

# Piston Rod Cylinders Bellows Cylinders

Advanced cylinder concepts with outstanding performance define the ORIGA piston rod cylinder programme.

The resulting advantages are the basis for trouble-free operation – whether as individual components or in a combined system, meeting the demands of modern automation for high reliability and high economic efficiency. Special solutions can be developed for optimum efficiency in specific applications.



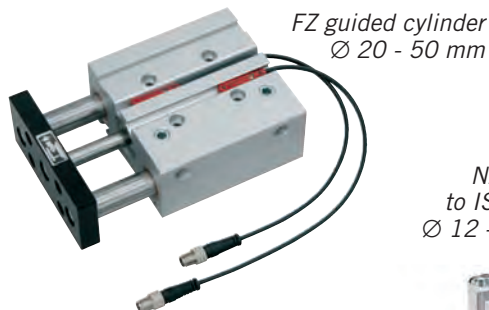
Consistent design of accessories for all cylinder series, e.g. swivel mountings, pivots, piston rod eyes, magnetic switches, etc.

DZ tie rod cylinder  
to ISO 15552 (ISO 6431)  
Ø 125 - 320 mm

DZB blocking cylinder  
mountings to ISO 15552  
(ISO 6431)  
Ø 32 - 125 mm



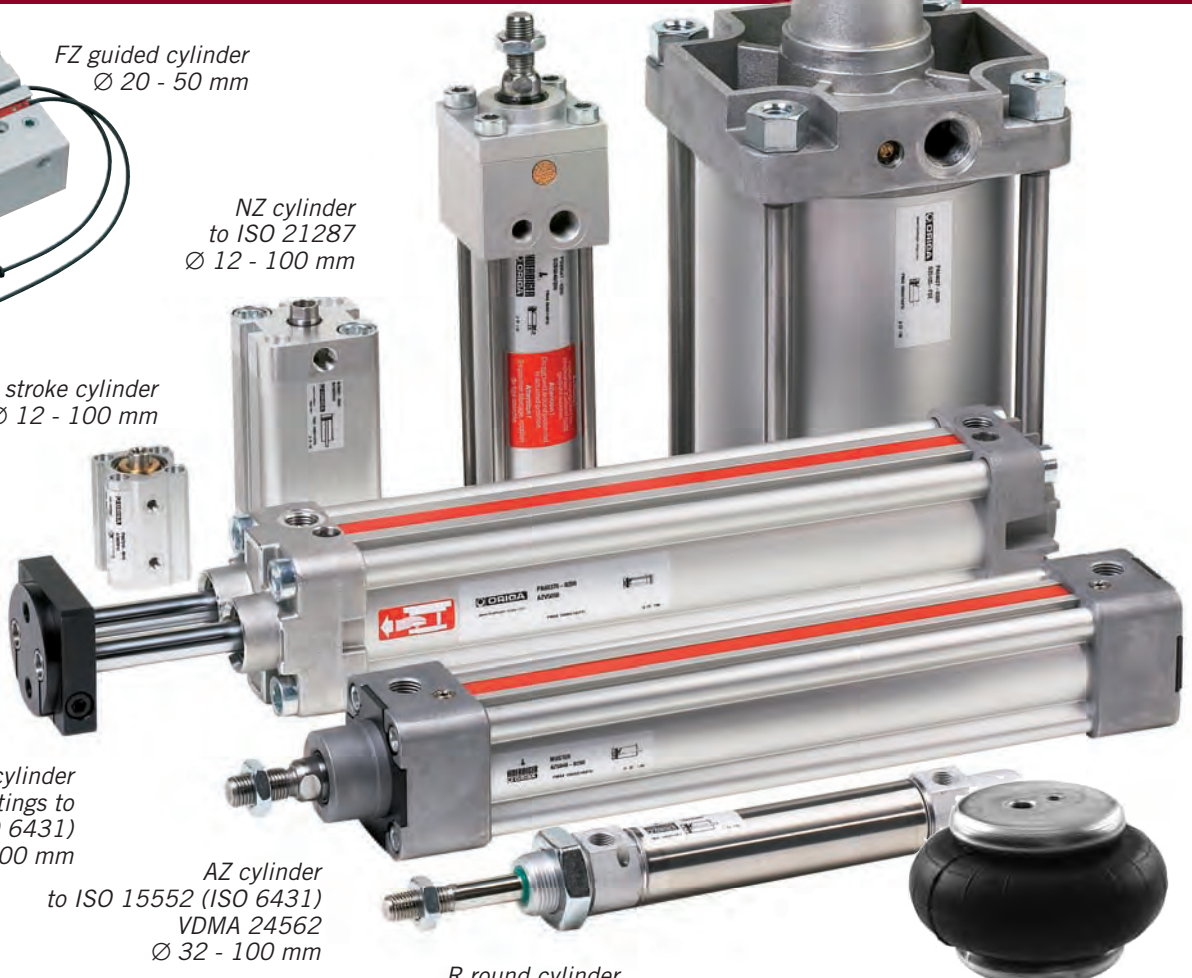
ST stop cylinder



FZ guided cylinder  
Ø 20 - 50 mm

NZ cylinder  
to ISO 21287  
Ø 12 - 100 mm

SZ short stroke cylinder  
Ø 12 - 100 mm



AZV non-rotating cylinder  
mountings to  
ISO 15552 (ISO 6431)  
Ø 32 - 100 mm


AZ cylinder  
to ISO 15552 (ISO 6431)  
VDMA 24562  
Ø 32 - 100 mm

R round cylinder  
to ISO 6432 Ø 10 - 25 mm  
R round cylinder Ø 32 - 63 mm

SP bellows cylinder  
single, double, triple convolution

**HOERBIGER-ORIGA-Products for -Atmospheres**

**Equipment Group II Category 2GD**

**Piston Rod Cylinders:  II 2GD c T4 T135°C**

**Note on ordering:**

When ordering the ATEX version of a cylinder, please add "ATEX" to the type designation and order no.

**Example:**

**DZ 5125-0100 ATEX**

**PA 53540-0100 ATEX**

**Cylinders  
for EX-Areas  
ATEX versions**




Formula	$F = p \cdot A \cdot R$
Symbol	Description
A p R	Piston area Pressure in bar Friction ca. 10%

<sup>1)</sup> Air consumption when charging in dm<sup>3</sup>/100 mm stroke. The tube volume must also be taken into consideration. The given figures relate to piston area A.

The figures for piston area B change proportionally with the piston areas A to B.

A = Piston area - piston side  
B = Piston area - piston rod side



**Piston Force  
and Air  
Consumption**  
*for  
Standard Cylinders*


		Piston diameter (mm)																
		8	10	12	16	20	25	32	40	50	63	80	100	125	160	200	250	320
Piston area* (cm <sup>2</sup> )	A	0.5	0.8	1.1	2.0	3.1	4.9	8.0	12.6	19.6	31.2	50.0	78.0	122.7	201.0	314.1	490.8	804
	B	0.38	0.65	0.85	1.7	2.6	4.1	6.9	10.6	16.5	28.0	45.4	73.6	114.7	188.5	301.5	471.2	773
Approx. piston force (kN) at ... bar	1	0.0045	0.007	0.010	0.018	0.028	0.044	0.072	0.113	0.176	0.281	0.452	0.706	1.104	1.809	2.827	4.417	7.236
	2	0.0090	0.014	0.020	0.036	0.056	0.088	0.144	0.226	0.353	0.561	0.905	1.413	2.209	3.619	5.654	8.835	14.476
	3	0.0135	0.021	0.030	0.054	0.084	0.132	0.217	0.339	0.530	0.842	1.357	2.120	3.313	5.428	8.482	13.253	21.715
	4	0.0180	0.028	0.040	0.072	0.113	0.176	0.289	0.452	0.707	1.122	1.809	2.827	4.417	7.238	11.309	17.671	28.953
	5	0.0225	0.035	0.050	0.090	0.141	0.220	0.362	0.565	0.884	1.402	2.262	3.534	5.522	9.407	14.137	22.089	36.191
	<b>6</b>	<b>0.0270</b>	<b>0.042</b>	<b>0.060</b>	<b>0.108</b>	<b>0.169</b>	<b>0.265</b>	<b>0.434</b>	<b>0.678</b>	<b>1.060</b>	<b>1.683</b>	<b>2.714</b>	<b>4.241</b>	<b>6.626</b>	<b>10.857</b>	<b>16.964</b>	<b>26.507</b>	<b>43.429</b>
	7	0.0315	0.049	0.070	0.126	0.197	0.309	0.506	0.792	1.237	1.963	3.167	4.948	7.731	12.666	19.792	30.952	50.652
	8	0.0360	0.056	0.080	0.144	0.226	0.353	0.579	0.905	1.414	2.244	3.619	5.654	8.835	14.476	22.619	35.342	57.788
	9	0.0405	0.063	0.090	0.162	0.254	0.397	0.651	1.018	1.590	2.524	4.071	6.361	9.940	16.286	25.447	39.760	65.124
	10	0.0450	0.070	0.100	0.180	0.282	0.441	0.723	1.131	1.767	2.805	4.523	7.068	11.044	18.095	28.274	44.178	72.360
Approx. air consumption (dm <sup>3</sup> /100 mm stroke at ... bar <sup>1)</sup> Figures are valid for piston area A (see symbol)	1	0.010	0.016	0.02	0.04	0.06	0.09	0.18	0.30	0.46	0.71	1.20	1.90	2.65	4.60	6.90	10.80	16.50
	2	0.015	0.024	0.03	0.06	0.09	0.14	0.27	0.43	0.69	1.00	1.85	2.85	4.10	6.90	10.40	16.30	24.50
	3	0.020	0.032	0.04	0.08	0.12	0.19	0.36	0.58	0.92	1.40	2.45	3.80	5.50	9.20	13.90	21.80	32.50
	4	0.025	0.040	0.05	0.10	0.15	0.24	0.45	0.72	1.15	1.75	3.00	4.75	6.95	11.50	17.40	27.20	40.50
	5	0.030	0.048	0.06	0.12	0.18	0.29	0.55	0.86	1.40	2.10	3.65	5.70	8.40	13.80	20.90	32.70	48.00
	<b>6</b>	<b>0.035</b>	<b>0.056</b>	<b>0.07</b>	<b>0.14</b>	<b>0.21</b>	<b>0.34</b>	<b>0.65</b>	<b>1.00</b>	<b>1.60</b>	<b>2.50</b>	<b>4.25</b>	<b>6.60</b>	<b>9.70</b>	<b>16.00</b>	<b>24.40</b>	<b>38.20</b>	<b>56.50</b>
	7	0.040	0.064	0.08	0.16	0.25	0.39	0.73	1.15	1.80	2.85	4.85	7.60	11.15	18.30	27.90	43.70	64.50
	8	0.045	0.072	0.09	0.18	0.28	0.41	0.82	1.30	2.00	3.20	5.45	8.50	12.55	20.60	31.50	49.20	72.50
	9	0.050	0.080	0.10	0.20	0.31	0.49	0.90	1.45	2.30	3.55	6.10	9.50	14.00	22.90	35.00	54.60	80.50
	10	0.055	0.088	0.11	0.22	0.34	0.53	1.00	1.60	2.50	3.90	6.40	10.40	15.40	25.20	38.50	60.10	89.00



# Compact Cylinder Ø 12-100 mm

Series SZ....  
Series SZD....  
Series SZV....

### Versions:

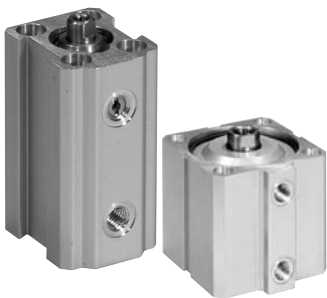
- single acting without cushioning
- double acting without cushioning
- for contactless position sensing
- with through piston rod
- non-rotating
- ATEX-Version 

### Special versions:

- with non-standard stroke lengths
- non-rotating with through piston rod

Compact cylinders are especially suitable for short stroke clamping tasks.

- minimum space requirements
- high clamping forces
- fast response times



### Characteristics

Characteristics	Symbol	Unit	Description					
General Features								
Type			Compact cylinder					
Series			SZ..., SZD..., SZV....					
System			Piston rod cylinder					
SZ6....			Double acting without cushioning For contactless position sensing					
SZ7....			Single acting without cushioning For contactless position sensing					
SZK3....			Single acting without cushioning					
SZD6...			With through piston rod Double acting without cushioning For contactless position sensing					
SZV6...			Non-rotating Double acting without cushioning For contactless position sensing					
Mounting								
Series	SZ..., SZD... SZV... SZK....		4 screws 2 screws Ø 32 mm: 2 screws Ø 50 - 63 mm: 4 screws See drawing for size dimensions					
Ambient temperature range	$T_{min}$ $T_{max}$	°C	-10					Note: When using below freezing point (°C) please contact us for advice
		°C	+70					
Medium temperature range	$T_{max}$	°C	+70					
Weight (mass)		kg	See table for details					
Medium			Filtered and lubricated or filtered and unlubricated compressed air					
Lubrication			Oil mist lubrication compatible with Buna N					
Material								
Housing			Aluminium profile, anodised					
End cap, top SZK3... SZ7..., SZ6..., SZV6....			Aluminium, brass Ø12-40: brass, Ø50-100: Al					
End cap, bottom			Aluminium					
Piston rod			Steel, high-alloy					
Seal			Oil resistant rubber					
Pneumatic Characteristics – Series SZ 6..., SZ7..., SZD6..., SZK3...								
Nominal pressure	$p_n$	bar	6					
Piston diameter		mm	12	16	20	25	32	
Operating pressure range								
SZK3...	$p_{max}$	bar	–	–	–	–	10	
SZ7..., SZ6..., SZV6...	$p_{min/max}$	bar	1-10	1-10	1-10	1-10	1-10	
SZD6...	$p_{min/max}$	bar	–	–	1-10	1-10	1-10	
	$p_{min/max}$	bar	2.5-10	2-10	2-10	1.5-10	1.5-10	
Piston diameter		mm	40	50	63	80	100	
Operating pressure range								
SZK3...	$p_{max}$	bar	–	10	10	–	–	
SZ7..., SZ6..., SZV6...	$p_{min/max}$	bar	1-10	1-10	1-10	1-10	1-10	
SZD6...	$p_{min/max}$	bar	1-10	1-10	1-10	–	–	
	$p_{min/max}$	bar	2.5-10	2-10	2-10	1.5-10	1.5-10	

Piston force and air consumption see page 9, dimensions see page 80,82, order instructions see page 83, 84

Characteristics – Continuation						
Piston diameter	mm	12	16	20	25	32
Port size						
SZK3...		–	–	–	–	G1/8
SZ7..., SZ6..., SZV6...		M5	M5	M5	G1/8	G1/8
SZD6...		–	–	–	G1/8	G1/8
SZD6...		M5	M5	M5	G1/8	G1/8
Piston diameter	mm	40	50	63	80	100
Port size						
SZK3...		–	G1/8	G1/8	–	–
SZ7..., SZ6..., SZV6...		G1/8	G1/8	G1/8	G1/4	G1/4
SZD6...		G1/8	G1/8	G1/8	–	–
SZD6...		G1/8	G1/8	G1/8	G1/4	G1/4
Piston diameter	mm	12	16	20	25	32
Piston rod diameter						
SZK3...		–	–	–	–	12
SZ7..., SZ6..., SZV6...		6	8	10	12	12
SZD6...		–	–	10	12	12
SZD6...		6	8	10	12	12
Piston diameter	mm	40	50	63	80	100
Piston rod diameter						
SZK3...		–	16	16	–	–
SZ7..., SZ6..., SZV6...		16	20	20	25	32
SZD6...		16	20	20	–	–
SZD6...		16	20	20	25	32
Stroke length						
SZK3...	mm	Ø32: 5, 10, Ø50-63: 10				
SZ7...	mm	max. 25, standard stroke lengths see order instructions				
SZ6..., SZD6..., SZV6...	mm	max. 80, standard stroke lengths see order instructions				
		Further stroke lengths on request				
Piston force and air consumption		See page 9				

#### Spring Return Force in N\*

Series	Stroke length (mm)	F <sub>min</sub> (N)									
		Ø12	Ø16	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
SZK3...	<sup>1)</sup>	–	–	–	–	53	–	173	254	–	–
SZ7...	5	8	15	23	26	38	48	–	–	–	–
SZ7...	10	6	12	19	21	28	38	70	90	114	138
SZ7...	25	–	11	19	20	28	38	48	67	90	120

\* theoretical value

<sup>1)</sup> stroke lengths for series SZK3...: Ø32: 5 mm, 10 mm, Ø50-63: 10 mm

#### Weight (mass) kg

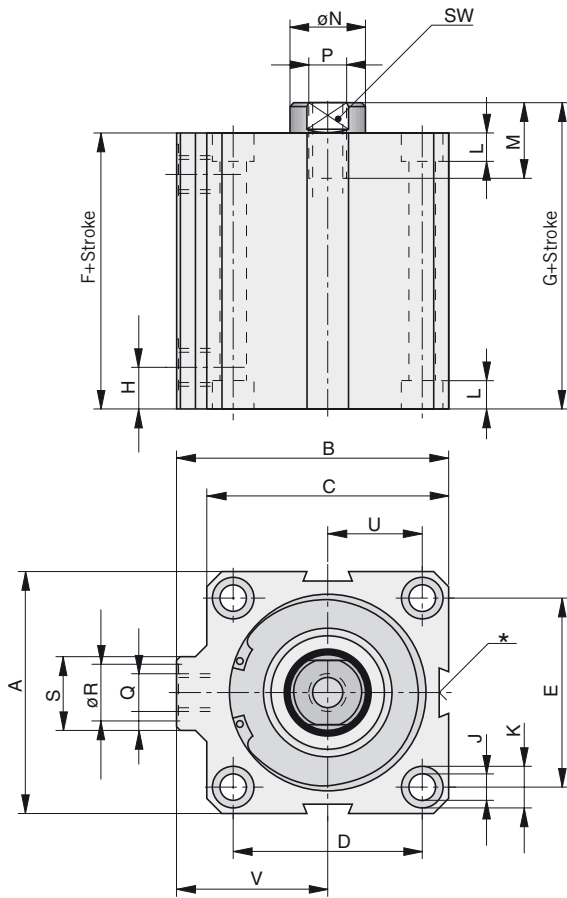
Series	Cylinder diameter																			
	Ø12		Ø16		Ø20		Ø25		Ø32		Ø40		Ø50		Ø63		Ø80		Ø100	
	1*	2*	1*	2*	1*	2*	1*	2*	1*	2*	1*	2*	1*	2*	1*	2*	1*	2*	1*	2*
SZK3...	–	–	–	–	–	–	–	–	–	–	0.170 for stroke 5 mm	0.200 for stroke 10 mm	0.450 for stroke 10 mm	0.800 for stroke 10 mm	–	–	–	–	–	–
SZ7...	0.050	0.013	0.080	0.018	0.110	0.022	0.160	0.033	0.230	0.042	0.350	0.059	0.500	0.080	0.900	0.108	1.300	0.138	2.100	0.213
SZ6...	0.050	0.013	0.080	0.018	0.110	0.022	0.160	0.033	0.230	0.042	0.350	0.059	0.500	0.080	0.900	0.108	1.300	0.138	2.100	0.213
SZD6...	0.060	0.015	0.100	0.022	0.140	0.028	0.200	0.042	0.280	0.051	0.430	0.075	0.640	0.104	1.060	0.133	1.560	0.176	2.540	0.276
SZV6...	–	–	–	–	0.220	0.024	0.280	0.036	0.350	0.046	0.480	0.065	0.650	0.090	1.200	0.115	–	–	–	–

\* 1 = Weight for cylinder with 10 mm stroke

2 = Weight per additional 10 mm stroke length for series SZK3... stroke see table

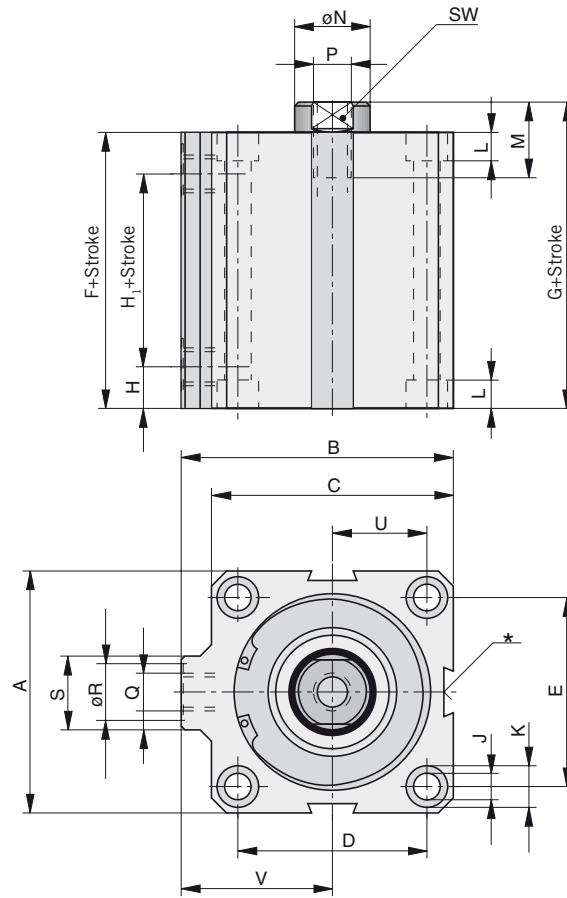


Dimensions – Cylinder, Series SZ7..., Ø 12 – 100 mm



\* are omitted for cyl. Ø12 to 20 mm

Dimensions – Cylinder, Series SZ6..., Ø 12 – 100 mm

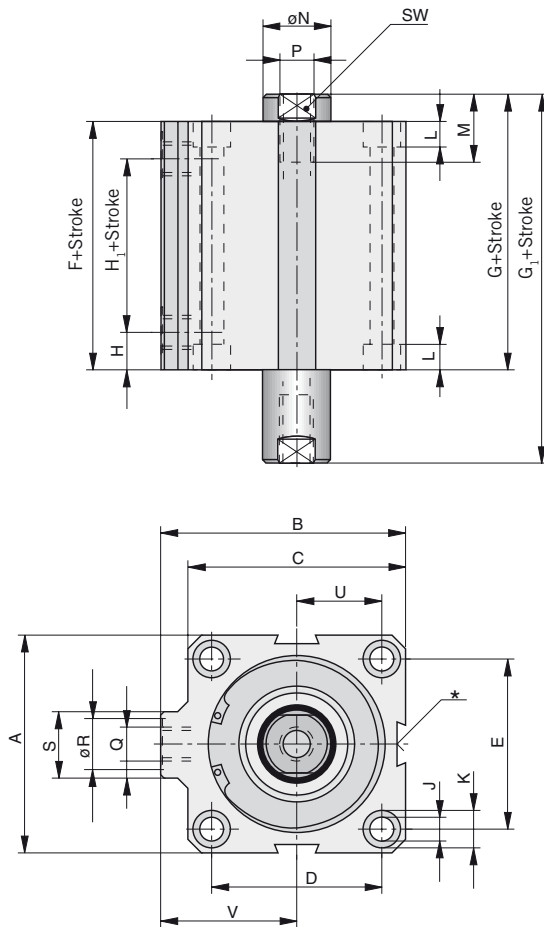


\* are omitted for cyl. Ø12 to 20 mm

Dimension Table (mm) – Series SZ7..., SZ6..., SZD6..., SZV6...

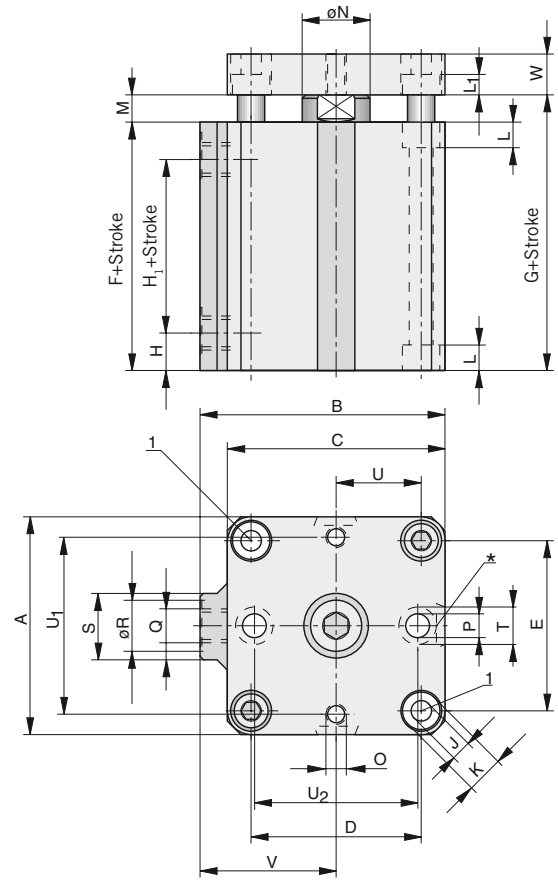
Cyl. Ø	Stroke (mm) Series SZ7...	A	B	C	D	E	F + Stroke SZ7...	F + Stroke SZ6... SZD6...	G + Stroke SZ6... SZ7...	G <sub>1</sub> + 2X Stroke SZD6...	H	H <sub>1</sub> + Stroke SZ7...
12		23	27	25	17.4	13	34	34	38.6	43	10	14
16	5.10 25	28	30	28	20	20	34.5 44.5	34.5 44.5	40.1 50	45.5	10.3	14
20	5.10 25	32	34	32	22	22	36 46	36 46	42 52	48	11	14
25	5.10 25	37	44	39	28	26	38.5 48.5	38.5 48.5	45 55	51.5	11.6	15.5
32	5.10.25	45	52	48	36	32	39	39	45.7	52	11.5	16
40	5.10.25	55	59	55	41	41	42	42	48.1	55.5	12.4	17
50	10.25	64	72	64	50	50	45	45	52.8	61.5	13.5	18
63	10.25	80	88	80	62	62	52.5	52.5	60.7	69.5	15.5	21.5
80	10.25	94	104	94	73	73	57	57	66.5	76	16	25
100	10.25	117	125.5	117	90.5	90.5	58.5	58.5	69.7	80.5	15.6	27.5

Dimensions – Cylinder, Series SZD6..., Ø 12 – 100 mm



\* are omitted for cyl. Ø12 to 20 mm

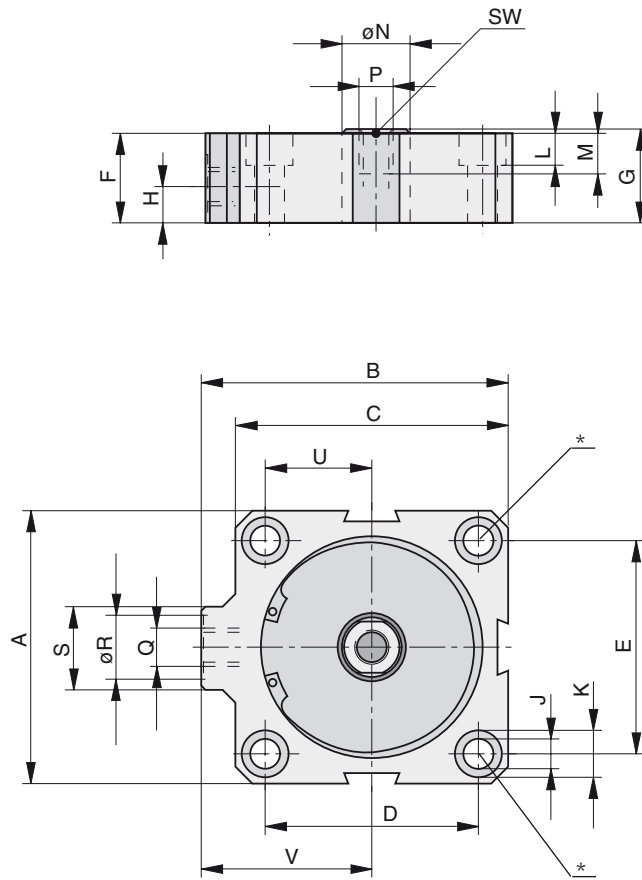
Dimensions – Cylinder, Series SZV6..., Ø 20 – 63 mm



\* is omitted for cyl. Ø 20 mm  
<sup>1)</sup> Mounting holes for cylinder

Cyl. Ø	ØJ	ØK	L	M	ØN	P	Q	ØR	S	U	V	SW
12	3.4	6	3.5	6	6	M3	M5	8	11	8.6	14.5	5
16	3.4	6	3.5	8	8	M4	M5	8	11	10	16	6
20	4.5	7.5	4.8	8	10	M5	M5	8	11	11	18	8
25	4.5	7.5	4.8	12	12	M6	G1/8	15	19	14	24.5	10
32	5.5	10	5.8	12	12	M8	G1/8	15	19	18	28	10
40	6.7	11	6.8	12	16	M8	G1/8	15	19	20.5	31.5	13
50	6.7	11	6.8	17.5	20	M10	G1/8	15	19	25	40	17
63	8.5	14	8.3	17.5	20	M12	G1/8	15	23	31	48	17
80	8.5	14	8.3	25	25	M16	G1/4	19	23	36.5	57	22
100	10.5	18	11	28	32	M20	G1/4	19	23	45.25	67	27

Dimensions – Cylinder, Series SZK3..., Ø 32, 50, 63 mm



\* is omitted for cyl. Ø32 mm

Series	A	B	C	D	E	F	G	H	J	K	L	M	ØN	Q	P	ØR	S	U	V	SW
SZK3032/5	45	52	48	-	32	27	28	8.5	5.5	10	5.7	12	12	G1/8	M6	15	19	18	28	10
SZK3032/10	45	52	48	-	32	32	33	8.5	5.5	10	5.7	12	12	G1/8	M6	15	19	18	28	10
SZK3050/10	64	72	64	50	50	30	31	8.5	6.7	11	6.8	12	16	G1/8	M8	15	19	25	40	13
SZK3063/10	80	88	80	62	62	35	36	8.5	8.5	14	8.3	12	16	G1/8	M8	15	23	31	48	13

Accessories

Magnetic Switch




Page 161



Piston force and air consumption see page 9, order instructions see page 83, 84

**Order Instructions – Cylinder, Series SZ7 ....., Ø 12 – 100 mm**

System	Symbol	Piston-Ø	Order Instructions	
			Type	Order-No.
Single acting without cushioning For contactless position sensing		12	SZ7012/..	PA67330-....
		16	SZ7016/..	PA67340-....
		20	SZ7020/..	PA67350-....
		25	SZ7025/..	PA67360-....
		32	SZ7032/..	PA58160-....
		40	SZ7040/..	PA59070-....
		50	SZ7050/..	PA60140-....
		63	SZ7063/..	PA61090-....
		80	SZ7080/..	PA62100-....
		100	SZ7100/..	PA63010-....

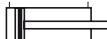
Complete Stroke Length (mm)

(4-digit)

Standard Stroke Lengths

Cyl. Ø	Stroke Lengths (mm)
12	5, 10
16, 20, 25, 32, 40	5, 10, 25
50, 63, 80, 100	10, 25

**Order Instructions – Cylinder, Series SZ6 ....., Ø 12 – 100 mm**

System	Symbol	Piston-Ø	Order Instructions	
			Type	Order-No.
Double acting without cushioning For contactless position sensing		12	SZ6012/..	PA67290-....
		16	SZ6016/..	PA67300-....
		20	SZ6020/..	PA67310-....
		25	SZ6025/..	PA67320-....
		32	SZ6032/..	PA58150-....
		40	SZ6040/..	PA59060-....
		50	SZ6050/..	PA60150-....
		63	SZ6063/..	PA61100-....
		80	SZ6080/..	PA62090-....
		100	SZ6100/..	PA63000-....

Complete Stroke Length (mm)

(4-digit)

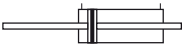
Standard Stroke Lengths

Cyl. Ø	Stroke Lengths (mm)
12	5, 10
16	5, 10, 25
20, 25	5, 10, 25, 50
32, 40	5, 10, 25, 50, 80
50-100	10, 25, 50, 80

Further stroke lengths available on request.



**Order Instructions – Cylinder, Series SZD6...., Ø 12 – 100 mm**

System	Symbol	Piston-Ø	Order Instructions	
			Type	Order-No.
With through piston rod Double acting without cushioning For contactless position sensing		12	SZD6012/..	PA67610-....
		16	SZD6016/..	PA67620-....
		20	SZD6020/..	PA67630-....
		25	SZD6025/..	PA67640-....
		32	SZD6032/..	PA58230-....
		40	SZD6040/..	PA59150-....
		50	SZD6050/..	PA60220-....
		63	SZD6063/..	PA61160-....
		80	SZD6080/..	PA62120-....
		100	SZD6100/..	PA63030-....

Complete Stroke Length (mm)

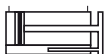
(4-digit)

**Standard Stroke Lengths**

Cyl. Ø	Stroke Lengths (mm)
12	5, 10
16	5, 10, 25
20, 25	5, 10, 25, 50
32, 40	5, 10, 25, 50, 80
50-100	10, 25, 50, 80

Further stroke lengths available on request.

**Order Instructions – Cylinder, Series SZV6...., Ø 20 – 63 mm**

System	Symbol	Piston-Ø	Order Instructions	
			Type	Order-No.
Non-rotating Double acting without cushioning For contactless position sensing		20	SZVD6020/..	PA67370-....
		25	SZV6025/..	PA67380-....
		32	SZV6032/..	PA58190-....
		40	SZV6040/..	PA59100-....
		50	SZV6050/..	PA60130-....
		63	SZV6063/..	PA61080-....

Complete Stroke Length (mm)

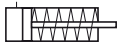
(4-digit)

**Standard Stroke Lengths**

Cyl. Ø	Stroke Lengths (mm)
20, 25	5, 10, 25, 50
32, 40	5, 10, 25, 50, 80
50, 63	10, 25, 50, 80

Further stroke lengths available on request.

**Order Instructions – Cylinder, Series SZK3...., Ø 32, 50, 63 mm**

System	Symbol	Piston-Ø	Order Instructions	
			Type	Order-No.
Single acting		32	SZK3032/5	PD35344-0005
		32	SZK3032/10	PD35344-0010
		50	SZK3050/10	PD35331-0010
		63	SZK3063/10	PD35346-0010