

Vacuum Pad: Ball Joint Type

Series *ZPT/ZPR*

Pad Diameter: $\phi 10$, $\phi 13$, $\phi 16$, $\phi 20$, $\phi 25$, $\phi 32$, $\phi 40$, $\phi 50$



Series *ZPT*: Vertical Vacuum Entry Type
Series *ZPR*: Lateral Vacuum Entry Type One-touch Fitting

ZA
ZX
ZR
ZM
ZMA
ZQ
ZH
ZU
ZL
ZY□
ZF□
ZP□
SP
ZCUK
AMJ
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AEP
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Related
Equipment

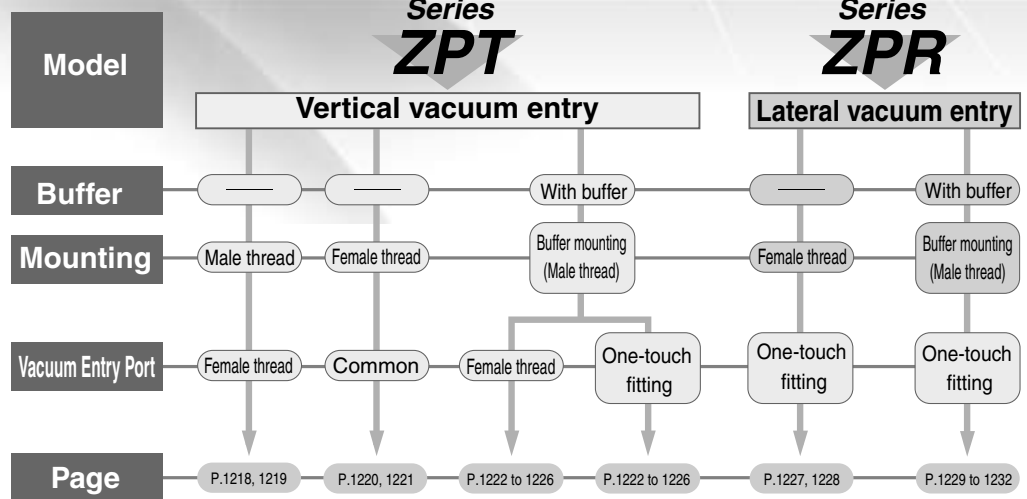
Vacuum Pad: Ball Joint Type

Series ZPT/ZPR

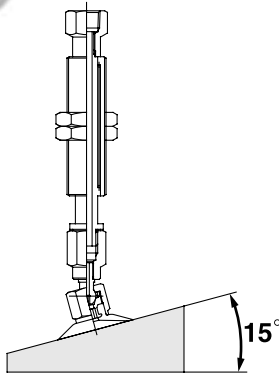
Pad diameter: ø10, ø13, ø16, ø20, ø25, ø32, ø40, ø50

Pad material: NBR, Silicon rubber, Urethane rubber, Fluororubber, Conductive NBR, Conductive silicon rubber

Series Variations



Adsorption is possible even on a slanted surface.



Inclination 15°
(Rotation 30°)

Buffer stroke

Pad dia. Buffer stroke	ø10	ø13	ø16	ø20	ø25	ø32	ø40	ø50
10 mm	●	●	●	●	●	●	●	●
20 mm	●	●	●	●	●	●	●	●
30 mm	●	●	●	●	●	●	●	●
40 mm	●	●	●	—	—	—	—	—
50 mm	●	●	●	●	●	●	●	●

Pad Material and Characteristics

◎ : Little or no influence ○ : Can be used depending on conditions. X: Not suitable

Characteristics Material	Durometer HS (±5°)	Operating temperature range (°C)	Oil resistance gasoline	Oil resistance benzol	Base resistance	Acid resistance	Weatherability	Ozone resistance	Abrasion resistance	Waterproof	Solvent resistance (Benzene, toluene)
NBR	50°	0 to 120	◎	×	○	○	×	×	◎	○	×
Silicon rubber	40°	-30 to 200	×	×	○	×	◎	◎	×	○	×
Urethane rubber	60°	0 to 60	◎	×	×	×	○	◎	◎	×	×
Fluororubber	60°	0 to 250	◎	◎	×	◎	◎	◎	○	◎	◎
Conductive NBR	50°	0 to 100	○	×	○	×	○	×	○	○	×
Conductive silicon rubber	50°	-10 to 200	×	×	○	×	◎	◎	×	○	×

The above table covers only general characteristics of subject rubber materials.

Pad material used by SMC pass the nominal JIS material standards; however, actual performance depends on operating conditions.

Vacuum Pad: Ball Joint Type Vertical Vacuum Entry Without Buffer/Male Thread *Series ZPT*

How to Orde



ZPT 25 F GN - B5 - A8

Pad diameter
(mm)

10	10
13	13
16	16
20	20
25	25
32	32
40	40
50	50

Pad type

F	Ball joint type
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Mounting thread diameter/
Male thread

Symbol	Thread	Pad dia. (mm)
A8	M8 x 1	10 to 16
A10	M10 x 1	20 to 32
A14	M14 x 1	40, 50

Vacuum entry port

B5	M5 x 0.8
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Material

N	NBR
S	Silicon rubber
U	Urethane rubber
F	Fluororubber
GN	Conductive NBR
GS	Conductive silicon rubber

Note) Pads are exclusively ball joint type and are not interchangeable with other pads.

Specifications

Vacuum entry direction		Vertical	
Connection		Mounting	Vacuum entry port
		Male thread	Female thread
Pad diameter (mm)	10 to 16	M8 x 1	M5 x 0.8
	20 to 32	M10 x 1	
	40, 50	M14 x 1	
Ball joint rotation		30°	

Mass

Pad dia. (mm)	Mounting (Male thread)	Vacuum entry (Female thread)
		M5 x 0.8
10 to 16	M8 x 1	20
20 to 32	M10 x 1	24
40, 50	M14 x 1	55

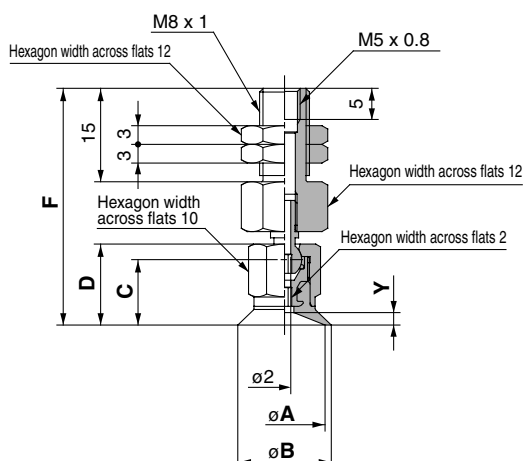
Pad Type

Pad form	Ball joint type					
Pad diameter (mm)	10, 13, 16, 20, 25, 32, 40, 50					
Material	NBR	Silicon rubber	Urethane rubber	Fluororubber	Conductive NBR	Conductive silicon rubber
Color	Black	White	Brown	Black with green mark	Black with 1 silver mark	Black with 2 silver mark
Durometer	50°	40°	60°	60°	50°	50°

Vacuum Pad: Ball Joint Type

Vertical Vacuum Entry: Without Buffer/Male Thread *Series ZPT*

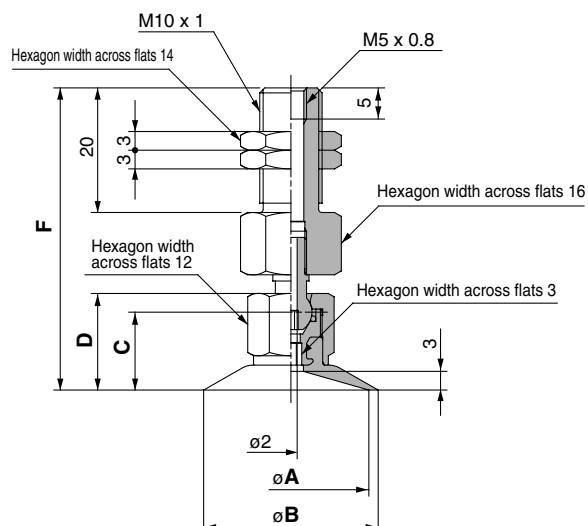
ZPT¹⁰₁₃¹⁶F□□-B5-A8 (Without buffer/Male thread)



Dimensions

Model	A	B	C	D	F	Y
ZPT10F□□-B5-A8	10	12	10	12.5	37.5	1.5
ZPT13F□□-B5-A8	13	15	10.5	13	38	2
ZPT16F□□-B5-A8	16	18	10.5	13	38	2

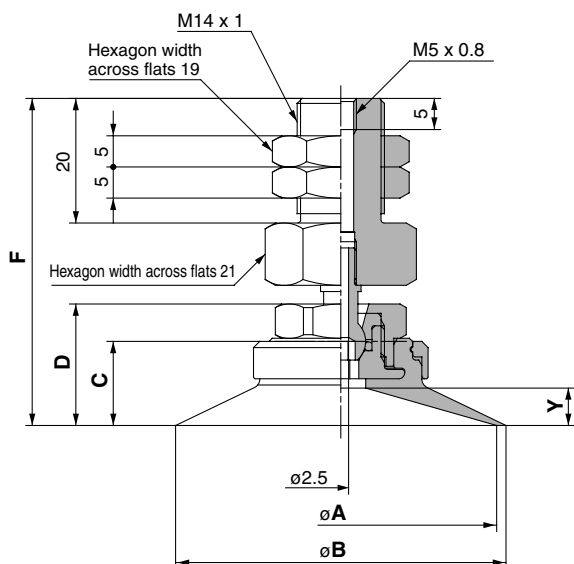
ZPT²⁰₂₅³²F□□-B5-A10 (Without buffer/Male thread)



Dimensions

Model	A	B	C	D	F
ZPT20F□□-B5-A10	20	22	12.5	15.5	48.5
ZPT25F□□-B5-A10	25	28	12.5	15.5	48.5
ZPT32F□□-B5-A10	32	35	13	16	49

ZPT⁴⁰₅₀F□□-B5-A14 (Without buffer/Male thread)



Dimensions

Model	A	B	C	D	F	Y
ZPT40F□□-B5-A14	40	43	12.5	18.5	51.5	5
ZPT50F□□-B5-A14	50	53	13.5	19.5	52.5	6

ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY□

ZF□

ZP□

SP

ZCUK

AMJ

AMV

AEP

HEP

Related
Equipment

Vacuum Pad: Ball Joint Type Vertical Vacuum Entry Without Buffer/Female Thread *Series ZPT*



How to Order

ZPT 20 F GS - B01

Pad diameter
(mm)

10	10
13	13
16	16
20	20
25	25
32	32
40	40
50	50

Pad type

F	Ball joint type
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Vacuum entry/
Mounting thread diameter

Connection	Symbol	Thread dia.	Pad dia. (mm)		
			10 to 16	20 to 32	40, 50
Female thread	B5	M5 x 0.8	●	●	—
	B8	M8 x 1.25	—	●	●
	B01	Rc 1/8	—	●	●
	N01	NPT 1/8	—	●	●
	T01	NPTF 1/8	—	●	●

Material

N	NBR
S	Silicon rubber
U	Urethane rubber
F	Fluororubber
GN	Conductive NBR
GS	Conductive silicon rubber

Note) Pads are exclusively ball joint type and are not interchangeable with other pads.

Specifications

Vacuum entry direction		Vertical	
Connection		Connection/Vacuum entry	
		Female thread	
Pad diameter (mm)	10 to 16	M5 x 0.8	
		M5 x 0.8	
	20 to 32	M8 x 1.25	
		1/8 (Rc, NPT, NPTF)	
		M8 x 1.25	
	40, 50	1/8 (Rc, NPT, NPTF)	
Ball joint rotation		30°	

Mass

Pad dia. (mm)	Vacuum entry (Female thread)		
	M5 x 0.8	M8 x 1.25	1/8 (Rc, NPT, NPTF)
10 to 16	10	—	—
20 to 32	14	17	19
40, 50	—	47	46

(g)

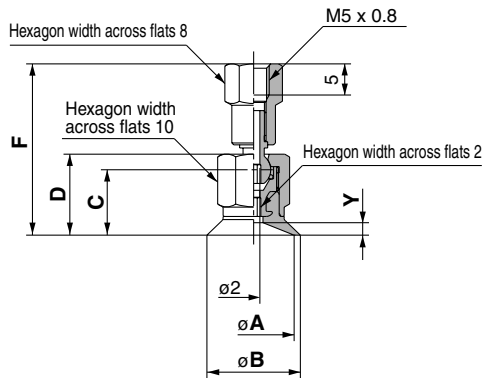
Pad Type

Pad form	Ball joint type					
Pad diameter (mm)	10, 13, 16, 20, 25, 32, 40, 50					
Material	NBR	Silicon rubber	Urethane rubber	Fluororubber	Conductive NBR	Conductive silicon rubber
Color	Black	White	Brown	Black with green mark	Black with 1 silver mark	Black with 2 silver mark
Durometer	50°	40°	60°	60°	50°	50°

Vacuum Pad: Ball Joint Type

Vertical Vacuum Entry: Without Buffer/Female Thread *Series ZPT*

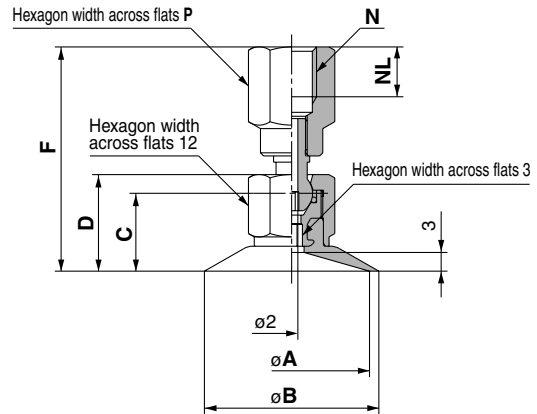
ZPT¹⁰₁₃¹⁶F□□-B5 (Without buffer/Female thread)



Dimensions

Model	A	B	C	D	F	Y
ZPT10F□□-B5	10	12	10	12.5	27	1.5
ZPT13F□□-B5	13	15	10.5	13	27.5	2
ZPT16F□□-B5	16	18				

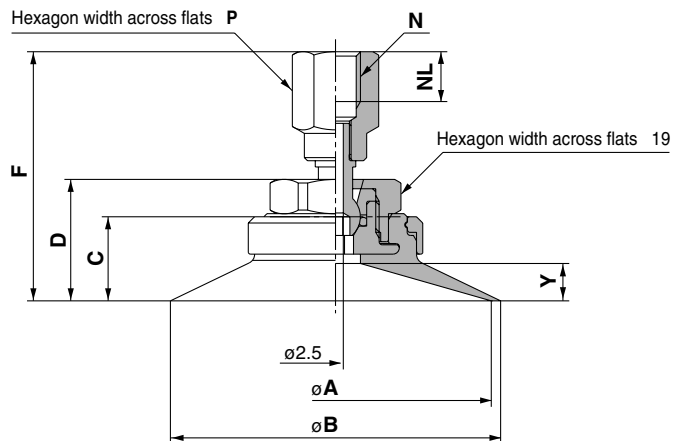
ZPT²⁰₂₅³²F□□-B5 (Without buffer/Female thread)



Dimensions

Model	A	B	C	D	N: M5 x 0.8			N: M8 x 1.25			N: □01	
					F	NL	P	F	NL	P	F	P
ZPT20F□□-□□□	20	22	12.5	15.5	32	5	9	36	8	12	36	14
ZPT25F□□-□□□	25	28										
ZPT32F□□-□□□	32	35	13	16	32			36.5			36.5	

ZPT⁴⁰₅₀F□□-B8 (Without buffer/Female thread)



Dimensions

Model	A	B	C	D	N: M8 x 1.25			N: □01	
					F	NL	P	F	P
ZPT40F□□-□□□	40	43	12.5	18.5	39	8	12	39	14
ZPT50F□□-□□□	50	53	13.5	19.5	40			40	

ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY□

ZF□

ZP□

SP

ZCUK

AMJ

AMV

AEP

HEP

Related
Equipment

Vacuum Pad: Ball Joint Type

Vertical Vacuum Entry: With Buffer

Series ZPT

How to Order

ZPT 10 F GN J 20 - 04 - A10

Pad diameter
(mm)

10	10
13	13
16	16
20	20
25	25
32	32
40	40
50	50

Pad type

F	Ball joint type
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Material

N	NBR
S	Silicon rubber
U	Urethane rubber
F	Fluororubber
GN	Conductive NBR
GS	Conductive silicon rubber

Buffer type

J	Rotating
K	Non-rotating

Buffer stroke

Symbol	Stroke	Pad dia. (mm)	
		ø10 to ø16	ø20 to ø50
10	10 mm	●	●
20	20 mm	●	●
30	30 mm	●	●
40	40 mm	●	—
50	50 mm	●	●

Mounting thread diameter/Male thread
(Refer to "Table (1)" for applications.)

Vacuum entry port
(Refer to "Table (1)" for applications.)

Table (1) Vacuum Entry/Mounting Thread Diameter

Pad dia. (mm)			Mounting thread diameter (Male thread)	
			10 to 16	20 to 50
Connection	Thread dia./Port size	Symbol	M10 x 1	M14 x 1
			A10	A14
Vacuum entry	Female thread	M5 x 0.8	●	—
		Rc 1/8	—	●
		NPT 1/8	—	●
		NPTF 1/8	—	●
One-touch fitting	ø4 tube	04	●	—
	ø6 tube	06	●	●
	ø8 tube	08	—	●

Tightening torque (N·m)

Mounting thread dia.	Torque
M10 x 1	3.0 ±0.5
M14 x 1	7.0 ±0.5

Note) Pads are exclusively ball joint type and are not interchangeable with other pads.

Pad Type

Pad form	Ball joint type					
Pad dia. (mm)	10, 13, 16, 20, 25, 32, 40, 50					
Material	NBR	Silicon rubber	Urethane rubber	Fluoro-rubber	Conductive NBR	Conductive silicon rubber
Color	Black	White	Brown	Black with green mark	Black with 1 silver mark	Black with 2 silver mark
Durometer	50°	40°	60°	60°	50°	50°

Vacuum Pad: Ball Joint Type Vertical Vacuum Entry: With Buffer *Series ZPT*



Specifications

Vacuum entry direction		Vertical		
Connection		Mounting	Vacuum entry port	
		Buffer male thread	Female thread	One-touch fitting
Pad dia. (mm)	10 to 16	M10 x 1	M5 x 0.8	ø4 tube
				ø6 tube
	20 to 50	M14 x 1	1/8 (Rc, NPT, NPTF)	ø6 tube
				ø8 tube
Ball joint rotation		30°		

Buffer Type

Pad dia. (mm)	ø10 to ø16		ø20 to ø50	
Mounting	M10 x 1		M14 x 1	
Stroke (mm)	10, 20, 30, 40, 50		10, 20, 30, 50	
Spring reactive force	0 stroke	1.0 N	0 stroke	2.0 N
	Stroke end	3.0 N	Stroke end	5.0 N
Non-rotating specification	Without non-rotating (J), With non-rotating (K)			

Mass

Pad dia. (mm)	Vacuum entry port				
	Female thread		One-touch fitting		
	M5 x 0.8	1/8 (Rc, NPT, NPTF)	ø4 tube	ø6 tube	ø8 tube
10 to 16	30	—	32	33	—
20 to 32	—	128	—	133	139
40, 50	—	158	—	159	167

Mass by Stroke

Pad dia. (mm)	Stroke (mm)			
	20	30	40	50
10 to 16	+10.5	+12.5	+22.5	+24
20 to 50	+37.5	+40	—	+66.5

ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY□

ZF□

ZP□

SP

ZCUK

AMJ

AMV

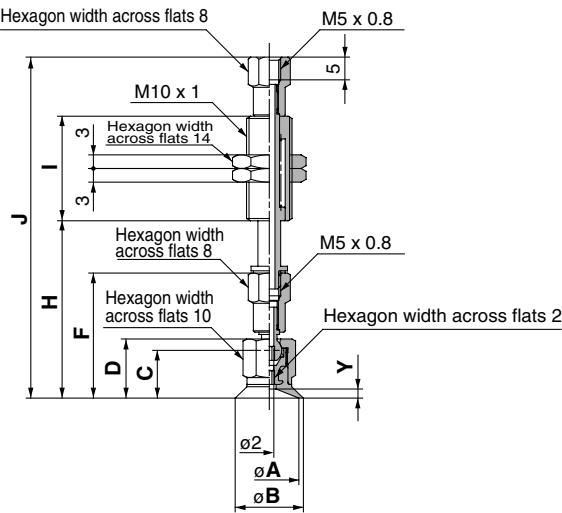
AEP

HEP

Related
Equipment

Series **ZPT**

ZPT¹⁰₁₃¹⁶F□□□^J10-B5-A10 (With buffer/Female thread)



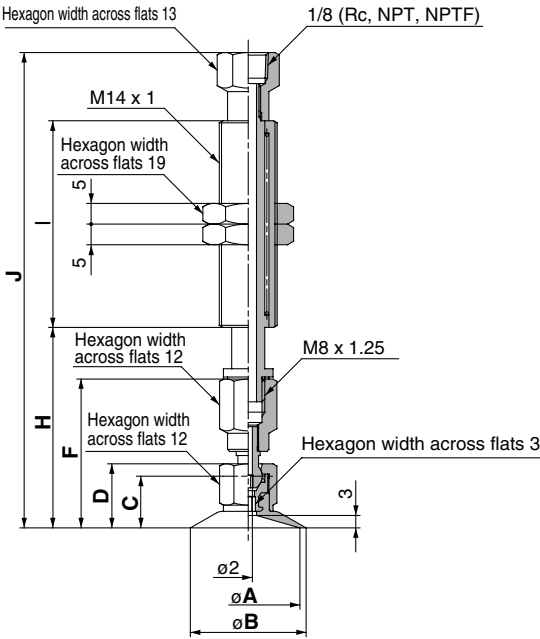
Dimensions: 10 mm Stroke (mm)

Model	A	B	C	D	F	H	I	J	Y
ZPT10F□□□10-B5-A10	10	12	10	12.5	27	38.5	23	74.5	1.5
ZPT13F□□□10-B5-A10	13	15	10.5	13	27.5	39		75	2
ZPT16F□□□10-B5-A10	16	18							

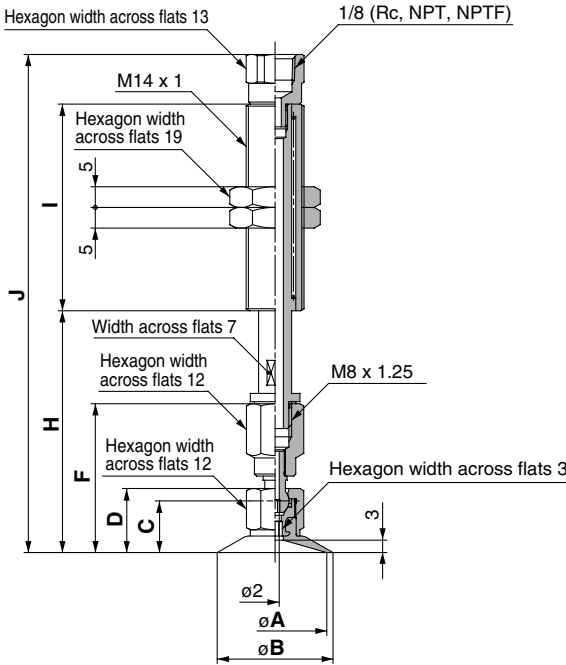
Additional Dimensions by Stroke (mm)

Stroke	H	I	J
20	+10	+28	+38
30	+20		+48
40	+30	+54	+84
50	+40		+94

ZPT²⁰₂₅³²F□□□^J10-□01-A14 (With buffer/Female thread)



Stroke: 10 mm



Stroke: 20 to 50 mm

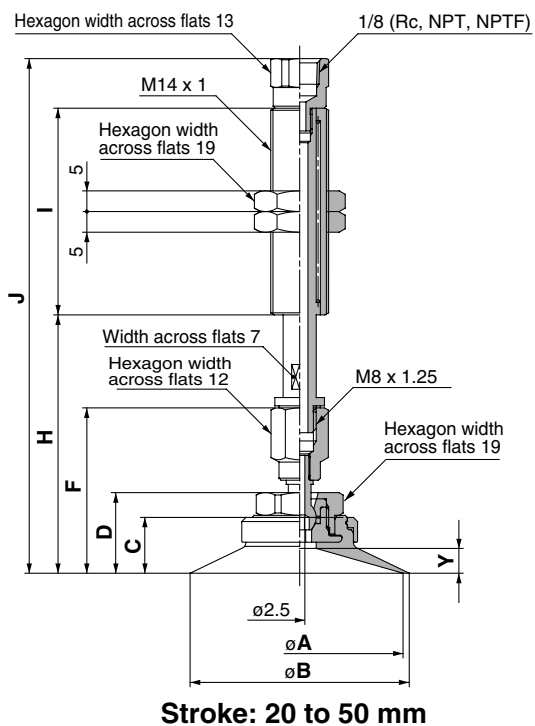
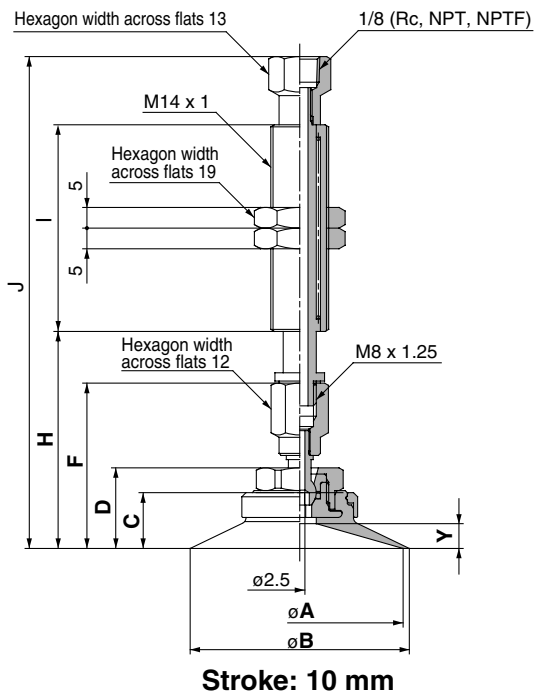
Dimensions: 10 mm Stroke (mm)

Model	A	B	C	D	F	H	I	J
ZPT20F□□□10-□01-A14	20	22	12.5	15.5	36	48.5	50	115
ZPT25F□□□10-□01-A14	25	28						115.5
ZPT32F□□□10-□01-A14	32	35						

Additional Dimensions by Stroke (mm)

Stroke	H	I	J
20	+10	±0	+5.5
30	+20		+15.5
50	+40		+60.5

ZPT⁴⁰₅₀F□□_K10-□01-A14 (With buffer/Female thread)



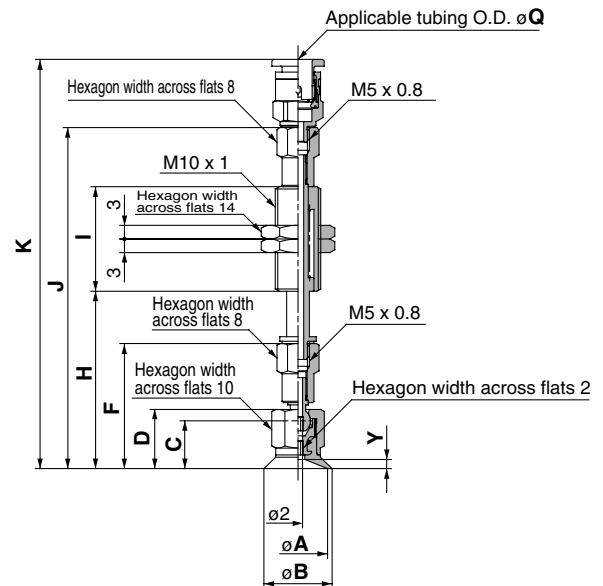
Dimensions: 10 mm Stroke

Dimensions: 10 mm Stroke (mm)									
Model	A	B	C	D	F	H	I	J	Y
ZPT40F□□□10-□01-A14	40	43	12.5	18.5	39	51.5	50	118	5
ZPT50F□□□10-□01-A14	50	53	13.5	19.5	40	52.5		119	6

Additional Dimensions by Stroke

Stroke	H	I	J
20	+10	±0	+5.5
30	+20		+15.5
50	+40	+25	+60.5

ZPT¹⁰₁₆¹³F□□_K^J10-0□-A10 (With buffer/One-touch fitting)



Dimensions: 10 mm Stroke

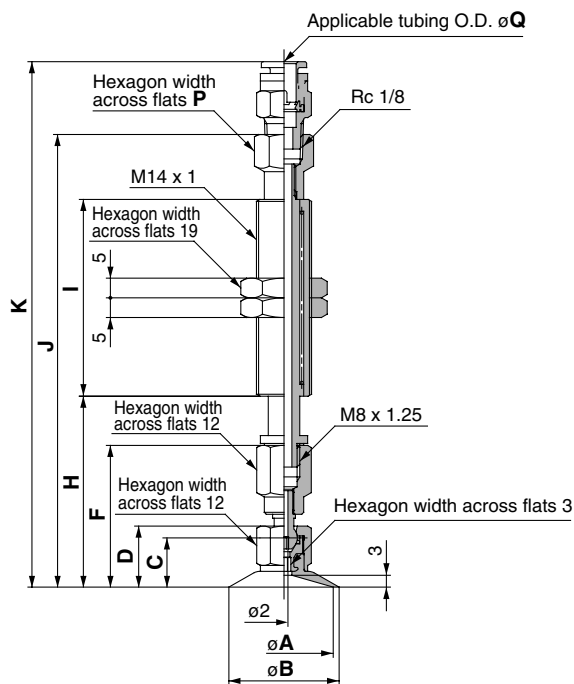
Model	A	B	C	D	F	H	I	J	Q: 4 K	Q: 6 K	Y
ZPT10F□□□10-□-A10	10	12	10	12.5	27	38.5	23	74.5	88.5	89.5	1.5
ZPT13F□□□10-□-A10	13	15	10.5	13	27.5	39		75	89	90	2
ZPT16F□□□10-□-A10	16	18									

Additional Dimensions by Stroke (mm)

Stroke	H	I	J	K
20	+10	+28	+38	
30	+20		+48	
40	+30	+54	+84	
50	+40		+94	

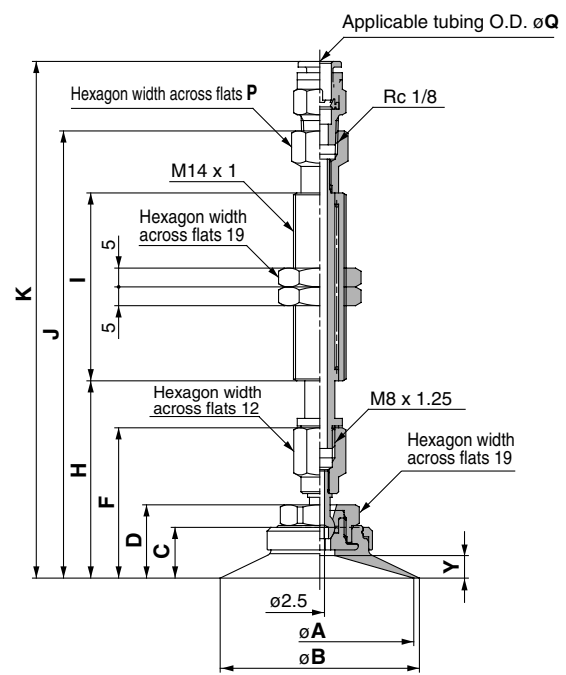
Series ZPT

ZPT²⁰₂₅₃₂F□□J_K10-0□-A14 (With buffer/One-touch fitting)

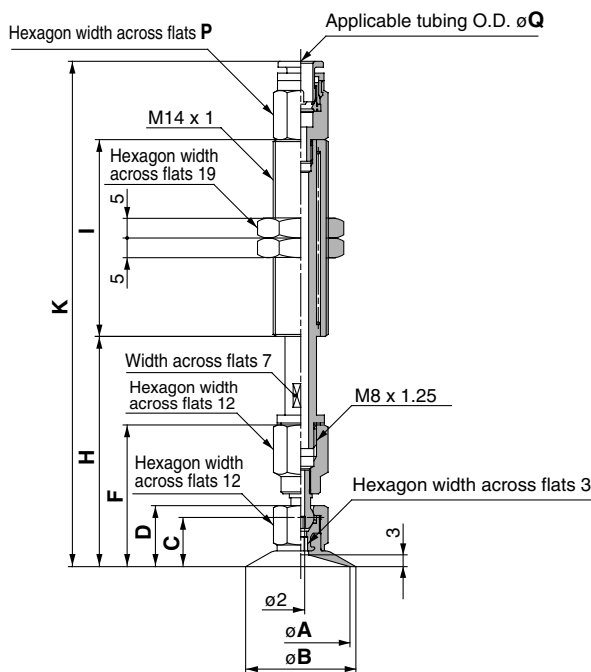


Stroke: 10 mm

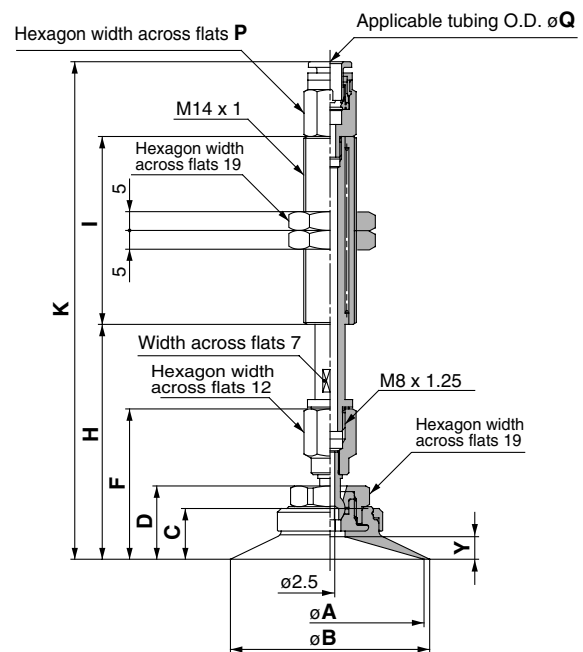
ZPT⁴⁰₅₀F□□J_K10-0□-A14 (With buffer/One-touch fitting)



Stroke: 10 mm



Stroke: 20 to 50 mm



Stroke: 20 to 50 mm

Dimensions: 10 mm Strokes

Model	A	B	C	D	F	H	I	J	Q: 6		Q: 8	
									K	P	K	P
ZPT20F□□□10-0□-A14	20	22	12.5	15.5	36	48.5		115	133.5		137	13
ZPT25F□□□10-0□-A14	25	28	12.5	15.5	36	48.5	50	115	133.5	13	137	13
ZPT32F□□□10-0□-A14	32	35	13	16	36.5	49		115.5	134		135.5	

Additional Dimensions by Stroke

Stroke	H	I	Q: 6		Q: 8	
			K	P	K	P
20	+10	±0	-5.1		-5.6	
30	+20		+4.9	-1	+4.4	+1
50	+40	+25	+49.9		+49.4	

Dimensions: 10 mm Strokes

Model	A	B	C	D	F	H	I	J	Q: 6		Q: 8		Y
									K	P	K	P	
ZPT40F□□□10-0□-A14	40	43	12.5	18.5	39	51.5		118	136.5		140	13	5
ZPT50F□□□10-0□-A14	50	53	13.5	19.5	40	52.5	50	119	137.5	13	141	13	6

Additional Dimensions by Stroke

Stroke	H	I	Q: 6		Q: 8	
			K	P	K	P
20	+10	±0	-5.1		-5.6	
30	+20		+4.9	-1	+4.4	+1
50	+40	+25	+49.9		+49.4	

Vacuum Pad: Ball Joint Type Lateral Vacuum Entry Without Buffer/Female Thread Series **ZPR**



How to Order

ZPR 10 F GS - 06 - B5

Pad diameter
(mm)

10	10
13	13
16	16
20	20
25	25
32	32
40	40
50	50

Pad type

F	Ball joint type
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Material

N	NBR
S	Silicon rubber
U	Urethane rubber
F	Fluororubber
GN	Conductive NBR
GS	Conductive silicon rubber

Mounting thread diameter/
Female thread

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

Vacuum entry port

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

Table (1) Vacuum Entry/Mounting Thread Diameter

Pad dia. (mm)		Mounting thread diameter			
		10 to 16		20 to 50	
Connection	Thread dia./ Port size	Symbol	M5 x 0.8 B5	M5 x 0.8 B5	M8 x 1.25 B8
	One-touch fitting				
Vacuum entry	ø4 tube	04	●	—	—
	ø6 tube	06	●	●	●
	ø8 tube	08	—	●	●

Note) Pads are exclusively ball joint type and are not interchangeable with other pads.

Specifications

Vacuum entry direction		Lateral	
Connection		Mounting	Vacuum entry port
		Female thread	One-touch fitting
Pad dia. (mm)	10 to 16	M5 x 0.8	ø4 tube
			ø6 tube
	20 to 50	M5 x 0.8	ø6 tube
			ø8 tube
		M8 x 1.25	ø6 tube
			ø8 tube
Ball joint rotation		30°	

Mass

Pad dia. (mm)	Mounting female thread	Vacuum entry (One-touch fitting)		
		ø4 tube	ø6 tube	ø8 tube
10 to 16	M5 x 0.8	18	19	—
20 to 32	M5 x 0.8	—	22	23
	M8 x 1.25	—	21	22
40, 50	M5 x 0.8	—	58	60
	M8 x 1.25	—	57	59

Pad Type

Pad form	Ball joint type					
Pad diameter (mm)	10, 13, 16, 20, 25, 32, 40, 50					
Material	NBR	Silicon rubber	Urethane rubber	Fluororubber	Conductive NBR	Conductive silicon rubber
Color	Black	White	Brown	Black with green mark	Black with 1 silver mark	Black with 2 silver mark
Durometer	50°	40°	60°	60°	50°	50°

ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY□

ZF□

ZP□

SP

ZCUK

AMJ

AMV

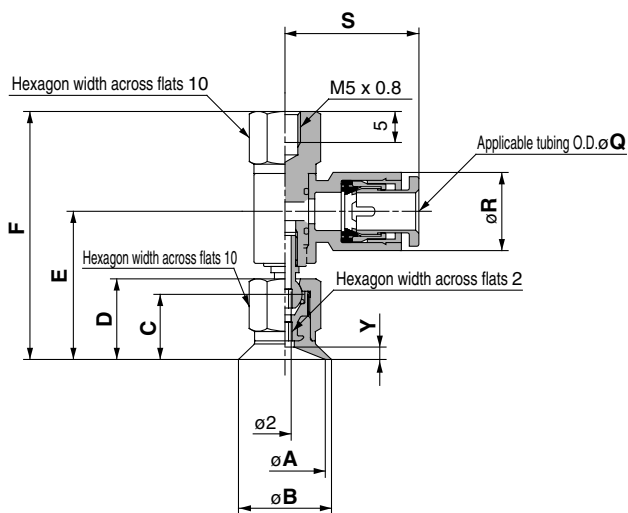
AEP

HEP

Related
Equipment

Series ZPR

ZPR¹⁰₁₃F□□-0□-B5 (Without buffer/Female thread)
16



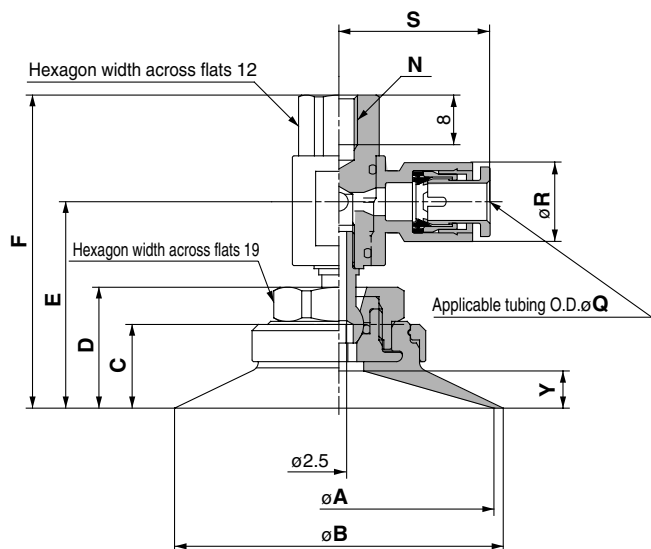
Dimensions (mm)

Model	A	B	C	D	E	F	Y
ZPR10F□□-0□-B5	10	12	10	12.5	23.4	39.5	1.5
ZPR13F□□-0□-B5	13	15	10.5	13	23.9	40	2
ZPR16F□□-0□-B5	16	18	10.5	13	23.9	40	2

Dimensions by Tubing Diameter (mm)

Pad diameter (mm)	Q: 4		Q: 6	
	R	S	R	S
ø10 to ø16	10.4	20.6	12.8	21.6

ZPR⁴⁰₅₀F□□-0□-B8 (Without buffer/Female thread)



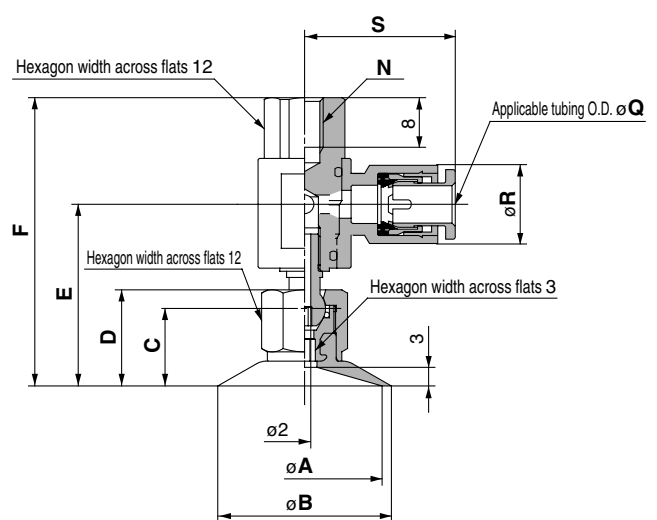
Dimensions (mm)

Model	A	B	C	D	E	F	N	Y
ZPR40F□□-0□-B8	40	43	12.5	18.5	32.3	49.5	M8 x 1.25	5
ZPR50F□□-0□-B8	50	53	13.5	19.5	33.3	50.5		6

Dimensions by Tubing Diameter (mm)

Pad diameter (mm)	Q: 6		Q: 8	
	R	S	R	S
ø40, ø50	12.8	24.3	15.2	26.2

ZPR²⁰₂₅F□□-0□-B⁵₈ (Without buffer/Female thread)
32



Dimensions (mm)

Model	A	B	C	D	E	F	N
ZPR20F□□-0□-B5	20	22	12.5	15.5	29.3	46.5	M5 x 0.8
ZPR20F□□-0□-B8							M8 x 1.25
ZPR25F□□-0□-B5	25	28	12.5	15.5	29.3	46.5	M5 x 0.8
ZPR25F□□-0□-B8							M8 x 1.25
ZPR32F□□-0□-B5	32	35	13	16	29.8	47	M5 x 0.8
ZPR32F□□-0□-B8							M8 x 1.25

Dimensions by Tubing Diameter (mm)

Pad diameter (mm)	Q: 6		Q: 8	
	R	S	R	S
ø20 to ø32	12.8	24.3	15.2	26.2

Vacuum Pad: Ball Joint Type

Lateral Vacuum Entry

With Buffer

Series ZPR

How to Order

ZPR 10 F GN J 30 - 06 - A10

Pad diameter (mm)

10	10
13	13
16	16
20	20
25	25
32	32
40	40
50	50

Pad type

F	Ball joint type
---	-----------------

Material

N	NBR
S	Silicon rubber
U	Urethane rubber
F	Fluororubber
GN	Conductive NBR
GS	Conductive silicon rubber

Buffer type

J	Rotating
K	Non-rotating

Mounting thread diameter/Male thread
(Refer to "Table (1)" for applications.)

Vacuum entry port
(Refer to "Table (1)" for applications.)

Table (1) Vacuum Entry/Mounting Thread Diameter

Pad dia. (mm)		Mounting thread diameter (Male thread)	
		10 to 16	20 to 50
Connection	Thread dia./Port size	M10 x 1	M14 x 1
Vacuum entry	One-touch fitting		
	ø4 tube	04	—
	ø6 tube	06	●
	ø8 tube	08	●

Tightening torque (N·m)

Mounting thread dia.	Torque
M10 x 1	3.0 ±0.5
M14 x 1	7.0 ±0.5

Buffer stroke

Symbol	Stroke	Pad dia. (mm)	
		ø10 to ø16	ø20 to ø50
10	10 mm	●	●
20	20 mm	●	●
30	30 mm	●	●
40	40 mm	●	—
50	50 mm	●	●

Note) Pads are exclusively ball joint type and are not interchangeable with other pads.

Pad Type

Pad form	Ball joint type					
Pad dia. (mm)	10, 13, 16, 20, 25, 32, 40, 50					
Material	NBR	Silicon rubber	Urethane rubber	Fluoro-rubber	Conductive NBR	Conductive silicon rubber
Color	Black	White	Brown	Black with green mark	Black with 1 silver mark	Black with 2 silver mark
Durometer	50°	40°	60°	60°	50°	50°

ZA
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ZMA
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ZU
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ZY□
ZF□
ZP□
SP
ZCUK
AMJ
AMV
AEP
HEP

Related Equipment

Series ZPR



Specifications

Vacuum entry direction		Lateral	
Connection		Mounting	Vacuum entry port
		Male thread	One-touch fitting
Pad dia. (mm)	10 to 16	M10 x 1	ø4 tube
			ø6 tube
	20 to 50	M14 x 1	ø6 tube
			ø8 tube
Ball joint rotation		30°	

Buffer Type

Pad dia. (mm)	10 to 16		20 to 50	
Mounting	M10 x 1		M14 x 1	
Stroke (mm)	10, 20, 30, 40, 50		10, 20, 30, 50	
Spring reactive force	0 stroke	1.0 N	0 stroke	2.0 N
	Stroke end	3.0 N	Stroke end	5.0 N
Non-rotating specification	Without non-rotating (J), With non-rotating (K)			

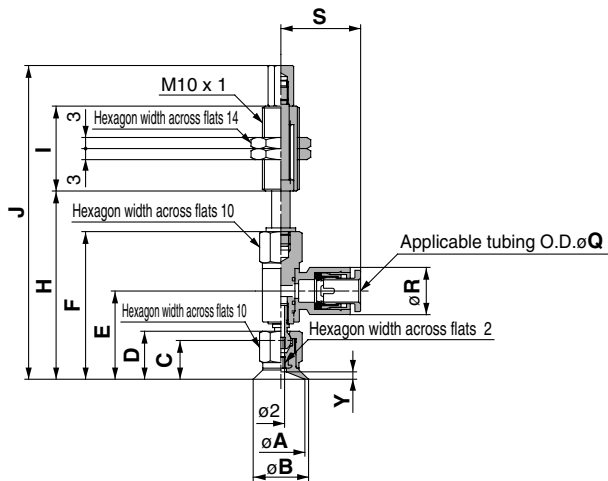
Mass

Pad dia. (mm)	Vacuum entry port		
	One-touch fitting		
	ø4 tube	ø6 tube	ø8 tube
10 to 16	34	35	—
20 to 32	—	38	39
40, 50	—	134	136

Mass by Stroke

Pad dia. (mm)	Stroke (mm)			
	20	30	40	50
10 to 16	+10.5	+12.5	+22.5	+24
20 to 50	+37.5	+40	—	+66.5

ZPR¹⁰₁₃¹⁶F□□J_K10-0□-A10 (With buffer)



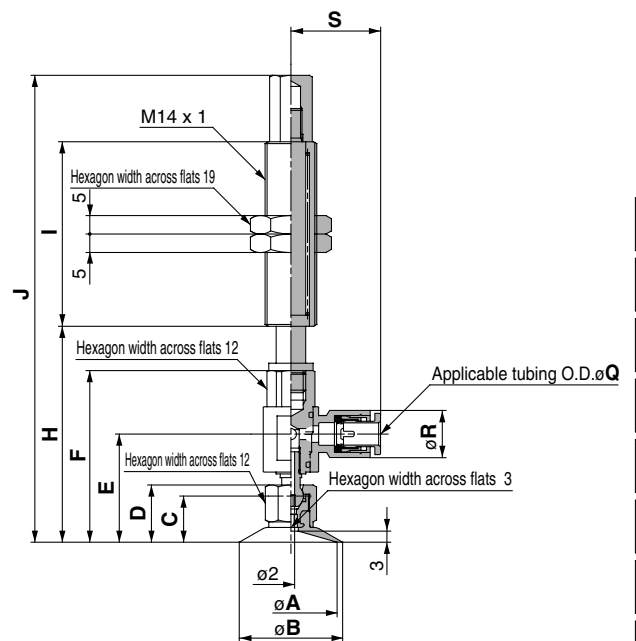
Dimensions: 10 mm Stroke

Model	A	B	C	D	E	F	H	I	J
ZPR10F□□10-0□-A10	10	12	10	12.5	23.4	39.5	50.5	23	84.5
ZPR13F□□10-0□-A10	13	15	10.5	13	23.9	40	51		85
ZPR16F□□10-0□-A10	16	18							

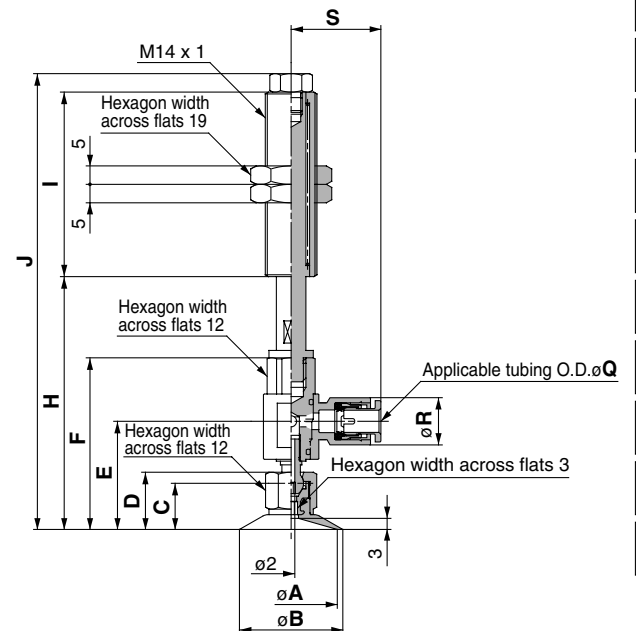
Model	Q: 4		Q: 6		Y
	R	S	R	S	
ZPR10F□□10-0□-A10					1.5
ZPR13F□□10-0□-A10	10.4	20.6	12.8	21.6	2
ZPR16F□□10-0□-A10					

Additional Dimensions by Stroke (mm)			
Stroke	H	I	J
20	+10	+28	+38
30	+20		+48
40	+30	+54	+84
50	+40		+94

ZPR²⁰₂₅³²F□□J_K10-0□-A14 (With buffer)



Stroke: 10 mm



Stroke: 20 to 50 mm

Dimensions: 10 mm Stroke

Model	A	B	C	D	E	F	H	I	J
ZPR20F□□10-0□-A14	20	22	12.5	15.5	29.3	46.5	58.5	50	126.5
ZPR25F□□10-0□-A14	25	28							127
ZPR32F□□10-0□-A14	32	35							

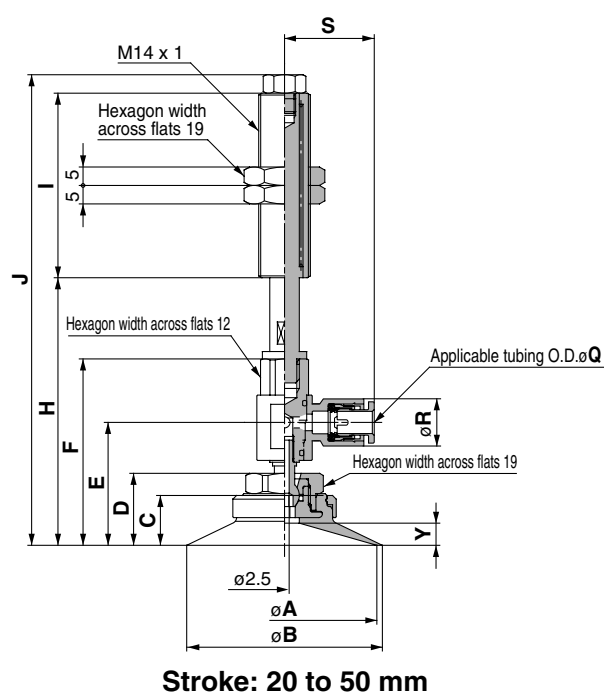
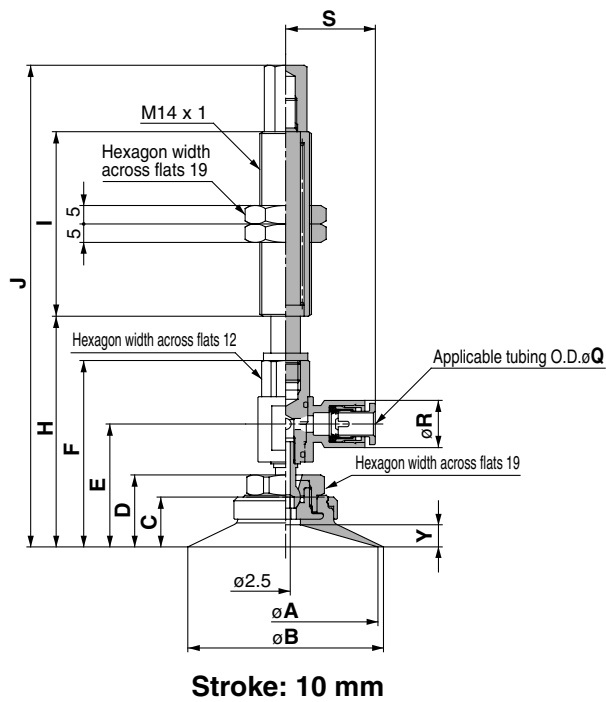
Model	Q: 6		Q: 8	
	R	S	R	S
ZPR20F□□10-0□-A14				
ZPR25F□□10-0□-A14	12.8	24.3	15.2	26.2
ZPR32F□□10-0□-A14				

Additional Dimensions by Stroke (mm)			
Stroke	H	I	J
20	+10	±0	-3
30	+20		+7
50	+40	+25	+52

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ZF□
ZP□
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AMV
AEP
HEP
Related Equipment

Series **ZPR**

ZPR⁴⁰₅₀F□□^J_K10-0□-A14 (With buffer)



Dimensions: 10 mm Stroke

Model	A	B	C	D	E	F	H	I	J	(mm)				
										Q: 6		Q: 8		Y
										R	S	R	S	
ZPR40F□□□10-0□-A14	40	43	12.5	18.5	32.3	49.5	61.5	50	129.5	12.8	24.3	15.2	26.2	5
ZPR50F□□□10-0□-A14	50	53	13.5	19.5	33.3	50.5	62.5		130.5					6

Additional Dimensions by Stroke

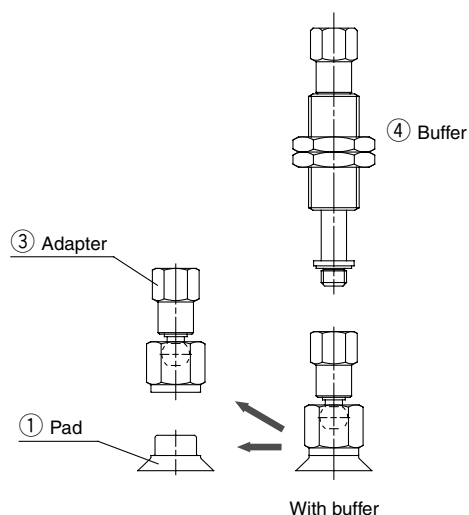
Stroke	(mm)		
	H	I	J
20	+10	±0	-3
30	+20		+7
50	+40	+25	+52

Series ZPT/ZPR

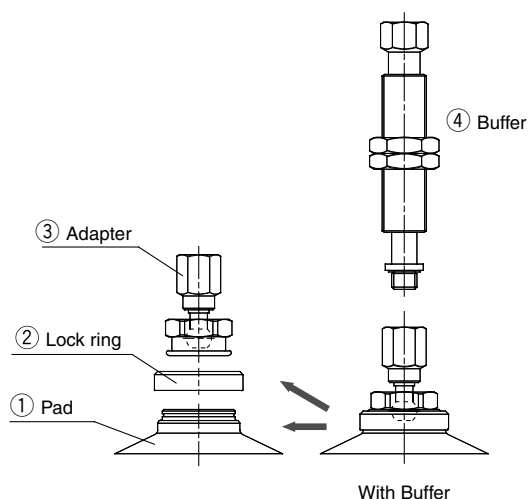
Component Parts

Series ZPT

Pad Diameter: ø10 to ø32

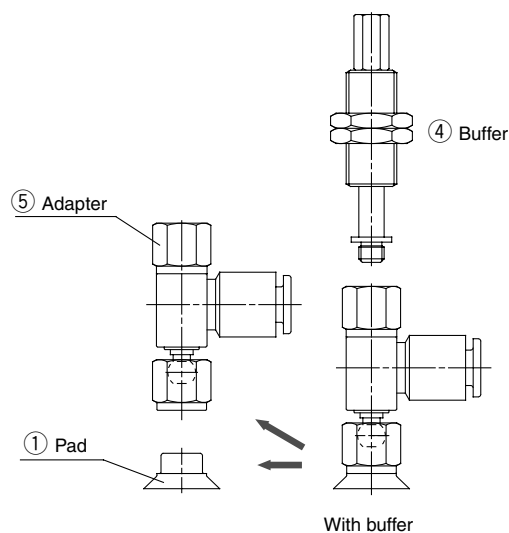


Pad Diameter: ø40, ø50

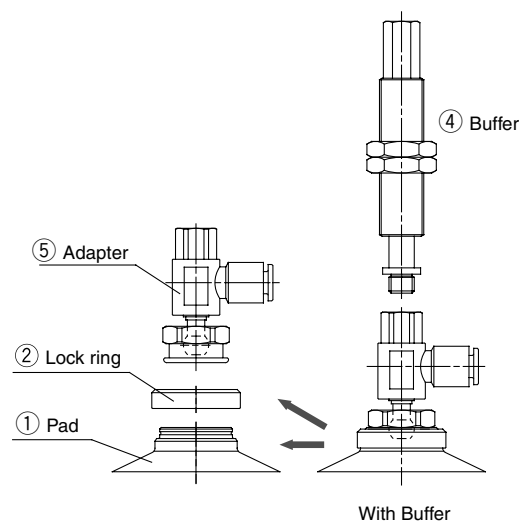


Series ZPR

Pad Diameter: ø10 to ø32



Pad Diameter: ø40, ø50



Component Parts

No.	Description	Material	Note
1	Pad	NBR, Silicon rubber, Urethane rubber, Fluororubber, Conductive NBR, Conductive silicon rubber	
2	Lock ring	Aluminum	Black anodized
3	Adapter	Brass, Stainless steel	Electroless nickel plated
4	Buffer	Brass	Electroless nickel plated
5	Adapter	Brass, Stainless steel, PBT	Electroless nickel plated

ZA

ZX

ZR

ZM

ZMA

ZQ

ZH

ZU

ZL

ZY□

ZF□

ZP□

SP

ZCUK

AMJ

AMV

AEP

HEP

Related Equipment

Replacement Parts

Pad, Individual Unit

How to Order

ZP 10 F GN

Pad diameter
(mm)

10	ø10
13	ø13
16	ø16
20	ø20
25	ø25
32	ø32
40	ø40
50	ø50

Material

N	NBR
S	Silicon rubber
U	Urethane rubber
F	Fluororubber
GN	Conductive NBR
GS	Conductive silicon rubber

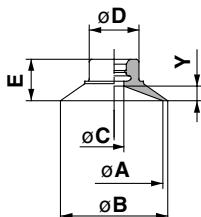
Pad type

F Ball joint type

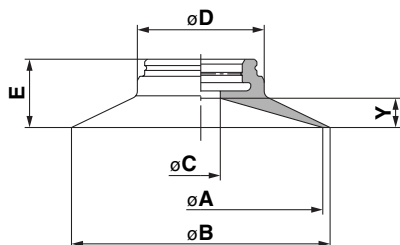
Note) Pads are exclusively ball joint type and are not interchangeable with other pads.

Dimensions

Ball joint type: ø10 to 32



Ball joint type: ø40, ø50



Model	A	B	C	D	E	Y
ZP10F□□	10	12	3	8.2	6.5	1.5
ZP13F□□	13	15			7	2
ZP16F□□	16	18			8.5	3
ZP20F□□	20	22	4	10.2	9	5
ZP25F□□	25	28			13	
ZP32F□□	32	35			14	
ZP40F□□	40	43	10	26	13	5
ZP50F□□	50	53	8		14	6

Lock Ring, Individual Unit

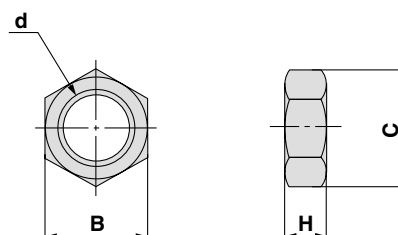
How to Order

ZPL F

For ball joint type
(ø40, ø50)

Mounting Nut

Dimensions



Model	d	H	B	C
ZPNA-M10	M10 x 1	3	14	16.2
ZPNA-M14	M14 x 1	5	19	21.9
ZPNA-M8	M8 x 1	3	12	13.9



Series ZPT/ZPR

Specific Product Precautions

Be sure to read before handling.

Refer to front matters 38 and 39 for Safety Instructions and pages 844 to 846 for Vacuum Equipment Precautions.

Caution on Design

⚠ Warning

1. In case where the workpieces are heavy or dangerous objects, etc., take measures to address a possible loss of adsorption force (installation of drop prevention guide, 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 which can be used 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 come into direct contact with medicines or food products, etc.

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

Use the pad lifting force table for reference.

Also, the pads to be 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 on the subject workpieces.

3. Use a buffer for adsorption on fragile workpieces.

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

4. The life of the buffer will be reduced if 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 force 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.

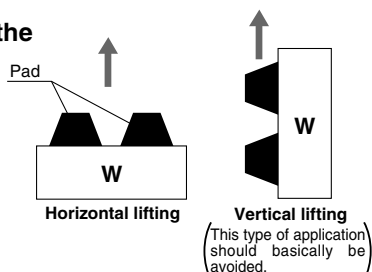
6. When transporting in an upward direction, factors such as acceleration, wind pressure and impact force must be considered in addition to the workpiece weight.

Use caution particularly when lifting items such as glass plates and circuit boards, because a large force will be applied by 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 workpiece can slip easily, accelerations and decelerations of horizontal movement should be kept low.

7. When transporting flat shaped workpieces that have large surface areas using multiple pads, care must be taken in arranging the pads, giving consideration to balance of the workpieces.

8. Use caution since the workpiece could rotate during transfer.

Use of more than one pad for each workpiece is recommended.



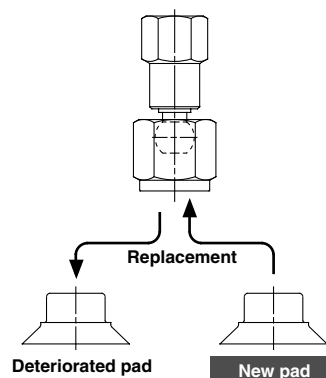
Maintenance

⚠ 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.



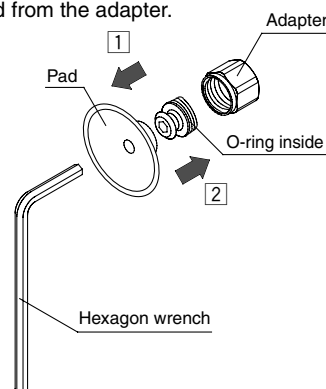
How to Assemble/Disassemble

⚠ Caution

Pad diameter: $\varnothing 10$ to $\varnothing 32$

1. Insert a hexagon wrench from the bottom of the pad, loosen the screw and remove the old pad from the adapter.

2. Place a new pad on the adapter, and after confirming that the O-ring is in place, retighten the screw with the hexagon wrench.

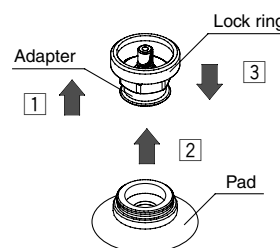


Pad diameter: $\varnothing 40$, $\varnothing 50$

1. Pull the lock ring upward, and after lifting it to the adapter, remove the old pad by pulling it downward.

2. When holding the lock ring in the raised position, place a new pad onto the adapter.

3. Confirm that the pad is securely in place, and then return the lock ring to its original position.



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Related Equipment