

MANNESMANN REXROTH	Hydraulically pilot operated check valve Types SV and SL, Series 4X			RE 21 468/10.95
	Sizes 10 to 32	up to 315 bar	up to 550 L/min	Replaces: 04.93

Characteristics:

- For sub plate mounting,
Mounting pattern to DIN 24 340 Form D,
ISO 5781 and CETOP-RP 121 H,
Subplates to data sheet RE 45 062
(separate order), see page 4
- For threaded connection
- With or without leakage port
- With or without pre-opening
- Type with pre-opening, dampened decompression
(Decrease of possible pressure shocks)
- 4 opening pressures



K 4352/16
Type SV 10 PA.-4X/...

Function description, sections, symbols

SV and SL valves are hydraulic pilot operated check valves in poppet type design which may be opened to allow flow in either direction.

These valves are used for the isolation of operating circuits under pressure, as safeguard against the lowering of a load when a line break occurs or against creeping movements of hydraulically locked-in actuators.

Basically these valves consist of housing (1), poppet (2), compression spring (3), control spool (4) as well as a pre-opening, as ball poppet valve (5), optionally.

The valve enables free flow from A to B, in the counter direction the poppet (2) is held on its seat by the system pressure, additionally to the spring force.

Through the pressure connection at control port X the control piston (4) is moved to the right. This pushes the poppet (2) from the seat. Now the valve may also have a flow from B to A.

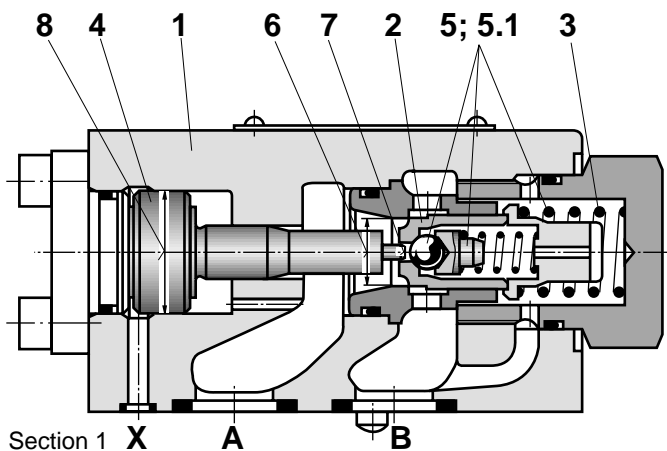
In order to ensure the proper opening of the valve via the control

piston (4) a certain minimum control pressure is necessary (see page 2).

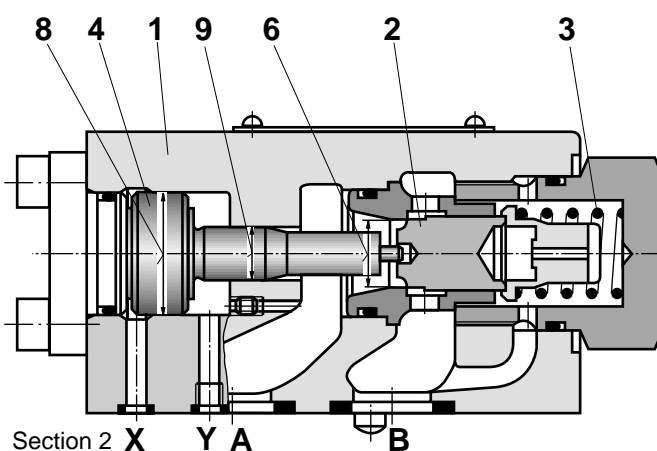
Type SV..A.. and SL..A.. (with pre-opening, section 1)
This valve has an additional pre-opening. Through pressure connection at control port X the control piston (4) is pushed to the right. This first pushes the ball (5.1) and then the poppet (2) from the seat. Now the valve may also have a flow from B to A.

Because of the pre-opening there is a dampened decompression of the fluid under pressure. Through this possible pressure shocks are avoided.

Type SL... (with leakage port, section 2)
The function of this valve is principally the same as the valve SV. The difference is the additional leakage port Y. With this the annulus area of the control piston (4) is separated from port A. The pressure present at port A only effects area A₄ (9) of the control piston (4).



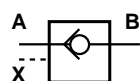
Section 1 X A B
Type SV..PA.-4X/... (without leakage port, with pre-opening)



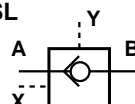
Section 2 X Y A B
Type SL..PB.-4X/... (with leakage port, without pre-opening)

Symbols

Type SV



Type SL



- 6 Area A₁
- 7 Area A₂
- 8 Area A₃
- 9 Area A₄

Ordering code

S -4X/ *

no leakage port
with leakage port

= V
= L

Type	SV		SL	
	G	P	G	P
Ordering code				
Size 10	= 10	= 10	= 10	= 10
Size 16	= 15	—	= 15	—
Size 20	= 20	= 20	= 20	= 20
Size 25	= 25	—	= 25	—
Size 32	= 30	= 30	= 30	= 30

for plate mounting
for threaded connection

= P
= G

with pre-opening
no pre-opening

= A
= B

Further details in clear text

no code = NBR seals
V = FPM seals
(other seals on request)

⚠ Warning!
Observe sealing suitability of
pressure fluid used!

4X = Series 40 to 49
(40 to 49: unchanged installation
and connection dimensions)

Opening pressure

1 = }
2 = } see Δp - q_v -operating curves
3 = } A to B
4 = }

Technical data (For applications outside these parameters please consult us!)

General

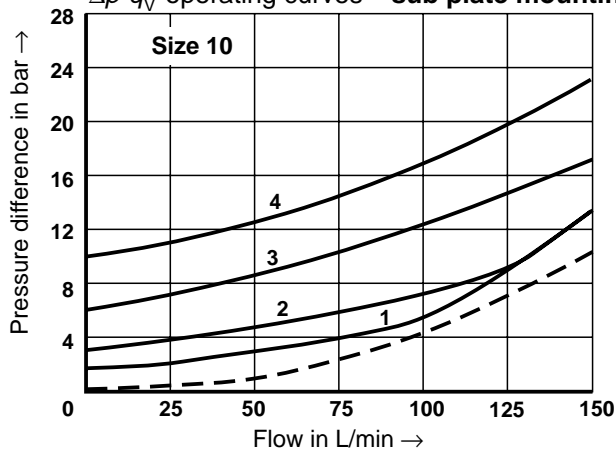
Size	10	16	20	25	32	
Weight	– sub plate mounting	kg	1,8		4,7	7,8
	– threaded connection	kg	2,1	5,4	5,4	10
Installation position	optional					
Direction of flow	from A to B free, from B to A through opening					

Hydraulic

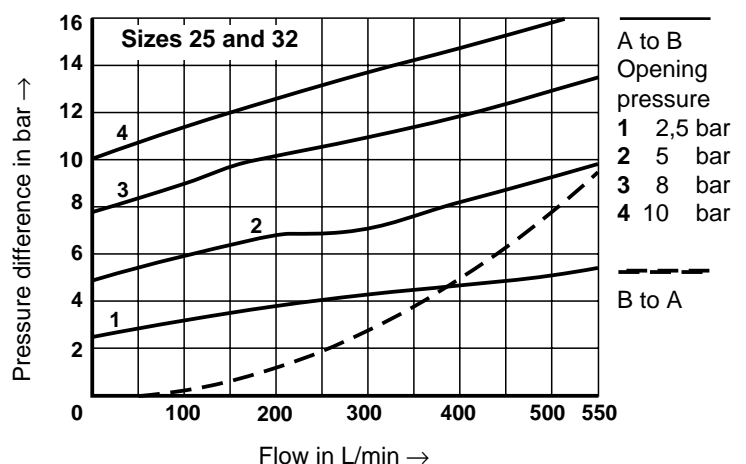
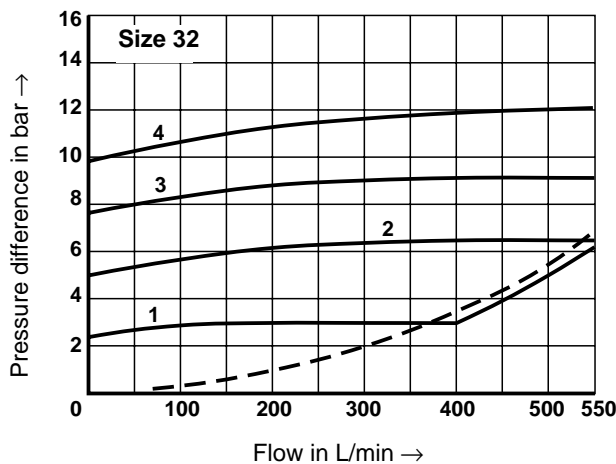
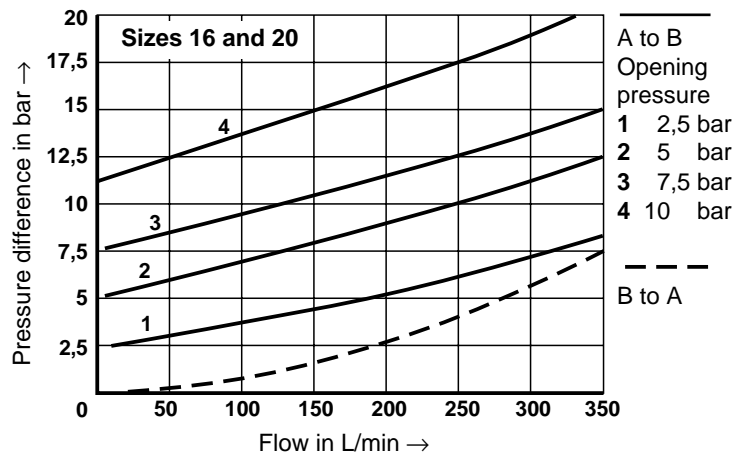
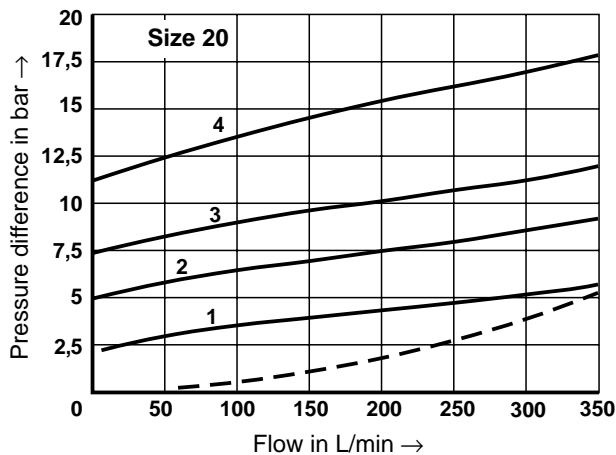
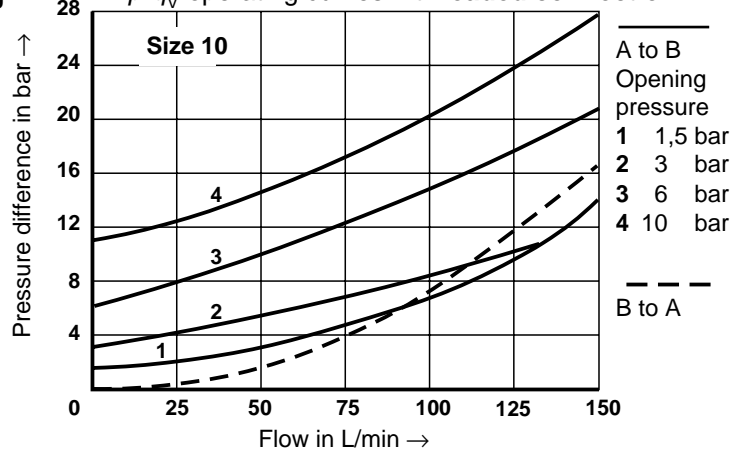
Operating pressure, max.	bar	5 to 315					
Control pressure, max.	bar	5 to 315					
Control volume	– port X	cm ³	2,5	10,8	10,8	19,27	19,27
	– port Y (only type SL)	cm ³	2,0	9,6	9,6	17,5	17,5
Control areas (Flächen nach Schnittzeichnung Seite 1)	– area A ₁	cm ²	1,33	3,46	3,46	5,72	5,72
	– area A ₂	cm ²	0,33	0,7	0,7	1,33	1,33
	– area A ₃	cm ²	3,8	10,17	10,17	16,61	16,61
	– area A ₄	cm ²	0,79	1,13	1,13	1,54	1,54
Pressure fluid 1) geeignet für NBR- und FPM-Dichtungen 2) geeignet nur für FPM-Dichtungen		Mineral oil (HL, HLP) to DIN 51 524 ¹⁾ ; Fast bio-degradable pressure fluids to VDMA 24 568 (also see RE 90 221); HETG (rape seed oil) ¹⁾ ; HEPG (polyglycols) ²⁾ ; HEES (synthetic ester) ²⁾ ; other pressure fluids on request					
Pressure fluid temperature range	°C	– 30 to + 80 (with NBR seals)					
		– 20 to + 80 (with FPM seals)					
Viscosity range	mm ² /s	2,8 to 500					
Fluid cleanliness		Maximum permissible degree of contamination of pressure fluid to NAS 1638 Class 9. We therefore recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$.					

Operating curves (measured at $v = 41 \text{ mm}^2/\text{s}$ and $t = 50 \text{ }^\circ\text{C}$)

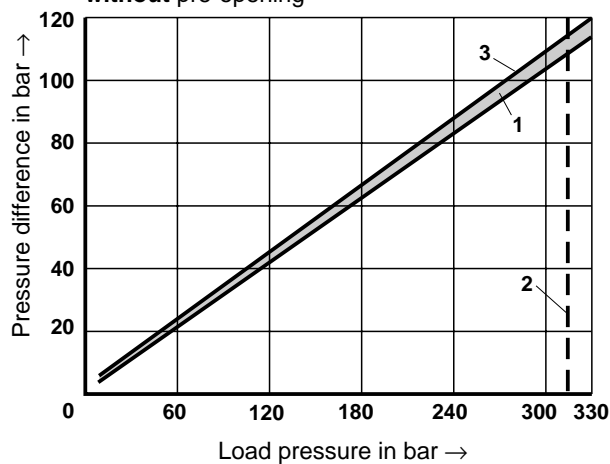
Δp - q_V -operating curves – sub plate mounting



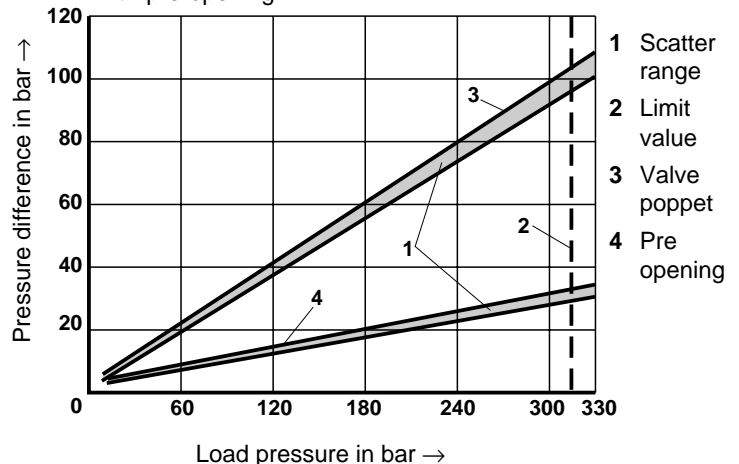
Δp - q_V -operating curves – threaded connection



Control pressure-Load pressure-operating curves without pre-opening

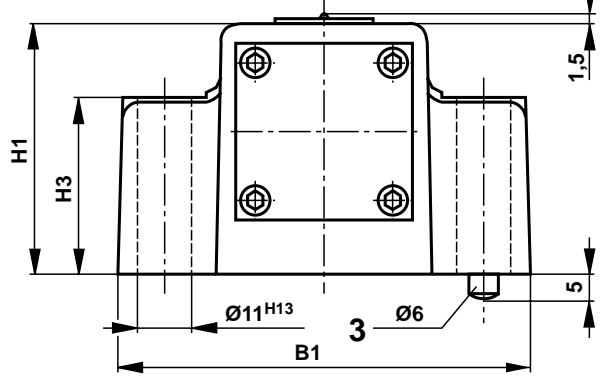
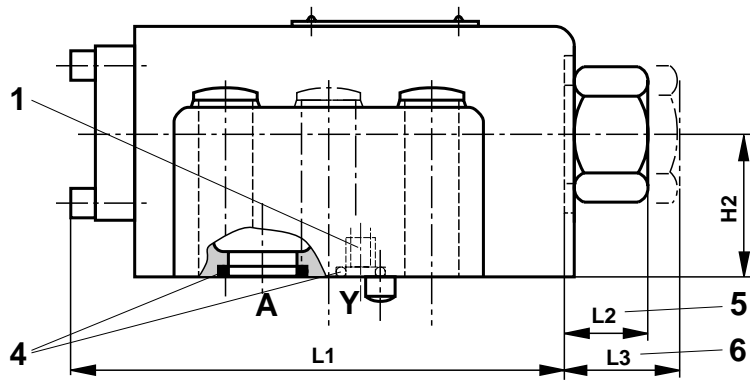


with pre-opening

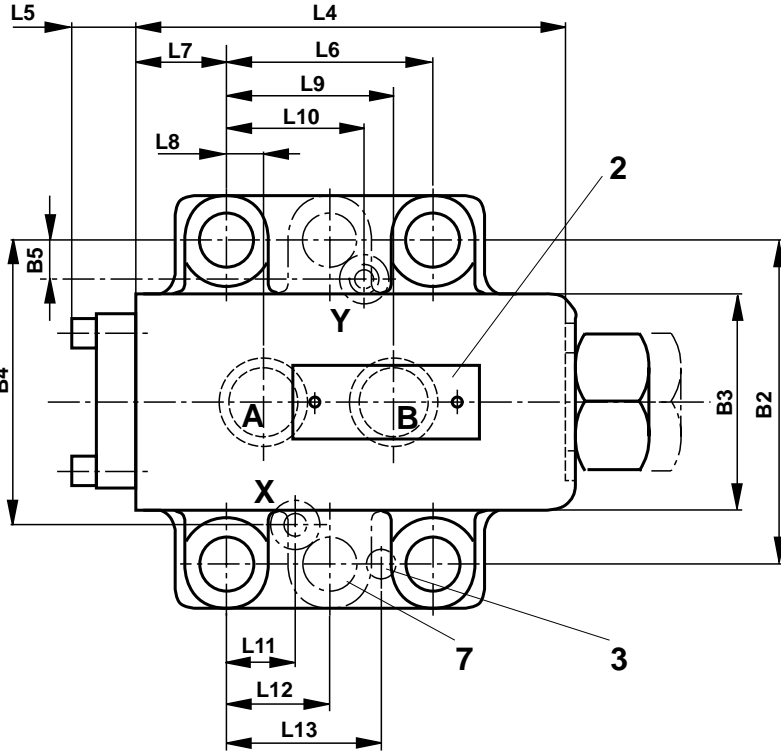


Unit dimensions: for sub plate mounting

(Dimensions in mm)



- 1 Port Y with valve type "SL" (with valve type "SV" this port is closed)
- 2 Name plate
- 3 Fixing pin
- 4 R-rings
- Size 10**
– Ports A and B 17,56 x 2,4 x 2,62
– Ports X and Y 9,81 x 1,5 x 1,78
- Size 20**
– Ports A and B 28,43 x 3,4 x 3,53
– Ports X and Y 9,81 x 1,5 x 1,78
- Size 32**
– Ports A and B 34,52 x 3,53 x 3,53
– Ports X and Y 9,81 x 1,5 x 1,78
- 5 Valve with opening pressure types "1" and "2" (dimension L2)
- 6 Valve with opening pressure types "3" and "4" (dimension L3)
- 7 6 valve fixing holes with type SV/SL 30



0,01/100mm
R_{max} 4
Required surface finish of mating piece

	Order no. – Seal kit	
	NBR seals	FPM seals
Size 10	312093	312094
Size 20	312442	312443
Size 32	312438	312439

Subplates

- Size 10**
G 460/01 (3/8"BSP)
G 461/01 (1/2"BSP)
- Size 20**
G 412/01 (3/4"BSP)
G 413/01 (1"BSP)
- Size 32**
G 414/01 (1 1/4"BSP)
G 415/01 (1 1/2"BSP)

Valve fixing screws

- Size 10**
4 off M10 x 50 DIN 912-10.9;
M_A = 75 Nm
- Size 20**
4 off M10 x 70 DIN 912-10.9;
M_A = 75 Nm
- Size 32**
6 off M10 x 85 DIN 912-10.9;
M_A = 75 Nm

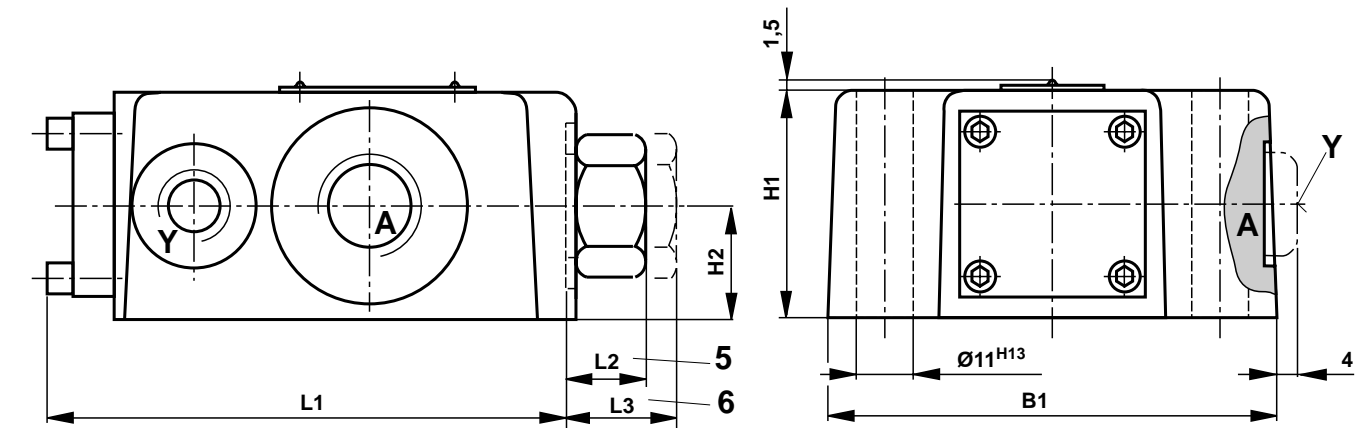
Subplates to data sheet RE 45 062 and valve fixing screws must be ordered separately.

Type	Size	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
SV	10	100,8	15,5	15,5	87,8	13	42,9	18,5	7,2	35,8	–
	20	135	17,7	47,7	117	18	60,3	27,5	11,1	49,2	–
	32	156,1	36,1	46,1	134	22,1	84,2	39	16,7	67,5	–
SL	10	100,8	15,5	15,5	87,8	13	42,9	18,5	7,2	35,8	21,5
	20	135	17,7	47,7	117	18	60,3	27,5	11,1	49,2	39,5
	32	156,1	36,1	46,1	134	22,1	84,2	39	16,7	67,5	59,5

Type	Size	L11	L12	L13	B1	B2	B3	B4	B5	H1	H2	H3
SV	10	21,5	–	31,8	84	66,7	44	58,8	–	51	29	36
	20	20,6	–	44,5	100	79,4	61	73	–	70	37	55
	32	24,6	42,1	62,7	118	96,8	75	92,8	–	85	42,5	70
SL	10	21,5	–	31,8	84	66,7	44	58,8	7,9	51	29	36
	20	20,6	–	44,5	100	79,4	61	73	6,4	70	37	55
	32	24,6	42,1	62,7	118	96,8	75	92,8	3,8	85	42,5	70

Unit dimensions: for threaded connection

(Dimensions in mm)



- 1 Port Y with valve type "SL" (with valve type "SV" this port is closed)
- 2 Name plate
- 5 Valve with opening pressure types "1" and "2" (dimension L2)
- 6 Valve with opening pressure types "3" and "4" (dimension L3)
- 7 2 valve fixing holes

Type	NG	Ports	
		A, B	X, Y
SV	10	G 1/2	G 1/4
	16	G 3/4	
	20	G 1	
	25	G 1 1/4	
	32	G 1 1/2	
SL	10	G 1/2	G 1/4
	16	G 3/4	
	20	G 1	
	25	G 1 1/4	
	32	G 1 1/2	

Type	Size	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	B1	B2	B3	H1	H2
SV	10	100,8	15,5	15,5	87,8	13	56,5	10,5	33,5	22,5	17,3	87	66,7	33,4	44	22
	16; 20	133	17,7	47,7	115	18	74,5	17	50,5	36	27	105	79,4	39,7	68	34
	25; 32	156,1	35,7	45,7	134	22,1	101	24	84	49	18	130	96,8	48,4	85	42,5
SL	10	100,8	15,5	15,5	87,8	13	56,5	10,5	33,5	22,5	17,3	87	66,7	33,4	44	22
	16; 20	133	17,7	47,7	115	18	74,5	17	50,5	36	27	105	79,4	39,7	68	34
	25; 32	156,1	35,7	45,7	134	22,1	101	24	84	49	18	130	96,8	48,4	85	42,5

Order no. – Seal kit		
	NBR-seals	FPM-seals
Size 10	312037	312038
Size 16	312448	–
Size 20	312442	312443
Size 25	312444	–
Size 32	312438	312439

Notizen



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