



Vacuum Pad: Vertical Vacuum Entry Without Buffer *Series ZPT*



Specifications

Vacuum entry	Direction		Vertical	
	Connection		Male thread	Female thread
	Thread diameter	$\phi 2$ to $\phi 8$ 2004, 3507, 4010 Thin section series ($\phi 10$ to $\phi 16$)		M5 x 0.8, M6 x 1
$\phi 10$ to $\phi 16$		M5 x 0.8, M6 x 1	M5 x 0.8, M6 x 1, Rc $\frac{1}{8}$	
$\phi 20$ to $\phi 32$		M6 x 1, M8 x 1	M5 x 0.8, M6 x 1, M8 x 1.25, Rc $\frac{1}{8}$	
$\phi 40, \phi 50$		M6 x 1, M8 x 1	M6 x 1, M8 x 1.25, Rc $\frac{1}{8}$	
Mounting			Use connection for vacuum entry	

Pad Type

Pad form	Flat	Flat with ribs	Deep	Bellows	Thin flat/Thin flat with ribs
Pad diameter (mm)	2, 4, 6, 8, 2 x 4, 3.5 x 7, 4 x 10, 10, 13, 16, 20, 25, 32, 40, 50	10, 13, 16, 20, 25, 32, 40, 50	10, 16, 25, 40	6, 8, 10, 13, 16, 20, 25, 32, 40, 50	10, 13, 16
Material (Color)	NBR (Black), Silicon rubber (White), Urethane rubber (Brown), Fluoro rubber (Black with green mark) Conductive NBR (Black with one white mark), Conductive silicon rubber (Black with two white marks)				
Durometer	NBR (50°), Silicon rubber (40°), Urethane rubber/Fluoro rubber (60°) Conductive NBR (50°), Conductive silicon rubber (50°)				

Weight/Male Thread (Female thread)

(g)

Model	Flat		Flat with ribs				Deep				Bellows							
	M4	M5	M6	M8	Rc $\frac{1}{8}$	M5	M6	M8	Rc $\frac{1}{8}$	M5	M6	M8	Rc $\frac{1}{8}$	M4	M5	M6	M8	Rc $\frac{1}{8}$
ZPT02 to ZPT08	— (3.5)	2.5 (3)	3.5 (—)	—	—	—	—	—	—	—	—	—	—	— (3.5) (except $\phi 2, \phi 4$)	2.5 (3) (except $\phi 2, \phi 4$)	3.5 (—) (except $\phi 2, \phi 4$)	—	—
ZPT10	—	10 (6.5)	12 (6)	—	— (13)	10 (6.5)	12 (6)	—	— (12)	10 (7)	12 (6)	— (13)	—	—	—	—	—	—
ZPT13	—	—	—	—	—	—	—	—	—	11 (7)	15 (7)	15 (13)	—	—	—	—	—	—
ZPT16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ZPT20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ZPT25	—	— (8.5)	15 (8)	26 (17)	— (16)	— (8.5)	15 (8)	26 (17)	— (16)	— (10)	15 (10)	15 (18)	— (17)	—	— (8.5)	15 (8)	16 (17)	— (16)
ZPT32	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ZPT40	—	—	28 (26)	30 (25)	— (23)	—	28 (26)	30 (25)	— (16)	—	30 (28)	32 (26)	— (20)	—	—	28 (26)	30 (25)	— (23)
ZPT50	—	—	30 (29)	32 (27)	— (25)	—	32 (30)	34 (29)	— (27)	—	—	—	—	—	—	30 (29)	32 (27)	— (25)

* (): Figures for female thread connections



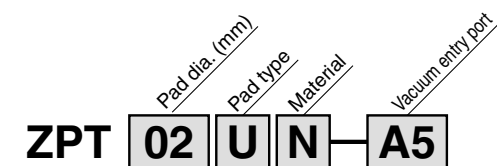
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Model

Model	Pad dia. (mm)	Applicable pad form						Connection/Thread dia.		Model	Pad dia. (mm)	Applicable pad form				Connection/Thread dia.	
		Flat (U)	Flat with ribs (C)	Deep (D)	Bellows (B)	Thin flat (UT)	Thin flat with ribs (CT)	Male thread	Female thread			Flat (U)	Flat with ribs (C)	Deep (D)	Bellows (B)	Male thread	Female thread
ZPT2004U□-□	2 x 4	●	—	—	—	—	—	M5 x 0.8 M6 x 1	M4 x 0.7 M5 x 0.8	ZPT10□□-□	10	●	●	●	●	M5 x 0.8 M6 x 1	M5 x 0.8 M6 x 1 Rc $\frac{1}{8}$
ZPT3507U□-□	3.5 x 7	●	—	—	—	—	ZPT13□□-□			13	●	●	—	●			
ZPT4010U□-□	4 x 10	●	—	—	—	—	ZPT16□□-□			16	●	●	●	●			
ZPT02U□-□	2	●	—	—	—	—	ZPT20□□-□			20	●	●	—	●	M6 x 1 M8 x 1	M5 x 0.8 M6 x 1 M8 x 1.25 Rc $\frac{1}{8}$	
ZPT04U□-□	4	●	—	—	—	—	ZPT25□□-□			25	●	●	●	●			
ZPT06□□-□	6	●	—	—	●	—	ZPT32□□-□			32	●	●	—	●	M6 x 1 M8 x 1	M6 x 1 M8 x 1.25 Rc $\frac{1}{8}$	
ZPT08□□-□	8	●	—	—	●	—	ZPT40□□-□			40	●	●	●	●			
ZPT10□□-□	10	—	—	—	—	●	ZPT50□□-□			50	●	●	—	●			
ZPT13□□-□	13	—	—	—	—	●											
ZPT16□□-□	16	—	—	—	—	●											

How to Order

Series ZPT
Without buffer



Pad diameter (mm)

2004	2 x 4
3507	3.5 x 7
4010	4 x 10
02	ø2
04	ø4
06	ø6
08	ø8
10	ø10
13	ø13
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50

Vacuum entry/Mounting thread diameter

Connection	Symbol	Thread diameter	ø2 to ø8 2 x 4, 3.5 x 7, 4 x 10 ø10 to ø16 (Thin section series)			
			ø10 to ø16	ø20 to ø32	ø40, ø50	
Male thread	A5	M5 x 0.8	●	●	—	—
	A6	M6 x 1	●	●	●	●
	A8	M8 x 1	—	—	●	●
Female thread	B4	M4 x 0.7	●	—	—	—
	B5	M5 x 0.8	●	●	●	—
	B6	M6 x 1	—	●	●	●
	B8	M8 x 1.25	—	—	●	●
	B01	Rc 1/8	—	●	●	●

Pad type

(Refer to "Table (1)" for applications.)

U	Flat
C	Flat with ribs
D	Deep
B	Bellows
UT	Thin flat
CT	Thin flat with ribs

Table (1) Pad Diameter/Pad Type

Type	Diameter (mm)														
	2 x 4	3.5 x 7	4 x 10	2	4	6	8	10	13	16	20	25	32	40	50
Flat	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Flat with ribs	—	—	—	—	—	—	—	●	●	●	●	●	●	●	●
Deep	—	—	—	—	—	—	—	●	—	●	—	●	—	●	—
Bellows	—	—	—	—	—	●	●	●	●	●	●	●	●	●	●
Thin flat	—	—	—	—	—	—	—	●	●	●	—	—	—	—	—
Thin flat with ribs	—	—	—	—	—	—	—	●	●	●	—	—	—	—	—

Material

N	NBR
S	Silicon rubber
U	Urethane rubber
F	Fluoro rubber
GN*	Conductive NBR (ø2 to ø16)
GS*	Conductive silicon rubber (ø2 to ø16)

* ø20 and larger are manufactured upon a receipt of order.

- ZX
- ZR
- ZM
- ZH
- ZU
- ZL
- ZY
- ZQ
- ZF
- ZP
- ZCU
- AMJ
- Misc.

⚠ Precautions

Be sure to read before handling. Refer to pages 13-15-3 to 13-15-4 for Safety Instructions and Common Precautions on the products mentioned in this catalog, and refer to page 13-1-5 for Precautions on every series.

Cautions on Design

⚠ Warning

1. In cases where workpieces are heavy or dangerous, etc., take measures to address a possible loss of adsorption force (installation of drop prevention guides, etc.).

In the case of transportation by vacuum adsorption using vacuum pads, adsorption force is lost when there is a drop in vacuum pressure. Furthermore, since vacuum pressure can also deteriorate due to wear and cracking of pads, and vacuum leakage from piping, etc., be certain to perform maintenance on vacuum equipment.

Selection

⚠ Caution

1. The pad materials differ depending upon the operating environment.

An appropriate pad material should be selected. Furthermore, since vacuum pads are manufactured for use with industrial products, they should not have direct contact with pharmaceuticals or food products, etc.

2. Depending upon the weight and shape of the workpieces, the diameter, quantity and shape of pads will vary.

Use the pad lifting force table for reference. Also, the pads selected will differ based upon conditions other than the above, such as the condition of the workpiece surface (presence or absence of oil or water), the workpiece material and its gas permeability. Confirmation is necessary by actually performing vacuum adsorption testing on the subject workpieces.

3. Use a buffer for adsorption on fragile workpieces.

The cushioning by the buffer is necessary when there is variation in the height of workpieces. When further positioning of pads and workpieces is desired, a detent buffer can be used.

4. The life of a buffer will be reduced if the lateral force is applied to the buffer shaft. Note that sometimes a load is applied to the buffer by a piping tube (pulling or pressing, etc. in a lateral direction).

5. Do not apply an impact or large forces to a pad when adsorbing a workpiece.

This will cause deformation, cracking and wear of the pad to be accelerated. The stiffening ribs, etc. should touch lightly, while staying within the pad skirt's deformation range. Positioning should be performed accurately. Especially in the case of small diameter pads.

6. When transporting in an upward direction, factors such as acceleration, wind pressure and impact force must be considered in addition to a workpiece weight.

Use caution particularly when lifting items such as glass plates and circuit boards, because a large force will be applied by the wind pressure. When a workpiece which is oriented vertically is transported horizontally, large forces are applied by acceleration when movement is started and stopped. Further, in cases where the pad and a workpiece can slip easily, accelerations and decelerations of horizontal movement should be kept low.

7. When transporting flat workpieces that have large surface areas using multiple pads, care must be taken when arranging the pads to balance the workpiece.

Maintenance

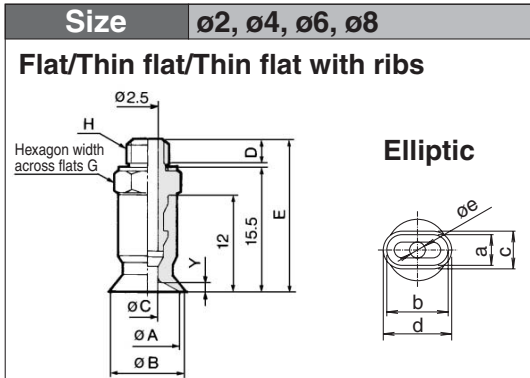
⚠ Caution

1. Perform pad maintenance regularly.

Since pads are essentially rubber, deterioration is unavoidable. The rate of deterioration depends upon factors such as conditions of use, environment and temperature. Regular maintenance should be performed. If any damage, splitting, cracking or abrasion has occurred in a pad which appears to be harmful, replace it immediately. Also, take care not to damage the outside of the pad.

Series ZPT

Connection	Male thread	Pad Form	Flat/Flat with ribs/Deep/Thin flat/ Thin flat with ribs/Elliptic
Vacuum Entry Port	Vertical	Mounting	Use connection for vacuum



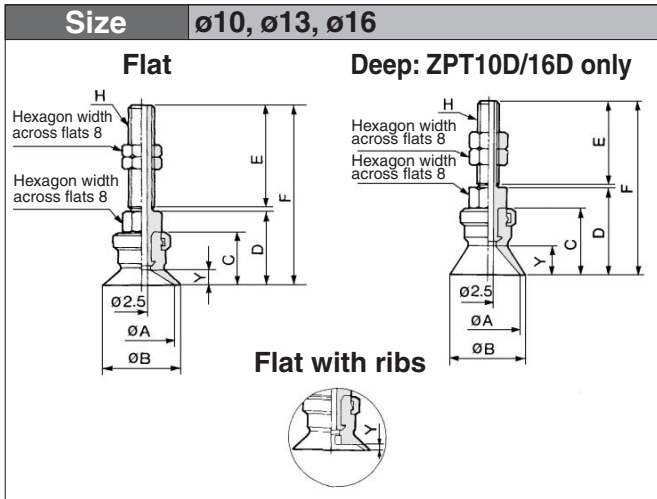
Flat/Thin Flat/Thin Flat with Ribs

Model	ϕA	ϕB	ϕC	H: M5 x 0.8			H: M6 x 1			Y	
				D	E	G	D	E	G		
ZPT02U	2	2.6	1.2	2.5	3	19	7	4	20	8	0.8
ZPT04U	4	4.8	1.6								
ZPT06U	6	7									
ZPT08U	8	9									
ZPT10UT	10	11									
ZPT13UT	13	14									
ZPT16UT	16	17									
ZPT10CT	10	11									
ZPT13CT	13	14									
ZPT16CT	16	17									

Elliptic

Model	a	b	c	d	ϕe	Y
ZPT2004U	2	4	2.6	4.6	1.2	0.3
ZPT3507U	3.5	7	4.3	7.8	1.8	0.5
ZPT4010U	4	10	5	11	2	0.8

* Dimensions of D, E, G are the same.

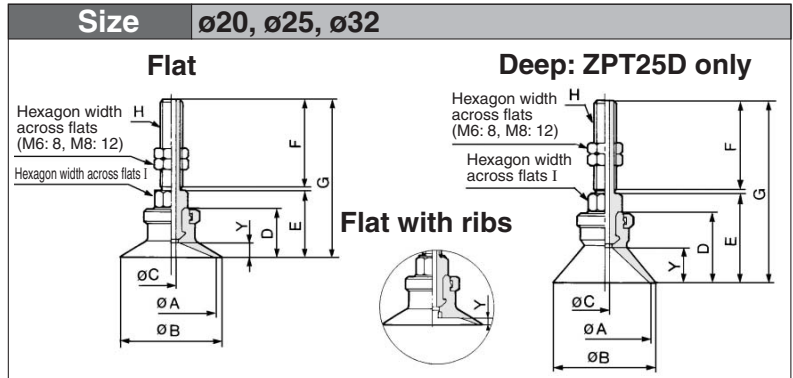


Flat/Flat with Ribs

Model	ϕA	ϕB	C	D	H: M5 x 0.8		H: M6 x 1		Y	
					E	F	E	F	Flat	Flat with ribs
ZPT10 ^U _C	10	12	12	17	20	38	25	43	3	1.7
ZPT13 ^U _C	13	15								1.8
ZPT16 ^U _C	16	18	12.5	17.5						38.5

Deep

Model	ϕA	ϕB	C	D	H: M5 x 0.8		H: M6 x 1		Y
					E	F	E	F	
ZPT10D	10	12	15	20	20	41	25	46	6
ZPT16D	16	18	16	21	20	42	25	47	7

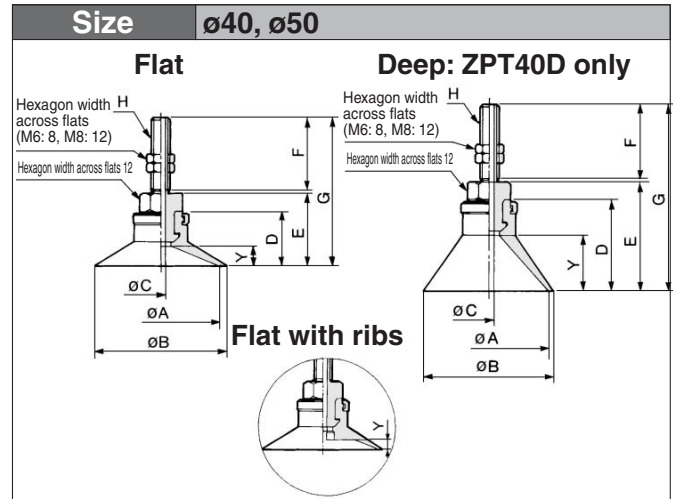


Flat/Flat with Ribs

Model	ϕA	ϕB	D	H: M6 x 1					H: M8 x 1					Y						
				ϕC	E	F	G	I	ϕC	E	F	G	I	Flat	Flat with ribs					
ZPT20 ^U _C	20	23	14	3	19	25	45	8	3.5	24	15	40	12	4	1.7					
ZPT25 ^U _C	25	28													19.5	45.5	24.5	40.5	4.5	1.8
ZPT32 ^U _C	32	35													14.5					2.3

Deep

Model	ϕA	ϕB	D	H: M6 x 1					H: M8 x 1					Y
				ϕC	E	F	G	I	ϕC	E	F	G	I	
ZPT25D	25	28	20	3	25	25	51	8	3.5	30	15	46	12	10



Flat/Flat with Ribs

Model	ϕA	ϕB	D	E	H: M6 x 1			H: M8 x 1			Y					
					ϕC	F	G	ϕC	F	G	Flat	Flat with ribs				
ZPT40 ^U _C	40	43	18.5	24.5	3	25	50.5	4.5	15	40.5	6.5	3.3				
ZPT50 ^U _C	50	53	19.5	25.5									51.5	41.5	7.5	3.8

Deep

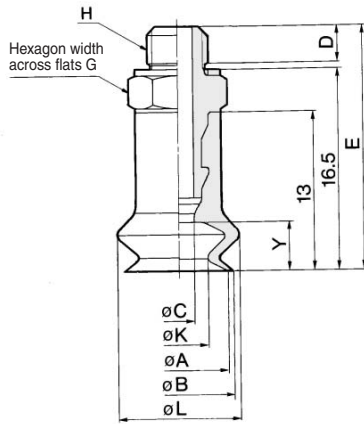
Model	ϕA	ϕB	D	E	H: M6 x 1			H: M8 x 1			Y
					ϕC	F	G	ϕC	F	G	
ZPT40D	40	43	29	35.5	3	25	61	4.5	15	51	17

Vacuum Pad: Vertical Vacuum Entry without Buffer **Series ZPT**

Connection	Male thread	Pad Form	Bellows
Vacuum Entry Port	Vertical	Mounting	Use connection for vacuum entry

Size $\phi 6, \phi 8$

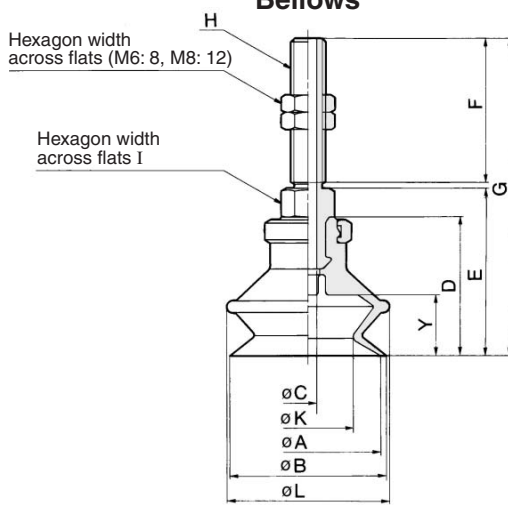
Bellows



Model	ϕA	ϕB	ϕC	H: M5 x 0.8			H: M6 x 1			ϕK	ϕL	Y
				D	E	G	D	E	G			
ZPT06B	6	7	2.5	3	20	7	4	21	8	3.3	9.1	4
ZPT08B	8	9	2.5	3	20	7	4	21	8	4.7	10.1	4

Size $\phi 20, \phi 25, \phi 32$

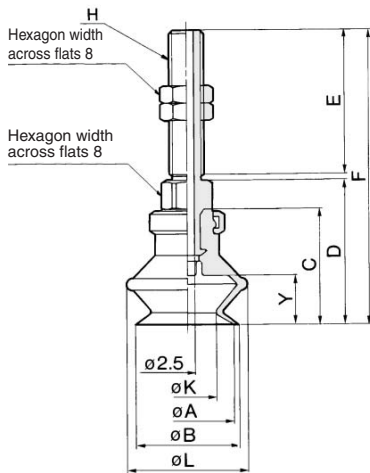
Bellows



Model	ϕA	ϕB	D	H: M6 x 1					H: M8 x 1					ϕK	ϕL	Y	
				ϕC	E	F	G	I	ϕC	E	F	G	I				
ZPT20B	20	22	23.5	28.5	54.5					33.5	49.5				12.4	25	10.5
ZPT25B	25	27	24	3	29	25	55	8	3.5	34	15	50	12	15.6	28	10.5	
ZPT32B	32	34	29		34		60			39		55		18.9	37	14	

Size $\phi 10, \phi 13, \phi 16$

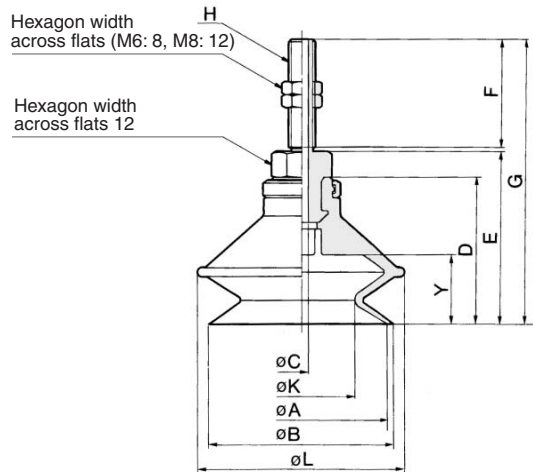
Bellows



Model	ϕA	ϕB	ϕC	D	H: M5 x 0.8		H: M6 x 1		ϕK	ϕL	Y
					E	F	E	F			
ZPT10B	10	12	16	21		42		47	5.5	13.8	5.5
ZPT13B	13	15	18.5	23.5	20	44.5	25	49.5	8.7	19	7.5
ZPT16B	16	18	20	25		46		51	9.9	21	8.5

Size $\phi 40, \phi 50$

Bellows

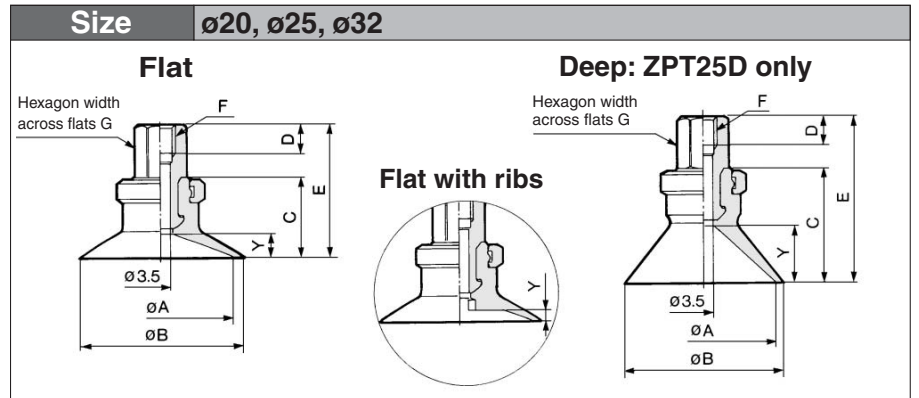
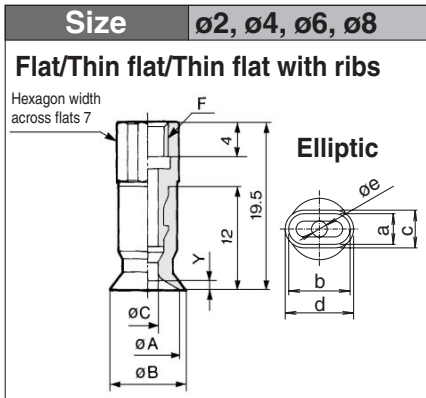


Model	ϕA	ϕB	D	E	H: M6 x 1			H: M8 x 1			ϕK	ϕL	Y
					ϕC	F	G	ϕC	F	G			
ZPT40B	40	43	34	40	3	25	66	4.5	15	56	24.4	48	16
ZPT50B	50	53	38	44			70			60	32.4	57	19

- ZX
- ZR
- ZM
- ZH
- ZU
- ZL
- ZY
- ZQ
- ZF
- ZP
- ZCU
- AMJ
- Misc.

Series ZPT

Connection	Female thread	Pad Form	Flat/Flat with ribs/Deep
Vacuum Entry Port	Vertical	Mounting	Use connection for vacuum entry



Flat

Model	ϕA	ϕB	C	F	Y
ZPT02U	2	2.6	1.2	M4 x 0.7	0.8
ZPT04U	4	4.8	1.6		
ZPT06U	6	7	2		
ZPT08U	8	9	2.5	M5 x 0.8	1
ZPT10UT	10	11	2.5		
ZPT13UT	13	14	2.5		
ZPT16UT	16	17	2.5	M5 x 0.8	1.5
ZPT10CT	10	11	2.5		
ZPT13CT	13	14	2.5		
ZPT16CT	16	17	2.5	M5 x 0.8	1

Flat/Flat with Ribs

Model	ϕA	ϕB	C	F: M5 x 0.8			F: M6 x 1			F: M8 x 1.25			F: Rc 1/8			Y	
				D	E	G	D	E	G	D	E	G	D	E	G	Flat	Flat with ribs
ZPT20 ^U _C	20	23	14	5	23	8	6	23	8	8	29	12	6.2	29	12	4	1.7
ZPT25 ^U _C	25	28	14.5	5	23.5	8	6	23.5	8	8	29.5	12	6.2	29.5	12	4.5	1.8
ZPT32 ^U _C	32	35	14.5	5	23.5	8	6	23.5	8	8	29.5	12	6.2	29.5	12	4.5	2.3

Deep

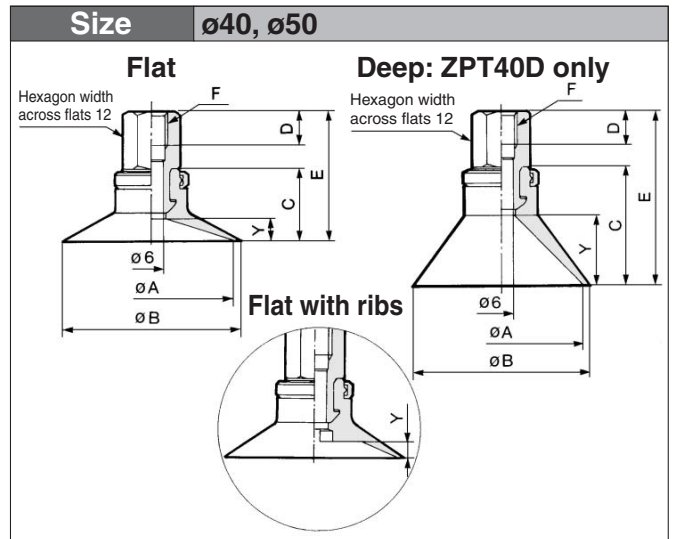
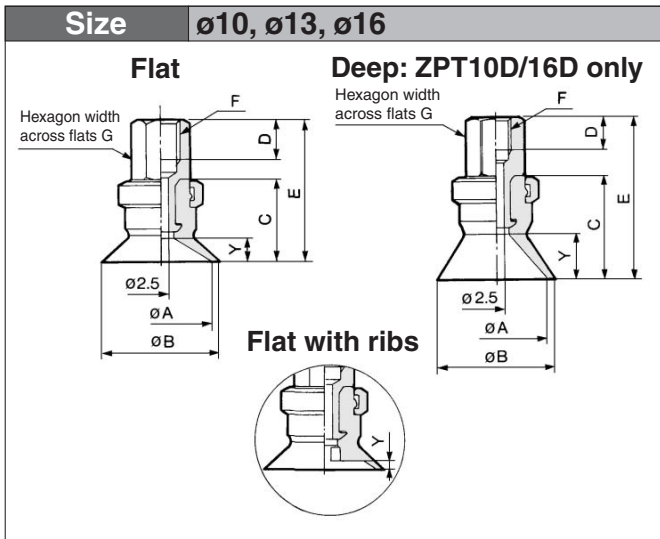
Model	ϕA	ϕB	C	F: M5 x 0.8			F: M6 x 1			F: M8 x 1.25			F: Rc 1/8			Y
				D	E	G	D	E	G	D	E	G	D	E	G	
ZPT25D	25	28	20	5	29	8	6	29	8	8	35	12	6.2	35	12	10

Elliptic

Model	a	b	c	d	ϕe	Y
ZPT2004U	2	4	2.6	4.6	1.2	0.3
ZPT3507U	3.5	7	4.3	7.8	1.8	0.5
ZPT4010U	4	10	5	11	2	0.8

Weight

Weight table for female thread: Refer to page 13-11-2.



Flat/Flat with Ribs

Model	ϕA	ϕB	C	F: M5 x 0.8			F: M6 x 1			F: Rc 1/8			Y	
				D	E	G	D	E	G	D	E	G	Flat	Flat with ribs
ZPT10 ^U _C	10	12	12	5	21	8	6	21	8	6.2	27	12	3	1.7
ZPT13 ^U _C	13	15	12.5	5	21.5	8	6	21.5	8	6.2	27.5	12	3	1.8
ZPT16 ^U _C	16	18	12.5	5	21.5	8	6	21.5	8	6.2	27.5	12	3.5	1.2

Flat/Flat with Ribs

Model	ϕA	ϕB	C	F: M6 x 1			F: M8 x 1.25			F: Rc 1/8			Y	
				D	E	G	D	E	G	D	E	G	Flat	Flat with ribs
ZPT40 ^U _C	40	43	18.5	6	27	8	6	27	8	6.2	32	6.5	3.3	
ZPT50 ^U _C	50	53	19.5	6	27	8	6	27	8	6.2	33	7.5	3.8	

Deep

Model	ϕA	ϕB	C	F: M5 x 0.8			F: M6 x 1			F: Rc 1/8			Y
				D	E	G	D	E	G	D	E	G	
ZPT10D	10	12	15	5	24	8	6	24	8	6.2	30	12	6
ZPT16D	16	18	16	5	25	8	6	25	8	6.2	31	12	7

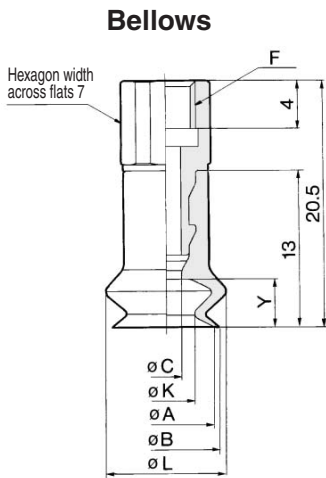
Deep

Model	ϕA	ϕB	C	F: M6 x 1			F: M8 x 1.25			F: Rc 1/8			Y
				D	E	G	D	E	G	D	E	G	
ZPT40D	40	43	29	6	27	8	6	27	8	6.2	42.5	17	

Vacuum Pad: Vertical Vacuum Entry without Buffer **Series ZPT**

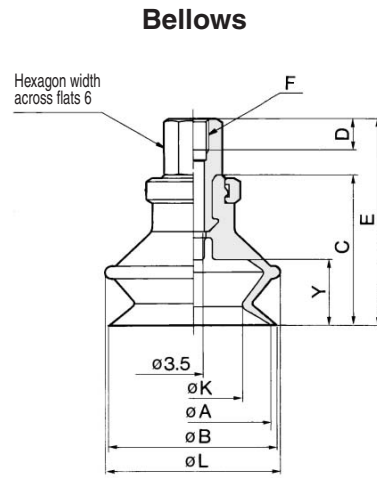
Connection	Female thread	Pad Form	Bellows
Vacuum Entry Port	Vertical	Mounting	Use connection for vacuum entry

Size **ø6, ø8**



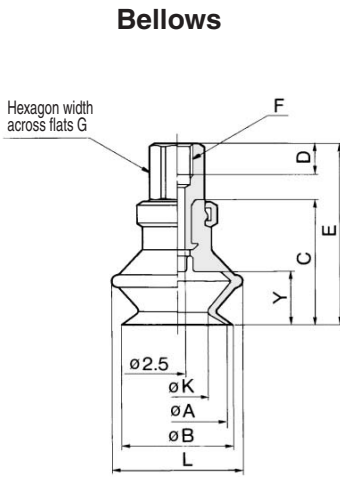
Model	øA	øB	øC	F	øK	øL	Y
ZPT06B	6	7	2.5	M4 x 0.7	3.3	9.1	4
ZPT08B	8	9		M5 x 0.8	4.7	10.1	

Size **ø20, ø25, ø32**



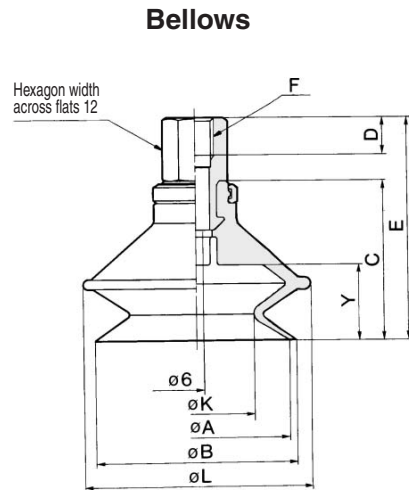
Model	øA	øB	øC	F: M5 x 0.8			F: M6 x 1			F: M8 x 1.25			F: Rc 1/8			øK	øL	Y
				D	E	G	D	E	G	D	E	G	D	E	G			
ZPT20B	20	22	23.5	5	32.5	8	6	32.5	8	8	38.5	12	6.2	38.5	12	12.4	25	10.5
ZPT25B	25	27	24	5	33	8	6	33	8	8	39	12	6.2	39	12	15.6	28	10.5
ZPT32B	32	34	29	5	38	8	6	38	8	8	44	12	6.2	44	12	18.9	37	14

Size **ø10, ø13, ø16**



Model	øA	øB	øC	F: M5 x 0.8			F: M6 x 1			F: Rc 1/8			øK	øL	Y
				D	E	G	D	E	G	D	E	G			
ZPT10B	10	12	16	5	25	8	6	25	8	6.2	31	12	5.5	13.8	5.5
ZPT13B	13	15	18.5	5	27.5	8	6	27.5	8	6.2	33.5	12	8.7	19	7.5
ZPT16B	16	18	20	5	29	8	6	29	8	6.2	35	12	9.9	21	8.5

Size **ø40, ø50**



Model	øA	øB	øC	F: M6 x 1			F: M8 x 1.25			F: Rc 1/8			E	øK	øL	Y
				D	E	G	D	E	G	D	E	G				
ZPT40B	40	43	34	6	6	8	6.2	47.5	24.4	48	16	47.5	24.4	48	16	
ZPT50B	50	53	38	6	6	8	6.2	51.5	32.4	57	19	51.5	32.4	57	19	

- ZX
- ZR
- ZM
- ZH
- ZU
- ZL
- ZY
- ZQ
- ZF
- ZP
- ZCU
- AMJ
- Misc.