

SZ Compact Cylinder

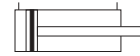
Specifications

Features	
Type	Compact Cylinder
Series	SZ
Configurations	SZ6 Double Acting, Single Rod, Magnetic Piston SZD6 Double Acting, Double Rod, Magnetic Piston SZV6 Double Acting, Non-Rotating, Magnetic Piston SZ7 Single Acting, Single Rod, Magnetic Piston, Spring Return
Construction Materials	
Barrel	Extruded Aluminum, Anodized (10µ)
Front Cover	Brass: Ø 12 to 40 Aluminum: Ø 50 to 100
Rear Cover	Aluminum, Anodized (10µ)
Piston Rod	Stainless Steel
Rod Bearing	Teflon Impregnated Brass
Piston	Delron: Ø 12 to 40 Aluminum: Ø 50 to 100
Seals	NBR (Optional: Viton)
Guide Rods	Stainless Steel
Guide Rod Bearings	Teflon Impregnated Steel
Tooling Plate	Aluminum, Anodized (10µ)
Bumpers	Polyurethane
Characteristics	
Operating Temperature	14° F (-10°C) to 158 °F (+70°C)
Operating Pressure	Min. SZ 6/SZV6 15 PSI (1 bar) SZD 12 38 PSI (2.5 bar) ø16, 20 30 PSI (2 bar) ø25-40 22 PSI (1.5 bar) ø50-100 15 PSI (1 bar) Max. 145 PSI (10 bar)
Normal Operating Pressure	90 PSI (6 bar)
Lubrication	Pre-lubricated at factory. If additional lubrication is required, use oil compatible with NBR seals and designed for use in pneumatic systems.
Media	Filtered and Regulated Compressed Air
Installation	In any Position
Weight	See Chart - Page 19
Stroke Length	Varies by Bore Size
Theoretical Forces	See Technical Information Sheet
Load Capacity	See Technical Information Sheet
Specifications	
Piston Diameter	12 16 20 25 32 40 50 63 80 100
Port Sizes	NPT 10•32 M5 10•32 M5 10•32 M5 1/8 1/8 1/8 1/8 1/8 1/8 1/4 1/4 Metric (G) M5 M5 M5 1/8 1/8 1/8 1/8 1/8 1/8 1/4 1/4
Rod Diameter	Inch 0.24 0.31 0.39 0.47 0.47 0.63 0.78 0.78 0.78 0.98 1.26 mm 6 8 10 12 12 20 20 20 20 25 32

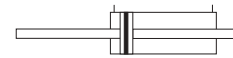
Series SZ

Ø12mm - 100mm

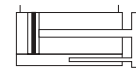
SZ 6: Double Acting, Single Rod, Magnets



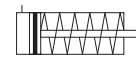
SZD 6: Double Acting, Double Rod, Magnets



SZV 6: Double Acting, Non-Rotating, Magnets



SZ 7: Single Acting, Single Rod, Magnets



Features:

- Stainless Steel Rod
- Magnetic Piston
- Bumpers
- Pre-Lubricated Design
- Inch or Metric Construction

SZ Compact Cylinder



Ordering Information

Example: SZV-U 6050/50-D
 Compact Cylinder
 Non-Rotating
 U.S. Option
 Double Acting, Magnets
 50mm Bore
 50mm Stroke
 Threaded Body Option

S Z V - U 6 0 5 0 / 5 0 - D

Versions:

- SZ - Single Rod
- SZD - Double Rod
- SZV - Non-Rotating

Design:

- - Metric Construction
- U - US Construction: NPT Ports & UNC Threads

Actuation:

- 6 - Double Acting, Magnets
- 7 - Single Acting, Magnets

Options:

- - Standard
- D - Threaded Body, top & bottom

Stroke:

- MM: (standard)
- any mm increment
 - see stroke length chart on next page for maximum stroke lengths
 - contact factory for special stroke lengths

Bore:

- 012 - 12mm (nom. 1/2")
- 016 - 16mm (nom. 3/4")
- 020 - 20mm (nom. 7/8")
- 025 - 25mm (nom. 1")
- 032 - 32mm (nom. 1-1/4")
- 040 - 40mm (nom. 1-1/2")
- 050 - 50mm (nom. 2")
- 063 - 63mm (nom. 2-1/2")
- 080 - 80mm (nom. 3-1/8")
- 100 - 100mm (nom. 4")

Proximity Sensors/Brackets: See Page 73

SZ Compact Cylinder

Cylinder Details

Standard Strokes (MM)	Bore Ø									
	12mm	16mm	20mm	25mm	32mm	40mm	50mm	63mm	80mm	100mm
SZ-U 6	Double Acting, Single Rod									
SZD-U 6	Double Acting, Double Rod									
5	•		•	•	•	•	•	•	•	•
10	•	•	•	•	•	•	•	•	•	•
15	•	•	•	•	•	•	•	•	•	•
20	•	•	•	•	•	•	•	•	•	•
25	•	•	•	•	•	•	•	•	•	•
30			•	•	•	•	•	•	•	•
40			•	•	•	•	•	•	•	•
50			•	•	•	•	•	•	•	•
60				•	•	•	•	•	•	•
80					•	•	•	•	•	•
SZV-U 6	Double Acting, Non-Rotating									
5			•	•	•	•	•	•		
10			•	•	•	•	•	•		
15			•	•	•	•	•	•		
20			•	•	•	•	•	•		
25			•	•	•	•	•	•		
30			•	•	•	•	•	•		
40			•	•	•	•	•	•		
50			•	•	•	•	•	•		
60				•	•	•	•	•		
80					•	•	•	•		
SZ-U 7	Single Acting, Single Rod									
5	•	•	•	•	•	•				
10	•	•	•	•	•	•	•	•	•	•
25		•	•	•	•	•	•	•	•	•

(Contact the factory for non-standard stroke lengths)

Spring Forces

Mode		Bore Ø									
		12mm	16mm	20mm	25mm	32mm	40mm	50mm	63mm	80mm	100mm
Cylinder Extended	lbf	2.25	4.05	6.07	6.97	10.57	13.04	19.33	23.60	29.23	33.72
	N	10	18	27	31	47	58	86	105	130	150
Retracted Stroke (5mm)	lbf	1.80	3.37	5.17	5.85	8.54	10.79	--	--	--	--
	N	8	15	23	26	38	48	--	--	--	--
Retracted Stroke (10mm)	lbf	1.35	2.70	4.27	4.72	6.29	8.54	15.74	20.23	25.63	31.02
	N	6	12	19	21	28	38	70	90	114	138
Spring Constant	lbf/in	2.23	3.08	4.05	5.14	10.34	11.71	--	--	--	--
	N/mm	0.39	0.54	0.71	0.9	1.81	2.05	--	--	--	--
Retracted Stroke (25mm)	lbf	--	2.47	4.27	4.50	6.29	8.54	10.79	15.06	20.23	26.98
	N	--	11	19	20	28	38	48	67	90	120
Spring Constant	lbf/in	--	1.54	2.00	2.57	4.28	4.57	8.62	8.79	9.25	12.33
	N/mm	--	0.27	0.35	0.45	0.75	0.8	1.51	1.54	1.62	2.16

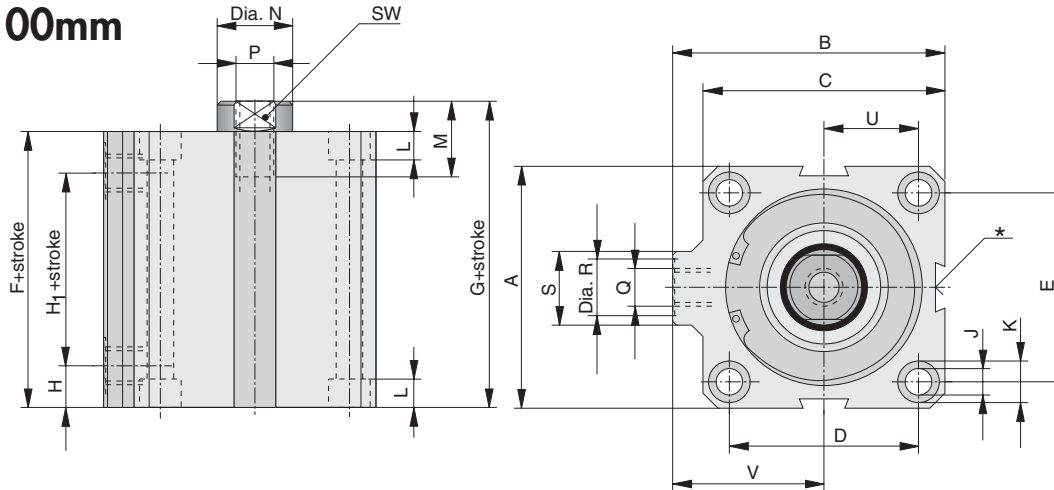
Weights

Cylinder Type		Bore Ø									
		12mm	16mm	20mm	25mm	32mm	40mm	50mm	63mm	80mm	100mm
SZ 6/7 per 0.38"(10mm)	lbs	0.11	0.18	0.24	0.35	0.51	0.77	1.10	1.98	2.87	4.63
	kg	0.05	0.08	0.11	0.16	0.23	0.35	0.50	0.90	1.30	2.10
	lbs	0.03	0.04	0.05	0.07	0.09	0.13	0.18	0.24	0.30	0.47
SZD 6 per 0.38"(10mm)	kg	0.013	0.018	0.022	0.033	0.042	0.059	0.080	0.108	0.138	0.213
	lbs	0.13	0.22	0.31	0.44	0.62	0.95	1.43	2.34	3.44	5.60
	kg	0.06	0.10	0.14	0.20	0.28	0.43	0.64	1.06	1.56	2.54
SZV 6 per 0.38"(10mm)	lbs			0.06	0.09	0.11	0.17	0.23	0.29	0.39	0.61
	kg			0.015	0.022	0.028	0.042	0.051	0.075	0.104	0.133
	lbs			0.49	0.62	0.77	1.06	1.41	2.65		
	kg			0.22	0.28	0.35	0.48	0.65	1.20		
	lbs			0.05	0.08	0.10	0.14	0.20	0.25		
	kg			0.024	0.036	0.046	0.065	0.090	0.115		

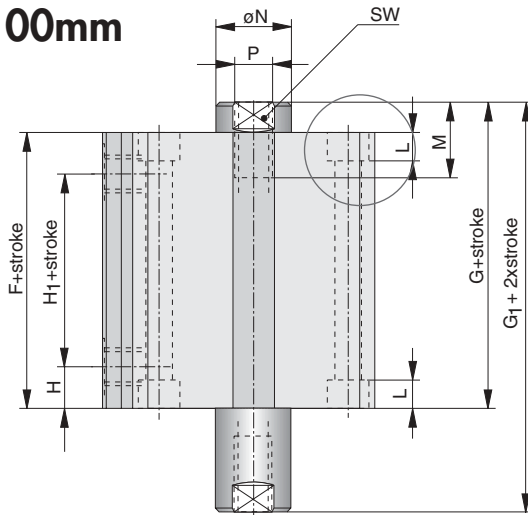
SZ Compact Cylinder

Dimensional Data

SZ6 and SZ7 Ø12-100mm



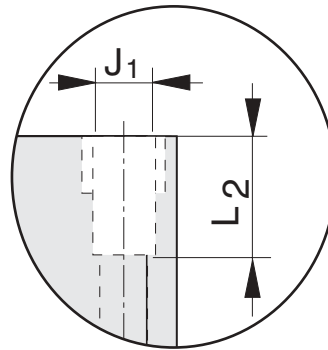
SZD 6 Ø12-100mm



Threaded Mounting Holes: OPTION- D

In addition to the counter bored thru-holes, threaded mounting holes are available. The diagram below details this feature.

of threaded hole: SZV: (2) Bottom Only
SZ6/7 & SZD 6: (8) Bottom & Top



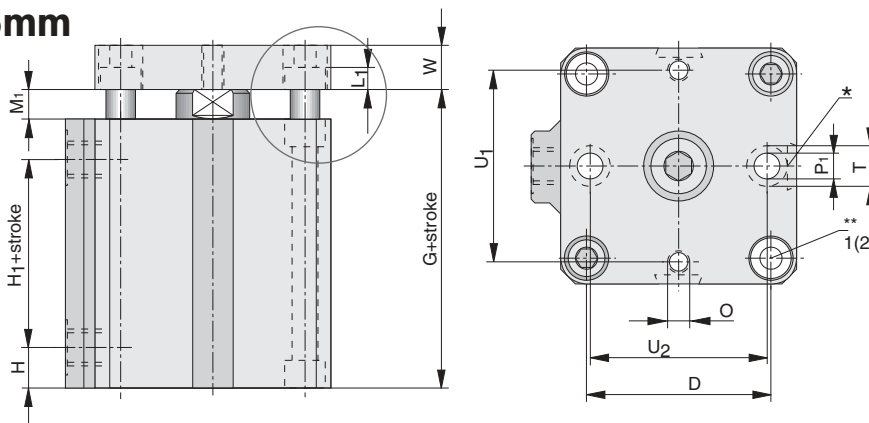
Dimension Explanations:

- J- Hole diameter thru Extrusion
- K- Counter Bore Diameter
- L- Body Counter Bore Depth
- L₁- Depth of Counterbore in Tooling Plate
- M- Piston Rod Thread Depth
- N₁- Diameter of Guide Rods

Notes:

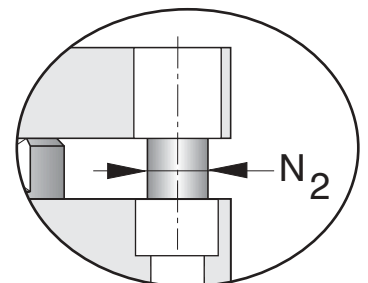
- * The center sensor dovetail is omitted on the Bore 20 Cylinder.
- 1- Through holes in Tooling Plate for SZV version
- ** Thru-hole in Tooling Plate

SZV 6 Ø20-63mm



Counter Bored Holes:

The standard cylinders have thru mounting holes that are counter bored. The diagram below shows details of this feature.



SZ Compact Cylinder



Dimensional Data

Bore Ø	A	B	C	D	E	F + stroke	G + stroke	G ₁ + 2 x stroke	H	H ₁ + stroke	J
12	0.91 23	1.06 27	0.98 25	0.68 17.2	0.51 13	1.34 34	1.52 38.5	1.69 43	0.39 10	0.55 14	0.13 3.4
16	1.10 28	1.18 30	1.10 28	0.79 20	0.79 20	1.36 34.5	1.57 40	1.79 45.5	0.39 10	0.55 14	0.13 3.4
20	1.26 32	1.34 34	1.26 32	0.87 22	0.87 22	1.42 36	1.65 42	1.89 48	0.43 11	0.55 14	0.18 4.5
25	1.46 37	1.73 44	1.54 39	1.10 28	1.02 26	1.52 38.5	1.77 45	2.03 51.5	0.45 11.5	0.61 15.5	0.18 4.5
32	1.77 45	2.05 52	1.89 48	1.42 36	1.26 32	1.54 39	1.79 45.5	2.05 52	0.35 9	0.81 20.5	0.22 5.5
40	2.17 55	2.32 59	2.17 55	1.61 41	1.61 41	1.65 42	1.89 48	2.17 55	0.35 9	0.94 24	0.26 6.7
50	2.52 64	2.83 72	2.52 64	1.97 50	1.97 50	1.77 45	2.09 53	2.40 61	0.43 11	0.91 23	0.26 6.7
63	3.15 80	3.46 88	3.15 80	2.44 62	2.44 62	2.07 52.5	2.38 60.5	2.70 68.5	0.47 12	1.12 28.5	0.33 8.5
80	3.70 94	4.09 104	3.70 94	2.87 73	2.87 73	2.24 57	2.60 66	2.95 75	0.51 13	1.22 31	0.33 8.5
100	4.61 117	4.94 125.5	4.61 117	3.56 90.5	3.56 90.5	2.30 58.5	2.70 68.5	3.09 78.5	0.55 14	1.22 31	0.41 10.5

Bore Ø	J ₁	K	L	L ₁	L ₂	M	M ₁	N	N ₂	O	P
12	8•32 M4	0.24 6	0.13 3.4		0.48 12	0.24 6		0.24 6			4•40 M3
16	8•32 M4	0.24 6	0.13 3.4		0.48 12	0.31 8		0.31 8			8•32 M4
20	1/4•20 M5	0.30 7.5	0.19 4.8	0.20 5	0.74 15	0.31 8	0.24 6	0.39 10	0.20 5	10•32 M4	10•32 M5
25	1/4•20 M5	0.30 7.5	0.19 4.8	0.20 5	0.74 15	0.47 12	0.26 6.5	0.47 12	0.20 5	10•32 M4	1/4•20 M6
32	5/16•18 M7	0.39 10	0.23 5.8	0.24 6	0.93 24	0.47 12	0.26 6.5	0.47 12	0.24 6	10•32 M5	1/4•20 M8
40	5/16•18 M8	0.43 11	0.27 6.8	0.24 6	0.93 24	0.47 12	0.24 6	0.63 16	0.24 6	10•32 M5	5/16•18 M8
50	5/16•18 M8	0.43 11	0.27 6.8	0.28 7	0.93 24	0.69 17.5	0.31 8	0.79 20	0.31 8	10•32 M6	3/8•16 M10
63	1/2•13 M10	0.55 14	0.33 8.3	0.35 9	1.49 30	0.69 17.5	0.31 8	0.79 20	0.39 10	10•32 M6	3/8•16 M12
80	1/2•13 M10	0.55 14	0.33 8.3		1.49 30	0.98 25		0.98 25			1/2•13 M16
100	1/2•13 M12	0.71 18	0.43 11		1.49 36	1.10 28		1.26 32			3/4•10 M20

Bore Ø	P ₁	Q	R	S	SW	T	U	U ₁	U ₂	V	W
12		10•32 M5	0.31 8	0.43 11	5		0.34 8.6			0.57 14.5	
16		10•32 M5	0.31 8	0.43 11	6		0.39 10			0.63 16	
20	0.18 4.5	10•32 M5	0.31 8	0.43 11	8	0.30 7.5	0.43 11	0.87 22	0.87 22	0.71 18	0.31 8
25	0.18 4.5	1/8 NPT G1/8	0.59 15	0.75 19	10	0.31 8	0.55 14	1.02 26	1.10 28	0.96 24.5	0.31 8
32	0.22 5.5	1/8 NPT G1/8	0.59 15	0.75 19	10	0.39 10	0.71 18	1.26 32	1.42 36	1.10 28	0.39 10
40	0.22 5.5	1/8 NPT G1/8	0.59 15	0.75 19	13	0.39 10	0.81 20.5	1.57 40	1.57 40	1.24 31.5	0.39 10
50	0.27 6.8	1/8 NPT G1/8	0.59 15	0.75 19	17	0.45 11.5	0.98 25	1.97 50	1.97 50	1.57 40	0.47 12
63	0.35 9	1/8 NPT G1/8	0.59 15	0.91 23	17	0.57 14.5	1.22 31	2.44 62	2.44 62	1.89 48	0.47 12
80		1/4 NPT G1/4	0.75 19	0.91 23	22		1.44 36.5			2.24 57	
100		1/4 NPT G1/4	0.75 19	0.91 23	27		1.78 45.25			2.64 67	

NOTE: SZ 7 Spring Return Version: 1" (25mm) Stroke

It is necessary to add the following to the base F & G dimensions

Bores: 16 to 25 Add 0.39" (10mm)
 32, 40 Add 0.197" (5mm)

NZK Compact Cylinder

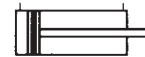
Specifications

Characteristics	Symbol	Unit	Description
General Features			
Type			Piston Rod Cylinder
Series			NZK
Configurations			NZK6 Double Acting, Single Rod, Magnetic Piston NZK7 Single Acting, Single Rod, Magnetic Piston NZK8 Single Acting, Single Rod, Magnetic Piston
Mounting			See drawing
Tube connection			Thread
Ambient temperature range	ϑ_{min} ϑ_{max}	°C	-20 +80
Mediums - temperature range	ϑ_{max}	°C	+8
Weight (mass)		kg	See table
Installation			In any position
Medium			Filtered and lubricated or filtered and unlubricated compressed air
Lubrication			Oil mist lubrication compatible with polyurethan
Material Cylinder tube Front/Rear covers Piston rod			Aluminum Aluminum Stainless steel
Pneumatic Characteristics			
Nominal pressure	P _n	bar	6
Operating pressure	P _{min} P _{max}	bar bar	0.5 (Single acting version: 1.0) 10
Piston diameter		mm	32 40 50 63 80 100
Port size			G1/8 G1/8 G1/8 G1/8 G1/8 G1/4
Piston rod diameter		mm	12 16 20 20 25 25
Piston rod thread			M6 M6 M8 M8 M10 M12 1) M10x1.25 M12x1.25 M16x1.5 M16x1.5 M20x1.5 M20x1.5
Stroke length		mm	Double acting version: See order instructions Single acting version: 5, 10, 15, 20, 25
Cushioning			Elastomer cushioning at both ends
Spring return force	max.	N	See diagram

Series NZK

Ø32mm - 100mm

NZK 6: Double Acting, Single Rod, Magnets



NZK 7: Single Acting, Single Rod, Magnets



NZK 8: Single Acting, Single Rod, Magnets



Features:

**Stainless Steel Rod
Magnetic Piston
Bumpers
Pre-Lubricated Design
Spring Extend or Retract
ISO 6431 Mounting Holes**

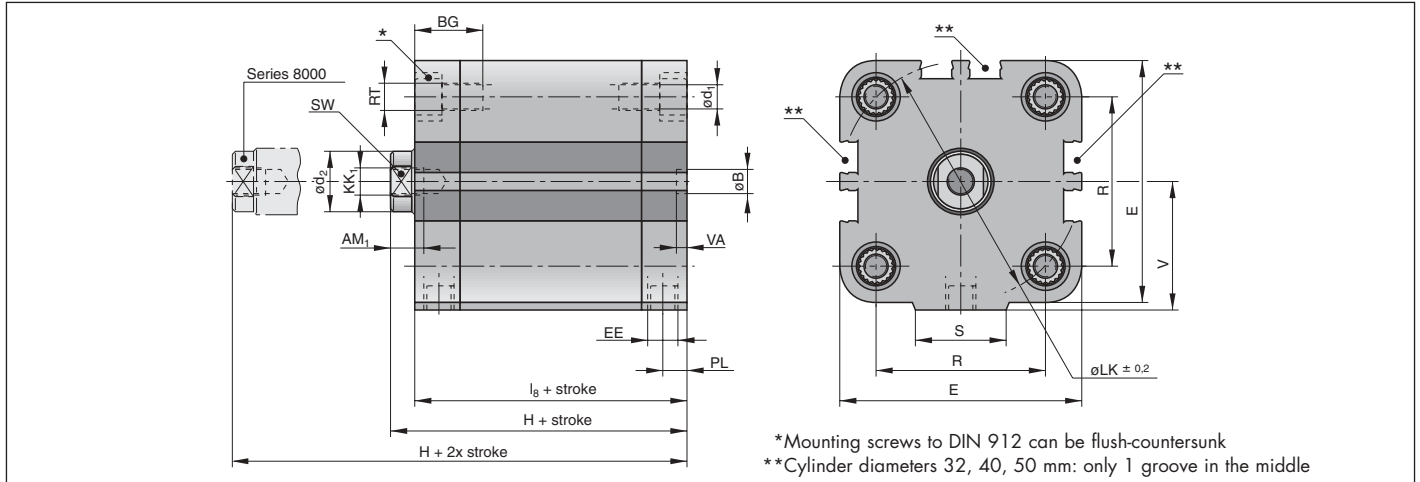
¹⁾ Piston rod thread on series NZK.../...-AG

NZK Compact Cylinder

Cylinder Details

Dimensions for Basic Cylinder

Version: Piston Rod with Female Thread (Series NZK..../...)



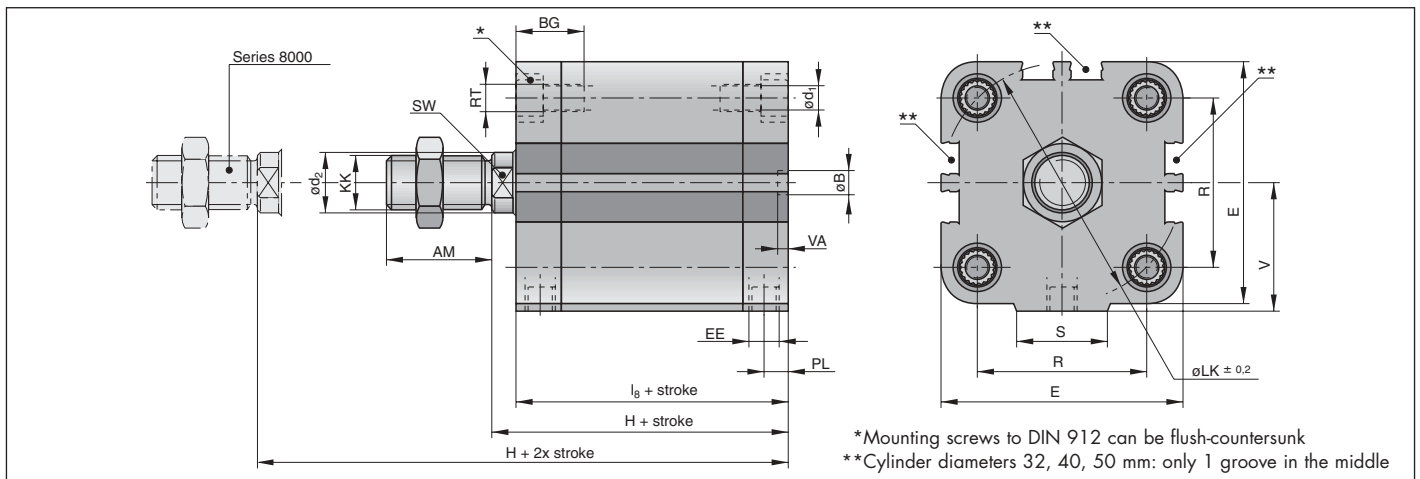
Dimension Table (mm) for Basic Cylinder

Bore Ø	AM ₁	øB H9	BG	ød ₁	ød ₂	E	EE	H (* +stroke)	KK ₁	l _g +stroke	øLK	PL	R	RT	S	SW	V	VA
32	12	6	21	5.5	12	50	G1/8	50.5	M6	44.5	46	8	32.5	M6	21	10	26.5	4
40	12	6	21	5.5	16	57	G1/8	52	M6	45.5	54	8	38	M6	22	13	30	4
50	12	6	22.5	6.5	20	67.5	G1/8	53	M8	45.5	66	8	46.5	M8	25	17	35.75	4
63	12	8	22.5	6.5	20	81	G1/8	57.5	M8	50	80	8	56.5	M8	30	17	43.5	4
80	16	8	27.5	8.5	25	98	G1/8	64	M10	56	102	8.5	72	M10	40	19	53	4
100	20	8	32.5	8.5	25	119	G1/4	76.5	M12	66.5	126	10.5	89	M10	50	22	62.5	4

*Series NZK 8000: H + 2x stroke

Dimensions for Basic Cylinder

Version: Piston Rod with Male Thread (Series NZK..../...-AG)



Dimension Table (mm) for Basic Cylinder

Bore Ø	AM	øB H9	BG	ød ₁	ød ₂	E	EE	H (* +stroke)	KK ₁	l _g +stroke	øLK	PL	R	RT	S	SW	V	VA
32	20	6	21	5.5	12	50	G1/8	50.5	M10x1.25	44.5	46	8	32.5	M6	21	10	26.5	4
40	24	6	21	5.5	16	57	G1/8	52	M12x1.25	45.5	54	8	38	M6	22	13	30	4
50	32	6	22.5	6.5	20	67.5	G1/8	53	M16x1.5	45.5	66	8	46.5	M8	25	17	35.75	4
63	32	8	22.5	6.5	20	81	G1/8	57.5	M16x1.5	50	80	8	56.5	M8	30	17	43.5	4
80	40	8	27.5	8.5	25	98	G1/8	64	M20x1.5	56	102	8.5	72	M10	40	19	53	4
100	40	8	32.5	8.5	25	119	G1/4	76.5	M20x1.5	66.5	126	10.5	89	M10	50	22	62.5	4

*Series NZK 8000: H + 2x stroke

NZK Compact Cylinder



Ordering Information

Description	Symbol	Bore Ø	Type #	Order #
Double acting without adjustable end cushioning, for contactless position sensing		32	NZK 6032/... NZK 6032/...-AG	PA 58390-.... PA 58470-....
		40	NZK 6040/... NZK 6040/...-AG	PA 59310-.... PA 59390-....
		50	NZK 6050/... NZK 6050/...-AG	PA 60390-.... PA 60470-....
		63	NZK 6063/... NZK 6063/...-AG	PA 61330-.... PA 61410-....
		80	NZK 6080/... NZK 6080/...-AG	PA 62230-.... PA 62310-....
		100	NZK 6100/... NZK 6100/...-AG	PA 63130-.... PA 63210-....
Single acting, normally retracted, without adjustable end cushioning for contactless position sensing		32	NZK 7032/... NZK 7032/...-AG	PA 58400-.... PA 58480-....
		40	NZK 7040/... NZK 7040/...-AG	PA 59320-.... PA 59400-....
		50	NZK 7050/... NZK 7050/...-AG	PA 60400-.... PA 60480-....
		63	NZK 7063/... NZK 7063/...-AG	PA 61340-.... PA 61420-....
		80	NZK 7080/... NZK 7080/...-AG	PA 62240-.... PA 62320-....
		100	NZK 7100/... NZK 7100/...-AG	PA 63140-.... PA 63220-....
Single acting, normally extended, without adjustable end cushioning for contactless position sensing		32	NZK 8032/... NZK 8032/...-AG	PA 58460-.... PA 58490-....
		40	NZK 8040/... NZK 8040/...-AG	PA 59360-.... PA 59410-....
		50	NZK 8050/... NZK 8050/...-AG	PA 60460-.... PA 60490-....
		63	NZK 8063/... NZK 8063/...-AG	PA 61400-.... PA 61430-....
		80	NZK 8080/... NZK 8080/...-AG	PA 62300-.... PA 62330-....
		100	NZK 8100/... NZK 8100/...-AG	PA 63200-.... PA 63230-....
<p>Complete type designation and order no. with stroke length in mm (4-digits)</p> <p>Stroke Length: MM (standard) Double acting Version:—any mm increment up to 500mm standard Single acting Version:—0005,0010,0015,0020,0025 Contact factory for special stroke lengths</p>				

Description	Bores					
	32mm	40mm	50mm	63mm	80mm	100mm
Foot mounting A-..	PD 27917	PD 27918	PD 28072	PD 28073	PD 28074	PD 28075
Rear trunnion mounting B-..	PD 22704	PD 22705	PD 22706	PD 22707	PD 22708	PD 22709
Rear trunnion mounting BA-..	PD 23412	PD 23413	PD 23414	PD 23415	PD 23416	PD 23417
Rear trunnion mounting BAS-..*	PD 23843	PD 23844	PD 23845	PD 23846	PD 23847	PD 23848
Front flange mounting C-..	PD 23403	PD 23404	PD 23405	PD 23406	PD 23407	PD 23408
Rear flange mounting D-..	PD 23403	PD 23404	PD 23405	PD 23406	PD 23407	PD 23408
Security bolt for mountings B,BA,BAS	KY 6153	KY 6154	KY 6157	KY 6156	KY 6158	KY 6159
Delivery information: on delivery all cylinder mountings, except the trunnion mounting are not assembled						