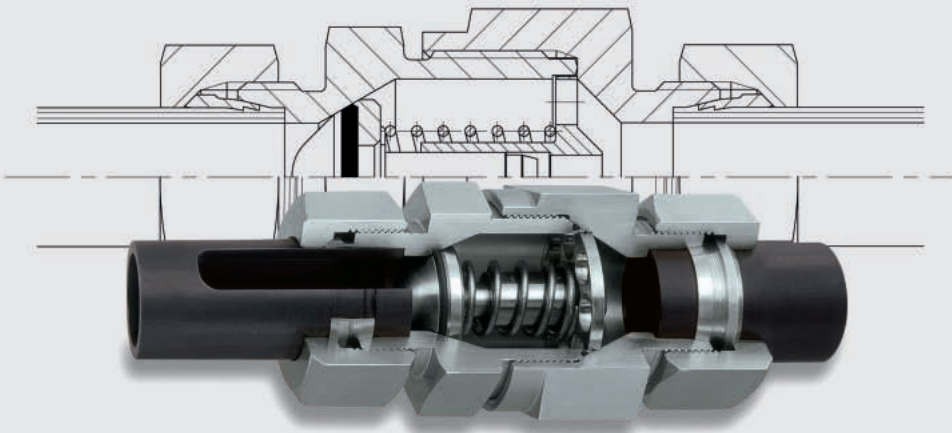


## Hydraulic Valves





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Non-return valves

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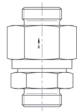
Non-return valves

RHD

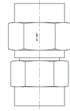
RHDI

RHV

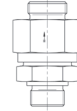
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Non-return valve plug-in  
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Inner valve-part installation  
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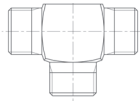
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Shuttle valves with ball seat

WV



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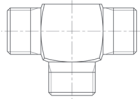
Function description  
for shuttle valves with soft  
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Shuttle valves  
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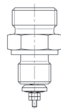
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Function description  
Line-break protection  
devices

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Line-break protection  
devices



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## Product Information Hydraulic Valves

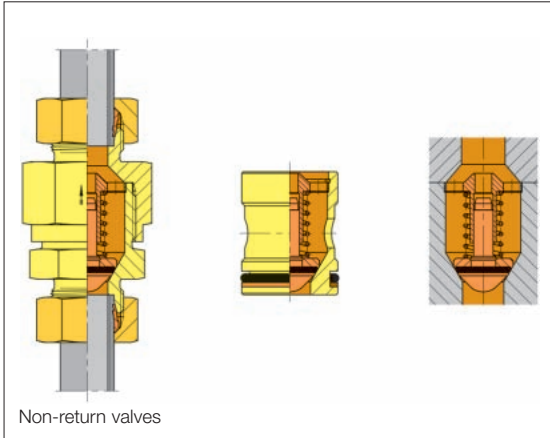
A logical addition to the broad range of the tube couplings are VOSS hydraulic valves for simple functional processes in hydraulic control circuits;

- Non-return valves for line and block installation
- Intelligent couplings with throttle functions
- Shuttle valves with a ball seat and soft seal
- Line-break protection devices
- Special valves

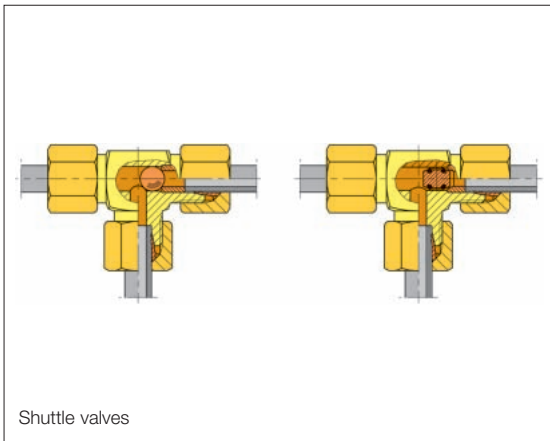
The following valves provide an overview of the common valve types and sizes we keep in stock for you.

We will be happy to advise you on modifications, additional functional details or special customer-related developments.

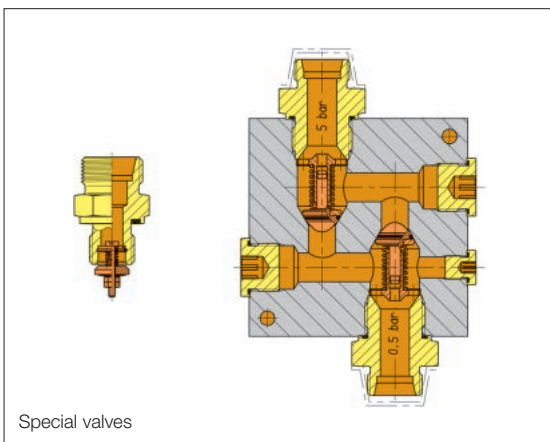
Additional VOSS valves are available on request.



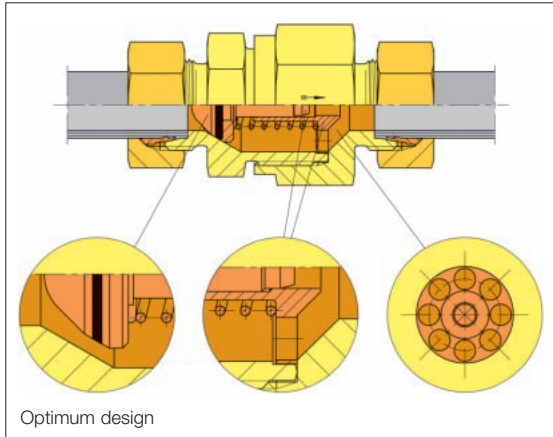
Non-return valves



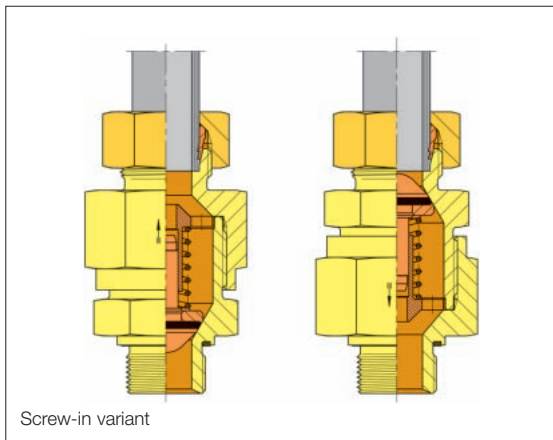
Shuttle valves



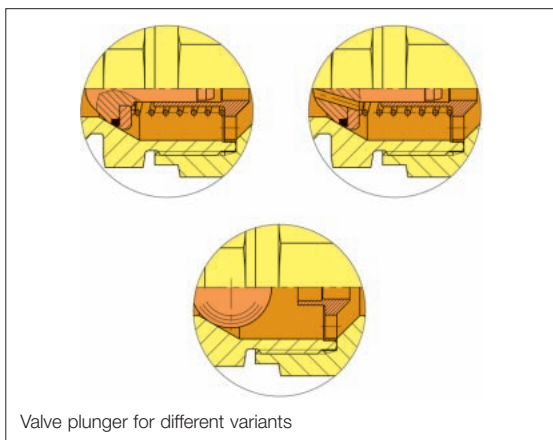
Special valves



Optimum design



Screw-in variant



Valve plunger for different variants

## Function description Non-return valves

VOSS non-return valves are available in the following design variants:

- Line non-return valves with tube coupling on both ends
- Screw-in non-return valves with metric fine thread or Whitworth pipe thread and sealed with profile seal
- Non-return valve plug-in cartridges
- Inner valve-part installation kit

Non-return valves are also used as intake or pre-loading valves depending on the opening pressure.

- Sealing is carried out by a spring-loaded taper with a chambered soft seal
- Stroke limitation and damping pin on taper reduce wear
- With screw-in non-return valves, flow direction from/to threaded stud
- Especially low-resistance flow due to shape of inner parts

### Opening pressures

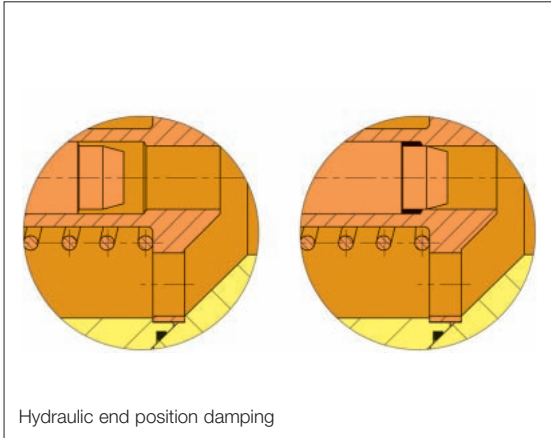
- The opening pressure is 1 bar in the standard design.
- Special opening pressures are listed in the following table for valves with an 2S cutting ring and an ES-4 cutting ring

Table of special opening pressures

	bar	Key No.:	
		2S	ES-4
Special opening pressure	0.2	-20	-30
Special opening pressure	0.5	-19	-29
Special opening pressure	1.5	-21	-31
Special opening pressure	2	-18	-28
Special opening pressure	2.5	-17	-27
Special opening pressure	3	-16	-26
Special opening pressure	4	-14	-24
Special opening pressure	4.5	-13	-23
Special opening pressure	5	-12	-22
Special opening pressure	6	-11	-25

With special opening pressures, the digits 9 and 10 of the Order No. (07 with 2S cutting ring and 09 with ES-4 cutting ring) are replaced with the corresponding Key No. in accordance with the table.

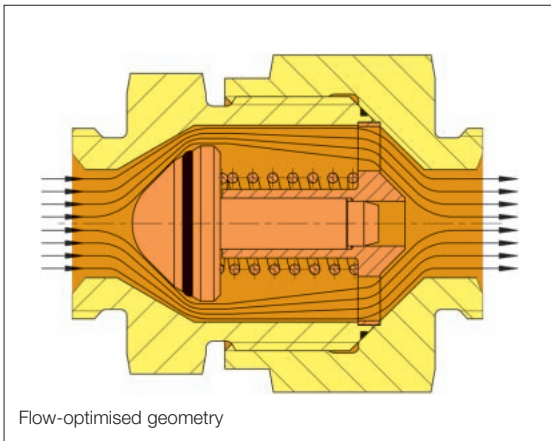
Ordering example: Non-return valve 0 6 00 01 20 07 with 6 bar opening pressure 0 6 00 01 20 11



The valves can always be realised with opening pressures (e.g. 0.1 bar) or even without springs as intake valves. With opening pressures of less than 0.5 bar, a vertical installation position with an upward flow direction is recommended (to avoid friction forces and ensure a centred sealing seat). However, then the plunger weight affects the opening pressure.

Opening-pressure tolerance  $\pm 20\%$

Valves under 0.2 bar:  
no tolerance specification possible  
(too many influencing factors).

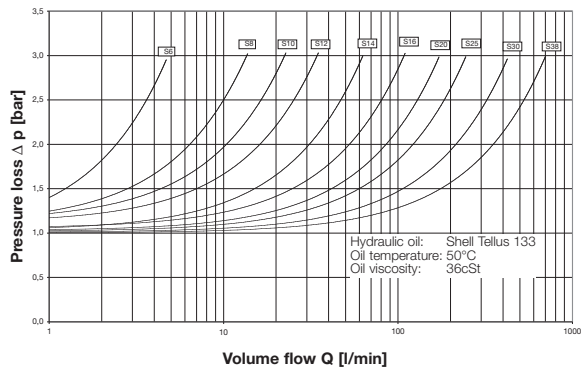
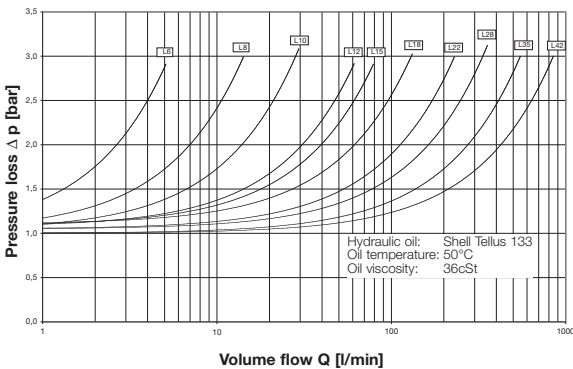


### Maximum opening pressure

Tube OD	max. opening pressure bar	Tube OD	max. opening pressure bar
L 6 – L 28	6	S 6 – S 30	6
L 35	5	S 38	5
L 42	2		

Pressure loss curves: Non-return valves, opening pressure 1 bar, L series  
VOSS Art. No.: 0 6 00 xx xx xx - 0 6 04 xx xx xx

Pressure loss curves: Non-return valves, opening pressure 1 bar, S series  
VOSS Art. No.: 0 6 00 xx xx xx - 0 6 04 xx xx xx

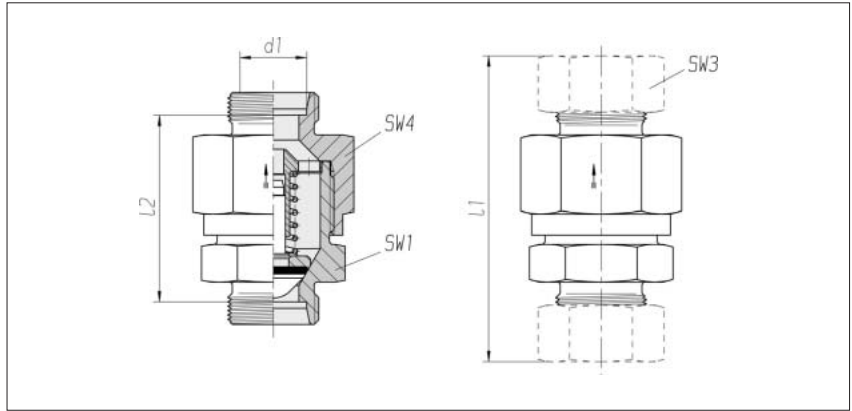


Flow resistances

## Non-return valves

Tube coupling on both ends  
with 2S cutting ring

Opening pressure 1 bar  
(standard design)



Series	Pressure*	SW1	SW3	SW4	l1** approx.	l2	kg/100 approx.	Order No. Single component	Order No. ***
L 6	PB 250	17	14	17	58	29	4.4	0 6 00 01 20 81****	0 6 00 01 20 XX
L 8	PB 250	19	17	19	59	30	5.5	0 6 00 02 20 81	0 6 00 02 20 XX
L 10	PB 250	22	19	24	69.5	40.5	9.8	0 6 00 03 20 81	0 6 00 03 20 XX
L 12	PB 250	27	22	30	72.5	43.5	16.5	0 6 00 04 20 81	0 6 00 04 20 XX
L 15	PB 250	30	27	32	77.5	47.5	20.5	0 6 00 05 20 81	0 6 00 05 20 XX
L 18	PB 160	36	32	36	83.5	51.5	29.0	0 6 00 06 20 81	0 6 00 06 20 XX
L 22	PB 160	41	36	46	93.5	61.5	49.5	0 6 00 07 20 81	0 6 00 07 20 XX
L 28	PB 100	50	41	55	103	70	78.4	0 6 00 08 20 81	0 6 00 08 20 XX
L 35	PB 100	60	50	65	117.5	74.5	122.7	0 6 00 09 20 81	0 6 00 09 20 XX
L 42	PB 100	65	60	75	122.5	77.5	162.6	0 6 00 10 20 81	0 6 00 10 20 XX
S 6	PB 630	19	17	19	63.5	34.5	6.6	0 6 00 11 20 81	0 6 00 11 20 XX
S 8	PB 630	19	19	19	63.5	34.5	6.8	0 6 00 12 20 81	0 6 00 12 20 XX
S 10	PB 630	22	22	24	72.5	40.5	11.5	0 6 00 13 20 81	0 6 00 13 20 XX
S 12	PB 630	24	24	27	74.5	42.5	14.5	0 6 00 14 20 81	0 6 00 14 20 XX
S 14	PB 630	27	27	32	82.5	47.5	20.9	0 6 00 15 20 81	0 6 00 15 20 XX
S 16	PB 400	32	30	36	86.5	50.5	27.8	0 6 00 16 20 81	0 6 00 16 20 XX
S 20	PB 400	41	36	46	97.5	54.5	49.5	0 6 00 17 20 81	0 6 00 17 20 XX
S 25	PB 400	46	46	50	106.5	58.5	62.7	0 6 00 18 20 81	0 6 00 18 20 XX
S 30	PB 250	55	50	60	122	69	107.8	0 6 00 19 20 81	0 6 00 19 20 XX
S 38	PB 250	65	60	70	136.5	75.5	161.3	0 6 00 20 20 81	0 6 00 20 20 XX

Supplementary to Order No. for complete fitting tube connection	Supplementary to Order No.
2S	07
ES-4	09
BV-10	Refer to the front page

\* Test pressure PP = 1.5 x table value

\*\* Apply to complete fittings with 2S or ES-4 tube connection components.  
For BV-10 Refer to the front page.

\*\*\* With union nut and 2S, ES-4 or BV-10 tube connection components

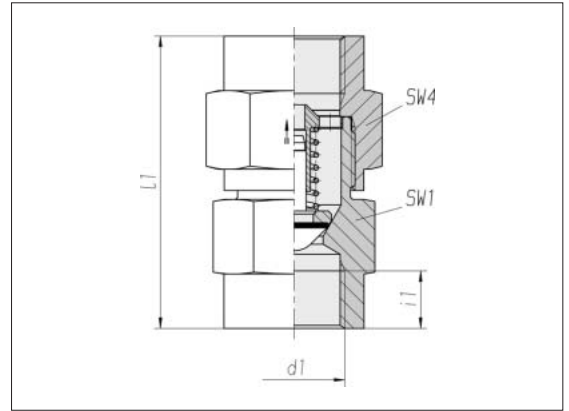
\*\*\*\* Sample product code, see: RHD06LOMD



## Non-return valves

Both sides fitted with inner threads (in inch)

Opening pressure 1 bar (standard design)



Series	Pressure*	d1	SW1	SW4	l1	i1	kg/100 approx.	Order No.
L 6	PB 250	G 1/8 A	19	19	50.5	8	10.4	0 6 70 25 20 00**
L 6	PB 250	G 1/4 A	19	19	55	12	11.7	0 6 70 26 20 00
L 10	PB 250	G 3/8 A	24	27	68.5	12	21.0	0 6 70 27 20 00
L 15	PB 250	G 1/2 A	32	36	74	14	35.5	0 6 70 28 20 00
L 18	PB 160	G 3/4 A	41	46	84	16	80.7	0 6 70 29 20 00
L 22	PB 160	G 1 A	46	50	96.5	18	89.2	0 6 70 30 20 00
L 28	PB 100	G 1 1/4 A	60	60	110	20	189.0	0 6 70 31 20 00
L 35	PB 100	G 1 1/2 A	65	70	119	22	237.6	0 6 70 32 20 00

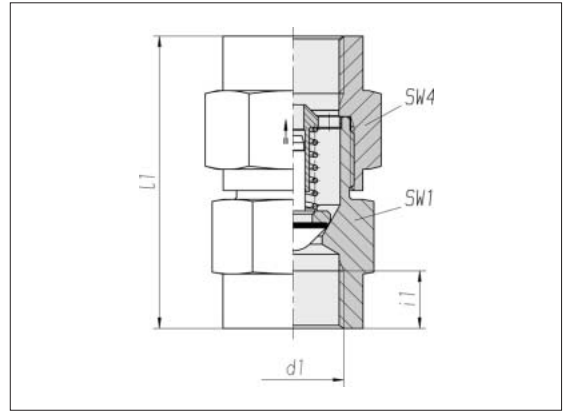
\* Test pressure PP = 1.5 x table value

\*\* Sample product code, see: RHD1/8

## Non-return valves

Both sides fitted with UNF inner thread according to SAE J 514 and ISO 11926-1

Opening pressure 1 bar (standard design)



Series Tube OD	Pressure*	d1	SW1	SW4	l1	i1	kg/100 approx.	Order No.
S 6	PB 630	7/16-20 UNF	19	19	57.5	4	11.5	0 6 70 35 20 00
S 8	PB 630	1/ 2-20 UNF	19	19	57.5	5	10.1	0 6 70 36 20 00
S 10	PB 630	9/16-18 UNF	22	24	68	7	17.4	0 6 70 37 20 00
S 12	PB 630	3/ 4-16 UNF	27	27	74.5	8	25.6	0 6 70 38 20 00
S 16	PB 400	7/ 8-14 UNF	32	36	80	12	44.0	0 6 70 39 20 00
S 20	PB 400	1 1/16-12 UN	41	46	91.5	16	79.8	0 6 70 40 20 00
S 25	PB 400	1 5/16-12 UN	46	50	98	20	93.0	0 6 70 41 20 00
S 30	PB 250	1 5/ 8-12 UN	55	60	104	25	153.8	0 6 70 42 20 00
S 38	PB 250	1 7/ 8-12 UN	65	70	117	32	221.4	0 6 70 44 20 00

\* Test pressure PP = 1.5 x table value

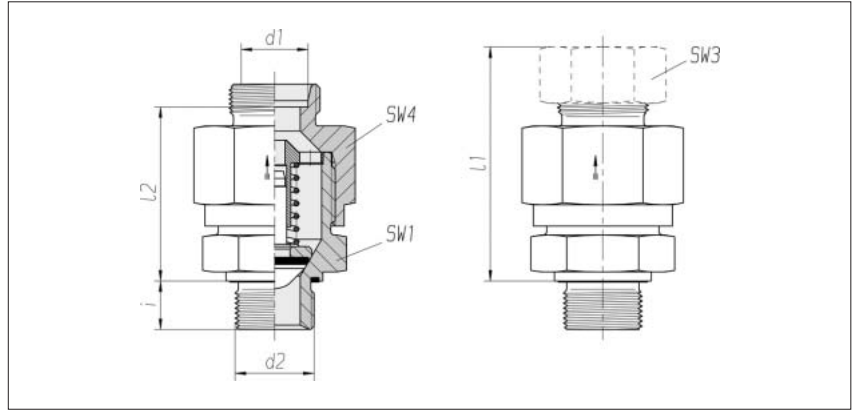
## Non-return valves

Flow direction from threaded stud

Thread:  
metric fine thread,  
straight

Sealed with PEFLEX seal

Opening pressure 1 bar  
(standard design)



Series	Pressure*	d2	SW1	SW3	SW4	l1** approx.	l2	i	Nm -10 %	kg/100 approx.	Order No. Single component	Order No. ***
L 6	PB 250	M 10 x 1	17	14	17	43.5	29	8	15	4.6	0 6 01 30 20 81****	0 6 01 30 20 XX
L 8	PB 250	M 12 x 1.5	19	17	19	44	29	12	25	7.5	0 6 01 31 20 81	0 6 01 31 20 XX
L 10	PB 250	M 14 x 1.5	22	19	24	55	40	12	50	10.6	0 6 01 32 20 81	0 6 01 32 20 XX
L 12	PB 250	M 16 x 1.5	27	22	30	57	42.5	12	70	17.3	0 6 01 33 20 81	0 6 01 33 20 XX
L 15	PB 250	M 18 x 1.5	30	27	32	61	45.5	12	90	20.8	0 6 01 34 20 81	0 6 01 34 20 XX
L 18	PB 160	M 22 x 1.5	36	32	36	66.5	50	14	130	36.6	0 6 01 35 20 81	0 6 01 35 20 XX
L 22	PB 160	M 26 x 1.5	41	36	46	74	57.5	16	180	49.9	0 6 01 36 20 81	0 6 01 36 20 XX
L 28	PB 100	M 33 x 2	50	41	55	83	66.5	18	230	81.5	0 6 01 37 20 81	0 6 01 37 20 XX
L 35	PB 100	M 42 x 2	60	50	65	92.5	71	20	330	124.8	0 6 01 38 20 81	0 6 01 38 20 XX
L 42	PB 100	M 48 x 2	65	60	75	99.5	76.5	22	500	169.6	0 6 01 39 20 81	0 6 01 39 20 XX
S 6	PB 630	M 12 x 1.5	19	17	19	46.5	31.5	12	50	9.0	0 6 01 40 20 81	0 6 01 40 20 XX
S 8	PB 630	M 14 x 1.5	19	19	19	46.5	31.5	12	60	7.0	0 6 01 41 20 81	0 6 01 41 20 XX
S 10	PB 630	M 16 x 1.5	22	22	24	54	38	12	80	15.6	0 6 01 42 20 81	0 6 01 42 20 XX
S 12	PB 630	M 18 x 1.5	24	24	27	57	41	12	90	15.4	0 6 01 43 20 81	0 6 01 43 20 XX
S 14	PB 630	M 20 x 1.5	27	27	32	62.5	44.5	14	130	27.2	0 6 01 44 20 81	0 6 01 44 20 XX
S 16	PB 400	M 22 x 1.5	32	30	36	66.5	48	14	130	36.0	0 6 01 45 20 81	0 6 01 45 20 XX
S 20	PB 400	M 27 x 2	41	36	46	73.5	52	16	200	50.3	0 6 01 46 20 81	0 6 01 46 20 XX
S 25	PB 400	M 33 x 2	46	46	50	81	57	18	250	87.3	0 6 01 47 20 81	0 6 01 47 20 XX
S 30	PB 250	M 42 x 2	55	50	60	92.5	66	20	500	113.2	0 6 01 48 20 81	0 6 01 48 20 XX
S 38	PB 250	M 48 x 2	65	60	70	103	72	22	600	197.3	0 6 01 49 20 81	0 6 01 49 20 XX

Supplementary to Order No. for complete fitting

tube connection

Supplementary to Order No.

2S

07

ES-4

09

BV-10

Refer to the front page

\* Test pressure PP = 1.5 x table value

\*\* Apply to complete fittings with 2S or ES-4 tube connection components. For BV-10 Refer to the front page.

\*\*\* With union nut and 2S, ES-4 or BV-10 tube connection components

\*\*\*\* Sample product code, see: RHV06LMEDOMD

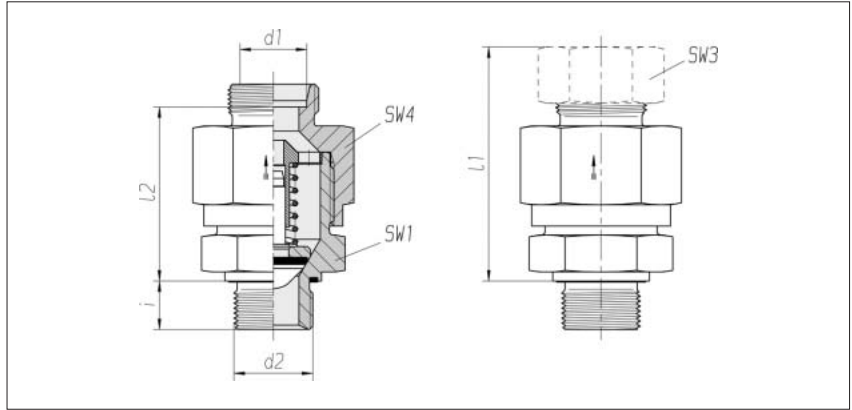
## Non-return valves

Flow direction from threaded stud

Thread:  
Whitworth pipe thread,  
straight

Sealed with PEFLEX seal

Opening pressure 1 bar  
(standard design)



Series	Pressure*	d2	SW1	SW3	SW4	l1**	l2	i	Nm	kg/100	Order No.	Order No.
Tube OD						approx.			-10 %	approx.	Single component	***
d1												
L 6	PB 250	G 1/8 A	17	14	17	43.5	29	8	20	5.7	0 6 02 30 20 81****	0 6 02 30 20 XX
L 8	PB 250	G 1/4 A	19	17	19	45	30	12	50	6.2	0 6 02 31 20 81	0 6 02 31 20 XX
L 10	PB 250	G 1/4 A	22	19	24	55.5	40.5	12	50	10.6	0 6 02 32 20 81	0 6 02 32 20 XX
L 12	PB 250	G 3/8 A	27	22	30	57	42.5	12	80	17.2	0 6 02 33 20 81	0 6 02 33 20 XX
L 15	PB 250	G 1/2 A	30	27	32	60.5	45.5	14	100	21.9	0 6 02 34 20 81	0 6 02 34 20 XX
L 18	PB 160	G 1/2 A	36	32	36	67.5	51	14	100	30.1	0 6 02 35 20 81	0 6 02 35 20 XX
L 22	PB 160	G 3/4 A	41	36	46	73	56.5	16	180	48.8	0 6 02 36 20 81	0 6 02 36 20 XX
L 28	PB 100	G 1 A	50	41	55	83	66.5	18	230	81.0	0 6 02 37 20 81	0 6 02 37 20 XX
L 35	PB 100	G 1 1/4 A	60	50	65	93.5	72	20	330	126.6	0 6 02 38 20 81	0 6 02 38 20 XX
L 42	PB 100	G 1 1/2 A	65	60	75	99.5	76.5	22	500	170.1	0 6 02 39 20 81	0 6 02 39 20 XX
S 6	PB 630	G 1/4 A	19	17	19	46.5	31.5	12	60	7.0	0 6 02 40 20 81	0 6 02 40 20 XX
S 8	PB 630	G 1/4 A	19	19	19	46.5	31.5	12	60	6.8	0 6 02 41 20 81	0 6 02 41 20 XX
S 10	PB 630	G 3/8 A	22	22	24	54	38	12	90	12.0	0 6 02 42 20 81	0 6 02 42 20 XX
S 12	PB 630	G 3/8 A	24	24	27	57	41	12	90	14.9	0 6 02 43 20 81	0 6 02 43 20 XX
S 14	PB 630	G 1/2 A	27	27	32	62.5	44.5	14	150	22.2	0 6 02 44 20 81	0 6 02 44 20 XX
S 16	PB 400	G 1/2 A	32	30	36	66.5	48	14	150	28.1	0 6 02 45 20 81	0 6 02 45 20 XX
S 20	PB 400	G 3/4 A	41	36	46	73.5	52	16	200	50.2	0 6 02 46 20 81	0 6 02 46 20 XX
S 25	PB 400	G 1 A	46	46	50	81.5	57.5	18	250	65.7	0 6 02 47 20 81	0 6 02 47 20 XX
S 30	PB 250	G 1 1/4 A	55	50	60	90.5	64	20	500	108.2	0 6 02 48 20 81	0 6 02 48 20 XX
S 38	PB 250	G 1 1/2 A	65	60	70	102.5	71.5	22	600	162.1	0 6 02 49 20 81	0 6 02 49 20 XX

Supplementary to Order No. for complete fitting

tube connection

Supplementary to Order No.

2S

07

ES-4

09

BV-10

Refer to the front page

\* Test pressure PP = 1.5 x table value

\*\* Apply to complete fittings with 2S or ES-4 tube connection components.  
For BV-10 Refer to the front page.

\*\*\* With union nut and 2S, ES-4 or BV-10 tube connection components

\*\*\*\* Sample product code, see: RHW06LREDOMD

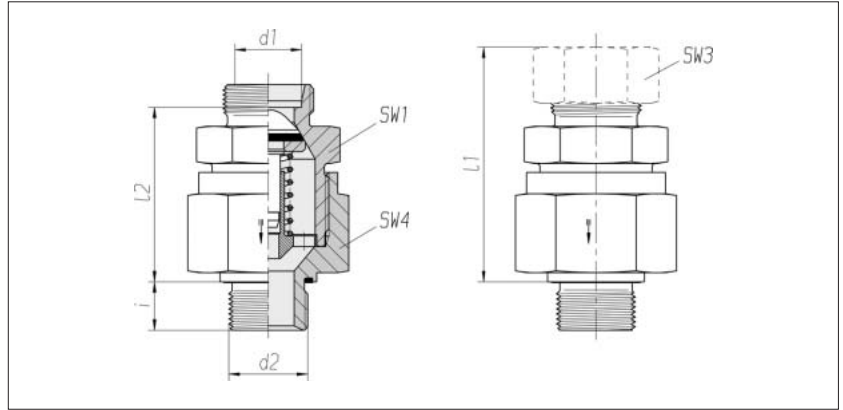
## Non-return valves

Flow direction to threaded stud

Thread:  
metric fine thread,  
straight

Sealed with PEFLEX seal

Opening pressure 1 bar  
(standard design)



Series	Pressure*	d2	SW1	SW3	SW4	l1**	l2	i	Nm -10 %	kg/100 approx.	Order No. Single component	Order No. ***
Tube OD d1						approx.						
L 6	PB 250	M 10 x 1	17	14	17	42.5	28	8	15	5.7	0 6 03 30 20 81****	0 6 03 30 20 XX
L 8	PB 250	M 12 x 1.5	19	17	19	43.5	28.5	12	25	5.5	0 6 03 31 20 81	0 6 03 31 20 XX
L 10	PB 250	M 14 x 1.5	22	19	24	53.5	38.5	12	50	10.3	0 6 03 32 20 81	0 6 03 32 20 XX
L 12	PB 250	M 16 x 1.5	27	22	30	55.5	41	12	70	16.5	0 6 03 33 20 81	0 6 03 33 20 XX
L 15	PB 250	M 18 x 1.5	30	27	32	59.5	44	12	90	19.9	0 6 03 34 20 81	0 6 03 34 20 XX
L 18	PB 160	M 22 x 1.5	36	32	36	64.5	48	14	130	28.3	0 6 03 35 20 81	0 6 03 35 20 XX
L 22	PB 160	M 26 x 1.5	41	36	46	72.5	56	16	180	47.9	0 6 03 36 20 81	0 6 03 36 20 XX
L 28	PB 100	M 33 x 2	50	41	55	82	65.5	18	230	79.4	0 6 03 37 20 81	0 6 03 37 20 XX
L 35	PB 100	M 42 x 2	60	50	65	93	71.5	20	330	125.8	0 6 03 38 20 81	0 6 03 38 20 XX
L 42	PB 100	M 48 x 2	65	60	75	98.5	75.5	22	500	194.0	0 6 03 39 20 81	0 6 03 39 20 XX
S 6	PB 630	M 12 x 1.5	19	17	19	46.5	31.5	12	50	9.3	0 6 03 40 20 81	0 6 03 40 20 XX
S 8	PB 630	M 14 x 1.5	19	19	19	46.5	31.5	12	60	9.2	0 6 03 41 20 81	0 6 03 41 20 XX
S 10	PB 630	M 16 x 1.5	22	22	24	54	38	12	80	11.8	0 6 03 42 20 81	0 6 03 42 20 XX
S 12	PB 630	M 18 x 1.5	24	24	27	57	41	12	90	18.9	0 6 03 43 20 81	0 6 03 43 20 XX
S 14	PB 630	M 20 x 1.5	27	27	32	61.5	43.5	14	130	27.9	0 6 03 44 20 81	0 6 03 44 20 XX
S 16	PB 400	M 22 x 1.5	32	30	36	65	46.5	14	130	27.5	0 6 03 45 20 81	0 6 03 45 20 XX
S 20	PB 400	M 27 x 2	41	36	46	73.5	52	16	200	50.3	0 6 03 46 20 81	0 6 03 46 20 XX
S 25	PB 400	M 33 x 2	46	46	50	81	57	18	250	65.5	0 6 03 47 20 81	0 6 03 47 20 XX
S 30	PB 250	M 42 x 2	55	50	60	92.5	66	20	500	133.8	0 6 03 48 20 81	0 6 03 48 20 XX
S 38	PB 250	M 48 x 2	65	60	70	103.5	72.5	22	600	196.9	0 6 03 49 20 81	0 6 03 49 20 XX

Supplementary to Order No. for complete fitting

tube connection

Supplementary to Order No.

2S

07

ES-4

09

BV-10

Refer to the front page

\* Test pressure PP = 1.5 x table value

\*\* Apply to complete fittings with 2S or ES-4 tube connection components.  
For BV-10 Refer to the front page.

\*\*\* With union nut and 2S, ES-4 or BV-10 tube connection components

\*\*\*\* Sample product code, see: RHZ06LMEDOMD

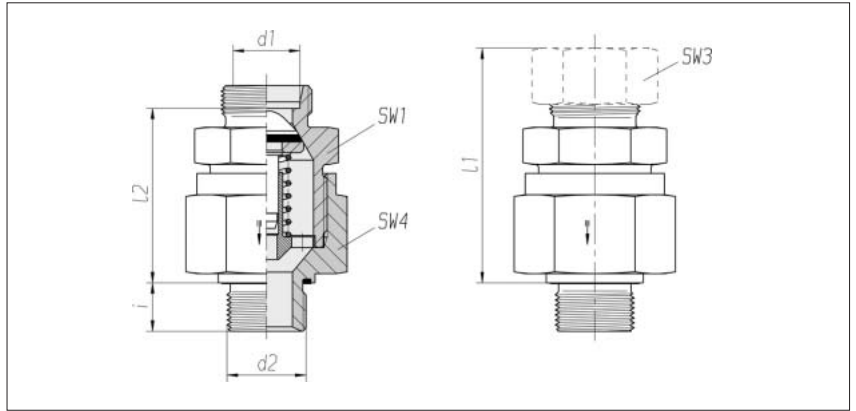
# Non-return valves

Flow direction to threaded stud

Thread:  
Whitworth pipe thread,  
straight

Sealed with PEFLEX seal

Opening pressure 1 bar  
(standard design)



Series	Pressure*	d2	SW1	SW3	SW4	l1**	l2	i	Nm	kg/100	Order No.	Order No.
Tube OD						approx.			-10 %	approx.	Single component	***
d1												
L 6	PB 250	G 1/8 A	17	14	17	42.5	28	8	20	4.5	0 6 04 30 20 81****	0 6 04 30 20 XX
L 8	PB 250	G 1/4 A	19	17	19	43.5	28.5	12	50	5.8	0 6 04 31 20 81	0 6 04 31 20 XX
L 10	PB 250	G 1/4 A	22	19	24	55	40	12	50	10.6	0 6 04 32 20 81	0 6 04 32 20 XX
L 12	PB 250	G 3/8 A	27	22	30	56	41.5	12	80	16.8	0 6 04 33 20 81	0 6 04 33 20 XX
L 15	PB 250	G 1/2 A	30	27	32	59	44	14	100	20.8	0 6 04 34 20 81	0 6 04 34 20 XX
L 18	PB 160	G 1/2 A	36	32	36	64.5	48	14	100	28.0	0 6 04 35 20 81	0 6 04 35 20 XX
L 22	PB 160	G 3/4 A	41	36	46	73.5	57	16	180	49.4	0 6 04 36 20 81	0 6 04 36 20 XX
L 28	PB 100	G 1 A	50	41	55	83.5	67	18	230	81.9	0 6 04 37 20 81	0 6 04 37 20 XX
L 35	PB 100	G 1 1/4 A	60	50	65	93	71.5	20	330	121.7	0 6 04 38 20 81	0 6 04 38 20 XX
L 42	PB 100	G 1 1/2 A	65	60	75	98.5	75.5	22	500	167.2	0 6 04 39 20 81	0 6 04 39 20 XX
S 6	PB 630	G 1/4 A	19	17	19	46.5	31.5	12	60	7.0	0 6 04 40 20 81	0 6 04 40 20 XX
S 8	PB 630	G 1/4 A	19	19	19	46.5	31.5	12	60	6.9	0 6 04 41 20 81	0 6 04 41 20 XX
S 10	PB 630	G 3/8 A	22	22	24	54	38	12	90	12.0	0 6 04 42 20 81	0 6 04 42 20 XX
S 12	PB 630	G 3/8 A	24	24	27	57	41	12	90	15.0	0 6 04 43 20 81	0 6 04 43 20 XX
S 14	PB 630	G 1/2 A	27	27	32	61.5	43.5	14	150	21.6	0 6 04 44 20 81	0 6 04 44 20 XX
S 16	PB 400	G 1/2 A	32	30	36	66.5	48	14	150	28.0	0 6 04 45 20 81	0 6 04 45 20 XX
S 20	PB 400	G 3/4 A	41	36	46	73.5	52	16	200	50.7	0 6 04 46 20 81	0 6 04 46 20 XX
S 25	PB 400	G 1 A	46	46	50	81	57	18	250	65.6	0 6 04 47 20 81	0 6 04 47 20 XX
S 30	PB 250	G 1 1/4 A	55	50	60	92.5	66	20	500	108.5	0 6 04 48 20 81	0 6 04 48 20 XX
S 38	PB 250	G 1 1/2 A	65	60	70	103.5	72.5	22	600	161.8	0 6 04 49 20 81	0 6 04 49 20 XX

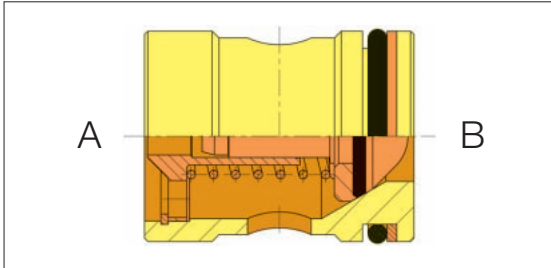
Supplementary to Order No. for complete fitting	
tube connection	Supplementary to Order No.
2S	07
ES-4	09
BV-10	Refer to the front page

\* Test pressure PP = 1.5 x table value

\*\* Apply to complete fittings with 2S or ES-4 tube connection components. For BV-10 Refer to the front page.

\*\*\* With union nut and 2S, ES-4 or BV-10 tube connection components

\*\*\*\* Sample product code, see: RHZ06LREDOMD

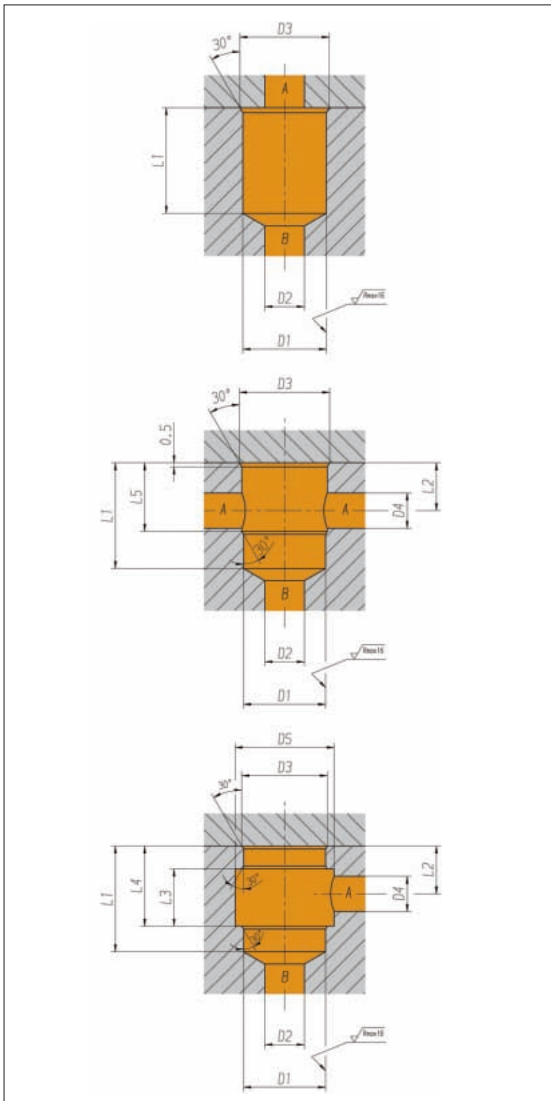


## Function description Non-return valve plug-in cartridges

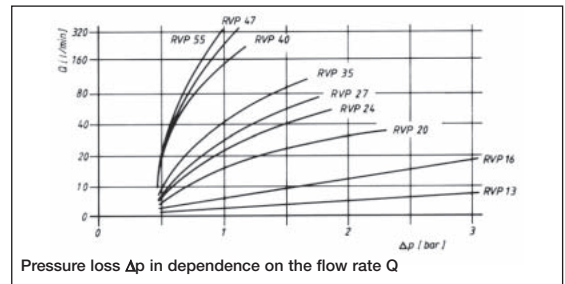
As a plug-in element for hydraulic devices with a plate structure or for direct installation in devices and machine housings, VOSS non-return valve plug-in cartridges release the flow in one direction and block it in the opposite direction.

The non-return valve plug-in cartridges are also used as intake or pre-loading valves depending on the opening pressure.

- Due to their compact design, VOSS non-return valve plug-in cartridges are also suitable for tight installation situations.
- Sealing is carried out by a spring-loaded taper with a chambered soft seal.
- Stroke limitation and damping pin on taper reduce wear to a minimum.
- Due to the shape of the inner parts, VOSS non-return valve plug-in cartridges provide for a particularly low-resistance flow.
- Thanks to the passage cross bore, VOSS non-return valve plug-in cartridges enable differing supply and flow-through directions. The housing cartridges are also available without a cross bore on request.



## Flow resistance



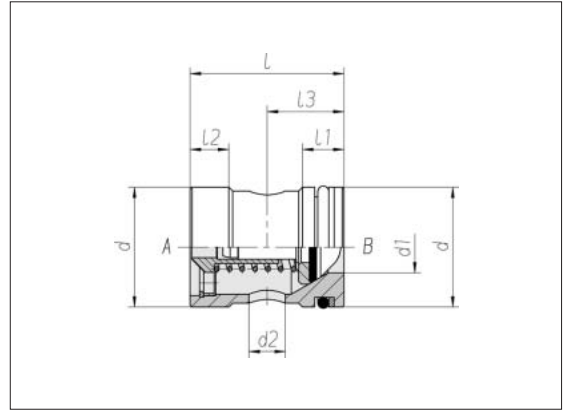
## Mounting hole

Type	D1	D2	D3	D4	D5	L1	L2	L3	L4	L5
	(D10)		(+0,2)			min.				
RVP 13	4	13.7	4	14	23.3	12	9	15	14.5	
RVP 16	6	16.7	6	18.5	26.8	14.5	11.5	18.5	18	
RVP 20	8	20.7	8	23.5	30.3	16	14	21	20.5	
RVP 24	10	25	10	27.5	35.3	18	16	24	23.5	
RVP 27	12	28	12	31.5	38.3	20	19	27	26.5	
RVP 35	15	36	15	40.5	44.8	19.5	23	32.5	27.5	
RVP 40	19	41	19	47.5	50.8	23	27.5	38.5	33	
RVP 47	24	48	24	56	60.3	28	35	48	40.5	
RVP 55	30	56.2	30	70	70.3	28	43	56	43.5	

# Non-return valve plug-in cartridges

Flow direction B-A

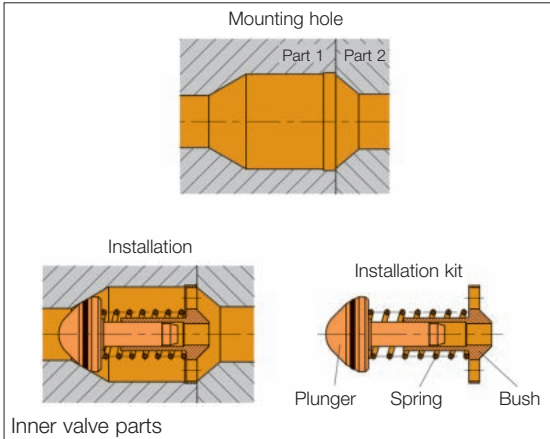
Opening pressure 1 bar  
(standard design)



Type	Pressure	d	d1	d2	l	l1	l2	l3	kg/100 approx.	Order No.
RVP 13	PB 400	13	4	3	23	8	6	11	1.6	0 6 05 00 20 00*
RVP 16	PB 400	16	6	4.5	26.5	8	7	12	2.7	0 6 05 01 20 00
RVP 20	PB 400	20	8	6	30	9	7	14	4.3	0 6 05 02 20 00
RVP 24	PB 400	24	10	7	35	11	8	17	6.4	0 6 05 03 20 00
RVP 27	PB 400	27	12	8.5	38	11	8	18	8.9	0 6 05 04 20 00
RVP 35	PB 400	35	15	11	44.5	12	9.5	25	18.5	0 6 05 05 20 00
RVP 40	PB 250	40	19	13.5	50.5	12	11	27.5	25.2	0 6 05 06 20 00
RVP 47	PB 250	47	24	17	60	12	13	32	40.4	0 6 05 07 20 00
RVP 55	PB 250	55	30	21.5	70	14	13	42	62.6	0 6 05 08 20 00

\* Sample product code, see:  
RVP13





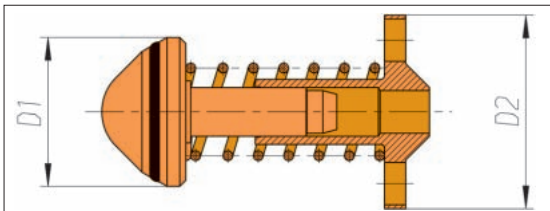
## Function description Inner valve-part installation kit

VOSS inner valve parts can be used as an installation kit directly in assemblies, such as valve blocks, distributors and units using the specified mounting holes.

The advantages lie in the compact design, consisting of a plunger with a permanently attached chambered soft seal, spring and bush, as well as the low-resistance flow properties adopted from the non-return valves.

### General technical data for all non-return valves

- Material and surface protection: Housing of steel, galvanised surface, NBR seals, other materials available on request
- Installation position: as desired
- Operating pressure: 100 / 160 / 250 / 400 / 630 bar
- Temperature range: -40 °C to +120 °C (other temperatures available on request)
- Pressure fluids: on mineral oil basis (other media available on request)



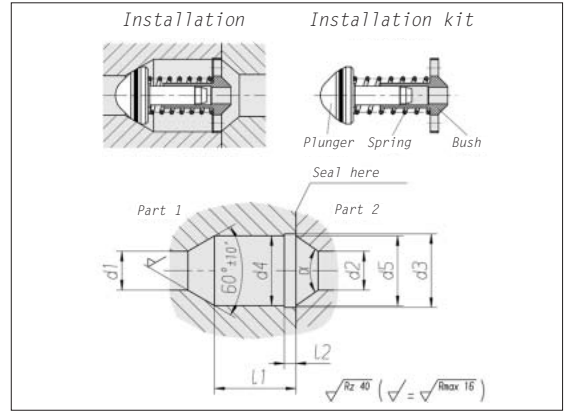
Tube OD	Series	D1	D2	Order No. Compl. set of inner parts (1 bar, NBR seal)*
L	6	7.5	9.3	0 6 69 03 20 00
L	8	8.5	11.3	0 6 69 04 20 00
L	10	11.7	15.3	0 6 69 05 20 00
L	12	14.8	18.8	0 6 69 06 20 00
L	15	15.8	20.8	0 6 69 07 20 00
L	18	19.8	25.8	0 6 69 08 20 00
L	22	24.5	31.8	0 6 69 09 20 00
L	28	30	39.8	0 6 69 10 20 00
L	35	38	49.8	0 6 69 11 20 00
L	42	41	55.8	0 6 69 12 20 00
S	6	7.5	9.3	0 6 69 03 20 00
S	8	8.5	10.8	0 6 69 13 20 00
S	10	9.6	12.8	0 6 69 14 20 00
S	12	11.7	15.3	0 6 69 05 20 00
S	14	14.8	18.8	0 6 69 06 20 00
S	16	17	22.3	0 6 69 15 20 00
S	20	21.7	27.8	0 6 69 16 20 00
S	25	27	34.8	0 6 69 17 20 00
S	30	30	40.8	0 6 69 18 20 00
S	38	38	50.8	0 6 69 19 20 00

Identification dimensions

\* For plunger with FPM / FKM seal, change the last 2 digits of the order number from "00" to "58"; inner parts with special opening pressures available on request

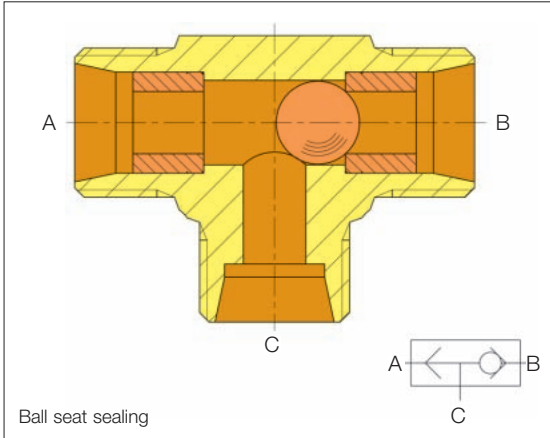
# Inner valve-part installation kit

Opening pressure 1 bar  
(standard design)



Series	d1	d2	d3 + 0,1	d4 + 0,1	d5 ± 0,1	l1 ± 0,1	l2 + 0,2	α	Order No.
L 6	4	4	9.6	8.6	8.6	16.5	2.5	70°	0 6 69 03 20 00*
L 8	6	6	11.5	10.5	10.5	16.0	2.5	70°	0 6 69 04 20 00
L 10	8	8	15.5	14.5	14.5	21.8	2.5	70°	0 6 69 05 20 00
L 12	10	10	19.0	18.0	18.0	21.0	3	70°	0 6 69 06 20 00
L 15	12	12	21.0	20.0	20.0	23.0	3	70°	0 6 69 07 20 00
L 18	15	15	26.0	25.0	25.0	24.5	3.5	70°	0 6 69 08 20 00
L 22	19	19	32.0	31.0	30.6	29.2	4	80°	0 6 69 09 20 00
L 28	24	24	40.0	39.0	38.5	34.5	4.5	90°	0 6 69 10 20 00
L 35	30	30	50.0	49.0	48.6	32.2	4.5	70°	0 6 69 11 20 00
L 42	36	36	56.0	55.0	54.2	31.7	5.5	70°	0 6 69 12 20 00
S 6	4	4	9.6	8.6	8.6	16.5	2.5	70°	0 6 69 03 20 00
S 8	5	5	11.0	10.0	10.0	15.0	2.5	70°	0 6 69 13 20 00
S 10	7	7	13.0	12.0	12.0	22.0	2.5	70°	0 6 69 14 20 00
S 12	8	8	15.5	14.5	14.5	21.8	2.5	70°	0 6 69 05 20 00
S 14	10	10	19.0	18.0	18.0	21.0	3	70°	0 6 69 06 20 00
S 16	12	12	22.5	21.5	21.5	24.0	3	70°	0 6 69 15 20 00
S 20	16	16	28.0	27.0	27.0	28.0	3.5	70°	0 6 69 16 20 00
S 25	20	20	35.0	34.0	33.6	28.7	4	70°	0 6 69 17 20 00
S 30	25	25	41.0	40.0	39.6	32.3	4.5	70°	0 6 69 18 20 00
S 38	32	32	51.0	50.0	49.2	34.7	4.5	70°	0 6 69 19 20 00

\* Sample product code, see:  
ITL06L



## Function description Shuttle valves

Ball seat

VOSS shuttle valves (WV) act as automatic gates within a closed hydraulic circulation system.

With two blockable inlet openings and one outlet opening, the VOSS shuttle valve connects the connection A or B to C depending on the pressure oil feed, whereby the other connection is sealed off with a movable ball.

The simple, sturdy valve design provides a maintenance-free solution to your application problems. Operation is automatic.

VOSS shuttle valves belong to the non-return valves according to DIN ISO 1219.

Design, ball seat valve

Installation as tube installation and as special design also with taper connection

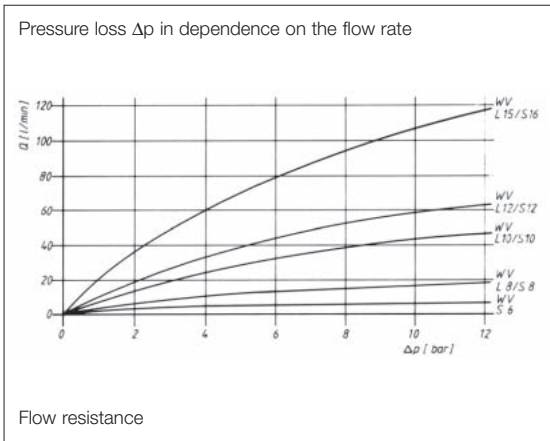
Any desired installation position possible

Material and surface protection: Housing of steel, surface galvanised, VOSS Zink-Nickel

Pressure fluids on mineral oil basis (other media available on request)

Temperature range:

-40 °C to +120 °C permissible leakage: 1 cm<sup>3</sup>/min



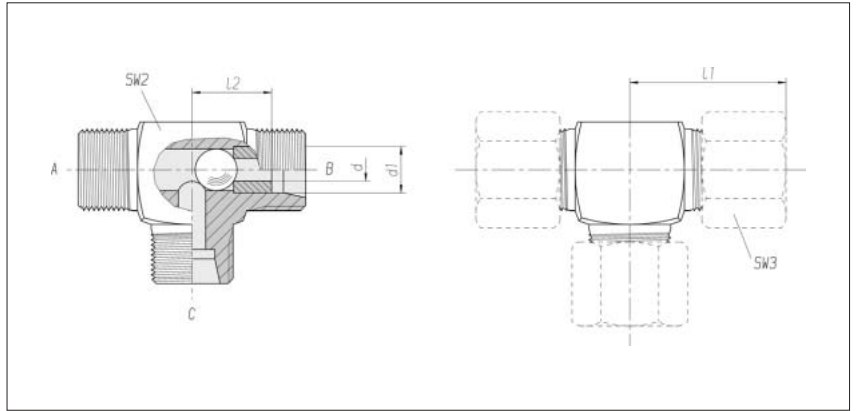
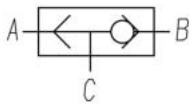
### CAUTION!

Do not use for compressed air or gases, and not in conjunction with welded tapers!

# Shuttle valves

Ball seat

Tube installation



Series	Pressure	d	SW2	SW3	l1 approx.	l2	kg/100 approx.	Order No. Single component	Order No. **
L 8	PB 250	4.5	14	17	29	14	5.7	5 6 90 99 22 81*	5 6 90 99 22 07
L 10	PB 250	6	17	19	30	15	7.4	5 6 90 99 82 81	5 6 90 99 82 07
L 12	PB 250	7.5	19	22	32	17	10.8	5 6 90 99 70 81	5 6 90 99 70 07
L 15	PB 250	10	19	27	36	21	12.4	5 6 90 99 62 81	5 6 90 99 62 07
S 6	PB 630	3	14	17	31	16	6.9	5 6 90 99 32 81	5 6 90 99 32 07
S 8	PB 630	4.5	17	19	32	17	9.5	5 6 90 99 92 81	5 6 90 99 92 07
S 10	PB 630	6	19	22	34	17.5	12.4	5 6 90 99 02 81	5 6 90 99 02 07
S 12	PB 630	7.5	22	24	38	21.5	17.7	5 6 90 99 52 81	5 6 90 99 52 07
S 16	PB 400	10	24	30	43	24.5	18.8	5 6 90 99 42 81	5 6 90 99 42 07

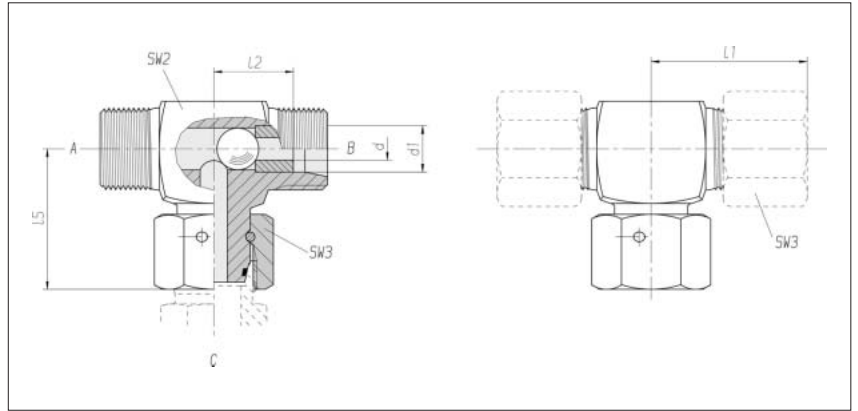
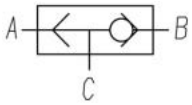
\* Sample product code, see:  
WV08LOMD

\*\* With union nut and 2S cutting ring

## Shuttle valves

Ball seat

with taper connection



Series Tube OD d1	Pressure	d	SW2	SW3	l1 approx.	l2	l5	kg/100 approx.	Order No. Single component **	Order No.
L 12	PB 250	7.5	19	22	32	17	29	13.4	5 6 90 99 11 81*	5 6 90 99 11 07

\* Sample product code, see:  
WW-ET12LOMD

\*\* With union nut and 2S cutting ring

## Function description Shuttle valves

### Soft-sealing

VOSS soft-sealing shuttle valves act in a hydraulic circulation systems according to the same operating principle as the ball seat variant.

Design, soft-sealing ball seat valve, installation as tube installation (other designs available on request)

Any desired installation position possible

Material and surface protection: Housing of steel, surface galvanised, VOSS Zink-Nickel

Seals of NBR (FPM / FKM on request)

Pressure fluids on mineral oil basis (other media available on request)

Freedom from leaks, from 3 bar absolute ultra-fine sealing (medium: hydraulic oil)

The sealing principle:

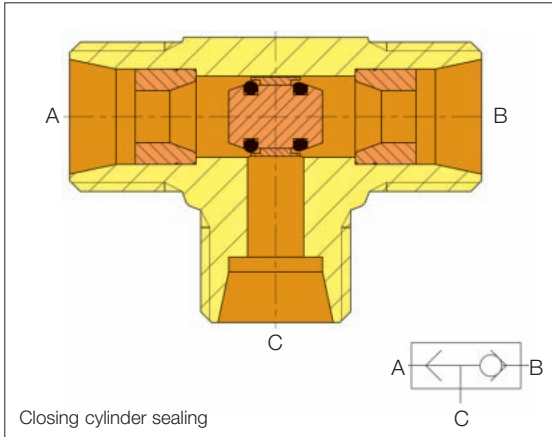
The sliding sleeve on the closing cylinder

- releases the sealing area when it contacts the sleeve
- protects the O-ring directed toward the flow against being flushed out

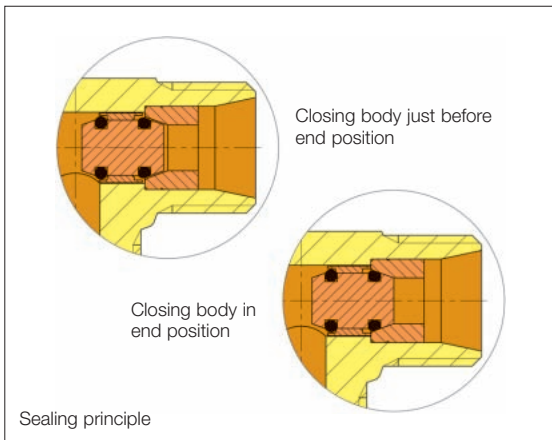
### Temperature range:

-35 °C to +100 °C with NBR seal

-25 °C to +200 °C with FPM / FKM seal (on request)



Closing cylinder sealing



Sealing principle



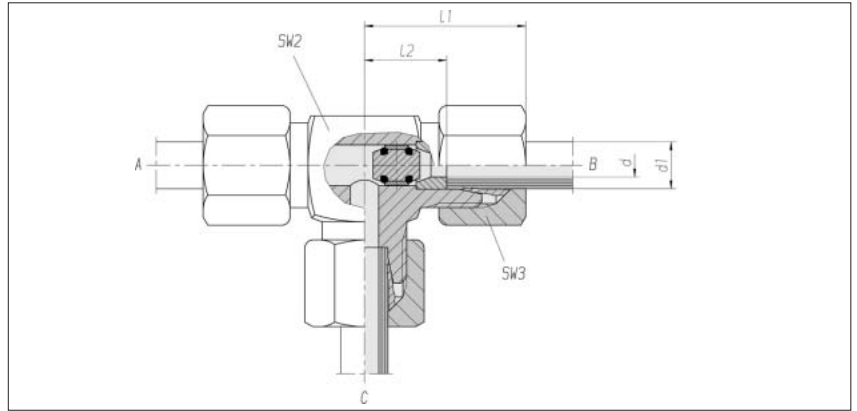
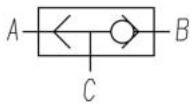
### CAUTION!

Do not use for compressed air or gases, and not in conjunction with welded tapers!

## Shuttle valves

Soft-sealing

Tube installation



Series	Pressure	d	SW2	SW3	l1	l2	kg/100	Order No.	Order No.
Tube OD					approx.		approx.	Single component	**
d1									
L 8	PB 250	4.5	14	17	29	14	5.8	5 6 90 98 02 81*	5 6 90 98 02 07
L 10	PB 250	6	17	19	30	15	7.4	5 6 90 98 12 81	5 6 90 98 12 07
L 12	PB 250	7.5	19	22	32	17	11.1	5 6 90 98 22 81	5 6 90 98 22 07
L 15	PB 250	10	19	27	36	21	26.0	5 6 90 98 32 81	5 6 90 98 32 07
S 6	PB 630	3	14	17	31	16	12.6	5 6 90 98 42 81	5 6 90 98 42 07
S 8	PB 630	4.5	17	19	32	17	12.1	5 6 90 98 52 81	5 6 90 98 52 07
S 10	PB 630	6	19	22	34	17.5	22.1	5 6 90 98 53 81	5 6 90 98 53 07
S 12	PB 630	7.5	22	24	38	21.5	17.9	5 6 90 98 54 81	5 6 90 98 54 07
S 16	PB 400	10	24	30	43	24.5	19.7	5 6 90 98 55 81	5 6 90 98 55 07

\* Sample product code, see: WV08LOMD

\*\* With union nut and 2S cutting ring

## Function description

### Line-break protection devices

VOSS line-break protection devices block the consumer in the case of a sudden pressure drop due to the failure of the feed line, preventing an uncontrollable drop in the load. The lost counter-pressure and the resulting volume flow away from the consumer cause the valve disc to close immediately. The line-break protection devices are adjusted to a reaction volume flow which results in the valve closing when exceeded. Under normal operating conditions, the line-break protection device is held open by a spring. The easily accessible adjustment permits adjustment to the size and process speed of the consumer.

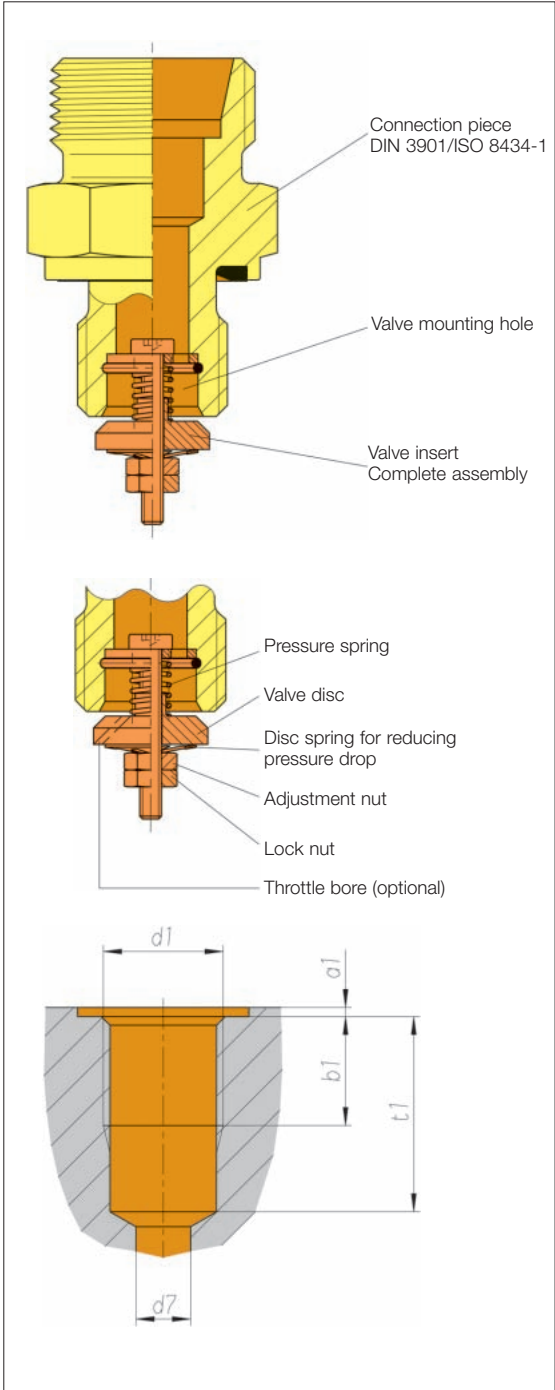
The operation of the disc spring under the valve disk increases the flow cross-section in the opening direction. The pressure drop via the valve is reduced without affecting the closing properties.

The integration of the function in the screw-in connecting piece reduces the assembly effort required. The installation size, e.g. of a cylinder, can be designed smaller. This decreases costs due to a reduced space requirement and lower weight.

- Four connection sizes G 1/4, G 3/8, G 1/2 and G 3/4
- Typical applications: excavators, forklift trucks, lifts, lifting platforms
- Threaded stud type E, DIN 3852 Part 11 Sealed with PEFLEX ring as standard
- Line-break protection devices with integrated throttle bore for controlled load decrease available on request
- Presetting for minimisation of assembly effort available on request
- Industrial property rights applied for

#### Mounting hole

d1	d7 +0.2	a1 max.	b1 min.	t1 min.
G 1/4	6	1.5	12	21.5
G 3/8	9.5	2	12	25.5
G 1/2	10.5	2.5	14	26
G 3/4	14.0	2.5	16	32





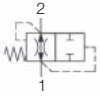
## Technical data

### Characteristics

- Connection variables G 1/4, G 3/8, G 1/2, G 3/4
- Reaction volume flow
 

G 1/4	8 - 16.5 l/min
G 3/8	6 - 40.0 l/min
G 1/2	20 - 70.0 l/min
G 3/4	45 - 130.0 l/min
- Flow direction
 

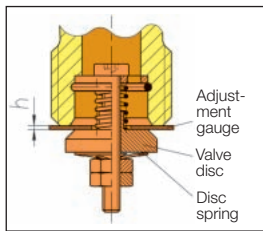
2 - 1	free flow
1 - 2	Valve blocked when set reaction volume flow exceeded
- Ambient temperature -20 °C to +80 °C
- Installation position as desired
- Operating pressure max. PN 315 bar
- Pressure fluid range Hydraulic oil as per DIN 51 524 T 1, T 2, T 3 (others on request)  
33 mm<sup>2</sup>/s (recommended)
- Medium viscosity



### Valve adjustment

The level of the reaction volume flow is dependent on the adjustment dimension "h". Adjustment is carried out after loosening the lock nut with the adjustment nut, whereby the adjustment dimension "h" is specified with valve adjustment gauges or feeler gauge blades of corresponding thickness. The adjustment must be locked by tightening the lock nut.

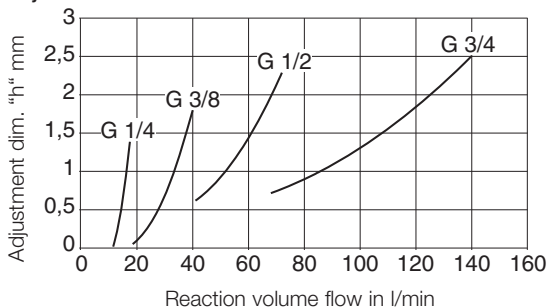
### Adjustment dim. „h“



### Preadjustment

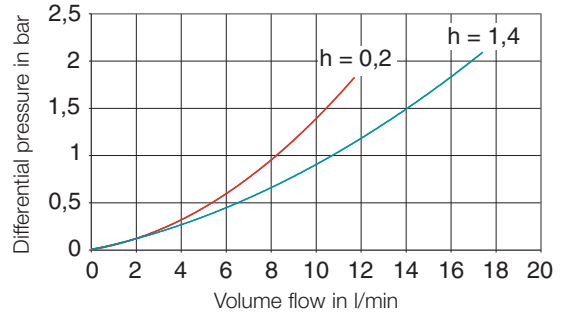
Type	"h"
G 1/4	1.4
G 3/8	1.8
G 1/2	2.3
G 3/4	2.5

### Adjustment curves at $v = 33 \text{ mm}^2/\text{s}$

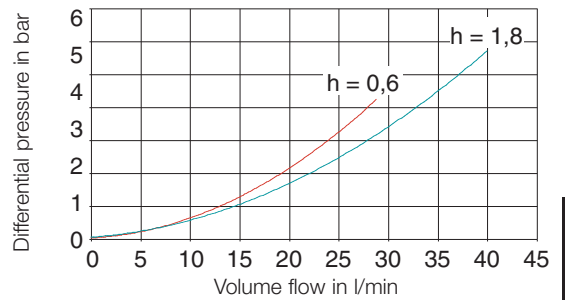


Pressure difference in dependence on the volume flow with  $v = 33 \text{ mm}^2/\text{s}$

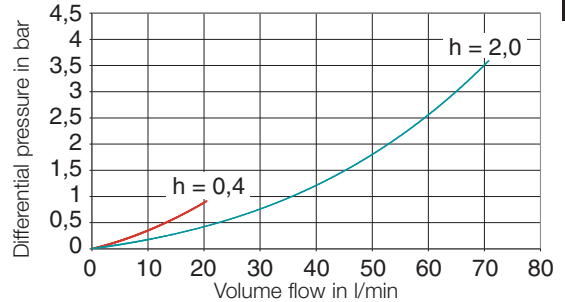
### G 1/4 without throttle bore



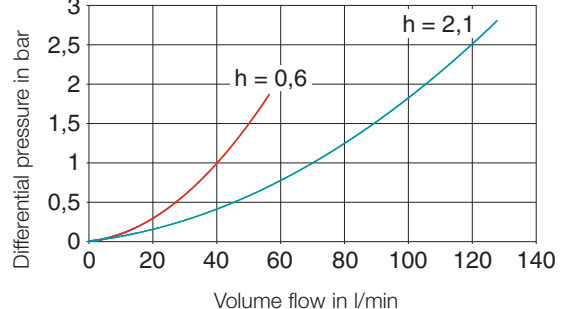
### G 3/8 without throttle bore



### G 1/2 without throttle bore



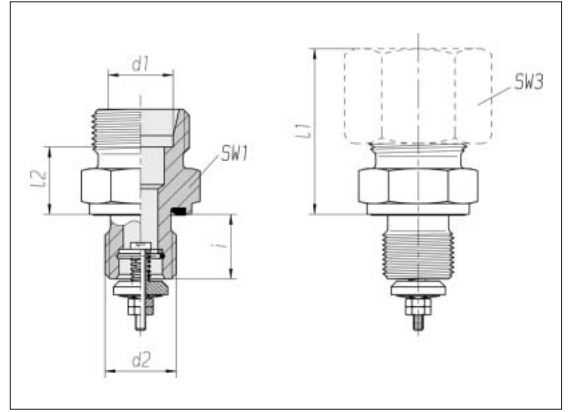
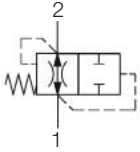
### G 3/4 without throttle bore



# Line-break protection devices

Thread:  
Whitworth pipe thread,  
straight

Sealed with PEFLEX seal



Series	Pressure	d2	SW1	SW3	l1	l2	i	Nm	kg/100	Order No.	Order No.
Tube OD					approx.			-10%	approx.	Single component	*
d1											
L 8	PN 315	G 1/4 A	19	17	25	10	12	50	2.8	0 6 30 05 20 81	0 6 30 05 20 07
L 8	PN 315	G 3/8 A	22	17	26.5	11.5	12	80	4.3	0 6 30 01 20 81	0 6 30 01 20 07
L 12	PN 315	G 1/4 A	19	22	27	12.5	12	50	6.2	0 6 30 00 20 81	0 6 30 00 20 07
L 12	PN 315	G 3/8 A	22	22	27	12.5	12	80	4.5	0 6 30 06 20 81	0 6 30 06 20 07
L 15	PN 315	G 1/2 A	27	27	29	14	14	100	7.3	0 6 30 02 20 81	0 6 30 02 20 07
L 22	PN 160	G 3/4 A	32	36	33	16.5	16	180	12.6	0 6 30 03 20 81	0 6 30 03 20 07