØD4	ØD5	ØD6	L1	L3	L4	L5	L6	L7	B1	B2	T1	H1	H2	H3		
DVP-06	24	6,5	10,5	5	9,8	35	19		8	9,5	16	41,5	28,5	6,8	64	59	16	6,35 x 1,78	0,20
	.94	.26	.41	.20	.39	1.38	.75		.31	.37	.63	1.63	1.12	.27	2.52	2.32	.63		.44
DVP-08	29	6,5	10,5	7	12,4	47,5	35		6,5	11	25,5	46	33,5	6,8	79	72	20	8,5 x 2	0,40
	1.14	.26	.41	.28	.49	1.87	1.38		.26	.43	1.00	1.81	1.32	.27	3.11	2.83	.79		.88
DVP-10	29	6,5	10,5	10	15,7	51	33,5		8,5	12,7	25,5	51	38	6,8	84	78	25	12 x 2	0,60
	1.14	.26	.41	.39	.62	2.01	1.32		.33	.50	1.00	2.01	1.50	.27	3.31	3.07	.98		1.32
DVP-12	38	6,5	10,5	13	18,7	75	38		18,5	22,5	30	57,5	44,5	6,8	100	89	25	15 x 2	1,00
	1.50	.26	.41	.51	.74	2.95	1.50		.73	.89	1.18	2.26	1.75	.27	3.94	3.50	.98		2.20
DVP-16	38	8,5	13,5	17	23,9	93,5	76	38	8,5	19,5	54	70	54	9	113	103	30	19 x 2,5	1,50
	1.50	.33	.53	.67	.94	3.68	2.99	1.50	.33	.77	2.13	2.76	2.13	.35	4.45	4.06	1.18		3.31
DVP-20	49	8,5	13,5	22	30,5	111	95	47,5	8	27	57	76,5	60	9	154	142	45	25 x 3	3,40
	1.93	.33	.53	.87	1.20	4.37	3.74	1.87	.31	1.06	2.24	3.01	2.36	.35	6.06	5.59	1.77		7.50
DVP-25	49	10,5	16,5	28,5	37,5	143	120	60	11	32	79,5	100	76	11	154	142	45	32 x 3	5,15
	1.93	.41	.65	1.12	1.48	5.63	4.72	2.36	.43	1.26	3.13	3.94	2.99	.43	6.06	5.59	1.77		11.35
DVP-30	49	13	19	35	43,5	171	143	71,5	15	39	95	115	92	13	159	147	50	38 x 3	7,50
	1.93	.51	.75	1.38	1.71	6.73	5.63	2.81	.59	1.54	3.74	4.53	3.62	.51	6.26	5.79	1.97		16.53

Order Codes



① Type

Throttle / Shut-Off Valve (Manifold Assembly) **DVP**

② Nominal Size DN

06 08 10 12 16 20 25 30

③ Sealing Material

FPM (Viton®) (standard option) **V**
 NBR (Buna-N®) **P**
 EPDM **E**

④ Panel Mounting Nut

Without panel mounting nut (standard option) **-**
 With panel mounting nut **PM**

⑤ Body / Spindle Material

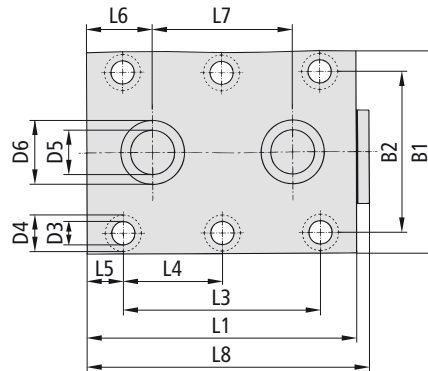
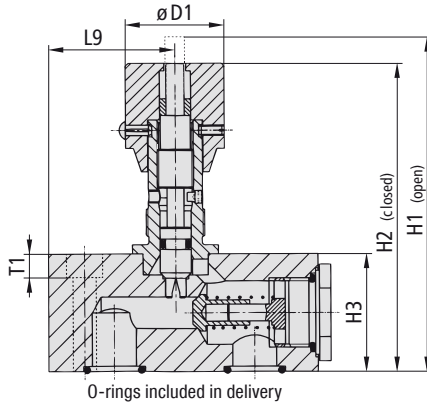
Steel (standard option) **-**
 Stainless Steel **SS**

Accessories / Spare Parts

Panel Mounting Kits

- See Page F83 for details.

Flow Control Valve - Type DRVP (Manifold Assembly)



Dimensions

For panel mounting, please see dimensions G2, D2 and S (Max.) on page F83.

Type + Nom. Size	Dimensions (mm/in)																Weight (kg/lbs)				
	ØD1	ØD3	ØD4	ØD5	ØD6	L1	L3	L4	L5	L6	L7	L8	L9	B1	B2	T1	H1	H2	H3	O-ring	
DRVP-06	24	6,5	10,5	5	9,8	41,5	19		6,4	8	16	47	13,5	41,5	28,5	6,8	64	59	16	6,35 x 1,78	0,26
	.94	.26	.41	.20	.39	1.63	.75		.25	.31	.63	1.85	.53	1.63	1.12	.27	2.52	2.32	.63		.57
DRVP-08	29	6,5	10,5	7	12,4	63,5	35		14,2	18,7	25,5	70	31	46	33,5	6,8	79	72	20	8,5 x 2	0,50
	1.14	.26	.41	.28	.49	2.50	1.38		.56	.74	1.00	2.76	1.22	1.81	1.32	.27	3.11	2.83	.79		1.10
DRVP-10	29	6,5	10,5	10	15,7	70	33,5		18	22,0	25,5	75	29,5	51	38	6,8	84	78	25	12 x 2	0,80
	1.14	.26	.41	.39	.62	2.76	1.32		.71	.87	1.00	2.95	1.16	2.01	1.50	.27	3.31	3.07	.98		1.76
DRVP-12	38	6,5	10,5	13	18,7	80	38		21	25,0	30	86	36,5	57,5	44,5	6,8	107	96	32	15 x 2	1,20
	1.50	.26	.41	.51	.74	3.15	1.50		.83	.98	1.18	3.39	1.44	2.26	1.75	.27	4.21	3.78	1.26		2.65
DRVP-16	38	8,5	13,5	17	23,9	104	76	38	14	25,4	54	110	49	70	54	9	128	118	45	19 x 2,5	2,50
	1.50	.33	.53	.67	.94	4.09	2.99	1.50	.55	1.00	2.13	4.33	1.93	2.76	2.13	.35	5.04	4.65	1.77		5.51
DRVP-20	49	8,5	13,5	22	30,5	127	95	47,5	16	35	57	133	49	76,5	60	9	159	147	50	25 x 3	3,90
	1.93	.33	.53	.87	1.20	5.00	3.74	1.87	.63	1.38	2.24	5.24	1.93	3.01	2.36	.35	6.26	5.79	1.97		8.60
DRVP-25	49	10,5	16,5	28,5	37,5	165	120	60	15	35,6	79,5	171	77	100	76	11	164	152	55	32 x 3	6,70
	1.93	.41	.65	1.12	1.48	6.50	4.72	2.36	.59	1.40	3.13	6.73	3.03	3.94	2.99	.43	6.46	5.98	2.17		14.77
DRVP-30	49	13	19	35	43,5	186	143	71,5	15	38,8	95	192	85	115	92	13	184	172	75	38 x 3	11,00
	1.93	.51	.75	1.38	1.71	7.32	5.63	2.81	.59	1.53	3.74	7.56	3.35	4.53	3.62	.51	7.24	6.77	2.95		24.25
DRVP-40	49	13	19	47,5	57,5	192	133,5	67,5	16	41,5	89	197	64	140	111	13	209	197	100	52 x 3	18,80
	1.93	.51	.75	1.87	2.26	7.56	5.25	2.66	.63	1.63	3.50	7.76	2.52	5.51	4.37	.51	8.23	7.76	3.94		41.45

Characteristics

Throttle and shut-off the flow of liquid media in direction A-B (free flow in reverse direction)

Features

- Designed for manifold mounting
- Panel mounting nuts available on request
- Graduated turning knob and coded spindle to accurately control flow
- Set-screw located on side of turning knob to lock valve in position

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

Materials

- Body and spindle made of Steel (1.0715), zinc/iron-plated (Fe/Zn Fe Co 8 C) and free of hexavalent chromium CrVI (standard option); Stainless Steel (1.4571) version available
- Turning knob made of Polyamide (PA)
- O-rings made of FPM (Viton®); NBR (Buna-N®) and EPDM sealed version available

Consult STAUFF for alternative materials.

Technical Data

- Opening pressure: 0,5 bar / 7 PSI (4,5 bar / 65 PSI available on request)
- Maximum working pressure: 350 bar / 5000 PSI (for all sizes)
- Operating temperature range: -20 °C ... +100 °C / -4 °F ... +212 °F

Please see page F94 for detailed flow characteristics.

Recommended Bolts / Tightening Torques

- Socket cap screws according to ISO 4762 or ANSI / ASME B18.3 recommended for installation (not included in delivery):

DRVP-06 M6 x 20 - 8.8 (9 N-m)
1/4-20 UNC x 3/4 - Gr. 5 (10 ft-lb)

DRVP-08 M6 x 25 - 8.8 (9 N-m)
1/4-20 UNC x 1 - Gr. 5 (10 ft-lb)

DRVP-10 M6 x 30 - 10.9 (12 N-m)
1/4-20 UNC x 1-1/4 - Gr. 8 (12 ft-lb)

DRVP-12 M6 x 35 - 12.9 (15 N-m)
1/4-20 UNC x 1-1/2 - Gr. 10 (14 ft-lb)

DRVP-16 M8 x 50 - 10.9 (30 N-m)
5/16-18 UNC x 2 - Gr. 8 (24 ft-lb)

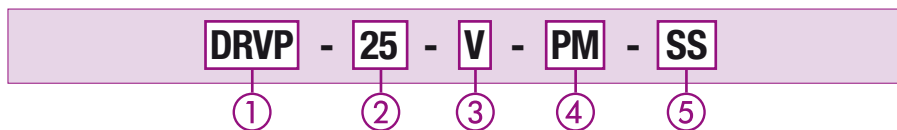
DRVP-20 M8 x 55 - 12.9 (35 N-m)
5/16-18 UNC x 2-1/4 - Gr. 10 (29 ft-lb)

DRVP-25 M10 x 60 - 12.9 (70 N-m)
3/8-16 UNC x 2-1/2 - Gr. 10 (58 ft-lb)

DRVP-30 M12 x 85 - 10.9 (100 N-m)
7/16-14 x 3-1/2 - Gr. 8 (63 ft-lb)

DRVP-40 M12 x 100 - 12.9 (130 N-m)
7/16-14 x 4 - Gr. 10 (70 ft-lb)

Order Codes



① Type

Flow Control Valve (Manifold Assembly) **DRVP**

② Nominal Size DN

06 08 10 12 16 20 25 30 40

③ Sealing Material

FPM (Viton®) (standard option) **V**
NBR (Buna-N®) **P**
EPDM **E**

④ Panel Mounting Nut

Without panel mounting nut (standard option) **-**
With panel mounting nut **PM**

⑤ Body / Spindle Material

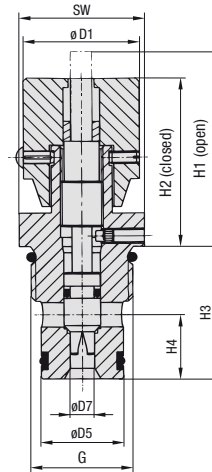
Steel (standard option) **-**
Stainless Steel **SS**

Accessories / Spare Parts

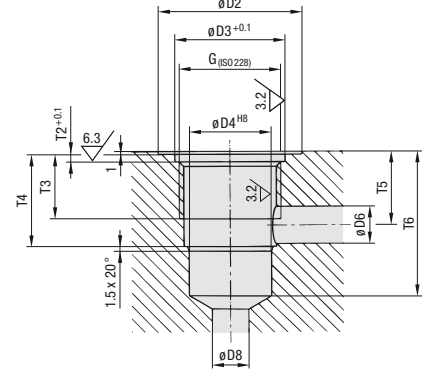
Panel Mounting Kits

- See Page F83 for details.

**Throttle / Shut-Off Valve - Type DVE
(Cartridge Assembly)**



Installation Details



Characteristics

Throttle and shut-off the flow of liquid media in both directions

Features

- Designed for direct installation into hydraulic manifolds with male BSP threaded stud
- Graduated turning knob and coded spindle to accurately control flow
- Set-screw located on side of turning knob to lock valve in position

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

Materials

- Body and spindle made of Steel (1.0715), zinc/iron-plated (Fe/Zn Fe Co 8 C) and free of hexavalent chromium CrVI (standard option); Stainless Steel (1.4571) version available
- Turning knob made of Polyamide (PA)
- O-rings made of NBR (Buna-N®); FPM (Viton®) and EPDM sealed version available

Consult STAUFF for alternative materials.

Technical Data

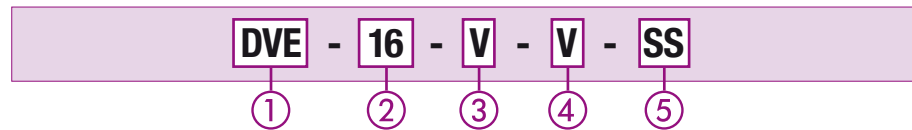
- Maximum working pressure: 350 bar / 5000 PSI (for all sizes)
- Operating temperature range: -20°C ... +100°C / -4°F ... +212°F

Please see page F94 for detailed flow characteristics.

Dimensions

Type + Nom. Size	Thread Options G	Dimensions (mm/in)														Weight (kg/lbs)				
		H1	H2	H3	H4	ØD1	ØD2	ØD3	ØD4	ØD5	ØD6	ØD7	ØD8	SW	T2		T3	T4	T5	T6
DVE-08	G1/2 BSP	47	41	28	12,0	29	32	24	14	14	5	5	5	27	1,9	14	17,5	15	29	0,15
		1.85	1.61	1.08	.47	1.14	1.26	.94	.55	.55	.20	.20	.20	1.06	.07	.55	.69	.59	1.14	.33
DVE-10	G1/2 BSP	64	54	31	14,5	38	32	24	16	16	8	6	8	27	1,9	14	20,5	17	33	0,25
		2.52	2.13	1.21	.57	1.50	1.26	.94	.63	.63	.31	.24	.31	1.06	.07	.55	.81	.67	1.30	.55
DVE-12	G3/4 BSP	65	55	40	17,5	38	37	30	19	19	10	8	10	32	1,9	21	29,0	24	43	0,50
		2.56	2.17	1.57	.69	1.50	1.46	1.18	.75	.75	.39	.31	.39	1.26	.07	.83	1.14	.94	1.69	1.10
DVE-16	G1 BSP	65	55	44	21,1	38	47	36	27	27	12	8	12	41	1,9	21	30,0	24	47	0,70
		2.56	2.17	1.71	.83	1.50	1.85	1.42	1.06	1.06	.47	.31	.47	1.61	.07	.83	1.18	.94	1.85	1.54

Order Codes



① Type

Throttle / Shut-Off Valve (Cartridge Assembly) **DVE**

② Nominal Size DN

08 **10** **12** **16**

③ Sealing Material

FPM (Viton®) (standard option) **V**
 NBR (Buna-N®) **P**
 EPDM **E**

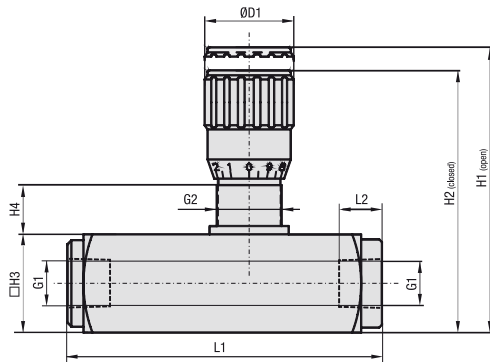
④ Connection

Male BSP thread (ISO 228) **B**

⑤ Body / Spindle Material

Steel (standard option) **-**
 Stainless Steel **SS**

Pressure Compensated Flow Control Valve - Type PNDRV (In-Line Assembly)



Dimensions

Type + Nominal Size	Thread Options G1	Dimensions (mm/in)							Weight (kg/lbs)
		L1	L2	H1	H2	H3	H4	G2	
PNDRV-08	1/4 NPT	94	12,5	88,5	81,5	30	15	M20 x 1	0,58
	7/16-20 UNF (1/4" SAE)								
	G1/4 BSP	3.70	.49	3.48	3.21	1.18	.59		.77
PNDRV-10	3/8 NPT	110,5	13	103	94,5	35	17	M25 x 1,5	0,94
	9/16-18 UNF (3/4" SAE)								
	G3/8 BSP	4.35	.51	4.06	3.72	1.38	.67		2.09
PNDRV-12	1/2 NPT	137	15,5	122	112	45	18	M30 x 1,5*	1,83
	3/4-16 UNF (1/2" SAE)								
	G1/2 BSP	5.39	.61	4.80	4.41	1.77	.71		4.07
PNDRV-16	3/4 NPT	163	17	150	138	55	24	M40 x 1,5	3,35
	1-1/16-12 UN (3/4" SAE)								
	G3/4 BSP	6.42	.67	5.91	5.43	2.17	.94		7.44

* M25 x 1,5 for version with female UN/UNF thread (SAE J514)

Characteristics

Throttle and shut-off the flow of liquid media in direction A-B (free flow in reverse direction) with pressure compensating feature via built-in compensating piston

Features

- Designed for in-line assembly with female NPT, SAE and BSP threaded connections
- Panel mounting nuts available on request
- Graduated turning knob to accurately control flow
- Set-screw located on side of turning knob to lock valve in position

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

Materials

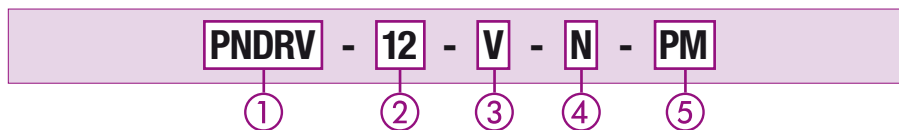
- Body made of Steel, phosphated
- Internal components made of Stainless Steel
- Turning knob made of Aluminium
- O-rings made of FPM (Viton®)
- Anti-extrusion ring made of PTFE

Consult STAUFF for alternative materials.

Technical Data

- Maximum working pressure: 210 bar / 3000 PSI (for all sizes)
- Operating temperature range: -20°C ... +120°C / -4°F ... +248°F
- Minimum filtration grade: 25 µm (absolute) to ensure the correct functioning, reduce wear and tear and increase the service life of the valve

Order Codes



① Type

Pressure Compensated Flow Control Valve (In-Line Assembly) **PNDRV**

② Nominal Size DN

08 **10** **12** **16**

③ Sealing Material

FPM (Viton®) (standard option) **V**
NBR (Buna-N®) **P**
EPDM **E**

④ Connection

Female NPT thread (ANSI B1.20.1) **N**
Female UN/UNF thread (SAE J514) **S**
Female BSP thread (ISO 228) **B**

⑤ Panel Mounting Nut

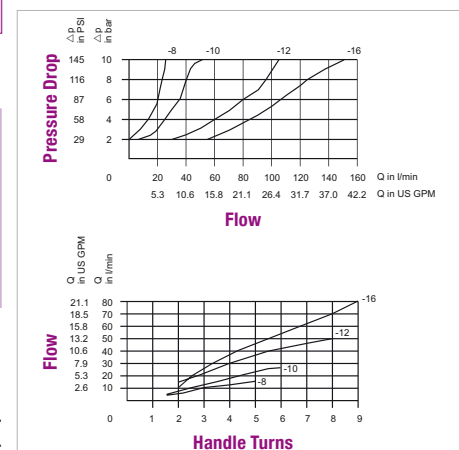
Without panel mounting nut (standard option) **-**
With panel mounting nut **PM**

Accessories / Spare Parts

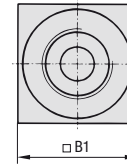
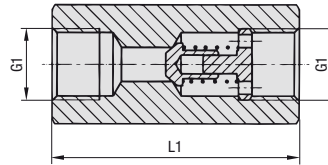
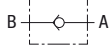
Panel Mounting Kits

- for PNDRV-08 (thread size M20x1): **PMK-810-T**
- for PNDRV-10 / 12S (thread size M25x1,5): **PMK-1012-T**
- for PNDRV-12N / -12S (thread size M30x1,5): **PMK-1212-T**
- for PNDRV-16 (thread size M40x1,5): **PMK-1616-T**

Flow Characteristics



Heavy-Duty Check Valve - Type RV (In-Line Assembly)



Characteristics

Allows a single-directional flow only

Features

- Designed for in-line assembly with female NPT, SAE and BSP threaded connections
- Metal-to-metal seat

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

Materials

- Body made of Steel (1.0715), zinc/iron-plated (Fe/Zn Fe Co 8 C) and free of hexavalent chromium CrVI (standard option); Stainless Steel (1.4571) version available

Technical Data

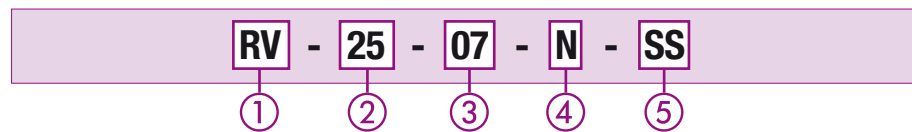
- Opening pressure: 0,5 bar / 7 PSI (4,5 bar / 65 PSI available on request)
- Maximum working pressure: 500 bar / 7250 PSI (depending on size)
- Operating temperature range: -20°C ... +100°C / -4°F ... +212°F

Please see page F94 for detailed flow characteristics.

Dimensions

Type + Nominal Size	Thread Options G1	Dimensions (mm/in)		Working Pressure PN (bar/PSI)	Weight (kg/lbs)
		L1	B1		
RV-06	1/8 NPT	45	16	500	0,10
	G1/8 BSP	1.77	.63	7250	.22
RV-08	1/4 NPT	55	25	500	0,20
	7/16-20 UNF (1/4" SAE) G1/4 BSP	2.17	.98	7250	.44
RV-10	3/8 NPT	65	30	500	0,40
	9/16-18 UNF (3/4" SAE) G3/8 BSP	2.56	1.18	7250	.88
RV-12	1/2 NPT	73	35	500	0,70
	3/4-16 UNF (1/2" SAE) G1/2 BSP	2.87	1.38	7250	1.54
RV-16	3/4 NPT	88	45	500	1,20
	1-1/16-12 UN (3/4" SAE) G3/4 BSP	3.46	1.77	7250	2.64
RV-20	1 NPT	127	50	500	2,00
	1-5/16-12 UN (1" SAE) G1 BSP	5.00	1.97	7250	4.40
RV-25	1-1/4 NPT	143	60	400	3,30
	1-5/8-12 UN (1-1/4" SAE) G1-1/4 BSP	5.63	2.36	5800	7.26
RV-30	1-1/2 NPT	143	70	315	4,20
	1-7/8-12 UN (1-1/2" SAE) G1-1/2 BSP	5.63	2.75	4500	9.24
RV-40	2 NPT	165	90	315	7,20
	2-1/2-12 UN (2" SAE) G2 BSP	6.49	3.54	4500	15.84

Order Codes



① Type

Heavy-Duty Check Valve (In-Line Assembly) **RV**

② Nominal Size DN

06 08 10 12 16 20 25 30 40

③ Opening Pressure

0,5 bar / 7 PSI (standard option) **07**
4,5 bar / 65 PSI **65**

Consult STAUFF for alternative opening pressures.

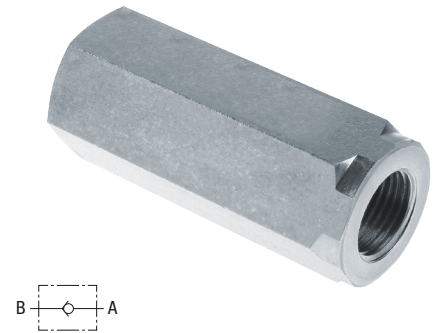
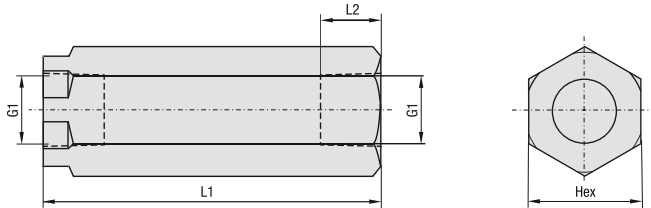
④ Connection

Female NPT thread (ANSI B1.20.1) **N**
Female UN/UNF thread (SAE J514) **S**
Female BSP thread (ISO 228) **B**

⑤ Body Material

Steel (standard option) **-**
Stainless Steel **SS**

Medium-Duty Check Valve - Type RVM (In-Line Assembly)



Dimensions

Type + Nominal Size	Thread Options G1	Dimensions (mm/in)			Working Pressure PN (bar/PSI)	Weight (kg/lbs)
		L1	L2	Hex		
RVM-08	1/4 NPT G1/4 BSP	63,0	12,5	22	400	0,17
		2.48	.49	.87	5800	.38
RVM-10	3/8 NPT G3/8 BSP	69,0	12,5	27	400	0,26
		2.72	.49	1.06	5800	.58
RVM-12	1/2 NPT G1/2 BSP	80,5	15,5	32	400	0,42
		3.17	.61	1.26	5800	.93
RVM-16	3/4 NPT G3/4 BSP	99,5	17,0	36	400	0,61
		3.92	.67	1.42	5800	1.36

Characteristics

Allows a single-directional flow only

Features

- Designed for in-line assembly with female NPT and BSP threaded connections
- Ideal for medium-duty applications
- Metal-to-metal seat

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

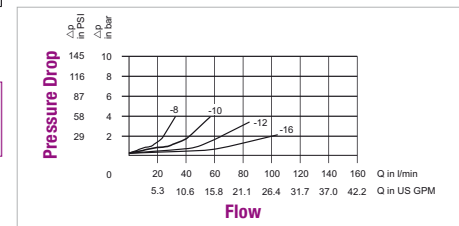
Materials

- Body made of Steel, zinc/nickel-coated (free of hexavalent chromium CrVI)
- Ball made of Stainless Steel

Technical Data

- Opening pressure: 0,5 bar / 7 PSI
- Field replaceable springs with a pressure setting of 2 bar / 30 PSI or 4 bar / 60 PSI
- Maximum working pressure: 400 bar / 5800 PSI (for all sizes)
- Operating temperature range: -20 °C ... +100 °C / -4 °F ... +212 °F

Flow Characteristics



Order Codes

RVM - 12 - 07 - N

① ② ③ ④

① Type

Medium-Duty Check Valve (In-Line Assembly) **RVM**

② Nominal Size DN

08 10 12 16

③ Opening Pressure

0,5 bar / 7 PSI (standard option) **07**
2 bar / 30 PSI **30**
4 bar / 60 PSI **60**

Consult STAUFF for alternative opening pressures.

④ Connection

Female NPT thread (ANSI B1.20.1) **N**
Female BSP thread (ISO 228) **B**

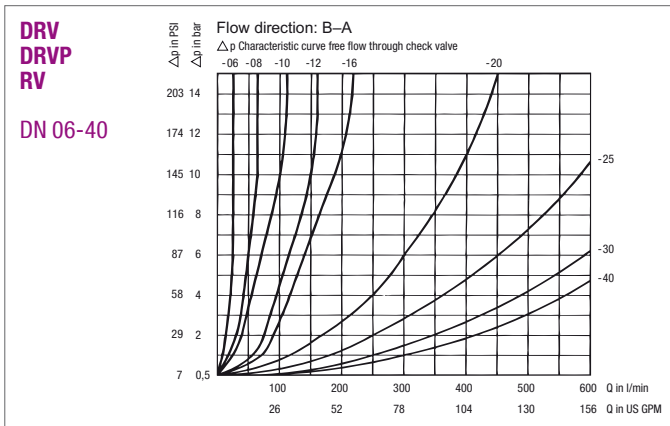
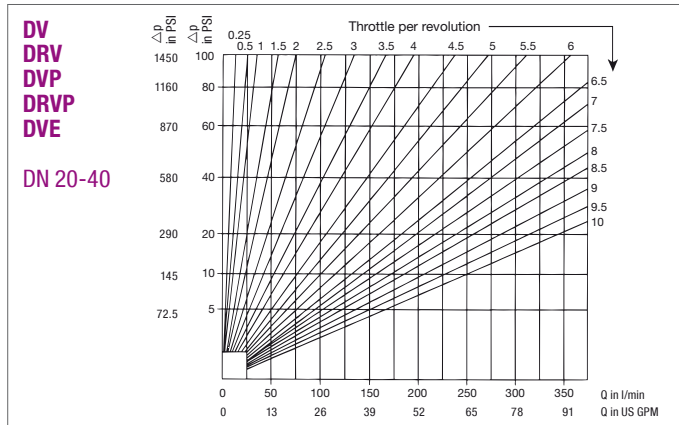
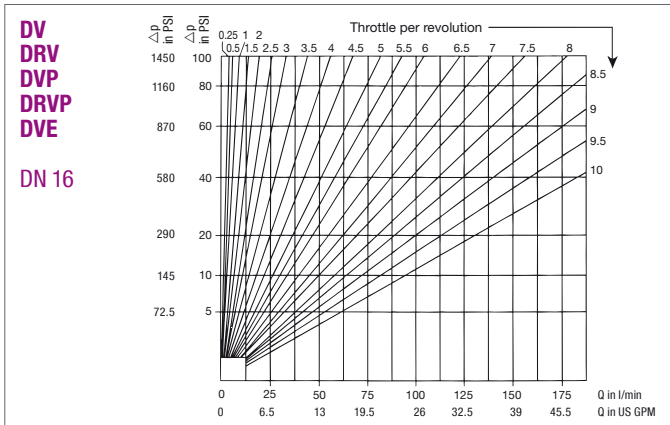
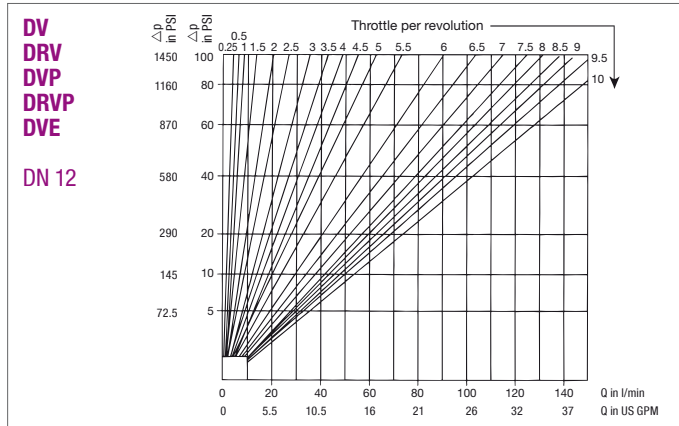
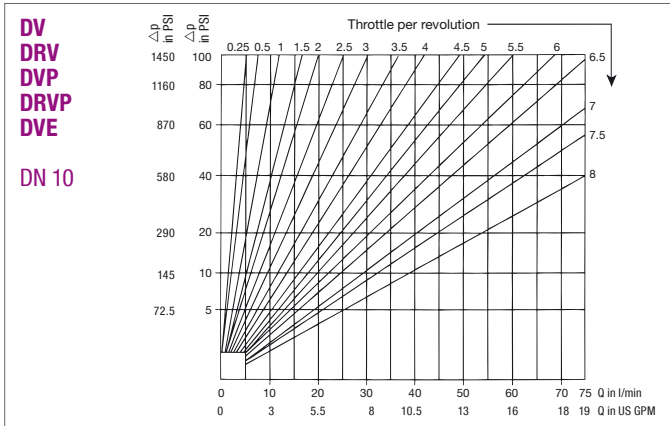
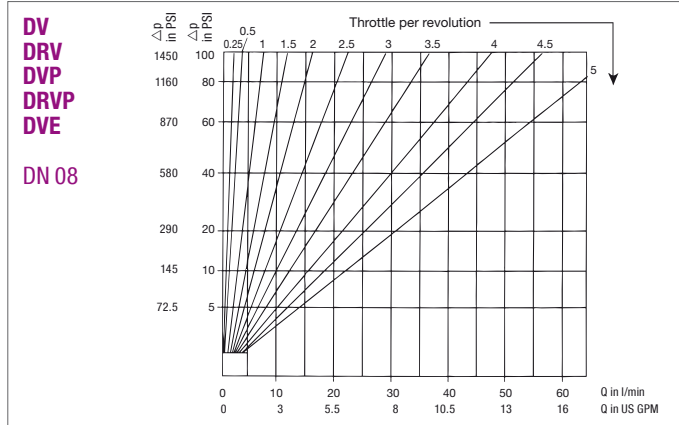
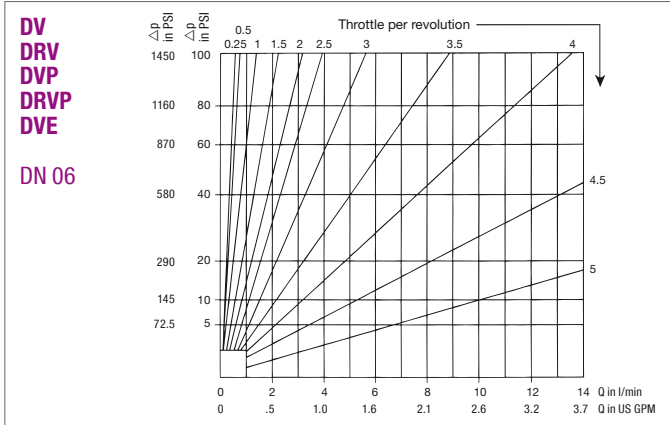
Accessories / Spare Parts

Field replaceable springs

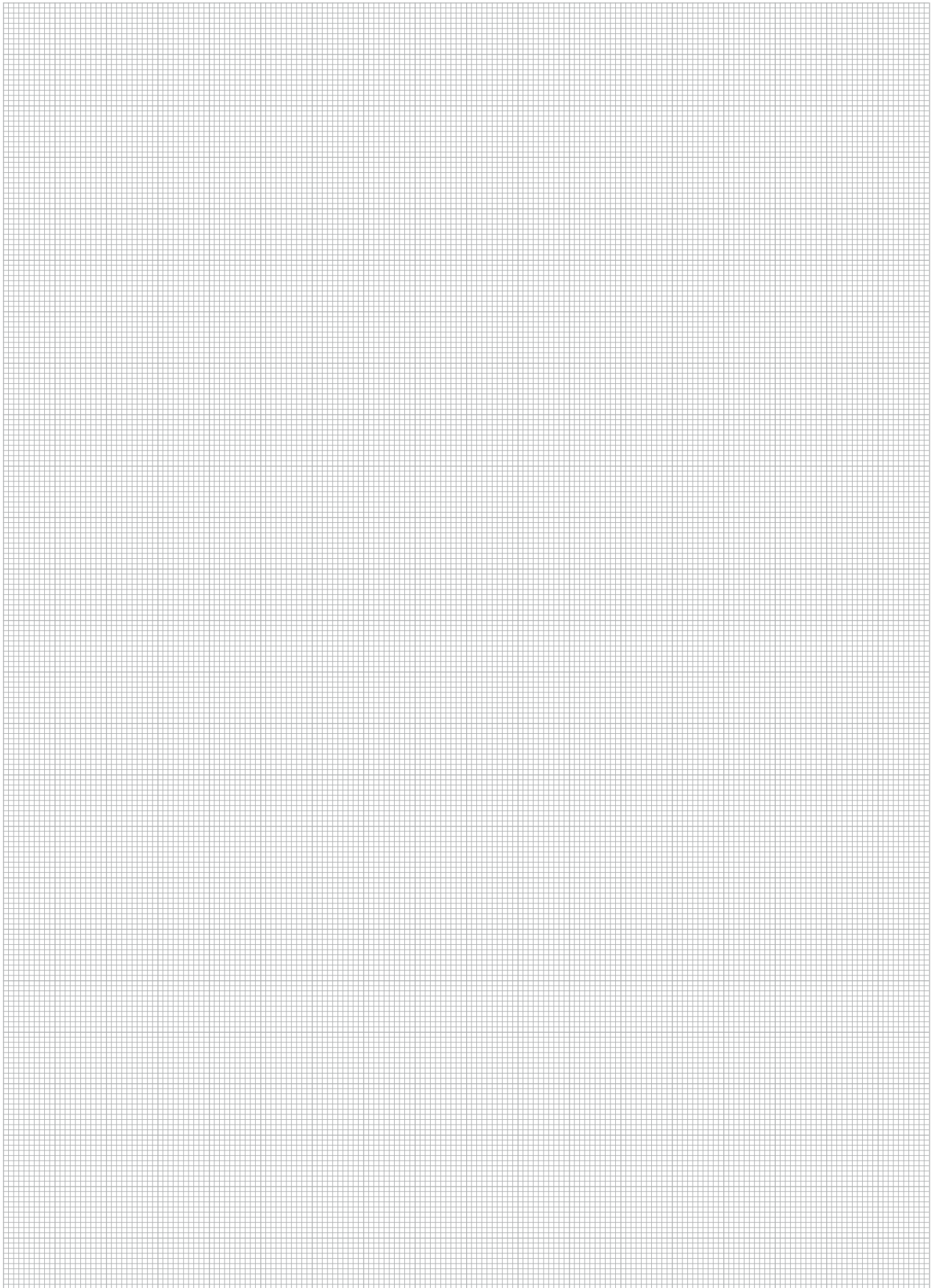
- for RVM-08 (setting of 2 bar / 30 PSI): **RVM-08-30**
- for RVM-08 (setting of 4 bar / 60 PSI): **RVM-08-60**
- for RVM-10 (setting of 2 bar / 30 PSI): **RVM-10-30**
- for RVM-10 (setting of 4 bar / 60 PSI): **RVM-10-60**
- for RVM-12 (setting of 2 bar / 30 PSI): **RVM-12-30**
- for RVM-12 (setting of 4 bar / 60 PSI): **RVM-12-60**
- for RVM-16 (setting of 2 bar / 30 PSI): **RVM-16-30**
- for RVM-16 (setting of 4 bar / 60 PSI): **RVM-16-60**

Consult STAUFF for alternative pressure settings.

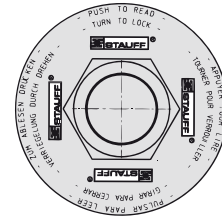
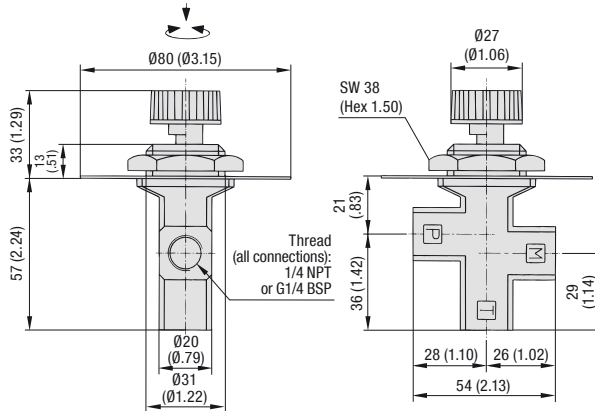
Nominal Flow Rate vs. Pressure Drop



Please note: The flow characteristics mentioned on this page are valid for mineral oils with a density of 0,86 kg/dm³ and the kinematic viscosity of 35 mm²/s (35 cSt). The characteristics have been determined in accordance to ISO 3968.



Gauge Isolator Valve ■ Type SWS-S1 (Single Station)



Characteristics

Effective protection of pressure gauges against overload caused by pressure peaks

Features

- Suitable for panel installation
- Max. panel thickness of 5 mm / .20 in
- Fixed with hexagonal nut
- Push button to read and turn to lock
- Multilingual instructions printed on face plate

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

Materials

- Body made of Cast Iron
- Spindle made of Steel
- Push / turn button made of Polyamide (PA)
- Face plate made of Aluminium
- O-rings made of NBR (Buna-N®)

Technical Data

- Maximum working pressure: 400 bar / 5800 PSI
- Operating temperature range: -30°C ... +115°C / -22°F ... +239°F

Order Codes

SWS - **N04** - **S1**

① ② ③

① Type

Gauge Isolator Valve **SWS**

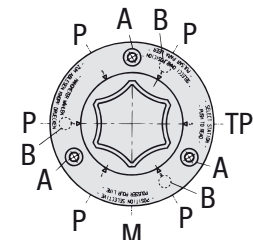
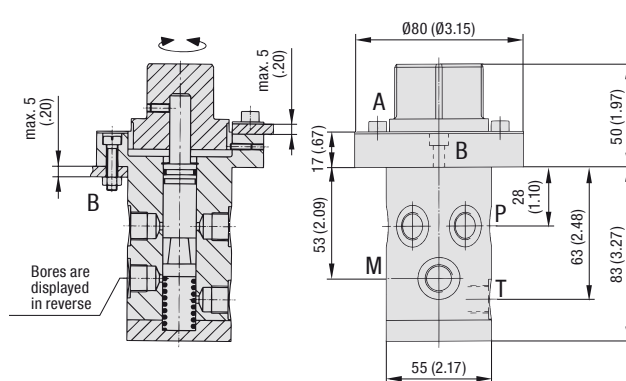
② Connection Thread

1/4 NPT (for all connections) **N04**
G1/4 BSP (for all connections) **B04**

③ Style

Single station **S1**

Gauge Isolator Valve ■ Type SWS-M (Multi Station)



Mounting Bores ($\varnothing 6$ mm / .24 in)

A 3 bores, equally spaced (120°),
BCD $\varnothing 65$ mm / 2.56 in

B 3 bores, equally spaced (120°),
BCD $\varnothing 65$ mm / 2.56 in

Connections (7/16–20 UNF or G1/4 BSP)

P 6 bores, equally spaced (60°)

M 1 bore

T 1 bore

Characteristics

Pressure measurement on six positions in the hydraulic circuit with only one pressure gauge

Features

- Suitable for bulkhead installation
- Max. panel thickness of 5 mm / .20 in
- Fixed with connection flange and screws: 3 hexagon head bolts M5 x 10 (DIN 933) for mounting the printed panel and 3 socket cap screws M5 x 25 (DIN 912) with washers (DIN 127) and nut (DIN 934) for panel installation included in delivery
- Turn button to select position of measurement
- Multilingual instructions printed on panel

Media Compatibility

- Suitable for hydraulic fluids

Please consult STAUFF before using with other media.

Materials

- Body made of Cast Iron
- Spindle made of Steel
- Push / turn button made of Polyamide (PA)
- Face plate and end cover made of Aluminium
- O-rings made of NBR (Buna-N®)

Technical Data

- Maximum working pressure: 400 bar / 5800 PSI
- Operating temperature range: -30°C ... +115°C / -22°F ... +239°F

Order Codes

SWS - **U04** - **M**

① ② ③

① Type

Gauge Isolator Valve **SWS**

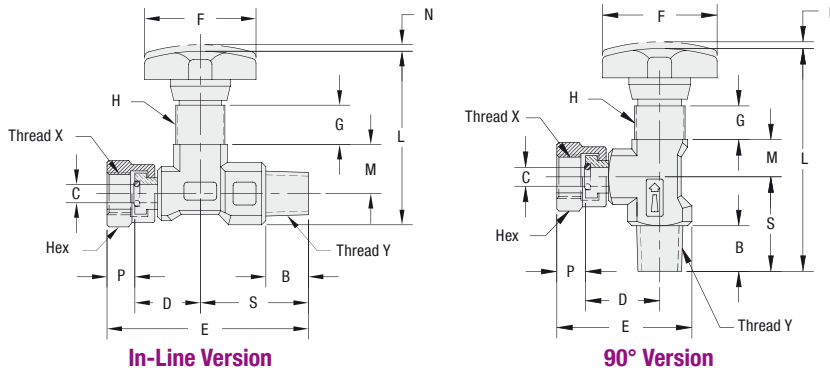
② Connection Thread

7/16–20 UNF (1/4" SAE) for all connections **U04**
G1/4 BSP for all connections **B04**

③ Style

Multi station **M**

Gauge Isolator Needle Valve - Types SWS-A1/A2 (Single Station)



Dimensions

Type	Thread X (Female)	Thread Y (Male)	Dimensions (mm/in)													Weight (kg/lbs)
			B	C	D	E	F	G	H	L	M	N	P	S	Hex	
SWS-A1	1/4 NPT G1/4 BSP	1/4 NPT 7/16-20 UNF (1/4" SAE) R1/4 BSPT	13	5,6	20	61,5	34	12	M15x1	53	15	2	8,5	33	18	0,13
			.51	.22	.78	2.42	1.34	.47		2.09	.59	.08	.33	1.30	.71	.22
SWS-A2	1/4 NPT G1/4 BSP	1/4 NPT R1/4 BSPT	13,5	5,6	22	40	34	10	M15x1	66	11	2	8,5	28	18	0,11
			.53	.22	.87	1.57	1.34	.39		2.60	.43	.08	.33	1.10	.71	.44

Characteristics

Effective protection of pressure gauges against overload caused by pressure peaks

Features

- Designed for in-line assembly (type A1) or 90° assembly (type A2) with female NPT / male NPT, female NPT / male SAE or female BSP / male BSPT threaded connections
- Panel mounting nuts available on request
- Rotating swivel nut allows for accurate orientation of the pressure gauge

Materials

- Body made of Steel, zinc/nickel-coated (free of hexavalent chromium CrVI)
- Spindle made of Steel
- Hand-wheel made of Polyamide (PA)
- O-rings made of NBR (Buna-N®)
- Anti-extrusion ring made of PTFE

Consult STAUFF for alternative materials.

Technical Data

- Maximum working pressure: 400 bar / 5800 PSI (for all sizes)
- Operating temperature range: -20 °C ... +100 °C / -4 °F ... +212 °F

Order Codes

SWS - **N04** - **A1** - **PM**

① ② ③ ④

① Type

Gauge Isolator Valve **SWS**

② Connection Threads

Female 1/4 NPT and Male 1/4 NPT **N04**
 Female 1/4 NPT and Male 7/16-20 UNF (1/4" SAE) **S04**
 (only available for in-line version)
 Female G1/4 BSP and Male R1/4 BSPT **B04**

③ Style

Single station, in-line version **A1**
 Single station, 90° version **A2**

④ Panel Mounting Kit

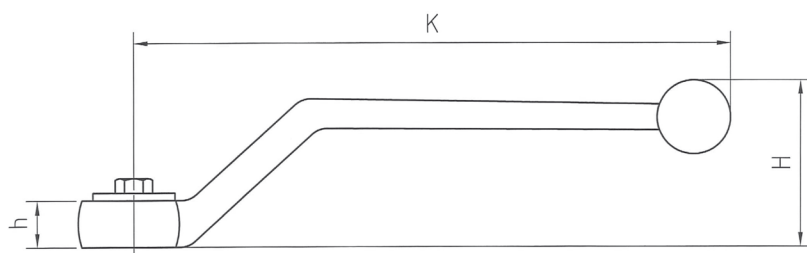
Without panel mounting kit (standard option) **-**
 With panel mounting kit **PM**



Pressure Gauges

Please see the **Diagtronics** section of this product catalogue for details on our full range of analog and digital pressure measurement equipment.

Levers



Zinc - Off-Set Design

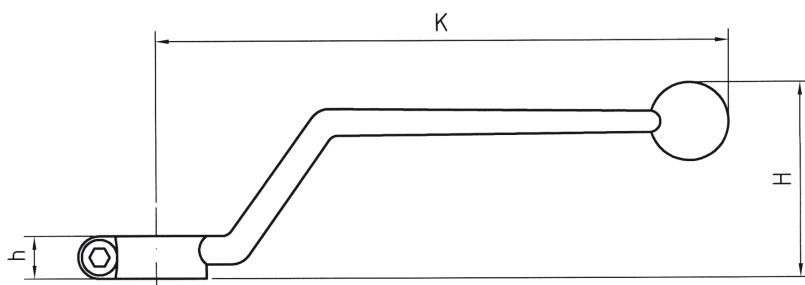
SW	Dimensions (mm/in)			Weight (kg/lbs)	Order Codes
	K	h	H		
7	80	6,5	30	0,03	SW7/OS-ZN
	3.15	.26	1.18	.07	
9	115	8,7	45	0,09	SW9/OS-ZN
	4.52	.34	1.77	.20	

Steel - Off-Set Design

SW	Dimensions (mm/in)				Weight (kg/lbs)	Order Codes
	K	h	h	H		
7	80	6,5	30	0,05	SW7/OS-S	
	3.15	.26	1.18	.11		
9	115	9	47	0,09	SW9/OS-S	
	4.52	.35	1.85	.20		
14	117	12	64	0,23	SW14/OS-S	
	4.61	.47	2.52	.51		
17	306	17	80	0,66	SW17/OS-S	
	12.04	.69	3.15	1.45		

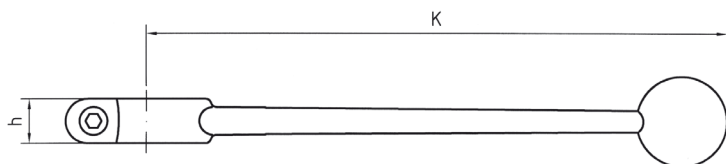
Stainless Steel V4A - Off-Set Design

SW	Dimensions (mm/in)			Weight (kg/lbs)	Order Codes
	K	h	H		
7	60	6,5	22	0,04	SW7/OS-SS
	2.36	.26	.87	.09	
9	115	9	47	0,10	SW9/OS-SS
	4.52	.35	1.85	.22	
14	173	12	64	0,23	SW14/OS-SS
	6.8	.47	2.52	.51	
17	227,5	15	90	0,66	SW17/OS-SS
	8.96	.59	3.54	1.45	



Aluminium - Off-Set Design

SW	Dimensions (mm/in)			Weight (kg/lbs)	Order Codes
	K	h	H		
12	160	12	55	0,07	SW12/OS-AL
	6.30	.47	2.17	1.54	



Zinc - Straight Design

SW	Dimensions (mm/in)			Weight (kg/lbs)	Order Codes
	K	h	h		
9	155	10	0,09	SW9/ST-ZN	
	6.10	.29	.20		
14	200	14	0,22	SW14/ST-ZN	
	7.87	.55	.48		

Aluminium - Straight Design

SW	Dimensions (mm/in)			Weight (kg/lbs)	Order Codes
	K	h	h		
9	150	11	0,06	SW9/ST-AL	
	5.91	.43	.13		
14	200	12	0,11	SW14/ST-AL	
	7.87	.47	.24		
17	320	16	0,27	SW17/ST-AL	
	12.60	.63	.59		

Locking Device - Type LD1
Dimensions / Order Codes

Nominal Size DN	SW	Dimensions (mm/in)		Order Codes
		B	L1	
4-13	9	9	25	LD1-SW9
		.35	.98	
16	12	12	40	LD1-SW12
		.47	1.57	
20-25	14	14	40	LD1-SW14
		.55	1.57	
32-50	17	17	50	LD1-SW17
		.67	1.97	

Characteristics

Locking kit consisting of shackle, sliding sleeve, link with screw and Steel lever.

Features

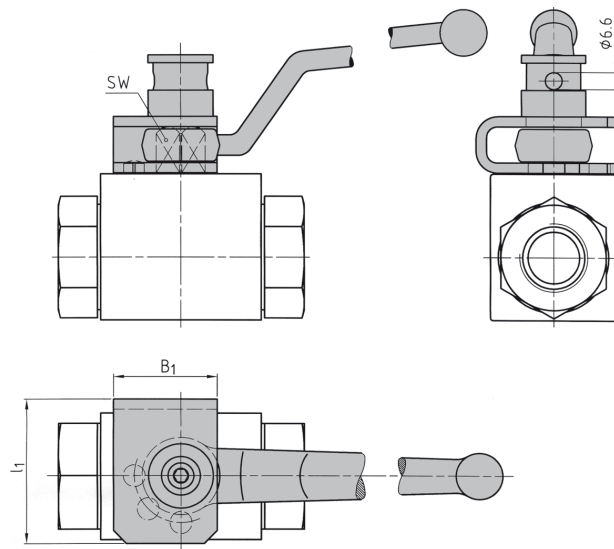
- Universal field-installed locking device
- High security: Cannot be dismounted when locked

Suitability

Type	Description
BBV	Block Body Valve with Threaded Connections (SW 9-14)
FBV	Forged Body Valve with Threaded Connections (SW 17)
HBV	High-Pressure Block Body Valve with Threaded Connections (SW 9-14)
BBV22/23	Block Body Valve with SAE Split Flange Connections (SW 9-14)
FBV22/23	Forged Body Valve with SAE Split Flange Connections (SW 17)

Type	Description
BBV	Block Body Valve with SAE Flange Connections (SW 9-14)
FBV	Forged Body Valve with SAE Flange Connections (SW 17)
BBV25	Block Body Valve (Two-Way Selector) for Manifold Mounting (SW 9-17)
BBV35	Block Body Valve (Three-Way Selector) for Manifold Mounting (SW 9-17)
BBVS35	Block Body Valve (Three-Way Selector) for Manifold Mounting (SW 9-17)

Type	Description
CBV	Block Body Valve (Three-Way Selector) with Threaded Connections (SW 9-17)
CBVS	Block Body Valve (Three-Way Selector) with Threaded Connections (SW 9-17)
KHZ	Compact Block Body Valve for Manifold or In-Line Assembly


Locking Device - Type LD2
Dimensions / Order Codes

Nominal Size DN	SW	Dimensions (mm/in)				Order Codes
		H	B1	B2	B3	
4-8	9	3,5	61	24	10	LD2-DN4-8
		.14	2.41	.94	.39	
10-13	9	3,5	61	24	10	LD2-DN10-13
		.14	2.41	.94	.39	
16	12	4,5	64	25,5	12	LD2-DN16
		.18	2.52	1.00	.47	
20-25	14	4,5	84	35,5	14	LD2-DN20-25
		.18	3.31	1.40	.55	
32-50	17	4,5	136	61,5	15	LD2-DN32-50
		.18	5.35	2.42	.59	

Characteristics

Locking kit consisting of locking plate, stopping disk and ring.

Features

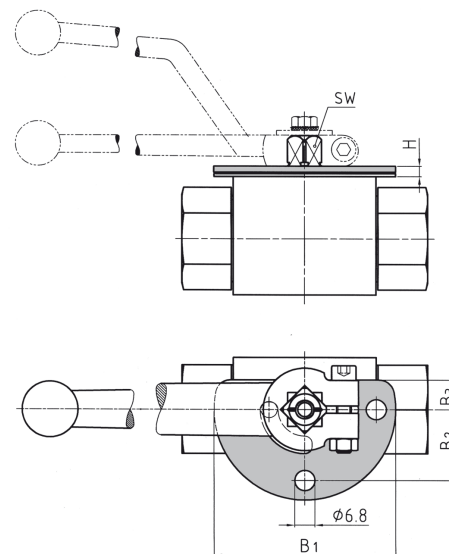
- Field-installed locking device
- Can be dismounted after disassembly of lever

Suitability

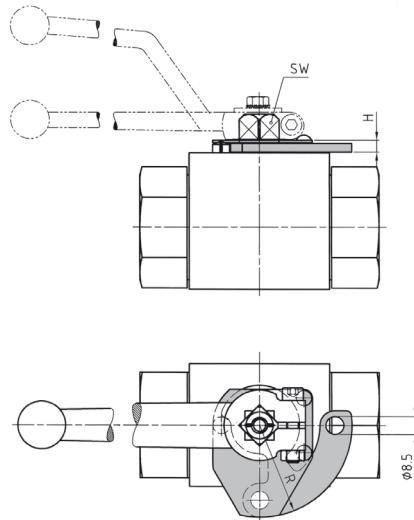
Type	Description
BBV	Block Body Valve with Threaded Connections (SW 9-14)
FBV	Forged Body Valve with Threaded Connections (SW 17)

Type	Description
BBV22/23	Block Body Valve with SAE Split Flange Connections (SW 9-14)
FBV22/23	Forged Body Valve with SAE Split Flange Connections (SW 17)

Type	Description
CBV (≤DN25)	Block Body Valve (Three-Way Selector) with Threaded Connections



Locking Device - Type LD3



Dimensions / Order Codes

Nominal Size DN	SW	Dimensions (mm/in)		Order Codes
		H	R	
4-13	9	4 .16	37 1.47	LD3-SW9-SS
16	12	4,3 .17	40 1.57	LD3-SW12-SS
20-25	14	5,5 .22	43,5 1.71	LD3-SW14-SS
32-50	17	6 .24	69,5 2.74	LD3-SW17-SS

Characteristics

Only available in combination with suitable ball valve.

Features

- Factory-installed locking device
- High security: Cannot be dismantled when locked

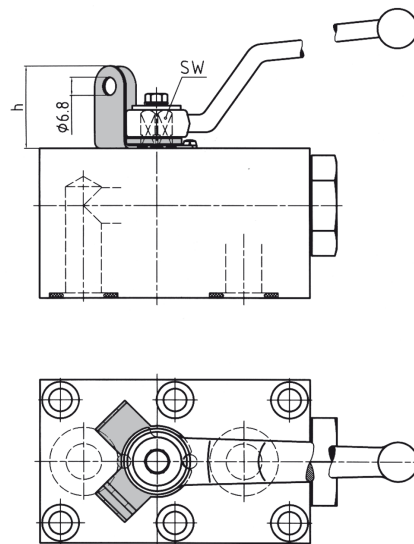
Suitability

Type	Description
BBV	Block Body Valve with Threaded Connections

Type	Description
FBV	Forged Body Valve with Threaded Connections

Type	Description
CBV (\leq DN25)	Block Body Valve (Three-Way Selector) with Threaded Connections

Locking Device - Type LD4



Dimensions / Order Codes

SW	Dimensions (mm/in)		Order Codes
	H		
7	24		LD4-SW7-SS
	.94		
9 *	28		LD4-SW9-SS
	1.10		
14 *	34,5		LD4-SW14-SS
	1.36		
17	44		LD4-SW17-SS
	1.73		

* Lever displaced by 180°

Characteristics

Locking kit consisting of locking plate, stopping disk and ring.

Features

- Universal field-installed locking device (for off-set lever)
- Can be dismantled after disassembly of lever

Suitability

Type	Description
BBV	Block Body Valve with Threaded Connections
FBV	Forged Body Valve with Threaded Connections
HBV	High-Pressure Block Body Valve with Threaded Connections
BBV29	Round Body Valve with Direct SAE Flange Connections
BBV2D	Round Body Valve with ISO Flange Connections
BBV2Y	Round Body Valve with CETOP Flange Connections

Type	Description
BBV25	Block Body Valve (Two-Way Selector) for Manifold Mounting
BBV35	Block Body Valve (Three-Way Selector) for Manifold Mounting
BBVS35	Block Body Valve (Three-Way Selector) for Manifold Mounting
CBV	Block Body Valve (Three-Way Selector) with Threaded Connections
CBV	Block Body Valve (Three-Way Selector) with SAE Flange Connections
CBVS	Block Body Valve (Three-Way Selector) with Threaded Connections
LBV	Block Body Valve (Three-Way Selector) with Threaded Connections
TBV	Block Body Valve (Three-Way Selector) with Threaded Connections
TBV	Block Body Valve (Four-Way Selector) with Threaded Connections
XBV	Block Body Valve (Four-Way Selector) with Threaded Connections

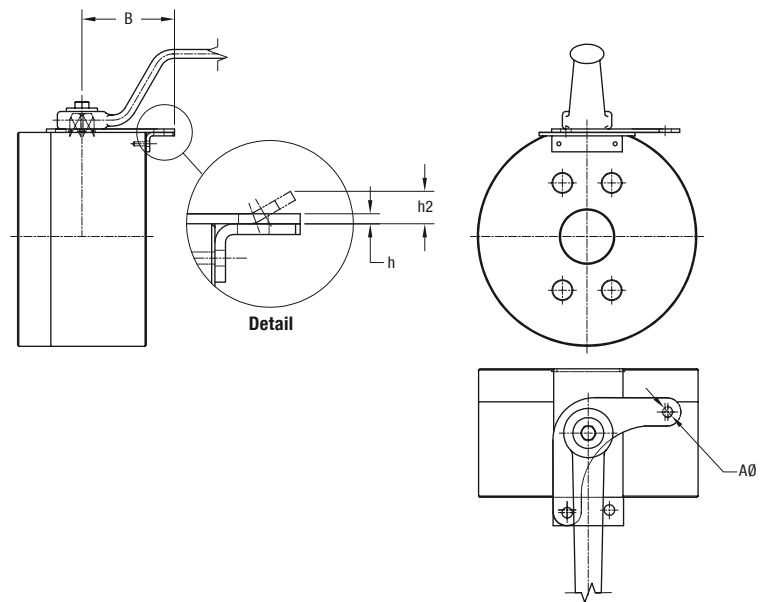
Locking Device - Type LD5A
Dimensions / Order Codes

STAUFF Size	SW	Dimensions (mm/in)				Order Codes
		ØA	B	h	h2	
08	12	8,5 .33	59 2.32	2 .08		LD5A-SW12
12-16	14	8,5 .33	64 2.52	2 .08		LD5A-SW14
20-32	17	9,5 .37	83 3.27	2 .08		LD5A-SW17
40	16	9,5 .37	102 4.01	3 .12		LD5A-40
48	19	9,5 .37	93 3.66	2 1.06	27	LD5A-48
64	24	9,5 .37	113 4.45	3 .12		LD5A-64
80	36	9,5 .37	134 5.28	3 .12		LD5A-80

Suitability

Type	Description
BBV29	Round Body Valve
BBV27/28	Round Body Valve
BBVF	Round Body Valve

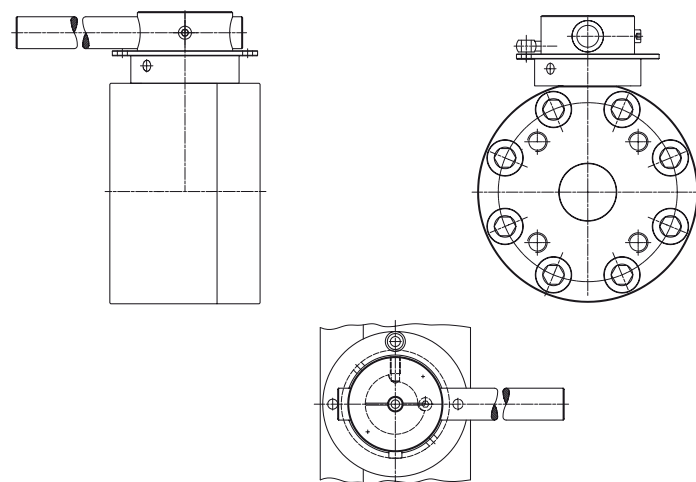
Please consult STAUFF for use with types BBV2D (direct ISO 6164 flange connection) and BBV2Y (direct CETOP flange connection).


Locking Device - Type LD5B
Order Codes

STAUFF Size	SW	Order Codes
40	16	LD5B-40
48	19	LD5B-48
64	24	LD5B-64

Suitability

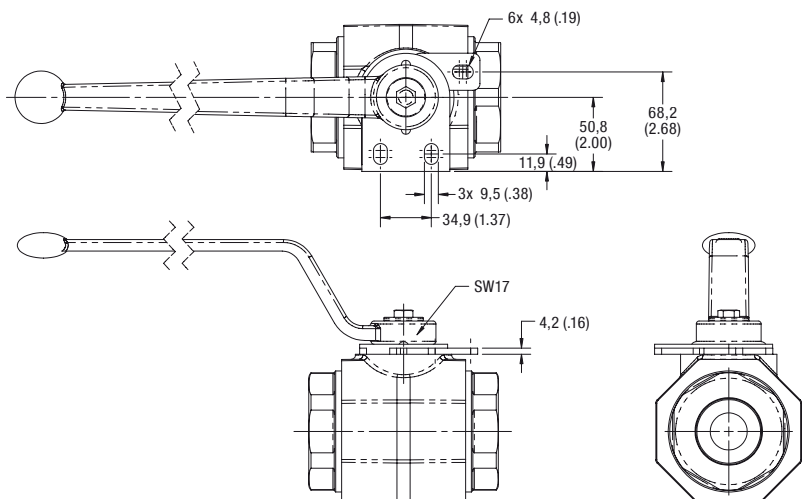
Type	Description
BBV27/28	Round Body Valve with Direct SAE Flange Connections
BBVF	Round Body Valve with DIN Flange Connections with Butt Weld Ends
BBV2Y	Round Body Valve with Direct ISO 6164 Flange Connection
BBV2D	Round Body Valve with Direct CETOP Flange Connection


Locking Device - Type LD6
Order Codes

Nominal Size DN	SW	Order Codes
20-32	17	LD6-SW17

Suitability

Type	Description
FBV	Forged Body Valve with Threaded Connections
FBV22/23	Forged Body Valve with SAE Split Flange Connections
FBV	Forged Body Valve with SAE Flange Connections



Double-Acting Pneumatic Actuators - Type EDA
Single-Acting Pneumatic Actuators - Type ESA

Warning: The selection charts are only valid for the following ball valve types supplied by STAUFF: BBV, FBV or CBV (all ending in ... K, ... M or ... H)



Most STAUFF ball valves can be factory-mounted to compact, efficient double-acting or single-acting pneumatic actuators for both high-pressure and low-pressure applications.

The actuators feature simple, robust construction and are suitable for applications with high cycle requirements.

Please note: The minimum air supply for STAUFF actuators is usually 5,5 bar / 80 PSI. They are designed for 90° open / close applications only and should not be used for valve throttling.

Select the size of your pneumatic actuator from the selection charts on the right and consult STAUFF for further information.

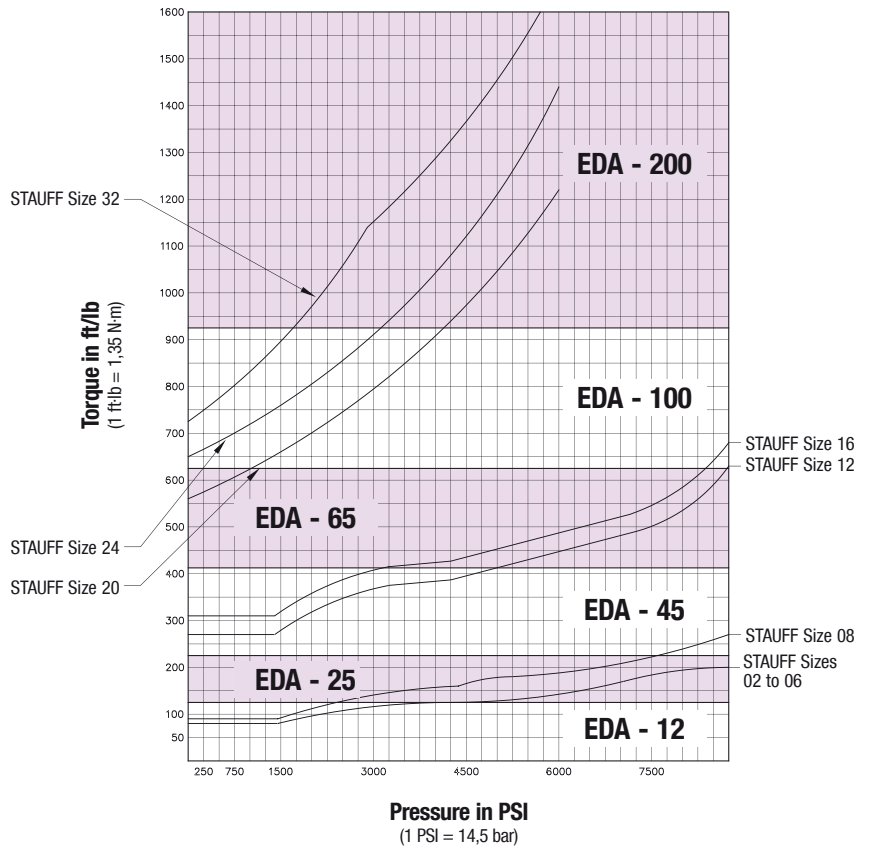
Limit Switches



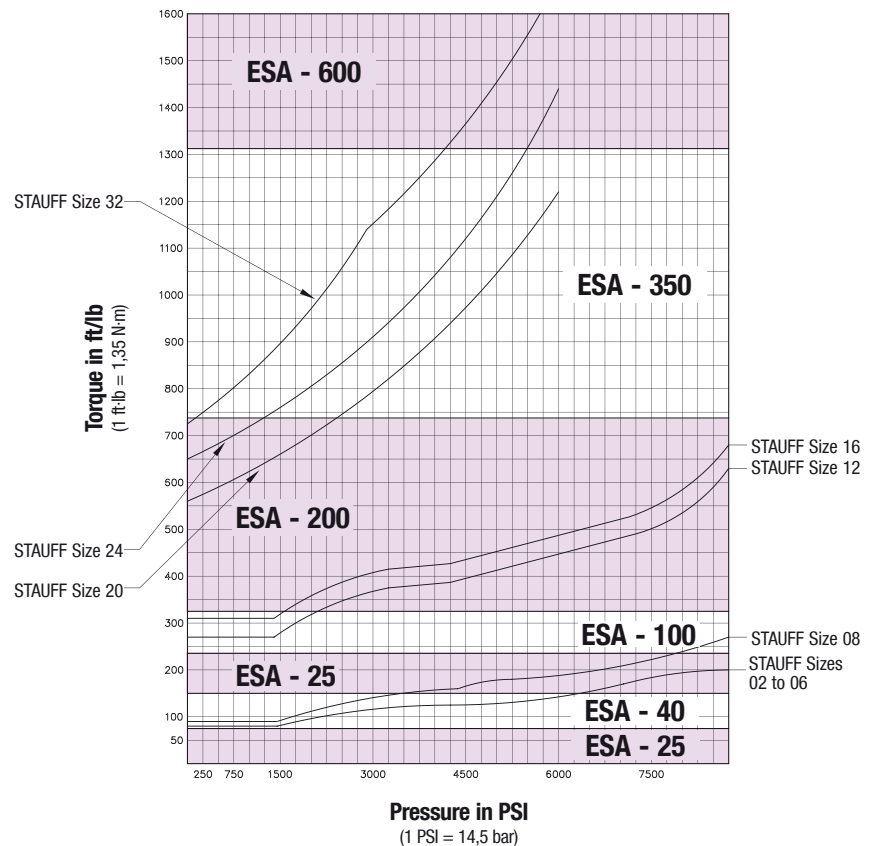
Electric actuator packages as well as solenoid valves and limit switches are also available and can also be offered for different valve styles and sizes.

Please consult STAUFF for further information.

Selection Chart for Double-Acting Pneumatic Actuators EDA
 for Two-Way Ball Valves used with Standard Mineral Oil according to DIN 51524 T1 and T2

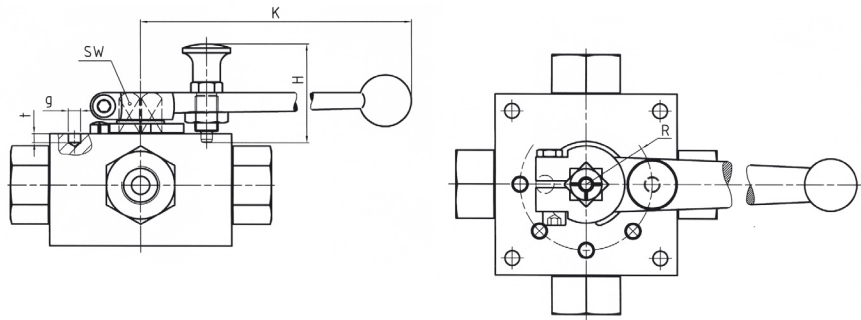


Selection Chart for Single-Acting Pneumatic Actuators ESA
 for Two-Way Ball Valves used with Standard Mineral Oil according to DIN 51524 T1 and T2



Ball Valves with Detent
Dimensions
Multi-Way Ball Valves (Types LBV / TBV / XBV)

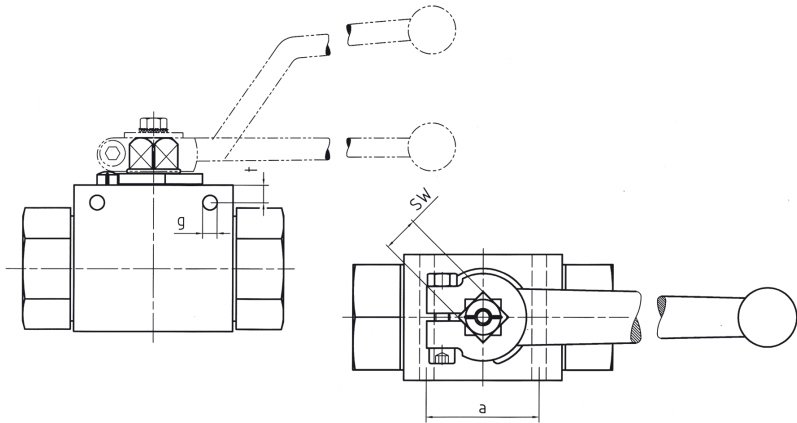
STAUFF Size	Nominal Size DN	Dimensions (mm/in)					
		SW	K	H	R	g	t
02	4	12	175	45	20	6	7
		.47	6.89	1.77	.79	.24	.28
04	6	12	175	45	20	6	7
		.47	6.89	1.77	.79	.24	.28
05	8	14	200	45	29	6	4
		.55	7.87	1.77	1.14	.24	.16
06	10	14	200	45	29	6	4
		.55	7.87	1.77	1.14	.24	.16
08	13	14	200	45	29	6	4
		.55	7.87	1.77	1.14	.24	.16
10	16	17	200	45	29	6	4
		.67	7.87	1.77	1.14	.24	.16
12	20	17	240	45	28	6	4
		.67	9.45	1.77	1.10	.24	.16
16	25	17	240	45	28	6	4
		.67	9.45	1.77	1.10	.24	.16



Please consult STAUFF for further information.

Ball Valves with Assembly Holes
Dimensions
Block Body Ball Valves (Types BBV / CBV / CBVS)

STAUFF Size	Nominal Size DN	Dimensions (mm/in)			
		SW	a	g	t
02	4	9	31	4,3	4,5
		.35	1.22	.17	.18
04	6	9	31	4,3	4,5
		.35	1.22	.17	.18
05	8	9	31	4,3	4,5
		.35	1.22	.17	.18
06	10	9	32	4,3	4
		.35	1.26	.17	.16
08	13	9	32	4,3	4
		.35	1.26	.17	.16
10	16	12	32	5,2	6
		.47	1.26	.20	.24
12	20	14	44	6,2	6
		.55	1.73	2.44	.24
16	25	14	44	6,3	6
		.55	1.73	.25	.24

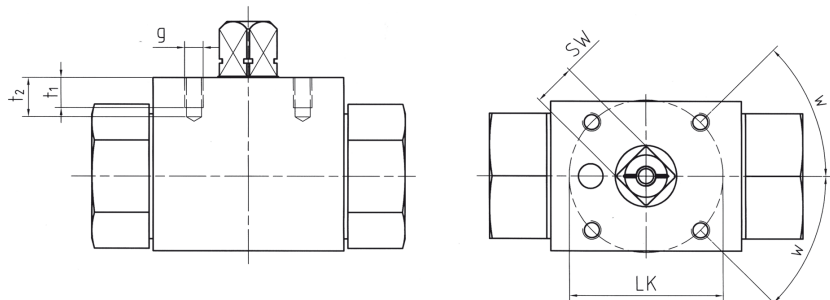


Please consult STAUFF for further information.

Ball Valves with Assembly Threads
Dimensions
Block Body Ball Valves (Types BBV / HBV / CBV / CBVS up to STAUFF Size 16)

Forged Body Ball Valves (Types FBV from STAUFF Size 20 on)

STAUFF Size	Nominal Size DN	Dimensions (mm/in)							ISO 5211
		SW	LK	g	t1	t2	w		
02	4	9	36	M5	6	7,5	30°*	F03*	
		.35	1.42		.24	.30			
04	6	9	36	M5	6	7,5	30°*	F03*	
		.35	1.42		.24	.30			
05	8	9	36	M5	6	7,5	30°*	F03*	
		.35	1.42		.24	.30			
06	10	9	36	M5	7	9	45°	F03	
		.35	1.42		.28	.35			
08	13	9	36	M5	6	8	45°	F03	
		.35	1.42		.24	.31			
10	16	12	42	M5	8	10	45°	F04	
		.47	1.65		.31	.39			
12	20	14	50	M6	10	14	45°	F05	
		.55	1.97		.39	.55			
16	25	14	50	M6	10	12	45°	F05	
		.55	1.97		.39	.47			
20	32	17	50	M6	8	12	45°	F05	
		.67	1.97		.31	.47			
24	40	17	50	M6	8	12	45°	F05	
		.67	1.97		.31	.47			
32	50	17	50	M6	8	12	45°	F05	
		.67	1.97		.31	.47			


 * 30° is not corresponding to ISO 5211
 Please consult STAUFF for further information.

Alternative Porting Patterns

Type	Symbol	Porting Pattern		Stop of End Position	Operating Angle	Overlap
BBV35	LLu		58-BBV35		90°	negative
BBVS358	Lu		57-BBVS35		180°	negative
* Pressure inlet possible from all ports! Must be operated without pressure!						
CBV	L		50-CBV		90°	negative
	T		51-CBV		90°	negative
CBVS	L		55-CBVS *		90°	negative
	T		56-CBVS *		90°	negative
* Pressure inlet possible from all ports! Must be operated without pressure!						
Not Allowed	T					
Three-Way LBV/ TBV with Stop of End Position	L		01		90°	positive
	T		02		90°	positive
	LL		03		45°	negative
	TL		04		45°	negative
	LI		06		90°	negative
	TL		08		90°	negative
	TI		09		90°	negative

Alternative Porting Patterns

Type	Symbol	Porting Pattern	Stop of End Position	Operating Angle	Overlap
Four-Way TBV / XBV with Stop of End Position	T		13	90°	positive
	X		16	90°	negative with closed position
	X		15	45°	negative
	XI		16	45°	negative
	XI		17	90°	negative
	LI		18	90°	negative
	XT		19	90°	negative
	TL		21	90°	negative
	XL		22	90°	negative
	XL		23	90°	negative
	L		24	180°	positive

Highest-Pressure Ball Valves



800 bar / 1200 PSI ball valve combination for alternating pressure demands from 6 bar / 87 PSI up to 800 bar / 12000 PSI working in a hose testing plant.

The STAUFF range of valves have stood the test of time for ultra high pressure applications up to 800 bar / 12000 PSI.

The high demands on ball valves will be maintained through the utilisation of high quality STAUFF specified materials. The extreme loads on the seals caused by the high pressures will be absorbed by a special chambering of the seals. Additionally the sealing system is protected against erosion and therefore rapid wear.

The ball valves are utilised in Test Stations, Steel Works, Cleaning and Cutting Systems.



Ball valve for a test bed: The customers demand was to apply high pressure and great volume to the specimen in a short time.



Descaling of steel sheets and profiles.

These valves are being utilised:

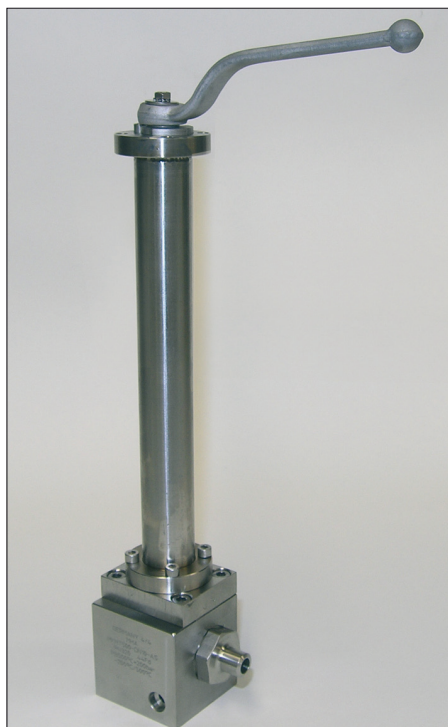
For High pressure water blasting

- internal cleaning of reactors, containers and mixers
- sewer cleaning
- pipe cleaning
- surface treatment like chamfering, descaling, varnish removal

For process and industrial technology

- CO₂ – extraction
- hydroforming
- test bed technology
- water jet cutting systems

High-Temperature Ball Valves



High temperature ball valves with heating elements for polymer production.

In order to provide the many advantages of ball valves in high temperature applications, STAUFF has developed the FBVT series of ball valves.

These valves are designed with a gland packing of special material. This sealing allows applications with high pressure and simultaneously high temperatures.

Up to a temperature of +260 °C / +500 °F high quality plastic seats are being utilised. These are suitable for high pressure and temperature loads due to their proven chambering.

For temperatures up to +500 °C / +932 °F STAUFF has developed a special sealing system with metal seats. Despite the additional demands on compression, wear and corrosion under high temperatures, the leak rate of these ball valves can be compared with standard valves.

Ball Valves for Gas Applications

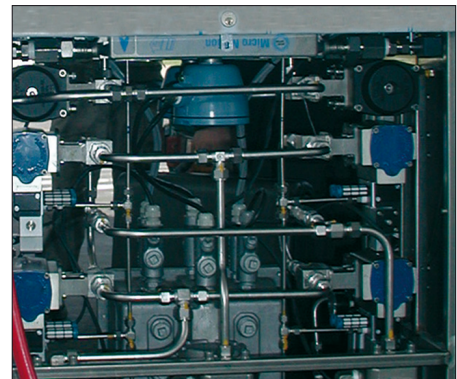
STAUFF ball valves are used for many gas applications, such as:

- General gas supply systems,
- Filling plants,
- compressor stations,
- gas stations,
- analysis equipment

The design follows the Pressure Equipment Directive 97/23/EC.

The ATEX Directive for hazardous location EX II 2G c will be proved in single test on demand.

The materials for body, ball and seals are dependant on the gas and application in consideration of the directives.



Ball valves with pneumatic actuator in gas stations.

Ball Valve Type	DN	PN (bar)	Approved Material Combination	Approved Material Combination for Hazardous Location EXII 2G c (ATEX)
BBV	6 - 25	16	Carbon or Stainless Steel / NBR (Buna-N®)	11aA / 44aA
FBV	32 - 50	16	Carbon or Stainless Steel / NBR (Buna-N®)	21 aA / 44aA
BBV	6 - 25	100	Carbon or Stainless Steel / NBR (Buna-N®)	11 aA / 44aA
BBV	6 - 25	500 / 315*	24HA / 44HA	21aA / 44aA
FBV	32 - 50	315*	24HA / 44HA	24aA / 44aA

* Pressure up to max. allowed nominal pressure of the ball valve

Further ball valves up to DN 200 with flange connector, as well as 3/2-way-selector ball valves, multi-way ball valves and ball valves for manifold mounting and cartridge ball valves are also available.

The requirements and tests are in accordance to DIN 3230 Part 5, test group PG1 or PG2, Material and test certificate DIN EN 10204-3.1, Certification to Pressure Equipment Directive 97/23/EC.

The leaking rate can be proved with a Helium leakage test device up to a leakage rate of 10^{-9} mbar x l/sec.

STAUFF recommends the use of the version with erosion protection ring in order to extend the lifetime of the seats look page 101.

Only if the most important parameters like pressure, medium, temperature, medium concentration and operation cycles are known the best or most suitable material combination and the most economical solution can be offered.

Except the general suggestions for the material combinations the chemical resistance and further directives are to be considered. For Fluids like oxygen, hydrogen, argon, helium and sour gas we request a consultation.

Sour gas application: For fluids with hydrogen sulphide (H₂S) – parts ball valves can be delivered in accordance to the NACE Standard MR0175.



Double block and bleed valve for sampling.



Filter station for the filtration of gases with STAUFF-3-way-selector ball valves for 250 bar / 3600 PSI and +200°C / +392 °F.

Gas stations:

For gas pumps both ball valves with floating ball and with trunnion ball are suitable. Most important for the design are the frequency of operation cycles in use with actuators. Assembling of actuators to ISO 5211 or direct mounting.

In case of maintenance the gas flow is diverted by a 3-way-selector valve combination allowing the filter elements to be changed. Due to the excellent KV-value this valve is the ideal switch over unit for use in high leak-tightness application.

Ball valves for analysis techniques and Sampling

Ball valves are deliverable as "double block and bleed valve". Part of this product range are the TALFIRE – ball valves. These ball valves meet the requirements of the TA-Luft (technical directive for clean air). They are used in applications with air pollution substances.

Ball Valves for Paints and Lacquers



Ball valve application in airless spraying device.

Ball valves for paints and lacquers must be resistant against the varying viscosities and dye particles in the fluid.

The sealing material is the determining factor to guarantee an optimal lifetime. The choice of the seals is depending on the required operating cycles and after consideration of the pressure differential.

In case of operating the ball valve without differential pressure, standard ball seats can be used.

To increase the lifetime we recommend a seat version with erosion protection ring. For a further increase of the lifetime and also a reduction of repair and maintenance time, a metal seat is the best solution.

The specified material combinations are suitable for most applications.

The chemical resistance to the used solvent has to be tested when selecting the ball valve.

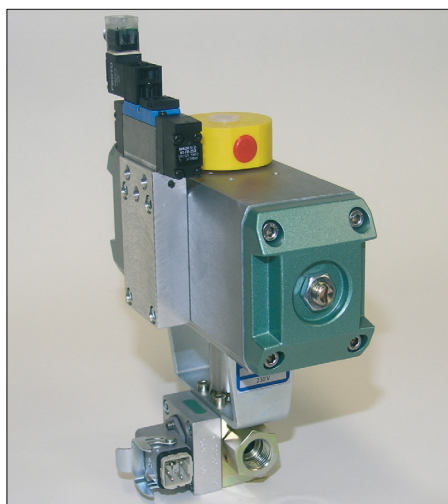
To maintain or repair the valve, it is necessary that the return and non-return lines in colour spraying plants can be blocked off.

Due to the opening of the bypass ball valve, an un-pressurised circulation has to be guaranteed.

The locking or opening of the bypass line is carried out manually, thereby incorrect operation is impossible.



Ball Valves for Isocyanates



Isocyanates react with humidity and develop crystalline particles. To avoid that the isocyanates get in contact with environmental humidity, the ball valves have to be completely leakproof.

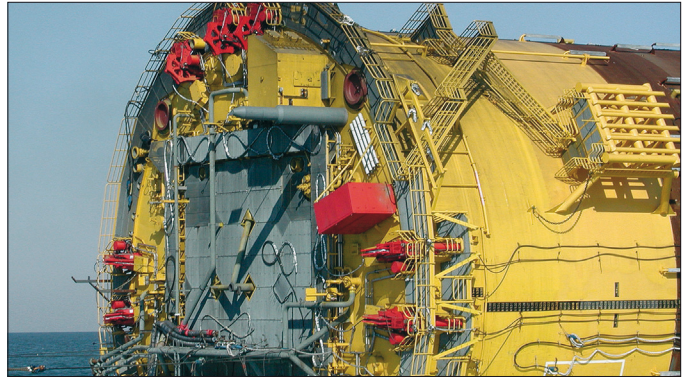
On the other hand the crystalline particles in the fluid mustn't damage the ball seats. Special seats are used because standard plastic seats can be damaged by crystalline particles.

With these sealing system from STAUFF a ball valve provides extended lifetime.

These valves are being used in the foaming systems and pasters. Ball valves are also available with heating devices and temperature sensors in order to keep the temperature regulated during the manufacturing process.

Equipped with actuators and limit switches STAUFF ball valves being operated in many instances by robots.

Ball Valves with Fire-Safe Approval



When handling flammable liquids safety must be a prime consideration. Great importance is therefore attributed to the design of "fire-safe" shut-off valves utilized in many industrial environments including:

This is most important for:

- Chemical Plants
- Petrochemical Plants
- Oil Drilling
- On-Shore and Off-Shore Installations
- Oil Refineries

When fire does break out, it is important that it does not spread through failures in pipe-work systems. Even under the most extreme conditions shut-off valves must provide:

- Secure Operation
- Reliable Sealing in shut-off position
- Reliable Sealing to the outside

Due to their quarter turn shut-off design, STAUFF ball valves provide a solution to meet these demands.

Metal seat edges at the ball seats guarantee the sealing function during and after contact with fire, even if the seals themselves are burnt.

In addition both housings and shafts are also sealed with heat resistant seats ensuring their continued operation.

The "fire-safe" test undergone by STAUFF ball valves subjected them to flames and a resulting temperature of +760 °C / +1400 °F where the ball valve is heated to a general temperature of min. +650 °C / +1202 °F.

The STAUFF "fire-safe" design ensured that after this burn period of 30 min. the valves remained operable and that a continued "emergency" sealing of the valve could be guaranteed.

The test conditions under which "fire-safe" requirements are specified are characterised in various international standards.

STAUFF ball valves of the BBV series have been tested successfully according to British Standard BS 6755 T.2, API 6 FA and ISO 10497. The tests were testified by the German TÜV Inspectorate.

At this time, certification as "fire-safe" relates to our BBV series with threaded connections and nominal sizes from DN 25 to DN 50 and the BBV series with flange connections and nominal sizes from DN 25 to DN 125 and within a nominal pressure range from 260 ... 420 bar / 3700 PSI ... PN 6000 PSI.

The material utilized for the soft seals in "fire-safe" valves remains dependant upon the required chemical resistance to suit the fluid, the application and operation conditions.

A wide variety of ball valve terminations are available from STAUFF to suit the individual applications or requirements and additionally other characteristics such as antistatic design can be incorporated within the STAUFF product.

Nomenclature Definitions

Nominal Pressure PN

The nominal pressure indicates the pressure rate of a hydraulic component and continuous dynamic application. The number is rounded up in order to comply with the internationally specified terms.

These nominal pressure values are internationally recognised and assist to appoint common component dimensions. For all ball valves conform to a design and test pressure 1.5 x PN according to DIN 3230 T5 and ISO 5108 for body. For ball seats we admit 1,1 x PN.

The nominal pressure specifies the admissible working overpressure at +20 °C / 68 °F. Please consider the pressure reduction at higher temperature.

Maximum Working Pressure P_{max}

P_{max} is the maximum working pressure of a component including pressure peaks for limited duration of dynamic application resp. the maximum working pressure which considers temperature reduction ratings.

Burst Pressure P_{Burst}

The safety factor for burst pressure tests is a minimum of 2.4 times the nominal pressure.

$$P_{Burst} = 2.4 \times PN$$

Nominal Diameter DN

The nominal diameter is a numeric dimension of mating parts without indication of outer tube diameter or thread size, for example flanges. The nominal diameters match approximately the clear diameter of the ball valves in mm. Reduced diameters are marked by STAUFF with for example DN25/32. That corresponds to the ball valve being DN 25 and the adapter being DN 32.

Leakage Rate

Leakage rate of ball valves with synthetic ball seats: DIN EN 12266 leakage rate A (No visually noticeable leakage during the duration of the test with fluid or air).

Standard Materials

Valve Body, Connections Adapters, Stem and Ball

Material Description	Standard	Temperature Range ¹	Applications
Free Cutting Steel 11SMn30 (formerly 9SMn28K)	1.0715 / DIN EN 10277-3 (SAE 1213)	-20°C ... +120°C -4°F ... +248°F	General oil hydraulics without special requirements on the material
Low Alloy Steel S355J2G3 (formerly St52-3)	1.0570 / DIN EN 10025	-40°C ... +120°C -40°F ... +248°F	General oil and water hydraulics as well as gas applications with special requirements to the yield stress
Stainless Steel X6CrNiMoTi17-12-2 X5CrNiMo17-12-2 X2CrNiMo17-13-2	DIN EN 10088 1.4571 (AISI 316 Ti) 1.4401 (AISI 316) 1.4404 (AISI 316 L)	-200°C ... +200°C -328°F ... +392°F	Special applications in the chemical and power industries with specific requirements on the material and corrosion protection

Ball Seats

Material Description	Trade Name	Temperature Range	Applications
Polyacetal POM	Delrin Hostaform C Ultraform	-30°C ... +100°C -86°F ... +212°F	High pressure and wear resistance, low water absorption, particularly suitable for hydraulic oils, other oils and water based hydraulic fluids
Polytetrafluorethylene PTFE	Teflon Hostflon Fluon	-200°C to +220°C ² -328°F ... +428°F ²	Excellent chemical resistance to almost all fluids, no water absorption, low surface friction. (Suitable for food FDA-US Food and Drug Administration) Higher characteristic compounds available.
Polyvinnylidenfluorid PVDF	Dyflor Kynar Solef	-40°C ... +120°C ² -40°F ... +302°F ²	Mechanical properties like Teflon, but higher rigidity and lower thermal stability, resistant to ketones and esters at higher temperatures
Polyetheretherketone PEEK	Arlon Victrex	-40°C ... +250°C -40°F ... +482°F	Good chemical resistance to many mediums, suitable for steam, high temperature resistance, high wearability
Cast iron GG25	0.60257 DIN 1651	-40°C ... +250°C -40°F ... +482°F	Applications for abrasive fluids

Stem and Adapter Sealing Materials

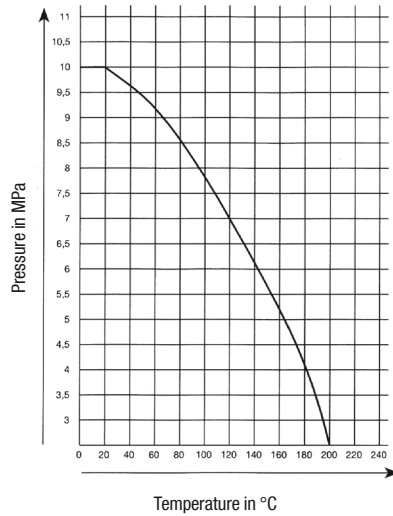
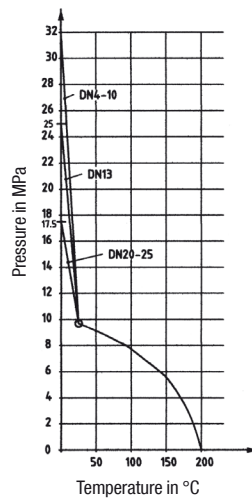
Material description	Trade Name	Temperature Range	Applications
Acrylonitrile Butadiene Rubber NBR	Buna N Perbunan Hycar Chemigum	-30°C ... +100°C -86°F ... +212°F	Good technical properties, therefore especially suitable for oils and gaseous mediums
Fluor Rubber FPM	Viton Fuorel Tecnoflon	-20°C ... +200°C -4°C ... +392°F	High chemical resistance to various mediums, in particular mineral oils, fuels and concentrated acids
Ethylene Propylene Diene Monomer Rubber EPDM	Buna AP Nordel	-50°C ... +130°C -58°C ... 266°F	Good ageing stability, low wear, especially suitable for actylene, brake fluids, hot water, superheated steam, cooling gases, low-flammable liquids based upon Phosphoric acid
Polytetrafluorethylene PTFE	Teflon Hostflon Fluon	-200°C ... +220°C ² -328°F ... +428°F ²	Excellent chemical resistance to almost all fluids, no water absorption, low surface friction. (Suitable for food FDA-US Food and Drug Administration) Higher characteristic compounds available.

¹ General temperature limits: A rating above the indicated limits is possible when the temperature reduction ratings are taken into consideration.

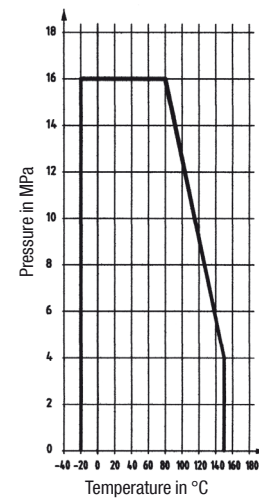
² Pressure / temperature curve must be observed.

Admissible Working Pressures

PTFE Ball Seats


 PTFE Ball Seats
Glass-Fibre Reinforced


PVDV Ball Seats



Surface Coatings

Zinc/Iron-Coating

Carbon steel products are supplied as standard with a high-quality zinc/iron-coating, which is a CrVI-free galvanic plated surface protection, corresponding to all demands according to the valid European regulations of the automobile industry, as well as the RoHS decree.

This surface protection also has a visual effect. It can be easily varnished to suit any product design, if required. The achieved corrosion protection is excellent and more effective than the protection of the yellow chrome-plating. The cathodic remote protective action prevents early occurring corrosions, that are due to handling or assembly damages.

As opposed to yellow plated surfaces zinc/iron-coated surfaces do not lose on corrosion protection with increasing thermal load from +80 ... +90°C / +176 ... +194°F. In the contrary, temperatures from approximately +100°C / +212°F increase the corrosion protection.

- Fe / ZnFe8 / Cn according to DIN 50979
- Approx. 96 hours resistance against white rust in the salt spray test to DIN EN ISO 9227
- Approx. 300 hours resistance against red rust in the salt spray test to DIN EN ISO 9227
- Free of hexavalent chromium Cr(VI)
- RoHS compliant according to 2002/95/EC (Restrictions of the Use of Hazardous Substances)
- ELV compliant according to 2000/53/EC (End of Life Vehicles Directive)

Besides the standard zinc/iron-coating, STAUFF can also supply the following surface coatings or surface treatments for the body materials:

Carbon Steel

- chemically nickel-plated
- varnished

Stainless Steel

- rotary or traction quality
- glass bead blasted
- electro polished
- ceramic finished

Aluminium

- anodised
- hard anodised

Please consult STAUFF for further information.

STAUFF Zinc/Iron-Coating

Approx. **96 hours** resistance against white rust
Approx. **300 hours** resistance against red rust
in the salt spray test to DIN EN ISO 9227


Yellow Zinc Plating

Corrosion clearly visible after **154 hours**
in the salt spray test to DIN EN ISO 9227


Phosphating

Corrosion clearly visible after **19.5 hours**
in the salt spray test to DIN EN ISO 9227



Determination of the Nominal Diameter

Using a Nomogram

This nomogram provides a guide for the determination of the nominal diameter (DN). We recommend to use the following flow rates as a basic guideline:

- Suction lines: 0,5 ... 0,8 m/sec (.1524 ft/sec)
- Return lines: 2,0 ... 4,0 m/sec (.61 ... 1.22 ft/sec)
- Pressure lines >10 MPa: 2,0 ... 4,0 m/sec (.61 ... 1.22 ft/sec)
- Pressure lines >50 MPa: 3,0 ... 12,0 m/sec (.91 ... 3.66 ft/sec)

Example 1

Velocity $v = 8$ m/sec (2.44 ft/sec)
Flow rate $Q = 150$ l/min (40 US GPM)

The straight line linking these two values on the outer scales intersects the nominal diameter DN 20 on the middle scale.

Example 2

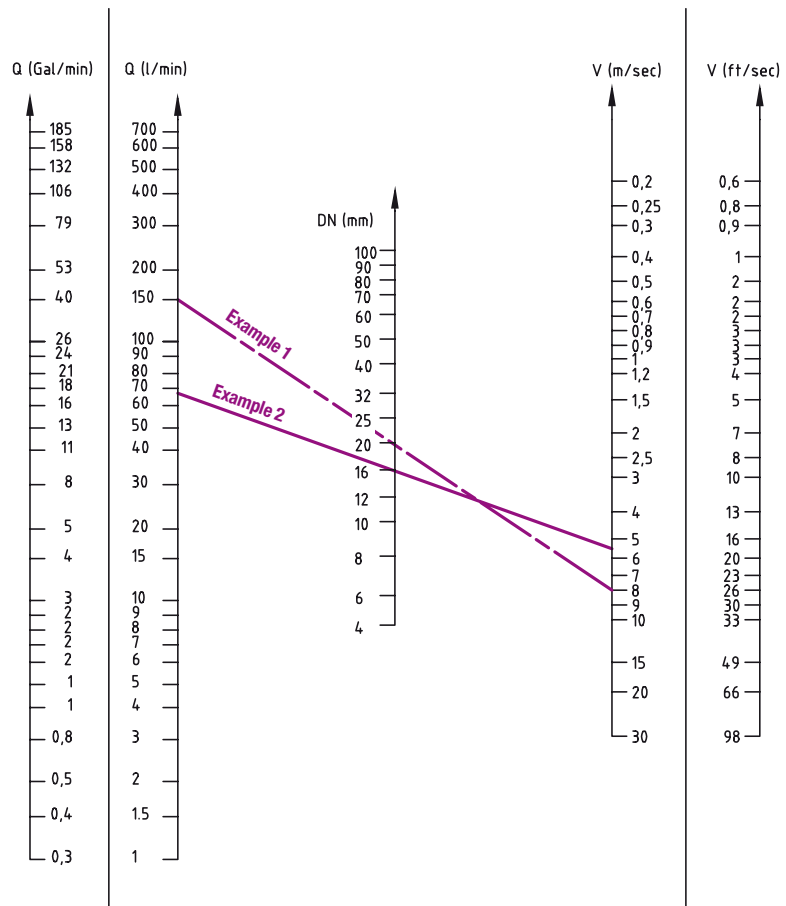
Velocity $v = 5,5$ m/sec (1.68 ft/sec)
Flow rate $Q = 66$ l/min (17 US GPM)

The straight line linking these two values on the outer scales intersects the nominal diameter DN 16 on the middle scale.

Please note:

No allowance is incorporated for the resistance of the pipes, elbows and valves, viscosity, the effect to temperature on viscosity and other factors.

Consult STAUFF for further information.



Determination of the Nominal Diameter

Using a List of Nominal Flow Rates

The indicated flow rates have been determined for ball valves in open position with water at a temperature of +15°C / +60°F.

K_v Coefficient

The nominal flow rate coefficient K_v , according to German standard VDI/VDE 2173 indicates the quantity of water in cubic meter per hour (m³/h) at

$$\Delta p = 1 \text{ bar} / 14.5 \text{ PSI and } 35 \text{ mm}^2/\text{s (cSt)} \\ \text{at } +5 \dots +30^\circ\text{C} / +41 \dots +86^\circ\text{C}.$$

C_v Coefficient

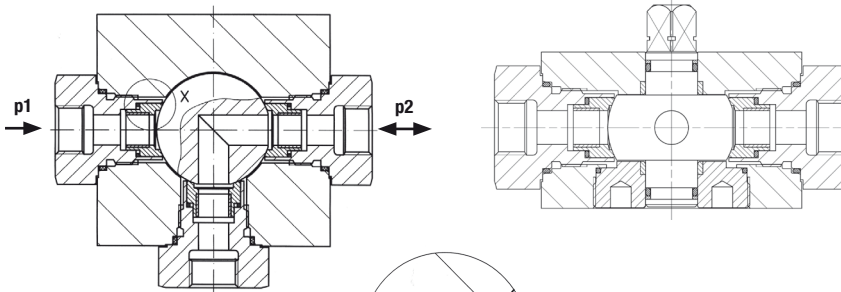
The C_v value (which is still common practice in USA) specifies how much US gallons of water flow through the valve per minute (US GPM) at

$$\Delta p = 1 \text{ bar} / 14.5 \text{ PSI at } +15^\circ\text{C} / +60^\circ\text{F}.$$

Consult STAUFF for further information.

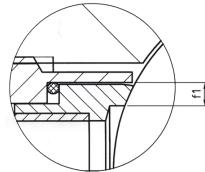
Nominal Size DN		K _v (m ³ /h)	C _v (US GPM)
(mm)	(in)		
15	1/2	19,4	22,6
20	3/4	45,6	53,0
25	1	71,5	83,1
32	1-1/4	105	122,1
40	1-1/2	170	197,7
50	2	275	319,8
65	2-1/2	507	589,5
80	3	905	1052,3
100	4	1414	1644,2
125	5	2362	2746,5
150	6	3694	4295,3

Multi-Way Ball Valves



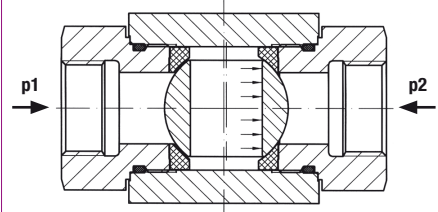
This valve has a trunnion ball.

The sealing element seals from the upstream side. The sealing is guaranteed under all pressure conditions. It is achieved by the sealing element being forced against the ball.



X3:1

Two-Way Ball Valves (Type LBV)

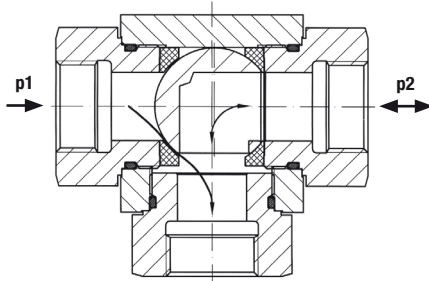


This valve has a floating ball.

The ball seats act as bearing seats for the ball. Sealing is achieved by the ball being pushed against the downstream seal due to the pressure p1 at .

Without pressure the sealing is guaranteed by the preloading of the sealing elements.

Three-Way Ball Valves (Type CBV)



The selector ball valve has 2 seats and a floating ball.

If the shut-off port is pressurised and p1 is higher than p2, then the ball is being forced against the opposite sealing element.

A gap forms and the ball valve is leaking.

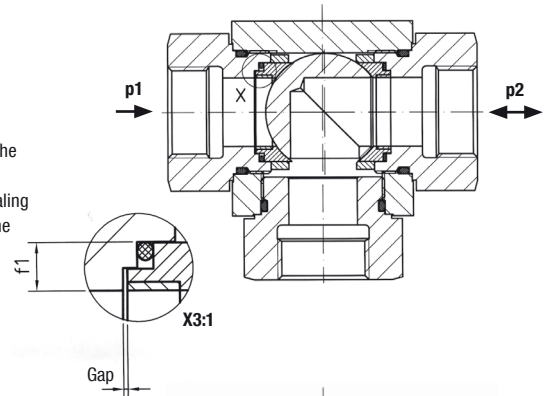
Three-Way Ball Valves (Type CBVS)

The selector ball valve has 2 front side sealing seats and a floating ball.

p1 > p2

Due to the forming of the ring surface „f1“ and the pressure (p1-p2) the left sealing element will be forced against the ball and consequently the sealing is achieved. The „floating“ ball moves against the right sealing surface - the ball valve remains sealed.

**Pressure inlet possible from all ports!
Must be operated without pressure!**

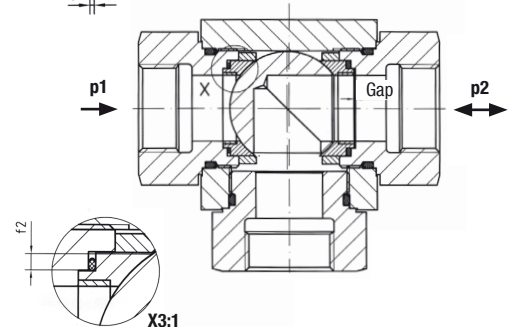


X3:1

p1 < p2

Due to the ring surface „f2“ and the pressure (p2-p1) the right sealing element will also be forced against the ball and consequently the sealing is achieved. The „floating“ ball moves against the left sealing surface - the ball valve remains sealed.

**Pressure inlet possible from all ports!
Must be operated without pressure!**



X3:1

For compressible and abrasive media special protected seats are utilised.

During the first part opening of the ball valve, standard plastic seats are located unprotected in the critical cross sectional area.

During gas applications and with all kinds of compressive media this narrowest cross section can result in a very high flow rate that cause erosion of the seats.

If media contain solids, for example paint, the abrasion risk in the first opening section is extremely high.

Ball valves with standard seats can quickly become inoperative.

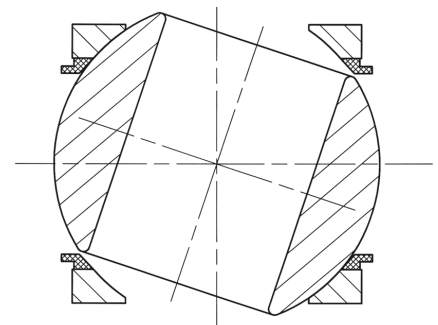
For this application, STAUFF has designed a sealing version with erosion protection ring. This ring is made of special material and keeps the high flow forces and the abrasive solids away from the plastic seals.

Tests and long term experience with this application have shown that ball valves with this sealing system provide substantially improved life times.

Times of non-use as well as maintenance and repair times are therefore reduced.

A further increase of the lifetime is possible by using metal seating elements.

Special Protected Seats



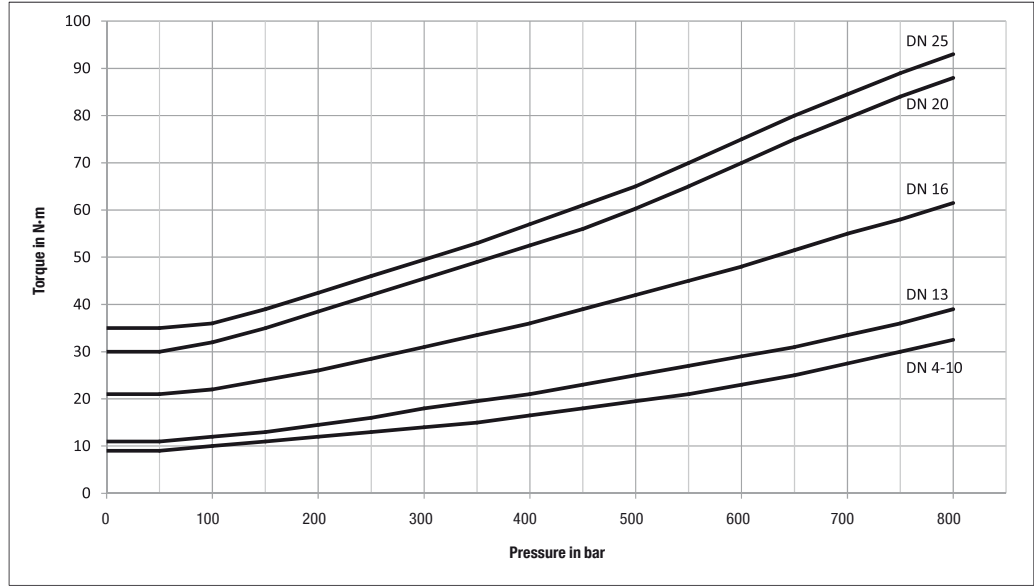
The ring is made of special material and protects the seats against erosion.

Torque Figures

Torque / Operation Pressure Curves

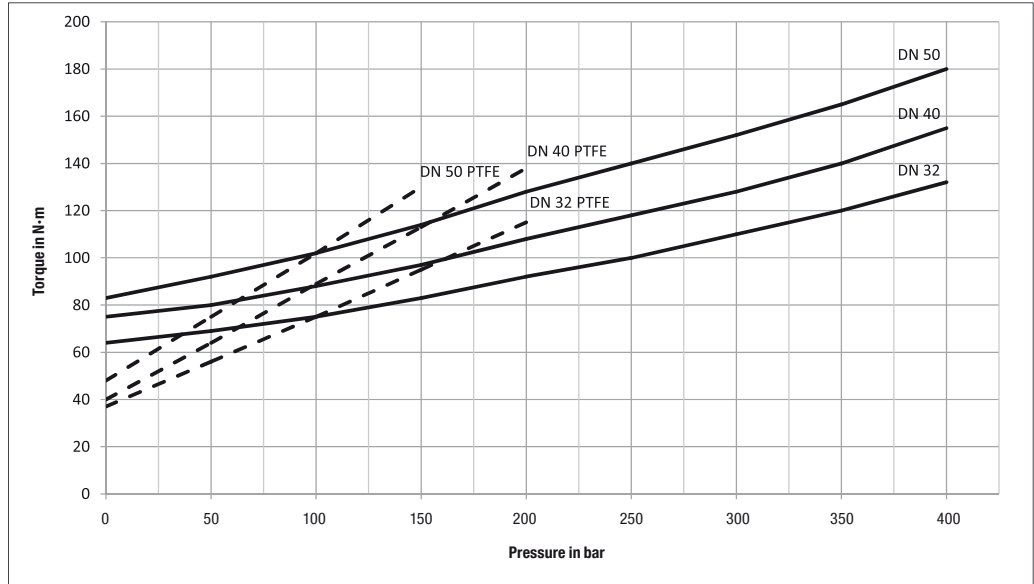
Operating torque
for ball valves with
POM seats

BBV
CBV
BBV22/23



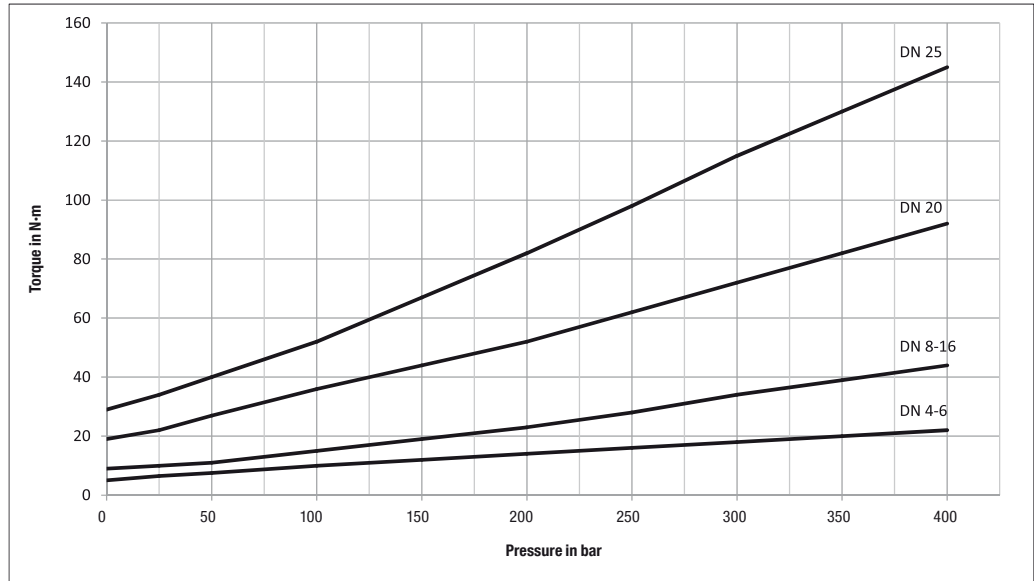
Operating torque
for ball valves with
Teflon or POM seats

FBV
FBV22/23



Operating torque
for ball valves with
POM seats

LBV
TBV
XBV



Pressure Equipment Directive CE-Marking of STAUFF Valves

Information about essential contents and consequences of the Pressure Equipment Directive (PED 97/23 EC) and the CE-marking for STAUFF valves

From 29th May 2002 the application of the Pressure Equipment Directive (PED 97/23 EC) is mandatory throughout in the European Community.

Responsibility

Manufacturers are obliged to ensure that products which are placed on the market in the European Community are designed and manufactured according to the regulations of the Pressure Equipment Directive.

The company is only allowed to purchase and use pressure equipment which corresponds to the regulations of the Pressure Equipment Directive.

Procedure

Valves have to be classified in categories (category I to III). Category I relates to the lowest, category III to the highest, hazard category.

The classification is carried out under consideration of

- diameter
- pressure
- medium-hazardous or harmless gases or liquids

Group 1 comprises hazardous mediums

- explosive
- extremely flammable
- highly flammable
- flammable (where the maximum allowable temperature is above flashpoint)
- very toxic
- toxic
- oxidising

Group 2 comprises all harmless mediums which are not listed in Group 1 such as hydraulic oil, water, air and oxygen.

Consequences

No CE-marking for:

- All valves < DN200 for harmless liquids of Group 2, such as hydraulic oil, water
- All valves up to and including DN 25 for all mediums in Group 1 and 2 (gaseous and liquid)

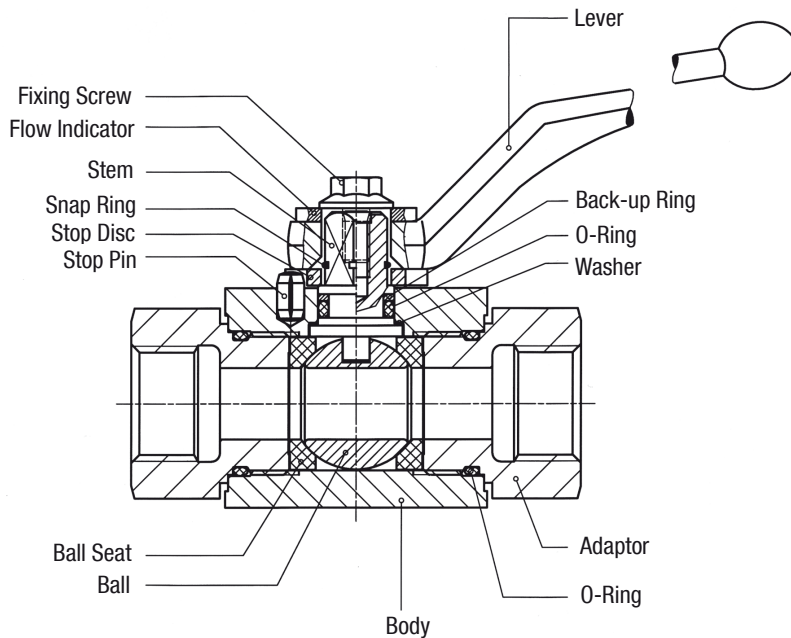
CE-marking for valves ≥ DN 32:

- With regards to valves of category I and II, STAUFF prepares a declaration of conformity.
- With regards to valves of category III an external conformity examination is necessary.
- The resulting costs will be included in our quotation.

Concerning valves of the categories I to III, it has to be observed that:

- a certification of conformity has to be enclosed with each delivery.
- operating instructions have to be enclosed with each packing unity.
- the traceability of products must be guaranteed.

Storing and Assembling Instructions



The assembly of the lever and the flow indicator has to be carried out the way that the groove of the stem and the groove of the indicator are identical in direction.

STAUFF delivers ball valves of first-class quality. This is guaranteed by the utmost care as far as construction and production of our products are concerned. All STAUFF products must pass our rigid quality assurance system ensuring the high standard of quality. As a matter of course, quality approvals can be supplied on request.

In order to guarantee the proper function of our products, the following criteria must be adhered to (non-observance can lead to expiration of this guarantee):

1. After receipt of order, the goods must be kept from moisture, erosion and thermal shock.

2. Ball valves are being delivered in open position. Store in a dry and clean place. Do not remove protective dust caps until final installation.

3. Pipe systems must be flushed before installing ball valves (dirt and other residues can damage seals).

4. It is possible to change the switching direction from our standard „clockwise“ to „counter clockwise“ by reversing the stop disc (see illustration).

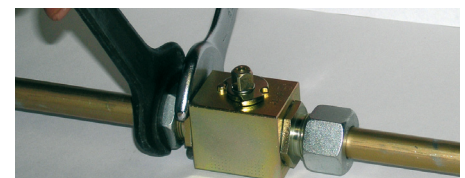
5. When mounting pipes or fittings to the ball valve, the valve connectors must be held in place at the hexagon with a suitable tool (open end wrench) to prevent expanding the end connectors.

6. Pressure test max. with 1,1 x PN with closed ball valve; 1,5 x PN in half opened position.

Flanged ball valves and ball valves in larger nominal diameters must be carefully aligned with pipe to prevent line stress. When welding ball valves into the pipe system, the temperature at the body must not exceed +200°C / +392°C.

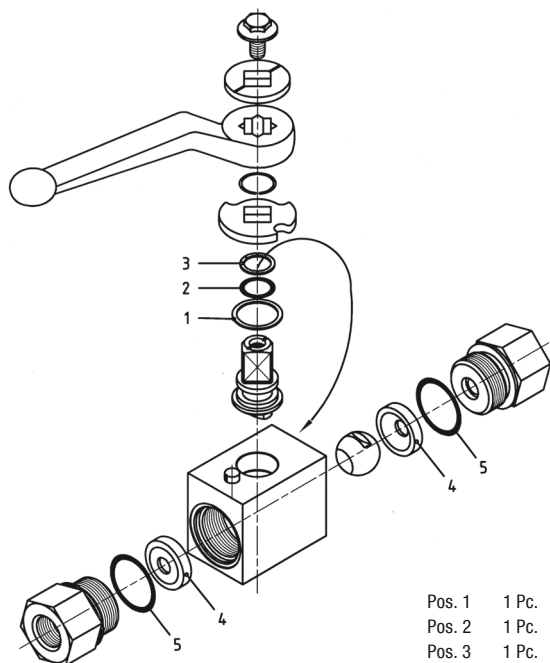
When bleeding a pipe system, the ball valve must be opened 45° to assure complete drainage.

In case of a defect please contact the factory prior to disassembly of our ball valves.



Seal Kits

Seal Kit for Two/Three-Way Block Body Valves



- Pos. 1 1 Pc. Thrust washer
- Pos. 2 1 Pc. O-ring for stem
- Pos. 3 1 Pc. Back-up ring for stem
- Pos. 4 2 Pcs. Ball seat for ball
- Pos. 5 2 Pcs. O-ring for adapter

Assembly Instructions

Notice: The change of seals should only be undertaken by experienced and qualified experts. We recommend that seals are only replaced at STAUFF or by one of our authorized distributors, so that the quality of repair can be guaranteed.

1. Dismantlement: Release any remaining fluid from the valve by first placing the ball in the HALF OPEN position and then to the OPEN position. Unscrew both adapters (anti-clockwise). Remove seals (note order and direction that these are in). The ball can only be removed when the valve is in the CLOSED position. Disassemble the stem by pressing it into the body of the valve. Remove all O-rings from the stem with suitable tools (e.g. small screw driver). Remove the thrust washer (on the stem collar) from the stem.

2. Preparation: Prior to replacing seals ensure that all components are clean and free of any contamination. All seal elements and O-rings as well as the areas of the valves that will be in contact with the seals have to be greased slightly with Vaseline.

3. Pre-Assembly: Mount the thrust washer (Pos.1) onto the stem collar. Replace O-rings (Pos.2+5) (using suitable tools) onto the stem and onto each adapter. Ensure that O-rings are not damaged on keen edges or overstretched, (e.g. by covering screw threads resp. of the shaft square by using suitable tools, alternatively by using a thin and soft foil).

Back-up rings (Pos.3) are located above the stem O-ring (Pos.2), e.g. on the pressure less side. Ensure that the back-up ring is located in the groove to avoid any damages by assembling the stem to the body.

4. Assembly: Reassemble the stem to the body by pressing and turning at the same time, and then align the body axially to the ball operating claw.

Then put the ball in and centre it. Turn the shaft 90° (CLOSED position) in order to retain the ball within the body. Place the new seals into the body ensuring that the concave areas face the ball. Gently screw the adapters into the body and make sure that the O-ring will not be damaged.

Tighten to the prescribed torque settings as indicated below:

- DN4-6: 48 Nm
- DN10: 90 Nm
- DN13: 110 Nm
- DN16: 110 Nm
- DN20: 220 Nm
- DN25: 250 Nm

Place stop disc over the shaft square ensuring that the valve closes when turned to the right and secure with a snap ring. Assemble handle or actuator.

5. Test: Test to ensure that the valve can be opened and closed easily. We recommend that the valve is tested with air at 0,6 MPa and under working pressure with a compatible liquid, max. 1,1 x PN in closed position of the ball. If water is used for testing ensure after the test procedure has been carried out that all water is removed from the valve. This is best achieved by blowing through the valve with air, whilst the valve is in a half open position. Treat with an anti-corrosion treatment.

Store the valve in the OPEN position.

Order Codes for Seal Kit

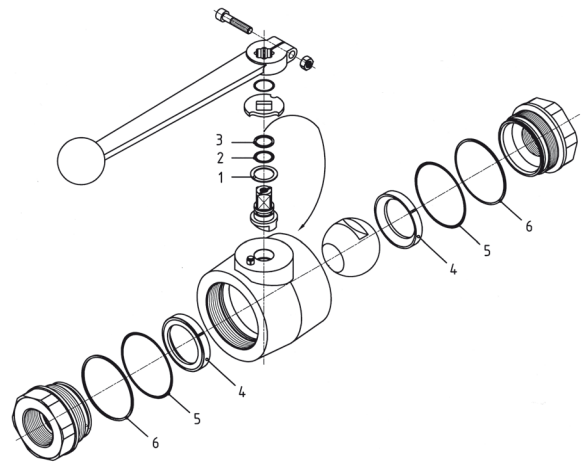
Ordering Guide for Block Body Ball Valves ending in ...01M (Delrin/Viton seat/seal combination)

Threaded and SAE Flange Connections Types BBV and CBV

STAUFF Size	Order Codes
04	BBVS/K047101M
06	BBVS/K067101M
08	BBVS/K087101M
12	BBVS/K124501M
16	BBVS/K164501M

Direct Mount Flange Connections Types BBV27/29 and BBVF

STAUFF Size	Order Codes
24	BBVS/K242701M
32	BBVS/K322701M
48	BBVS/K482701M
60	BBVS/K602701M



- Pos. 1 1 Pc. Thrust washer
- Pos. 2 1 Pc. O-ring for stem
- Pos. 3 1 Pc. Back-up ring for stem
- Pos. 4 2 Pcs. Ball seat for ball
- Pos. 5 2 Pcs. O-ring for adapter
- Pos. 6 2 Pcs. Back-up ring for adapter

Assembly Instructions

Note: The change of seals should only be undertaken by experienced and qualified experts. We recommend that seals are only replaced at STAUFF or by one of our authorized distributors to guarantee the quality of repair.

1. Dismantlement: Release any remaining fluid from the valve by first placing the ball in the HALF OPEN and then to the OPEN position. Unscrew both adapters (anti-clockwise). Remove seals (note the order and direction that these are in). The ball can only be removed when the valve is in CLOSED position. Disassemble the stem by pressing it into the body of the valve. Remove all O-rings from the stem with suitable tools (e.g. small screw driver). Remove the thrust washer (on the stem collar) from the stem.

2. Preparation: Prior to replacing seals ensure that all components are clean and free of any contamination. Slightly grease all seals and O-rings as well as the areas of the valves that will be in contact with the seals with Vaseline.

3. Pre-Assembly: Mount the thrust washer (Pos.1) onto the stem collar. Mount o-ring (Pos.2) and back-up ring (Pos.3) carefully onto the stem using suitable tools and avoid damages through sharp edges or overstretching (e.g. by covering screw threads resp. of the shaft square by using suitable tools, alternatively by using a thin and soft foil). Mount the stem back-up ring (Pos.3) on top of the stem o-ring (Pos.2), e.g. on the pressure less side. Ensure that the back-up ring is located in the groove to avoid any damages by assembling the stem to the body. Mounting of the endless back-up ring to the adapter.

Mount the back-up ring (Pos.6) carefully onto the adapter by using a rounded tool (no sharp edges), but ensure to stretch it as little and constantly as possible. After a short time (approx. 30 to 60 sec.) the back-up ring returns to its original form and size. Push the back-up ring towards the threads and mount the O-ring (Pos.5).

4. Assembly: Reassemble the stem to the body by pressing and turning at the same time, and then align the ball operating claw axially to the body. Insert the ball and centre it. Turn the shaft 90° (CLOSED position) in order to retain the ball within the body. Place the new seals into the body ensuring that the concave areas face the ball. Gently screw the adapters into the body and make sure that the O-ring will not be damaged.

Tighten to the prescribed torque settings as indicated below:

DN32-DN50: 800Nm

Place stop disc over the stem square ensuring that the valve closes when turned to the right and secure with the snap ring. Assemble handle or actuator.

5. Test: Check that the valve can be opened and closed easily. We recommend that the valve is tested with air at 0,6 MPa and under working pressure with a compatible liquid (e.g. water), max. 1,1 x PN in closed position of the ball. Afterwards all the fluid has to be removed again from the valve. This can be achieved by blowing air through the valve, whilst in HALF OPEN position. Let completely dry and treat with an anti-corrosive agent, if necessary.

Store the valve in the OPEN position.

Please consult STAUFF for details on the recommended assembling tool for back-up ring assembly on adapter.

Order Codes for Seal Kit

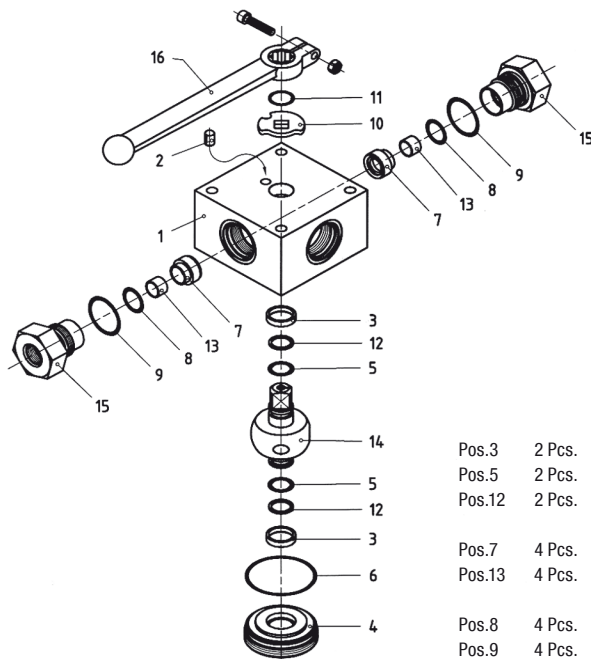
Ordering Guide for Two-Way Forged Body Ball Valves ending in ...01M (Delrin/Viton seat/seal combination)

**Threaded and SAE Flange Connections
Types FBV**

STAUFF Size	Order Codes
20	FBVS/K204501M
24	FBVS/K244501M
32	FBVS/K324501M

Seal Kits

Seal Kit for Multi-Way Block Body Valves



- Pos.3 2 Pcs. Bearing
- Pos.5 2 Pcs. O-ring for trunnion
- Pos.12 2 Pcs. back-up ring for O-ring on trunnion
- Pos.7 4 Pcs. Ball seats
- Pos.13 4 Pcs. Mounting tube for ball seat
- Pos.8 4 Pcs. O-ring for ball seat
- Pos.9 4 Pcs. O-ring for adapter
- Pos.6 1 Pc. O-ring for cap

Assembly Instructions

Notice: The change of seals should only be undertaken by experienced and qualified experts. We recommend that seals are only replaced at STAUFF or by one of our authorized distributors, so that the quality of repair can be guaranteed.

1. Dismantlement: In order to release the remaining pressure, carry out 1x reciprocating movement.

Disassemble the shaft handle (Pos.16). Unscrew all adapters (Pos.15) anti-clockwise. Remove seals (Pos.7). Unscrew cap (Pos.4) at body bottom with suitable tools anti-clockwise. Remove trunnions (Pos.14) and bearing shells (Pos.3). Remove all O-rings and back-up rings from trunnion resp. adapters and cap with suitable tools (for example with a small screw driver).

2. Preparation: Prior to replacing seals ensure that all components are clean and free of any contamination. Grease slightly with Vaseline all sealing elements and O-rings as well as the areas of the valves that will be in contact with the seals.

3. Pre-Assembly: Assemble O-rings (Pos.5) and back-up rings (Pos.12) in the grooves of the trunnion, back-up rings outwards to the pressure end.

Mount carefully O-rings on to the (Pos.9) adapters (Pos.15) by using suitable tools (at DN20 u. -25).

Attention: Ensure that O-rings are not damaged on keen edges or overstretched, (for example by covering screw threads resp. of the shaft square by using suitable tools, alternatively by using a thin and soft foil).

At DN4 to DN16: Place mounting tubes (Pos.13) in the provided bore of the seal elements (Pos.7), resp. at DN20 and DN25: place seal element in the sleeve (no description in this figure), spherical side directed to the exterior.

Push O-ring for sealing element (Pos.8) on to the sealing element (Pos.7), (resp. at DN20 and DN25 push on to sleeve) and place together in adapter.

Pre-assemble O-ring (Pos.6) on to the cap (Pos.4). (notice: ensure that there cannot occur any damages!).

4. Assembly: First assemble the bearing shells (bushing) (=Pos.3) in the body (Pos.1) and cap (Pos.4) so that the bevel shows towards the ball valve center and thus it can be used as chamfer for the O-ring (and back-up ring) of the trunnion.

Notice: Ensure that the back-up rings lie close to each other in the groove so that during the assembly process to the body and cap they are not damaged.

Assemble the shaft end of the trunnion (shaft square shows towards exterior) to the cap (Pos.4) by pressing and turning at the same time.

Order Codes for Seal Kit

Ordering Guide for Block Body Ball Valves ending in ...01M (Delrin/Viton seat/seal combination)

Threaded Connections Types LBV / TBV / XBV

STAUFF Size	Order Codes
04	XBVS/K047101M
06	XBVS/K067101M
08	XBVS/K085801M
12	XBVS/K124501M
16	XBVS/K164501M
20	XBVS/K164501M
24	XBVS/K164501M

DN4 to DN16: place O-ring for cap (Pos.6) in the body.

Push the trunnion (together with cap) in the body, until the cap thread touches the body thread, afterwards screw in the cap and tighten to the prescribed torque. (see table).

Gently screw in the pre-assembled adapters into the body and ensure that the O-ring is not damaged. Tighten the adapters with the prescribed torque.

Replace stop disc (Pos.10) over the shaft square so that the desired operation function is achieved, secure with snap ring (Pos.11). Assemble the handle (Pos.16) or the actuator (after it had been tested).

5. Test: Test to ensure that the valve can be opened and closed easily. We recommend that the valve is tested with 6 bar air and under working pressure with a compatible liquid, max. 1,1 x PN. If water is used for testing ensure the after the test procedure has been carried out that all water is removed from the valve.

This is best achieved by blowing air through the valve, whilst the valve is in a half open position. Treat with anti-corrosion treatment.

Store the valve in the „OPEN“ or „CLOSED“ position, resp. end position.

Tightening Torques of Adaptors and Endcaps

Nominal Size	Adapter Tightening Torque in N-m	Thread	Endcap Tightening Torque in N-m	Thread
DN 4-6	40	M18 x 1,5	120 ... 140	M38 x 1,5
DN 8-10	70	M22 x 1,5	140 ... 160	M45 x 1,5
DN 13-16	110	M30 x 1,5	320 ... 350	M60 x 1,5
DN 20	180	M38 x 1,5	550 ... 600	M80 x 2
DN 25 (-32, -40)	250	M45 x 1,5	650 ... 700	M92 x 3

