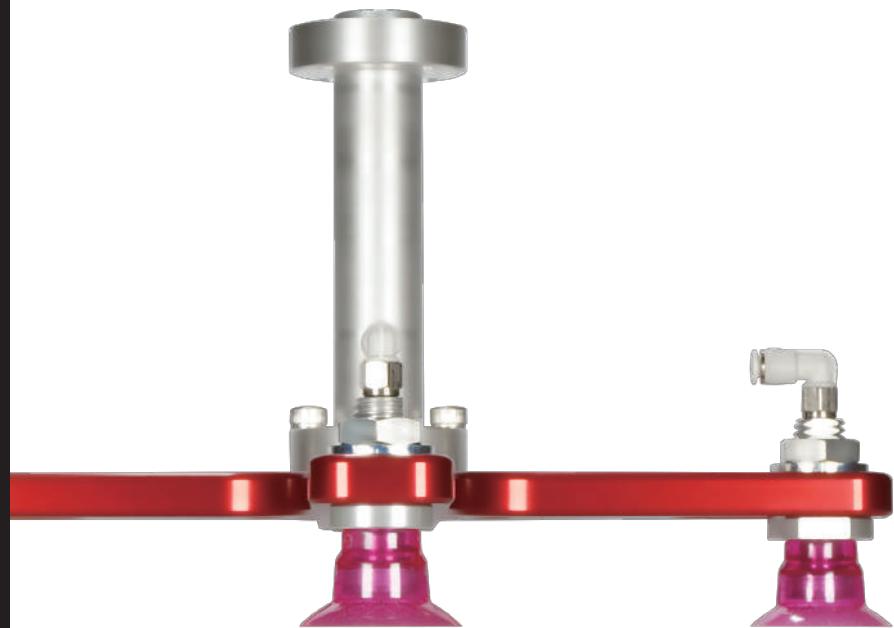


ROBOT HAND KIT Ver.4



Propose integral the robot hand
and suction cup

- No need to do complicated robot hand design
- Direct mounting to the robot



CONVUM
Myotoku Ltd.

2-6-18 Shimomaruko, Ohta-ku, Tokyo 146-0092, Japan
TEL 81-3-3759-1491 FAX 81-3-5741-7020
<https://www.convum.co.jp/en>



ROBOT HAND KIT

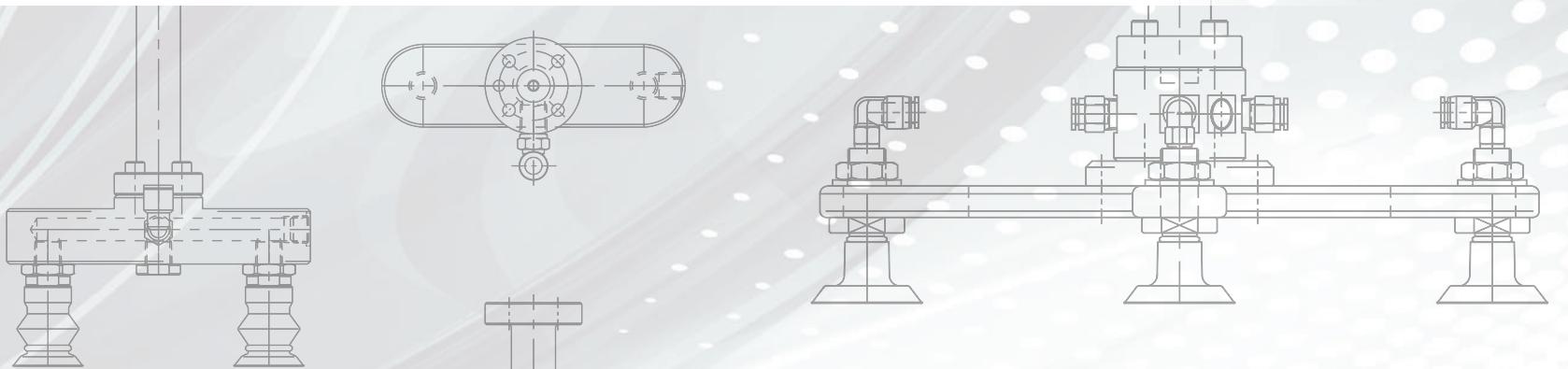


ROBOT HAND KIT

As a pioneer of vacuum equipment, Myotoku(CONVUM) has made all the necessary assembly robot hand parts such as the suction cup, flange, adapter, guide base and arm.

It reduces the work of complicated robot hand design for each workpiece and also reduces the man-hour for robot user and system integrator to design the hand.

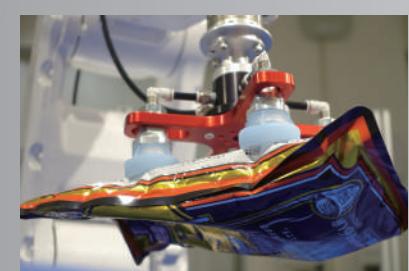
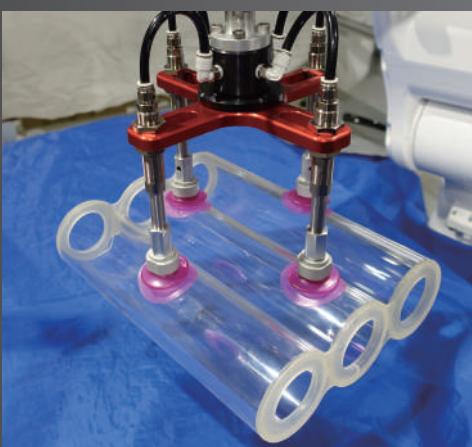
It's possible to purchase the completed set and parts. We also deal with the order made parts and set.



ROBOT HAND KIT

No need to do complicated
robot hand design
&
Direct mounting to the robot

Propose integral the robot hand
and suction cup



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I type robot hand for small size robot

F I type



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H type robot hand for small and medium size robot

F H type



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E type robot hand for small size robot

F E type



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X type robot hand for small and medium size robot

F X type



P13

Robot hand for parallel link robot, small size robot

K D P type



P15

Attachment for parallel hand



P21

Flange set to mount suction cup with spring fitting



P45

Robot hand for collaborative robot

CRK-Light



P61

Robot hand for sanitary industry, food industry

CRK SUS304 type



P69

Option

Change the hand by one button easily



P29

Hand for mount multiple small hand

Hand for medium robot
(payload 20 kg)



P51

Small size vacuum ejector for hand arm

CONVUM for CRK



P59

Compact type push-in connector



P75

Polyurethane tube



P78

Suction cup

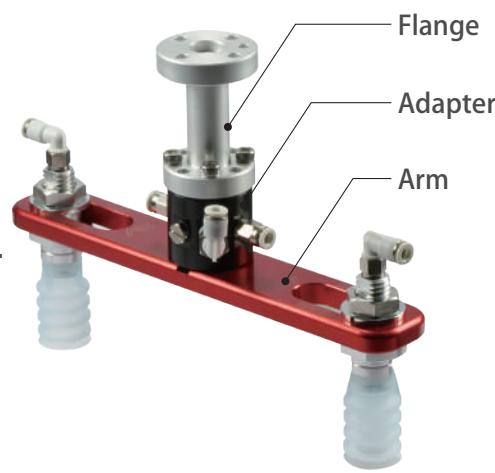


P79

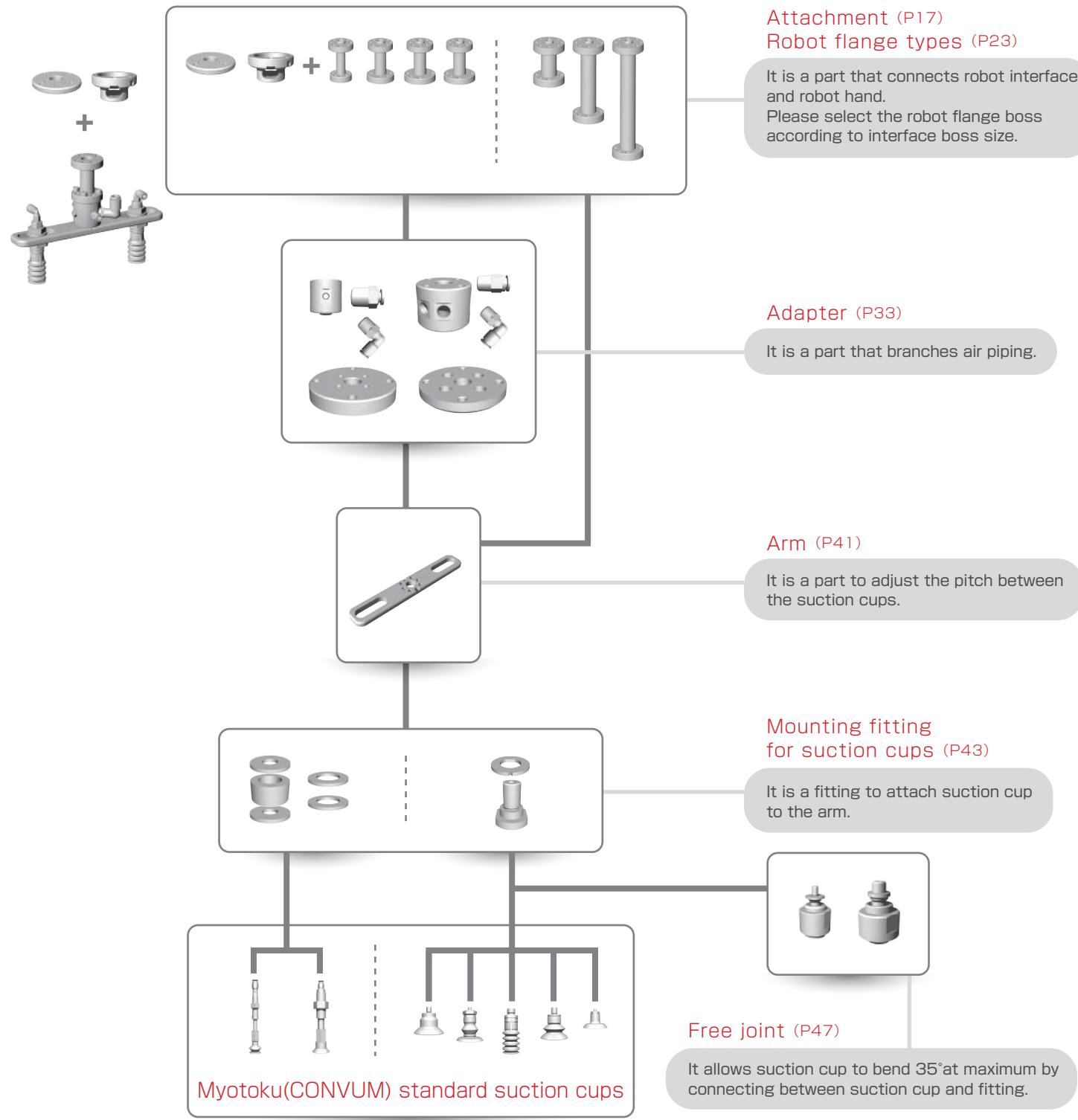
FI type

for small size robot
I type robot hand

It's possible to lay out 2pcs of suction cups on the liner arm.
The arm length size is selectable according to the workpieces.



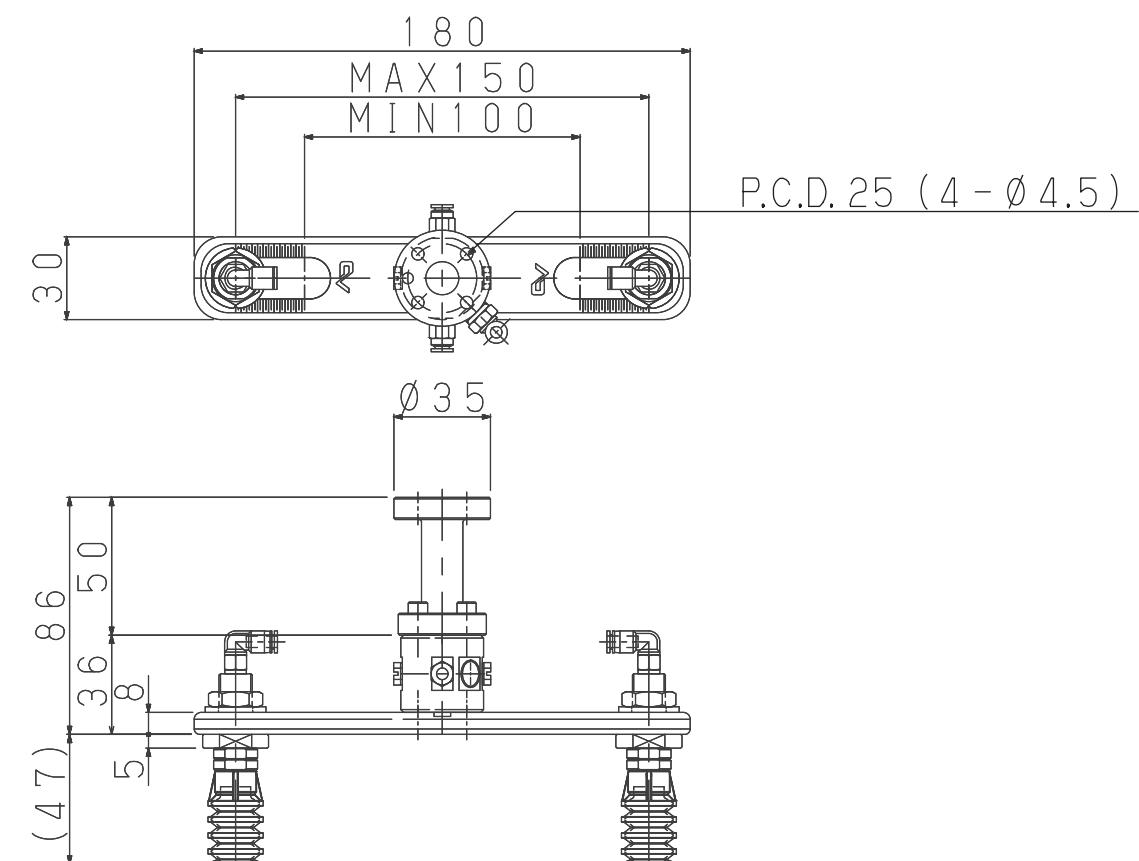
Picture of assembly tree



Example of kit combination(FI type)

Reference: set mass	227.3g	Model details
Use part model		
Robot flange	CRK-FL3P250L50BZ	P23
Adapter	CRK-FIAP250T4	P33
Arm	CRK-FIP250-L150	P41
Mounting fitting for suction cup	CRK-FPG1T4	P43
Suction cup	PL-20-G1-S4-F x2	P83

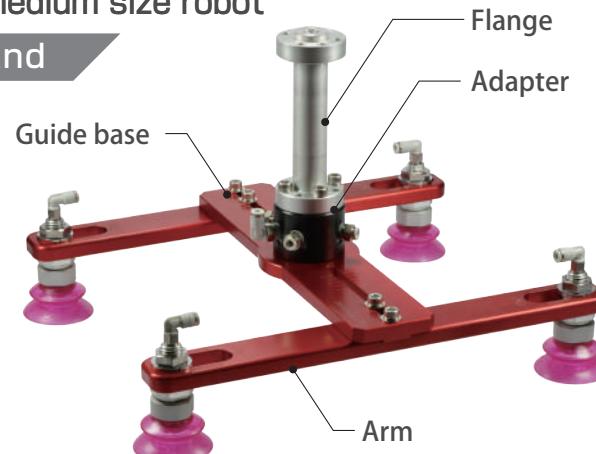
Dimensions



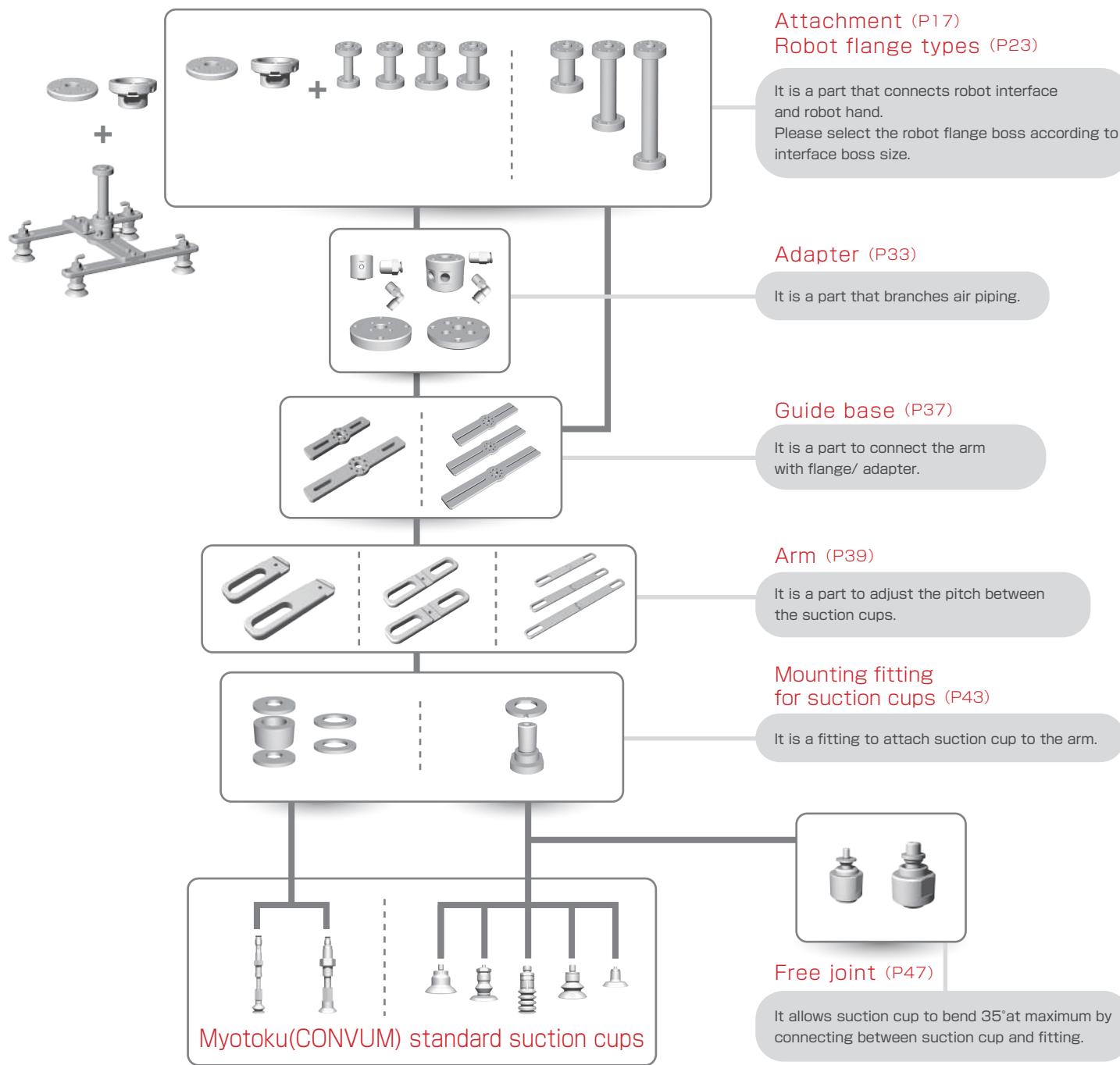
FH type

for small and medium size robot
Htype robot hand

Assembly of guide base and arm is optional. The position of 4pcs of suction cups are adjustable in the arm. The large size of guide base allows increase the number of arm and it's also possible to mount 8pcs of suction cups at maximum. The cantilever type to mount 2pcs of suction cups is also available.



Picture of assembly tree



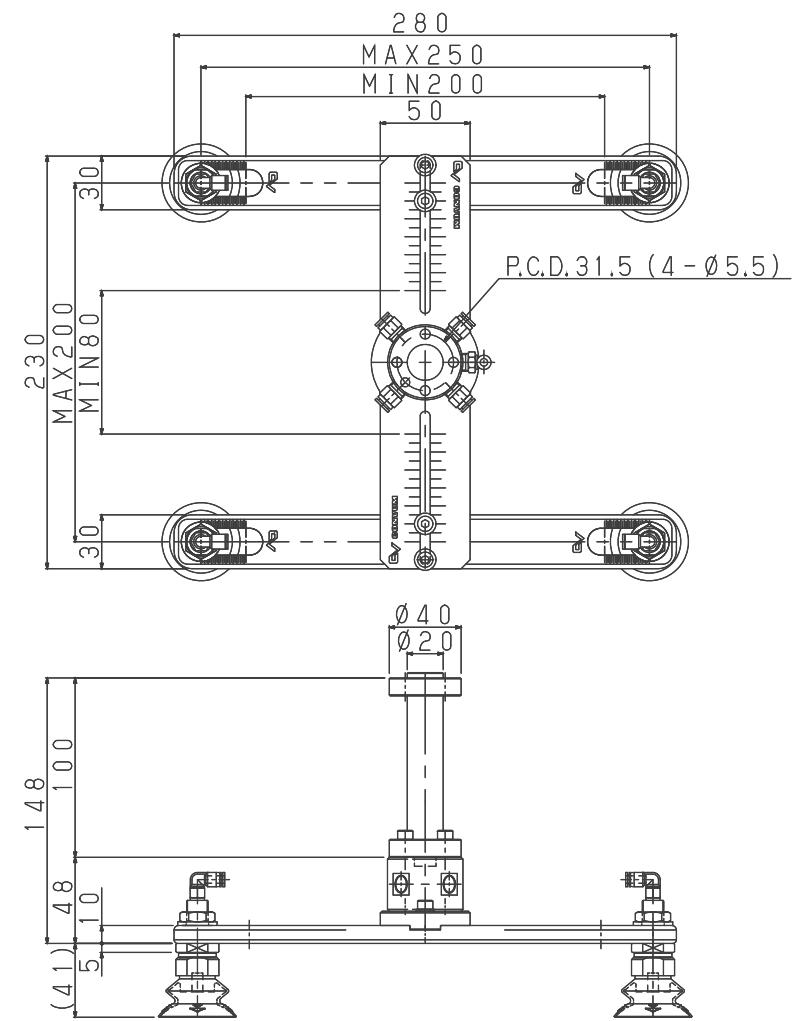
Example of kit combination(FH type)



Reference: set mass 857.4g

Use part model	Model details
Robot flange	CRK-FL7P315L100B20 P23
Adapter	CRK-FHAP315T4 P33
Guide base	CRK-FH200 P37
Arm	CRK-FA250 x2 P39
Mounting fitting for suction cup	CRK-FPM6T4 x2 P43
Suction cup	PK2B-40-T-M6-F x4 P81

Dimensions



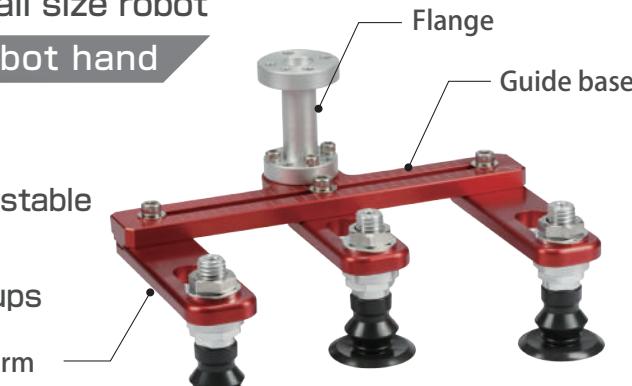
FE type

for small size robot
Etype robot hand

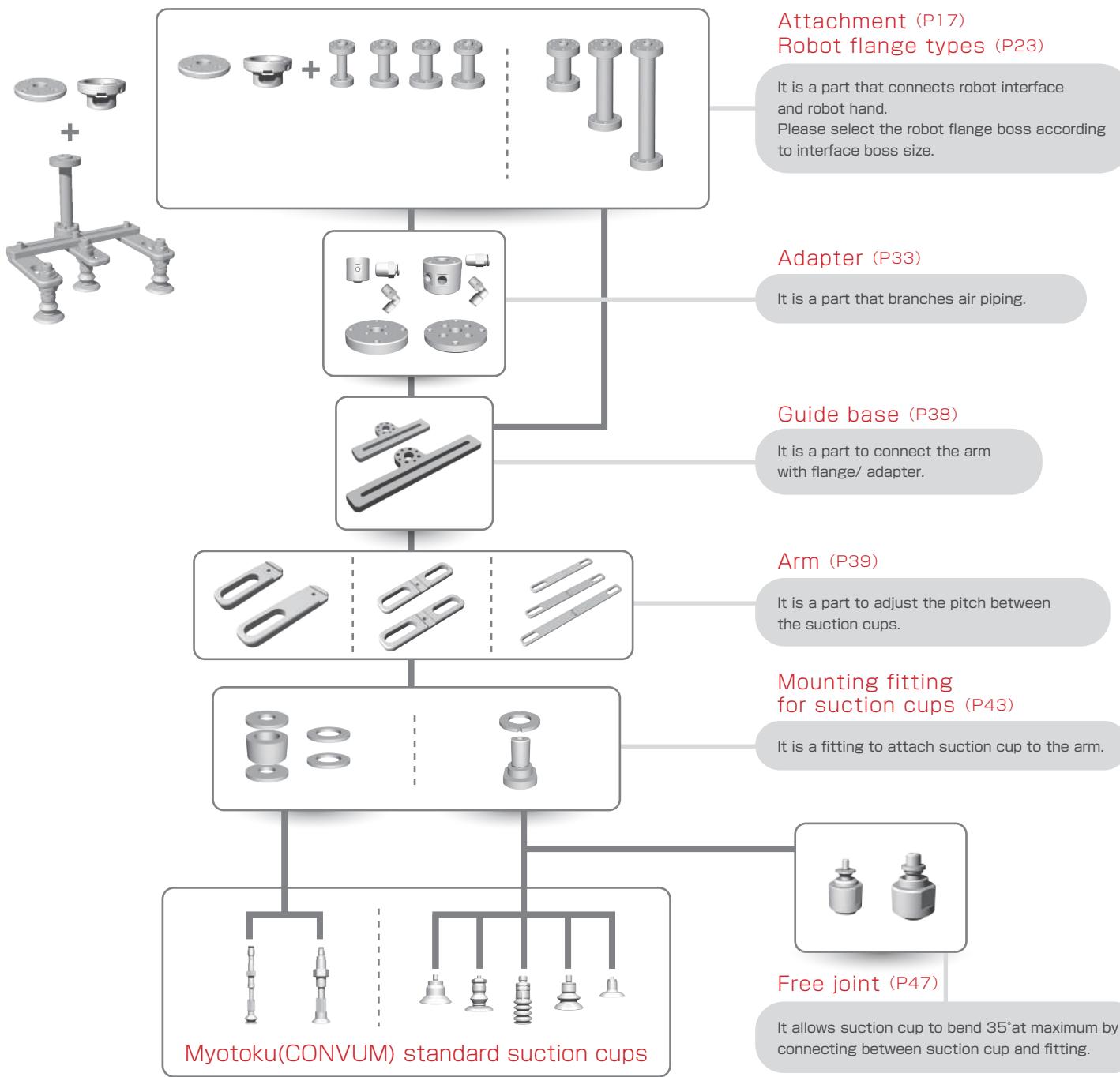
Assembly of guide base and arm is optional.

The position of 3pcs of suction cups are adjustable in the arm.

It's also possible to mount 6pcs of suction cups by positioning the flange in the center.



Picture of assembly tree



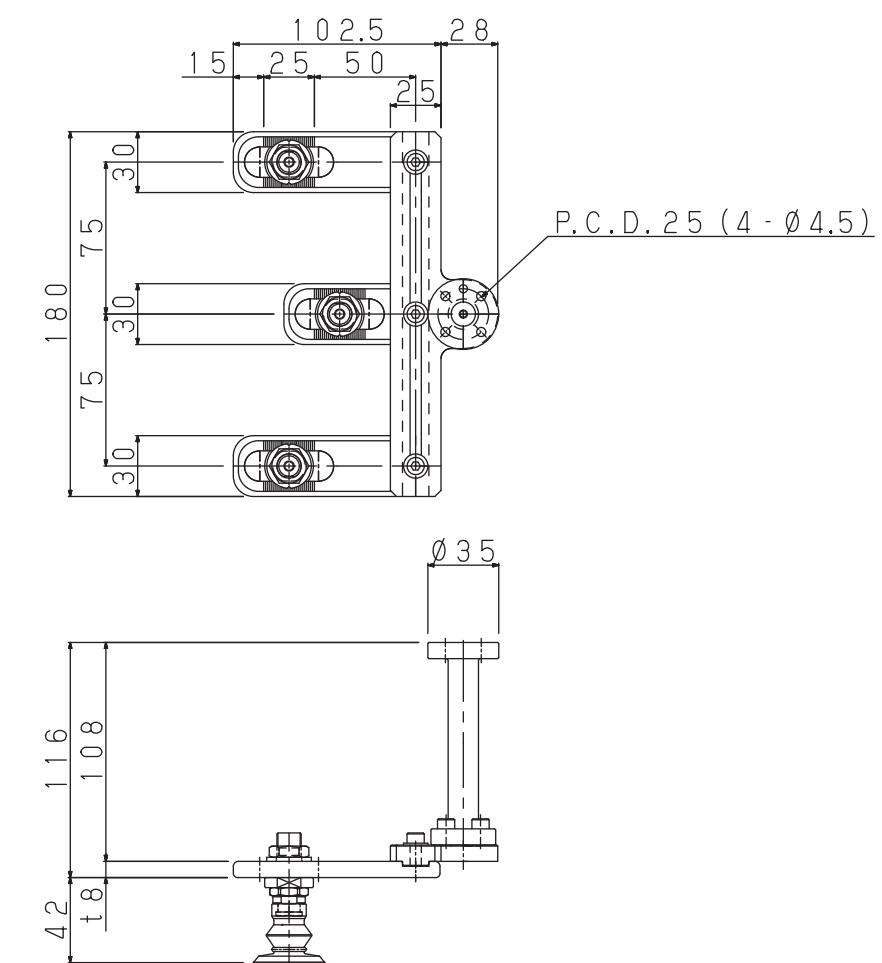
Example of kit combination(FE type)



Reference: set mass 384.9g

Use part model	Model details
Robot flange	CRK-FL3P250L50BZ P23
Guide base	CRK-FE150 P38
Arm	CRK-FA100H P39
Arm	CRK-FA150H x2 P39
Mounting fitting for suction cup	CRK-FPG1TZ x2 P43
Suction cup	PN-134B-G1-M-N x3 P79

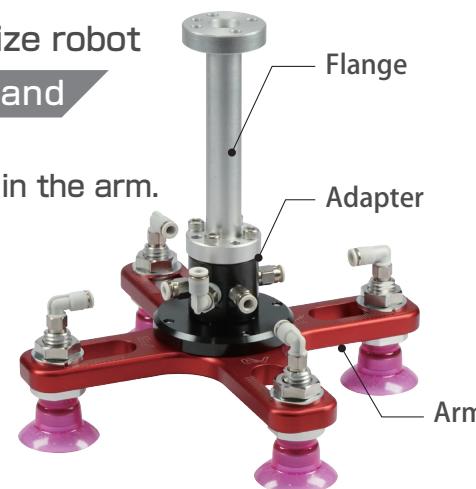
Dimensions



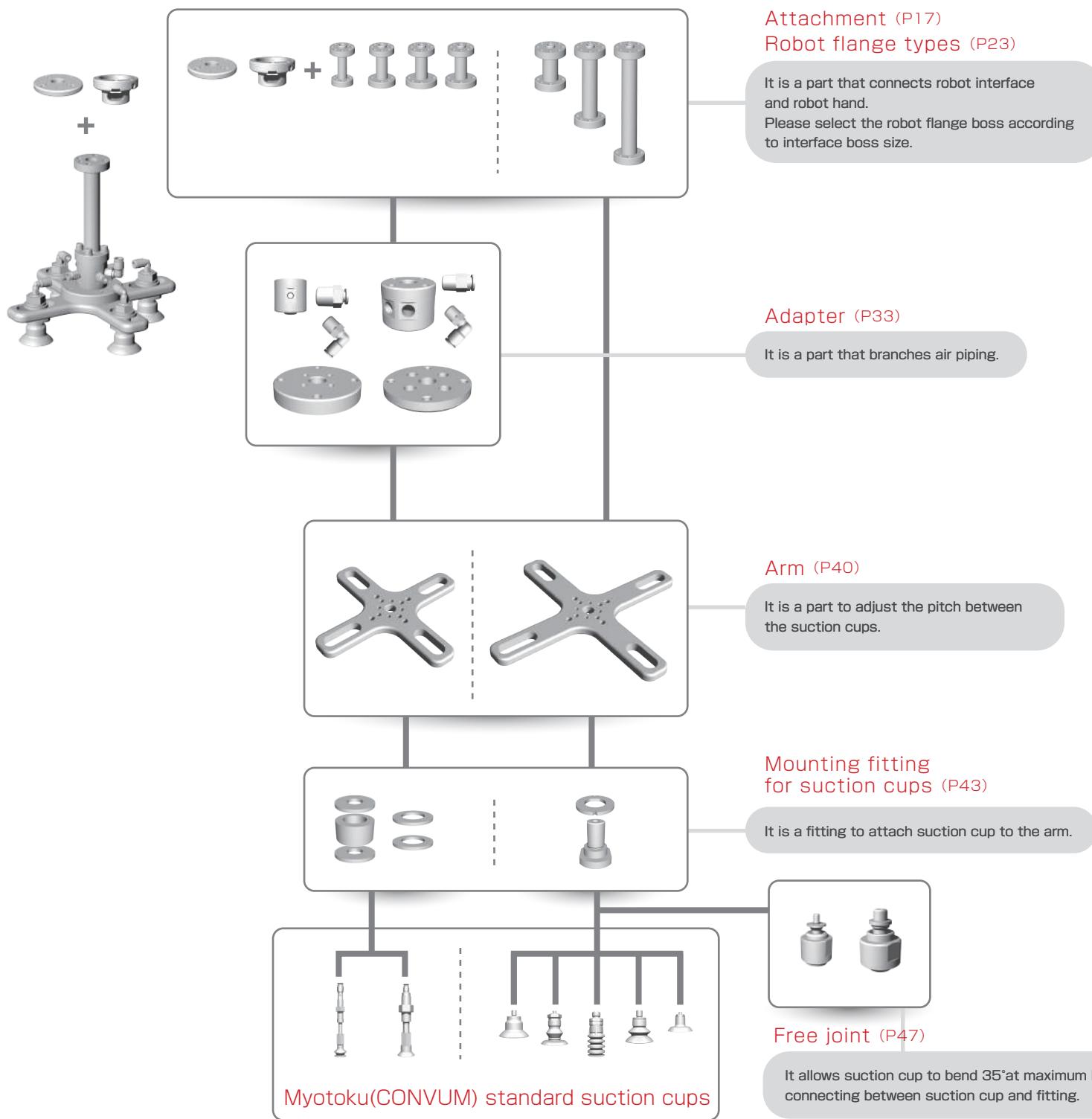
FX type

for medium size robot
X type robot hand

The position of 4 pcs of suction cups are adjustable in the arm.
It's strong and durable arm type.



Picture of assembly tree



Example of kit combination(FX type)

FX set ① (with adapter)

Reference: set mass 494.2g

Use part model	Model details
Robot flange	CRK-FL3P250L100BZ P23
Adapter	CRK-FXAP250T4 P33
Arm	CRK-FX150 P40
Mounting fitting for suction cup	CRK-FPM6T4 x2 P43
Suction cup	PK2-30-T x4 P80
Setting screw	TN-PK2-30-M6 x4 P80

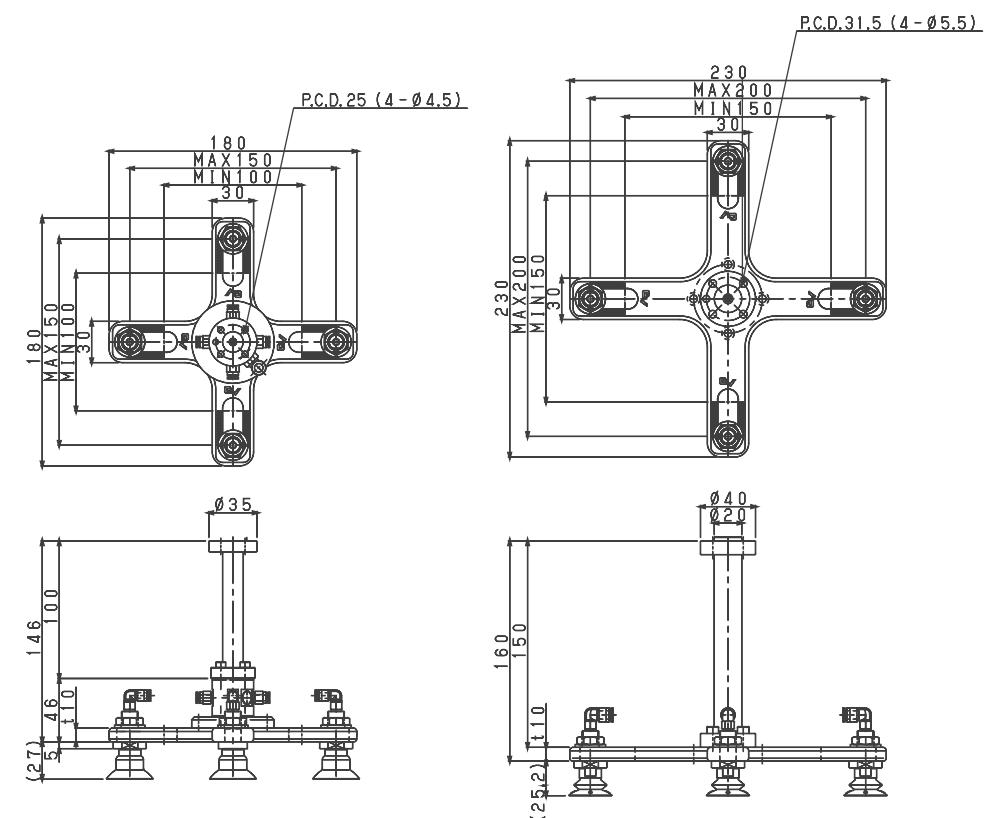


FX set ② (without adapter)

Reference: set mass 536.1g

Use part model	Model details
Robot flange	CRK-FL7P315L150B20 P23
Arm	CRK-FX200 P40
Mounting fitting for suction cup	CRK-FPM6T6 x2 P43
Suction cup	PK2B-30-T-M6 x4 P81

Dimensions



FX set ①

FX set ②

KDP type

for parallel link robot, small size robot

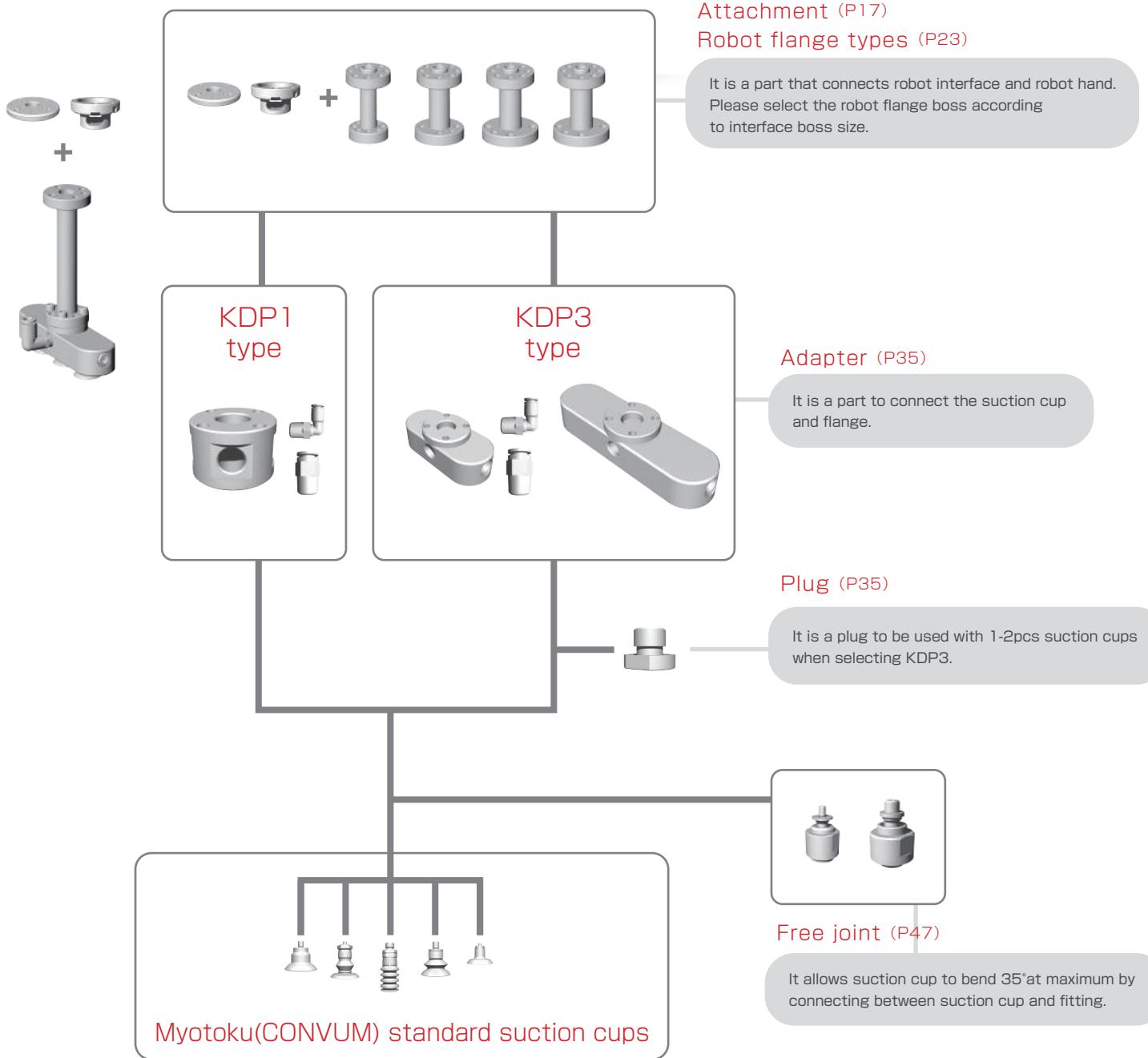
Direct mounting type to robot

The suction cup position is fixed and there are 1pcs of suction cup mounting type and 1~3pcs mounting type.(Note)

Note) 3pcs of suction cups are mountable at maximum. The disuse screw holes need to be closed by plug when mounting 1 or 2pcs of suction cup.



Picture of assembly tree



Example of kit combination(KDP type)

KDP set ①

Reference: set mass 241g



Use part model	Model details
Robot flange	CRK-FL3P250L100BZ P23
Adapter	CRK-KDP3P30M5T4 P35
Suction cup	PK2-20-T x3 P80
Setting screw	TN-PF-15-M5 x3 P80

KDP set ②

Reference: set mass 279.5g



Use part model	Model details
Robot flange	CRK-FL3P250L150BZ P23
Adapter	CRK-KDP3P40G1T6 P35
Plug	CRK-PG1 P35
Suction cup	PN-133B-G1-M-S4-F x2 P79

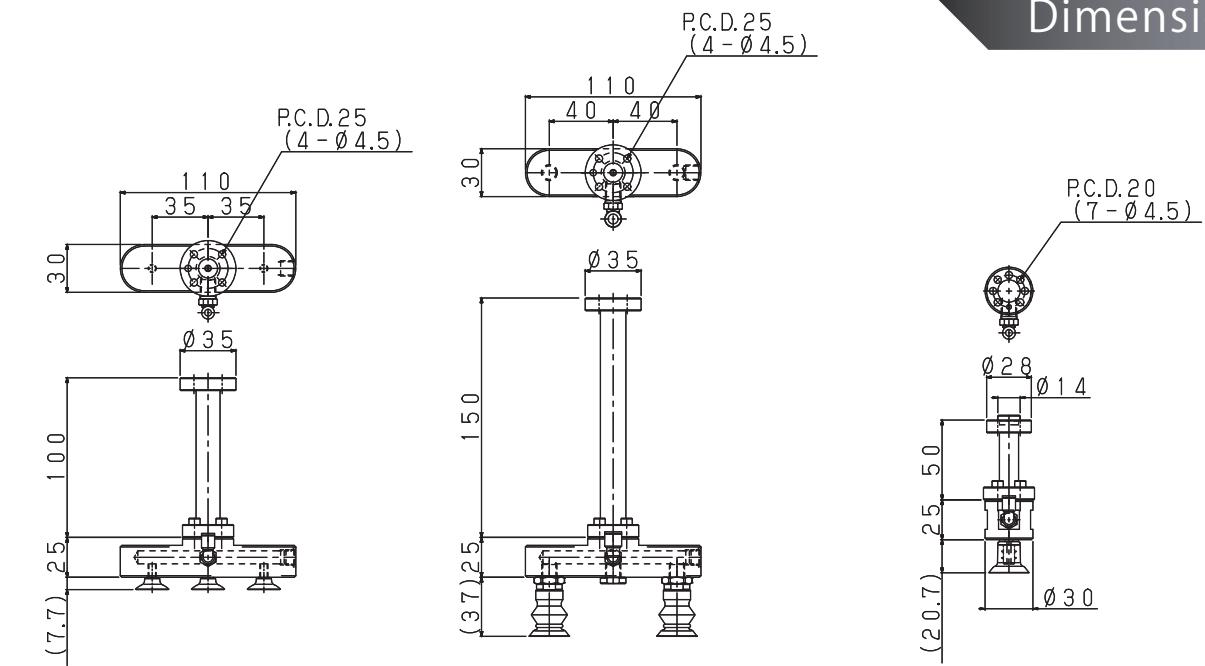
KDP set ③

Reference: set mass 81.9g



Use part model	Model details
Robot flange	CRK-FL3P200L50B14 P23
Adapter	CRK-KDP1ZM5T4 P35
Suction cup	PNG-133-SI30 P79
Setting screw	TN-PN-130-M5 P79

Dimensions

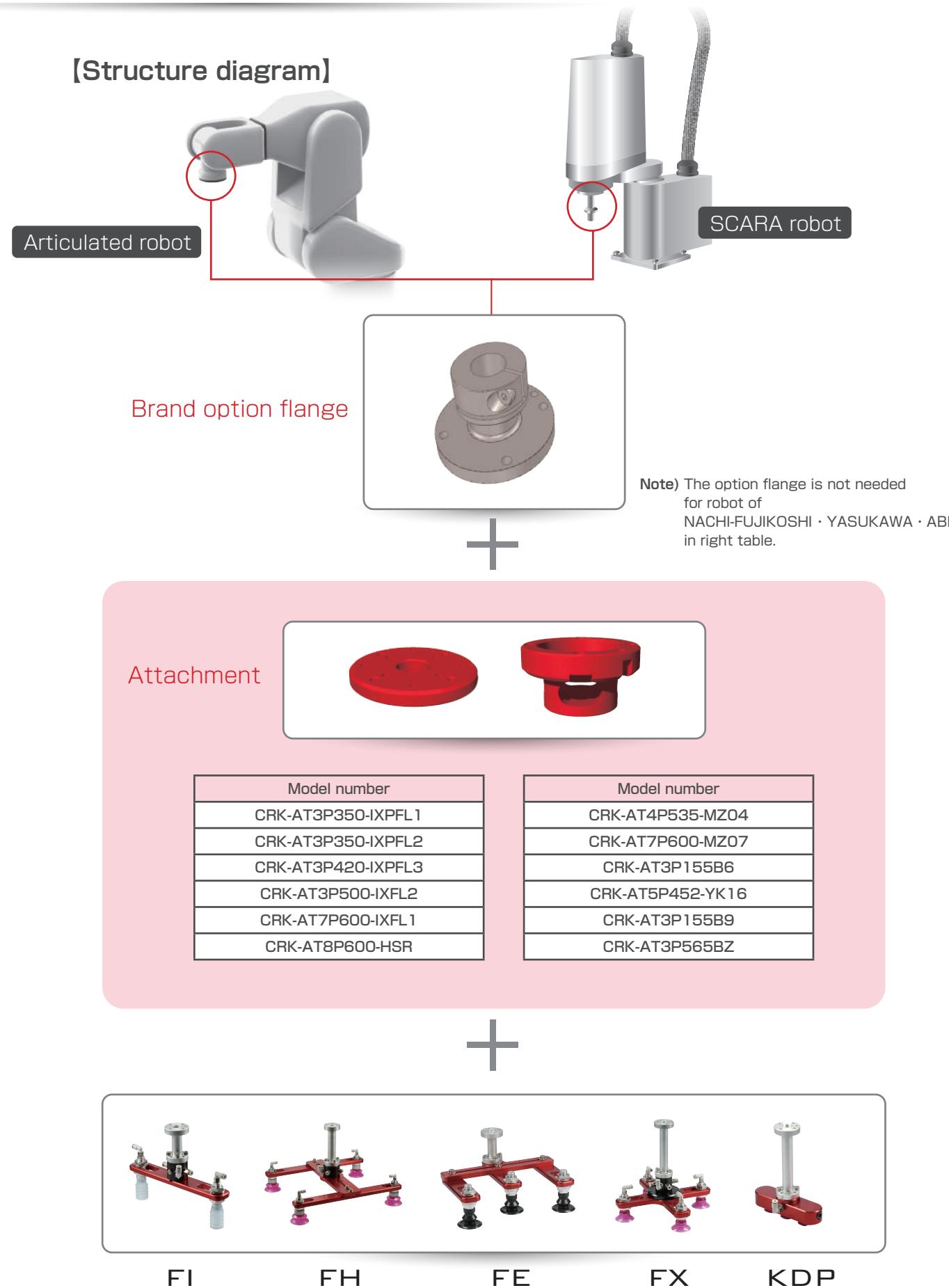


Attachment

FI/FH/FE/KDP type

It's a part to connect each brand option flange and robot flange.

[Structure diagram]



Applicable robot list

Brand	Category	Robot model	Payload (kg)	Flange model for robot brand option	Mounting screw	Applied flange model	Applied attachment model	
IAI	SCARA robot	IXP-3N1808 (3N2508)	Rated 1.0~Max3.0	IXP-FL-1	4-M3	CRK-FL3P250L (50/100/150) B12	CRK-AT3P350-IXPFL1	
		IXP-4N1808 (4N2508)					CRK-AT3P350-IXPFL2	
		IXP-3N35** (4N3515)		IXP-FL-2	4-M4		CRK-AT3P350-IXPFL2	
		IXP-3N45** (4N3515)					CRK-AT3P420-IXPFL3	
		IXP-3N55** (4N5520)	Rated 2.0~Max6.0	IXP-FL-3	4-M5	CRK-FL3P250L (50/100/150) B12 CRK-FL7P315L (50/100/150) B12	CRK-AT3P500-IXFL2	
		IXP-3N65** (4N6520)					CRK-AT7P600-IXFL1	
		IX-NNN2515H/3515H	Rated 1.0~Max3.0	IX-FL-2	4-M5	CRK-FL3P250L (50/100/150) B12	CRK-AT3P500-IXFL2	
		IX-NSN5016H/6016H					CRK-FL3P250L (50/100/150) B12	
DENSO WAVE	SCARA robot	IX-NNN50**H/60**H	Rated 2.0~Max10.0	IX-FL-1	4-M5	CRK-FL3P250L (50/100/150) B12 CRK-FL7P315L (50/100/150) B12	CRK-AT8P600-HSR	
		HS035A1-N/*						
		HS045A1-N/*	5.0	HS-5G	4-M5	CRK-FL3P250L (50/100/150) B12 CRK-FL7P315L (50/100/150) B12	CRK-AT8P600-HSR	
		HS055A1-N/*						
		HS-4535	8.0	HSR	4-M5	CRK-FL7P315L (50/100/150) B12		
		HS-4545						
		HS-4555						
		HSR048 (Floor, Hanging type)						
NACHI-FUJIKOSHI	Articulated robot	HSR055 (Floor, Hanging type)	4.0	4-M5	CRK-FL7P315L (50/100/150) B12	CRK-AT4P535-MZ04		
		HSR065 ((Floor, Hanging type))				CRK-AT7P600-MZ07		
		MZ04-01(MZ04D-01)	7.0	No option	4-M5	CRK-FL7P315L (50/100/150) B12	CRK-AT3P155B6	
		MZ04E-01(MZ04DE-01)						
		MZ07-01(MZ07P-01)						
YAMAHA	SCARA robot	MZ07L-01(MZ07LP-01)	1.0	4-M3	CRK-FL3P200L (50/100/150) BZ	CRK-AT3P155B6		
		MZ01-01						
		YK250XG-150-F (Flange mounting type)	5.0 (4.0)	YKΦ16	4-M4	CRK-FL3P315L (50/100/150) B12 CRK-FL7P315L (50/100/150) B12	CRK-AT5P452-YK16	
		YK350XG-150-F (Flange mounting type)						
		YK400XG-150-F (Flange mounting type)						
Yaskawa	Articulated robot	YK500XGL***-F (Flange mounting type)	0.5	No option	4-M3	CRK-FL3P200L (50/100/150) BZ	CRK-AT3P155B9	
		YK600XGL***-F (Flange mounting type)						
ABB	Double arm collaborative robot	IRB 14000	Each arm 0.5	No option	4-M2.5	CRK-FL2P220L(50/70/100)BZ CRK-LFL2P220L50BZ	CRK-AT3P565BZ	

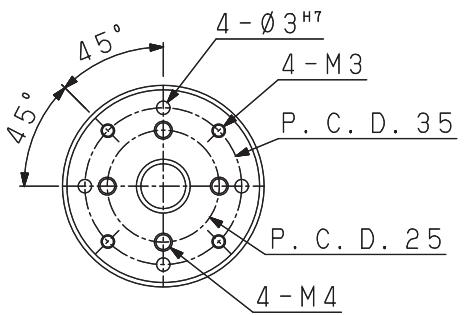
Attachment

FI/FH/FE/KDP type

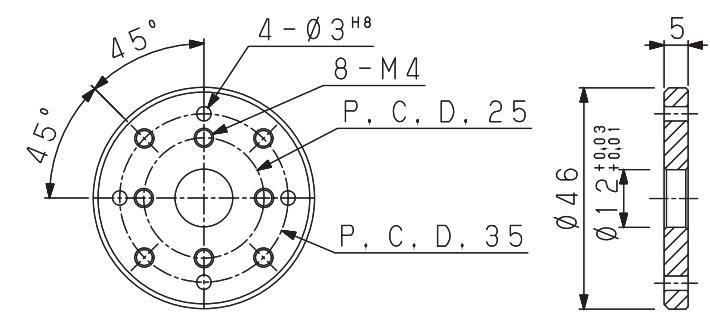
It's a part to connect each brand option flange and robot flange.

[Dimension]

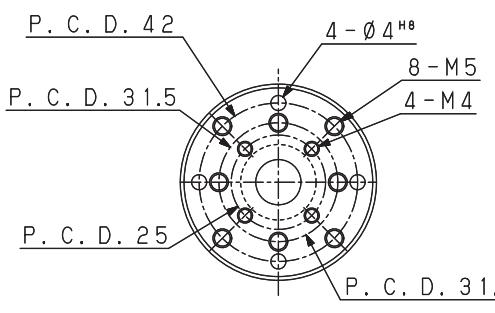
Attachment for IAI



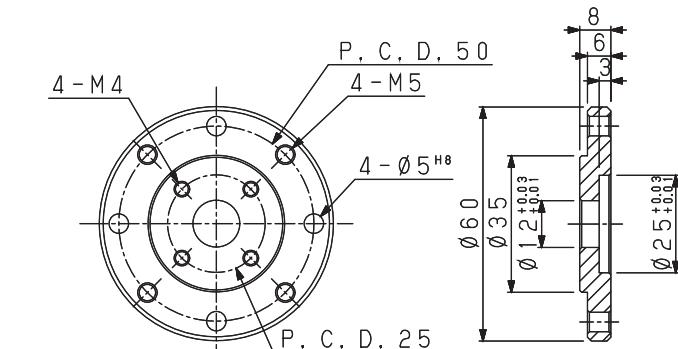
CRK-AT3P350-IXPFL1



CRK-AT3P350-IXPFL2

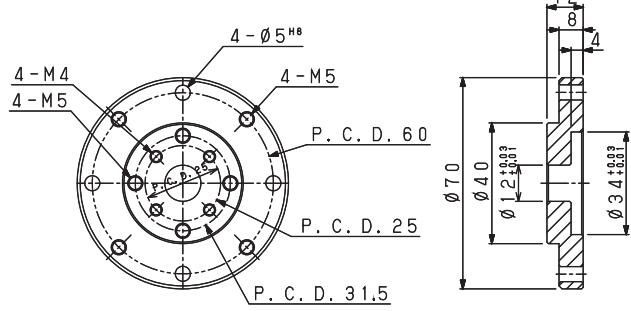


CRK-AT3P420-IXPFL3



CRK-AT3P500-IXFL2

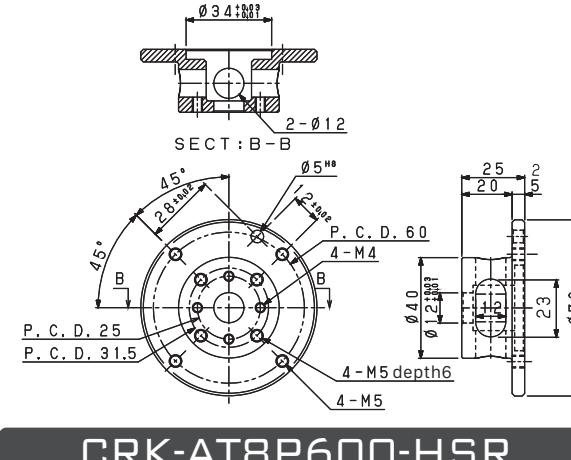
Attachment for Yaskawa



CRK-AT7P600-IXFL1

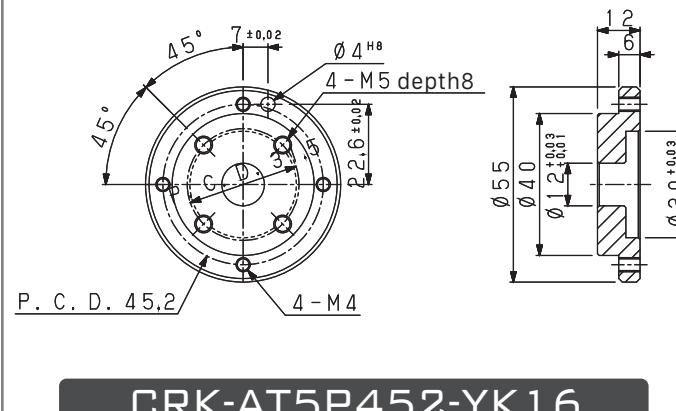
CRK-AT3P155B9

Attachment for DENSO WAVE



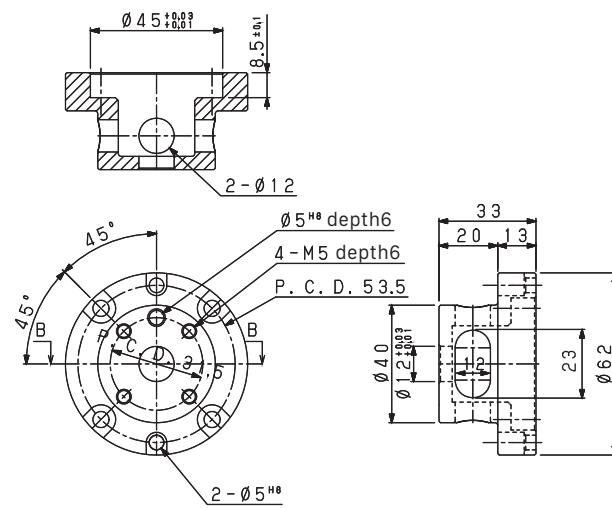
CRK-AT8P600-HSR

Attachment for YAMAHA

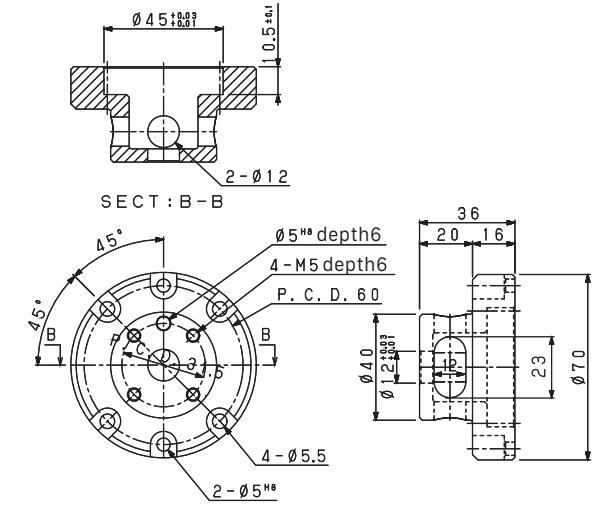


CRK-AT5P452-YK16

Attachment for NACHI-FUJIKOSHI

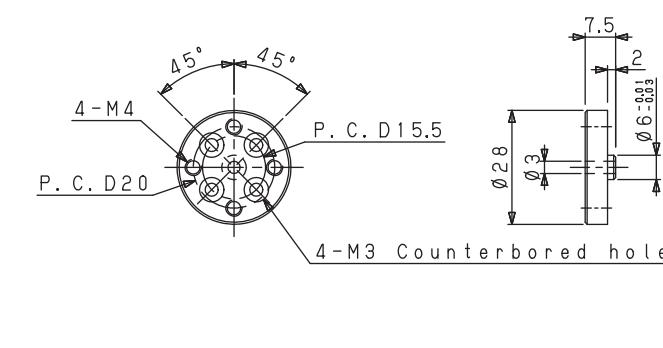


CRK-AT4P535-MZ04

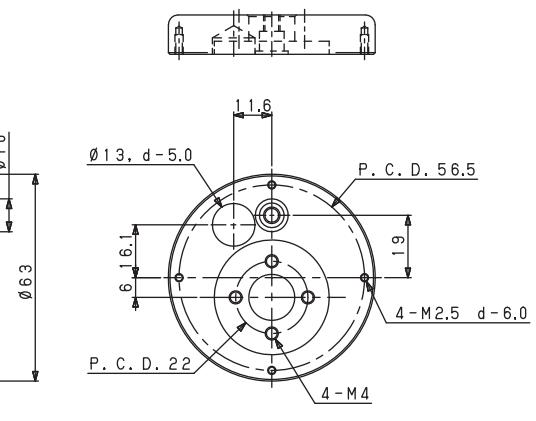


CRK-AT7P600-MZ07

Attachment for ABB



CRK-AT3P155B6



CRK-AT3P565BZ

Attachment

for parallel hand

Attachment for parallel hand of Kondo Seisakusho.

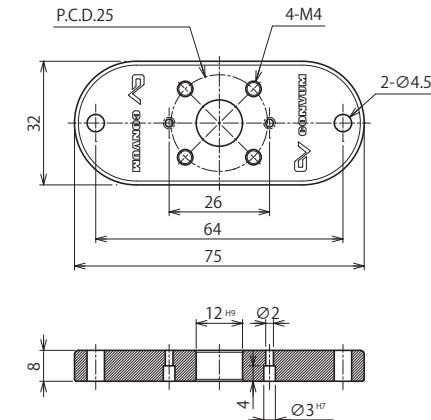


[Model]

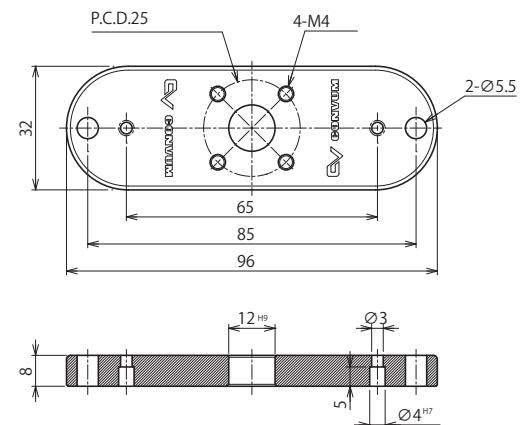
Model number	Applied parallel hand	Flange P.C.D.
CRK-KHAP250-HL12	HLF-12AS1	25.0
CRK-KHAP250-HL16	HLF-16AS1	
CRK-KHAP315-HL25	HLF-20AS1/HLC-25AS/HHC-50AS	31.5
CRK-KHAP315-HL30	HLC-30AS	

[Dimensions]

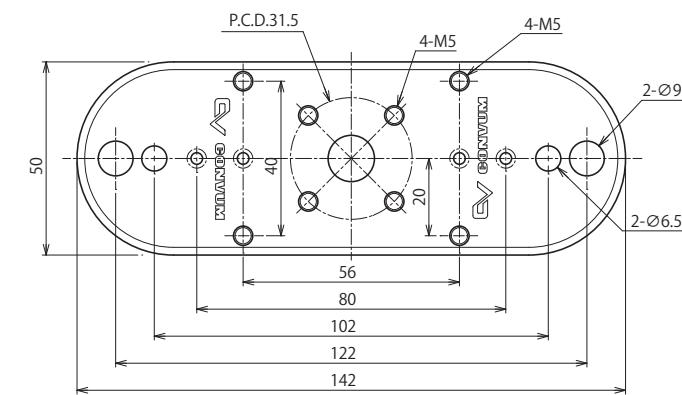
(mm)



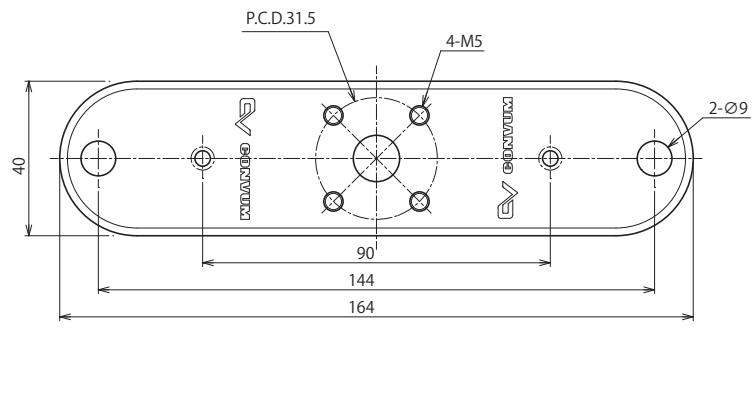
Model number	Mass (g)
CRK-KHAP250-HL12	42.0



Model number	Mass (g)
CRK-KHAP250-HL16	56.0



Model number	Mass (g)
CRK-KHAP315-HL25	163.0



Model number	Mass (g)
CRK-KHAP315-HL30	158.0

※Please check the below HP for dimensions of parallel hand

<http://www.konsei.co.jp/>

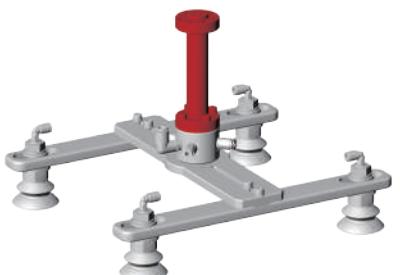
Robot flange

Payload 2kg/3kg/7kg
FI/FH/FE/KDP type

It's a part to connect robot interface and hand.



FI



FH



FE



FX



KDP

[How to order]

CRK - **FL3** **P250** **L50** **BZ**

(1) (2) (3) (4)

* Please refer the applicable model list when selecting.

* 4pcs of hex socket head bolts to mount hand are attached.

① Flange payload (kg)

Symbol	Payload
FL2	Less than 2
FL3	Less than 3
FL7	Less than 7

② Robot mounting diameter (P.C.D.)

Symbol	P.C.D.
P200	20.0
P220	22.0
P250	25.0
P315	31.5
P500	50.0

③ Length of flange (mm)

Symbol	Length
L50	50
L70	70
L100	100
L150	150

④ Robot flange boss diameter

Symbol	Boss size
BZ	N/A
B12	ϕ 12
B14	ϕ 14
B20	ϕ 20
B31	ϕ 31.5
B38	ϕ 38
B41	ϕ 41.1

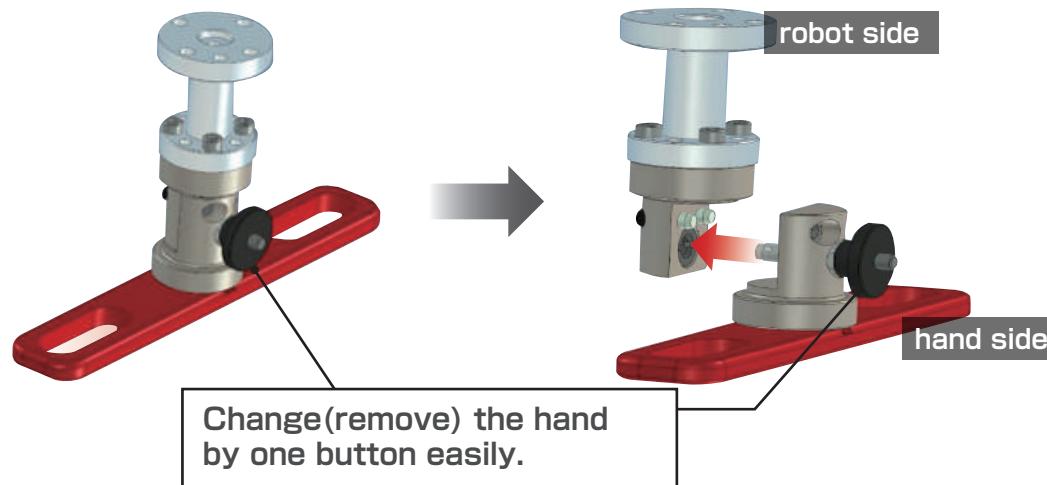
[Applicable Model List]

Series	① Payload	② P.C.D.	③ Length of flange	④ Boss diameter	Model number	How to connect to robot	
						Directly	With attachment
CRK-	FL2	P220	50	BZ	CRK-FL2P220L50BZ	<input type="radio"/>	-
			70		CRK-FL2P220L70BZ	<input type="radio"/>	-
			100		CRK-FL2P220L100BZ	<input type="radio"/>	-
	P200	BZ	50	BZ	CRK-FL3P200L50BZ	<input type="radio"/>	○
			100		CRK-FL3P200L100BZ	<input type="radio"/>	○
			150		CRK-FL3P200L150BZ	<input type="radio"/>	○
	P200	B14	50	B14	CRK-FL3P200L50B14	<input type="radio"/>	-
			100		CRK-FL3P200L100B14	<input type="radio"/>	-
			150		CRK-FL3P200L150B14	<input type="radio"/>	-
	P250	BZ	50	BZ	CRK-FL3P250L50BZ	<input type="radio"/>	-
			100		CRK-FL3P250L100BZ	<input type="radio"/>	-
			150		CRK-FL3P250L150BZ	<input type="radio"/>	-
	P250	B12	50	B12	CRK-FL3P250L50B12	<input type="radio"/>	○
			100		CRK-FL3P250L100B12	<input type="radio"/>	○
			150		CRK-FL3P250L150B12	<input type="radio"/>	○
	P315	B12	50	B12	CRK-FL3P315L50B12	<input type="radio"/>	-
			100		CRK-FL3P315L100B12	<input type="radio"/>	-
			150		CRK-FL3P315L150B12	<input type="radio"/>	-
	P315	B20	50	B20	CRK-FL3P315L50B20	<input type="radio"/>	-
			100		CRK-FL3P315L100B20	<input type="radio"/>	-
			150		CRK-FL3P315L150B20	<input type="radio"/>	-
	P500	B31.5	50	B31.5	CRK-FL3P500L50B31	<input type="radio"/>	-
			100		CRK-FL3P500L100B31	<input type="radio"/>	-
			50	B38	CRK-FL3P500L50B38	<input type="radio"/>	-
		B38	100		CRK-FL3P500LB100B38	<input type="radio"/>	-
			50	B41.1	CRK-FL3P500L50B41	<input type="radio"/>	-
			100		CRK-FL3P500L100B41	<input type="radio"/>	-
		P315	50	B12	CRK-FL7P315L50B12	<input type="radio"/>	○
			100		CRK-FL7P315L100B12	<input type="radio"/>	○
			150		CRK-FL7P315L150B12	<input type="radio"/>	○
			50	B20	CRK-FL7P315L50B20	<input type="radio"/>	-
			100		CRK-FL7P315L100B20	<input type="radio"/>	-
			150		CRK-FL7P315L150B20	<input type="radio"/>	-
		P500	50	B31.5	CRK-FL7P500L50B31	<input type="radio"/>	-
			100		CRK-FL7P500L100B31	<input type="radio"/>	-
			50	B38	CRK-FL7P500L50B38	<input type="radio"/>	-
			100		CRK-FL7P500LB100B38	<input type="radio"/>	-
			50	B41.1	CRK-FL7P500L50B41	<input type="radio"/>	-
			100		CRK-FL7P500L100B41	<input type="radio"/>	-

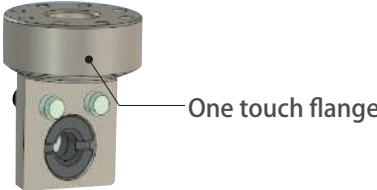
One touch flange

Change the hand by one button easily.

Please use robot side type and hand side type in combination.



for robot side



■ Robot side

[How to order]

CRK	-	FW	P250	FL050	B12
-----	---	----	------	-------	-----

① ② ③

① Flange pitch (P.C.D.)

Symbol	P.C.D. (mm)
P250	25.0
P315	31.5

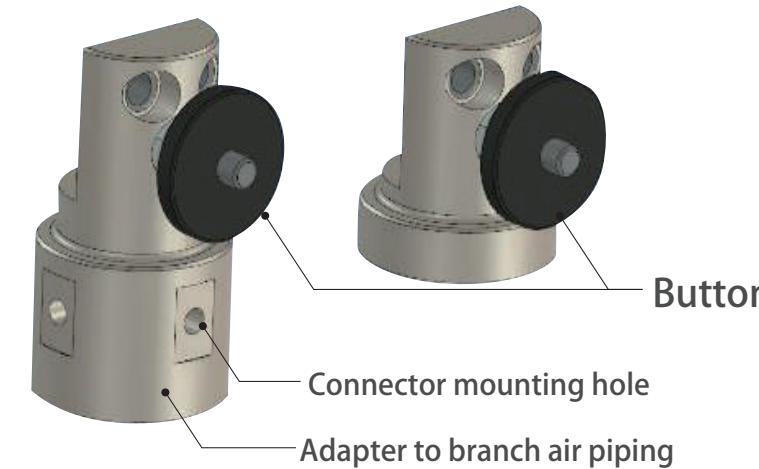
② Flange type (robot side)

Symbol	Type	Length of flange (mm)
FA	CRK standard flange connection type	-
FL050	Integrated flange	50
FL100	Integrated flange	100

③ Boss diameter

Symbol	Boss diameter
BZ	N/A <small>Note1</small>
B12	$\phi 12$
B20	$\phi 20$ <small>Note2</small>

Note1) When "FA" selected in ②, the boss diameter will be "BZ".
Note2) When "P315" selected in ①.



■ Hand side

[How to order]

CRK	-	FW	P315	MA	T6
-----	---	----	------	----	----

① ② ③

① Flange pitch (P.C.D.)

Symbol	P.C.D.
P250	25.0
P315	31.5

② Flange type (hand side)

Symbol	Type
MA	with adapter to branches air piping
MZ	N/A

* Please refer the applicable model list when selecting.

③ Push-in connector

Symbol	Specifications
TZ	N/A
T4	$\phi 4$ elbow
T6	$\phi 6$ elbow

Note) When "MZ" selected in ②, the push-in connector will be "TZ".

[Applicable model list]

for robot side

Model number
CRK-FWP250FABZ
CRK-FWP250FL050BZ
CRK-FWP250FL100BZ
CRK-FWP250FL050B12
CRK-FWP250FL100B12
CRK-FWP315FABZ
CRK-FWP315FL050BZ
CRK-FWP315FL100BZ
CRK-FWP315FL050B12
CRK-FWP315FL100B12
CRK-FWP315FL050B20
CRK-FWP315FL100B20

for hand side

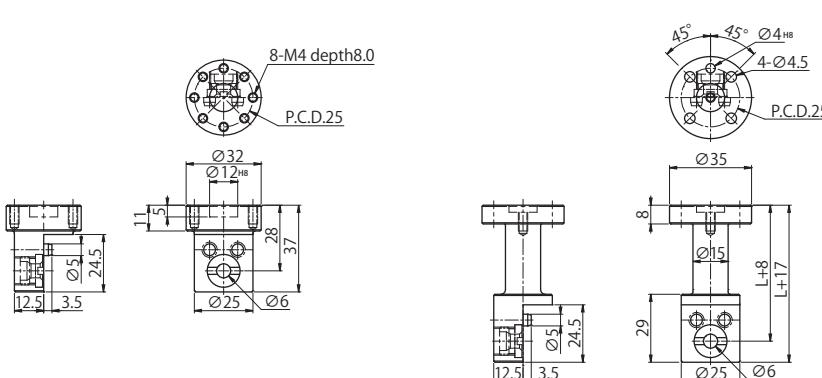
Model number	Included items
CRK-FWP250MTZ	Bolt for hand 4pcs
CRK-FWP250MATZ	Bolt for hand 4pcs
CRK-FWP250MAT4	Bolt for hand 4pcs Push-in connector 5pcs M5 plug 2pcs
CRK-FWP250MAT6	Bolt for hand 4pcs
CRK-FWP315MTZ	Bolt for hand 4pcs
CRK-FWP315MATZ	Bolt for hand 4pcs
CRK-FWP315MAT4	Bolt for hand 4pcs Push-in connector 5pcs Rc1/8 plug 2pcs
CRK-FWP315MAT6	Bolt for hand 4pcs Push-in connector 5pcs Rc1/8 plug 2pcs

[Applicable model of robot side and hand side/Payload]

for robot side	for hand side	
	CRK-FWP250 type	CRK-FWP315 type
CRK-FWP250 type	○(Payload 3kg)	×
CRK-FWP315 type	○(Payload 3kg)	○(Payload 7kg)

[Dimensions] for robot side

(mm)



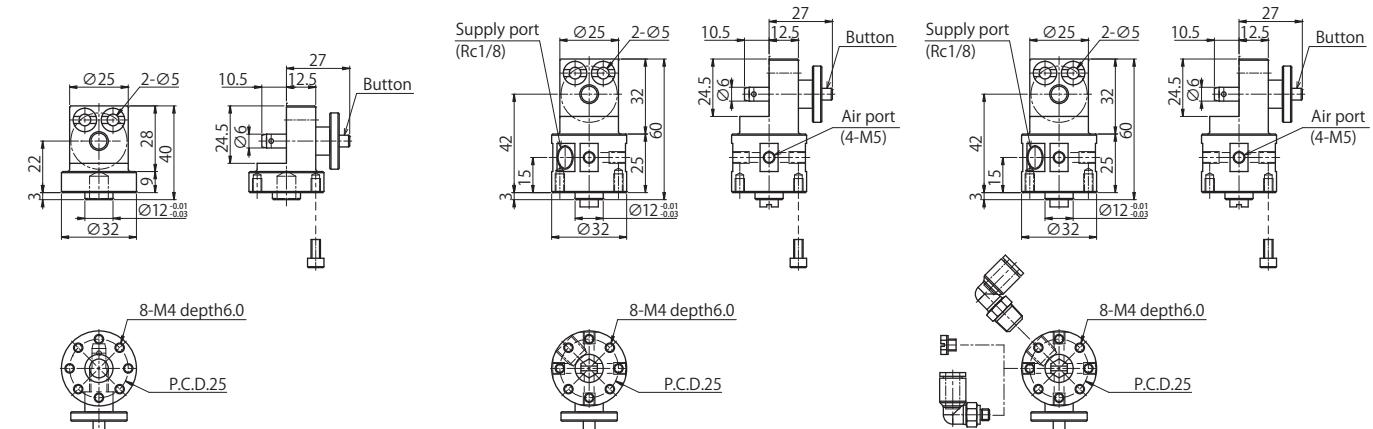
Model number	Mass (g)
CRK-FWP250FABZ	47.0

Model number	L	Mass (g)
CRK-FWP250FL050BZ	50	57.0
CRK-FWP250FL100BZ	100	80.5

Model number	L	Mass (g)
CRK-FWP250FL050B12	50	59.5
CRK-FWP250FL100B12	100	83.0

[Dimensions] for hand side

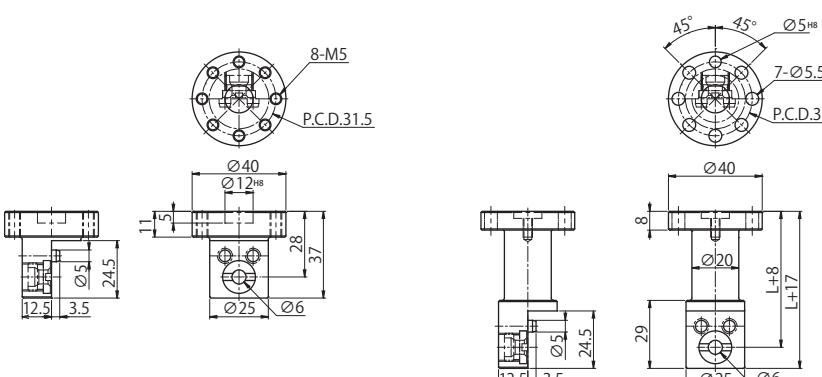
(mm)



Model number	Mass (g)
CRK-FWP250MTZ	60.0

Model number	Mass (g)
CRK-FWP250MATZ	94.5

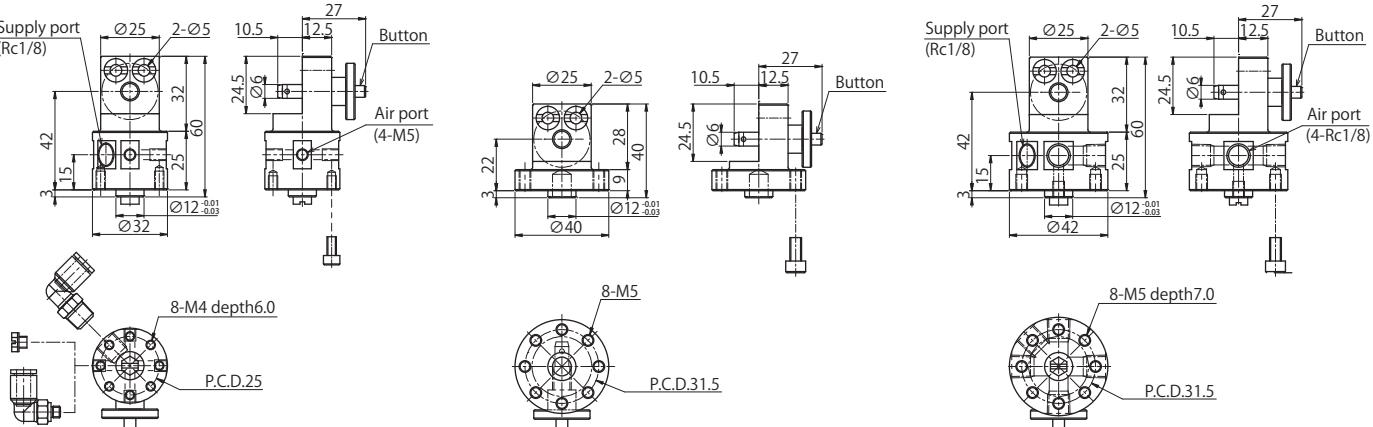
Model number	Mass (g)
CRK-FWP250MAT4	114.0



Model number	Mass (g)
CRK-FWP315FABZ	59.0

Model number	L	Mass (g)
CRK-FWP315FL050BZ	50	72.0
CRK-FWP315FL100BZ	100	113.5

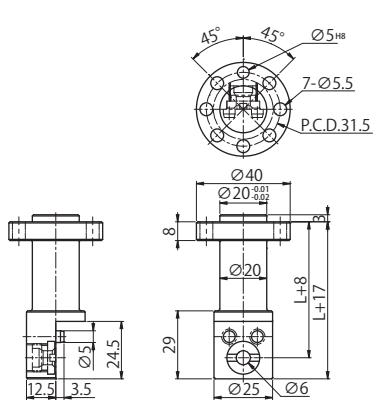
Model number	L	Mass (g)
CRK-FWP315FL050B12	50	74.5
CRK-FWP315FL100B12	100	116.0



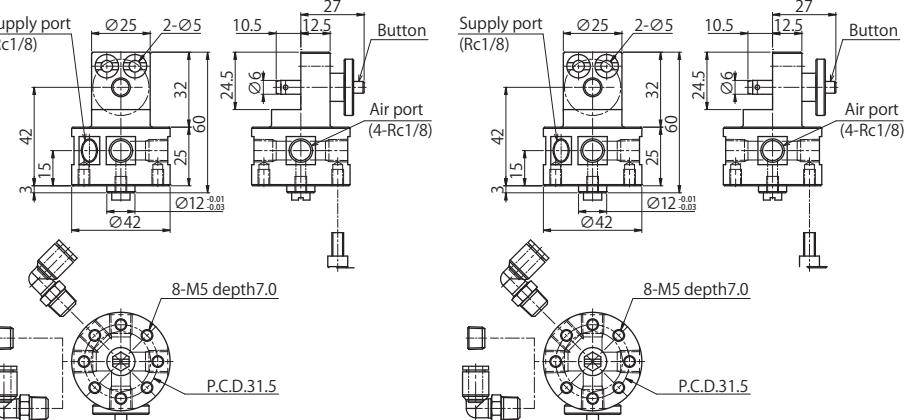
Model number	Mass (g)
CRK-FWP250MAT6	117.0

Model number	Mass (g)
CRK-FWP315MTZ	68.5

Model number	Mass (g)
CRK-FWP315MATZ	122.0



Model number	L	Mass (g)
CRK-FWP315FL050B20	50	75.0
CRK-FWP315FL100B20	100	116.5



Model number	Mass (g)
CRK-FWP315MAT4	152.5

Model number	Mass (g)
CRK-FWP315MAT6	156.0

Adapter

KDP type

It is a part to connect pads and flange.



KDP1 type



KDP3 type
Suction cup 2pcs, plug 1pcs



KDP3 type
Suction cup 3pcs

[How to order]

CRK - KDP3 P15 G1 T4 - W

① ② ③ ④ ⑤

① Suction cup quantity

Symbol	Suction cup quantity	Payload (kg)
KDP1	1 pcs	Less than 3
KDP3	3 pcs Note	

Note) Please use to close the disuse screw hole when mounting 1pcs and 2pcs of suction cups.

⑤ Surface treatment

Symbol	Color of anodizing
Blank	Red
W	White
B	Blue

Plug

CRK - P G1

③ Suction cup mounting screw size

Symbol	Pitch
Z	N/A Note
P15	15×3 holes
P20	20×3 holes
P25	25×3 holes
P30	30×3 holes
P35	35×3 holes
P40	40×3 holes

Note) When selecting KDP1 in ①.

Symbol	Screw size
G1	G1/8
M1	M10
M6	M6
M5	M5

Symbol	Screw size
G1	G1/8
M1	M10
M6	M6
M5	M5

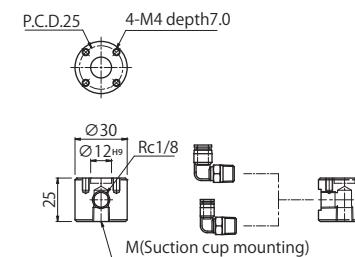


* It is a plug to be used with 1-2pcs suction cups when selecting KDP3.

* Please refer the applicable model list when selecting.

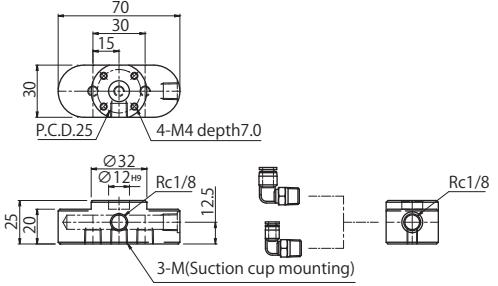
* The connection dimensions of adapter and robot flange is P.C.D.25.

[Dimensions]



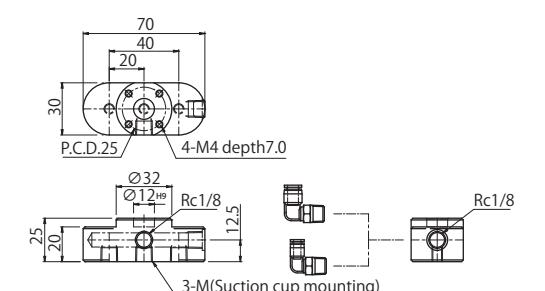
Model number	M Suction cup mounting screw
CRK-KDP1ZG1□	G1/8
CRK-KDP1ZM1□	M10×1.5
CRK-KDP1ZM6□	M6×1.0
CRK-KDP1ZM5□	M5×0.8

* □ in the table indicates the push-in connector.



Model number	M Suction cup mounting screw
CRK-KDP3P15M6□	M6×1.0
CRK-KDP3P15M5□	M5×0.8

* □ in the table indicates the push-in connector.

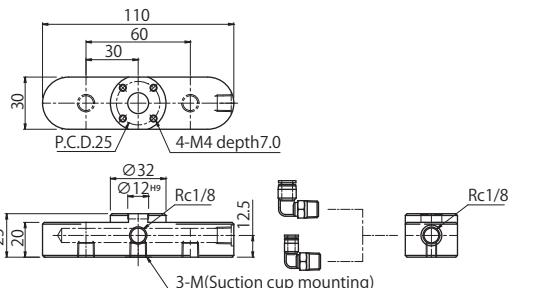


Model number	M Suction cup mounting screw
CRK-KDP3P20G1□	G1/8
CRK-KDP3P20M1□	M10×1.5
CRK-KDP3P20M6□	M6×1.0
CRK-KDP3P20M5□	M5×0.8

* □ in the table indicates the push-in connector.

Model number	M Suction cup mounting screw
CRK-KDP3P25G1□	G1/8
CRK-KDP3P25M1□	M10×1.5
CRK-KDP3P25M6□	M6×1.0
CRK-KDP3P25M5□	M5×0.8

* □ in the table indicates the push-in connector.

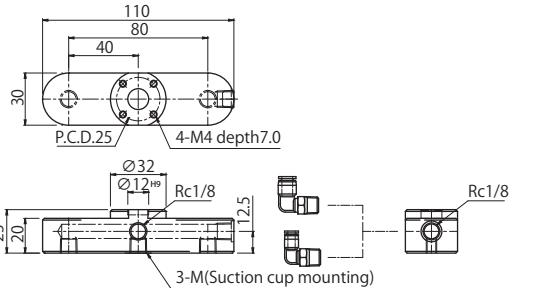


Model number	M Suction cup mounting screw
CRK-KDP3P30G1□	G1/8
CRK-KDP3P30M1□	M10×1.5
CRK-KDP3P30M6□	M6×1.0
CRK-KDP3P30M5□	M5×0.8

* □ in the table indicates the push-in connector.

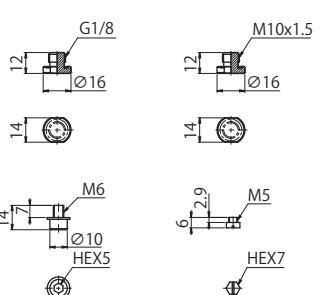
Model number	M Suction cup mounting screw
CRK-KDP3P35G1□	G1/8
CRK-KDP3P35M1□	M10×1.5
CRK-KDP3P35M6□	M6×1.0
CRK-KDP3P35M5□	M5×0.8

* □ in the table indicates the push-in connector.



Model number	M Suction cup mounting screw
CRK-KDP3P40G1□	G1/8
CRK-KDP3P40M1□	M10×1.5
CRK-KDP3P40M6□	M6×1.0
CRK-KDP3P40M5□	M5×0.8

* □ in the table indicates the push-in connector.



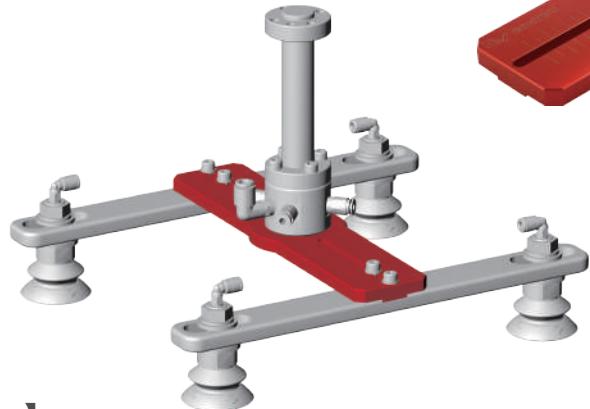
Model number	M Suction cup mounting screw	Mass (g)
CRK-PG1	G1/8	3.0
CRK-PM1	M10×1.5	3.0
CRK-PM6	M6×1.0	5.2
CRK-PM5	M5×0.8	1.0

(mm)

Guide base

FH type

It is a part to connect the arm with flange/ adapter.



[How to order]

CRK - FH 100 - W

① ②

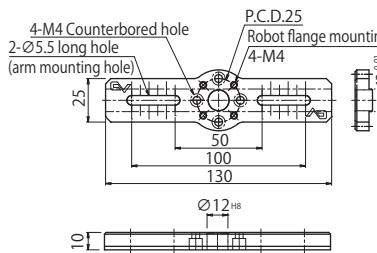
① Guide base specifications

Symbol	Adjustable range (mm)	Mounting P.C.D.	Payload (kg)
100	50~100	25.0	Less than 3
150	100~150		
200	80~200		
250	80~250		
300	100~300	31.5	Less than 7

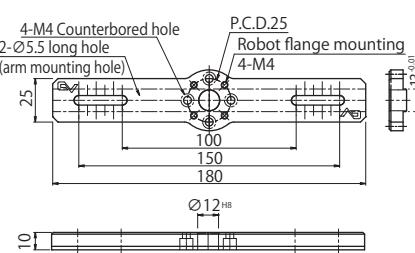
② Surface treatment

Symbol	Color of anodizing
Blank	Red
W	White
B	Blue

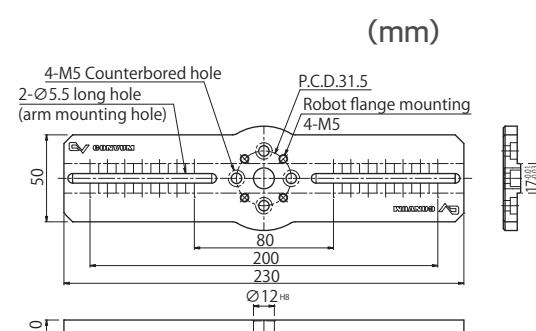
[Dimensions]



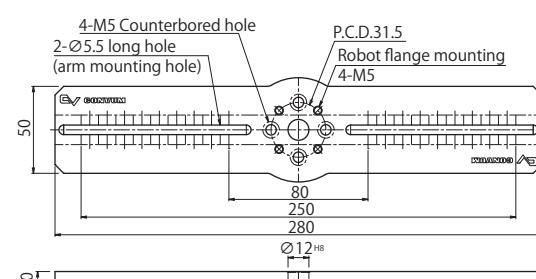
Model number	Lmax	Lmin	Mass(g)
CRK-FH100	100	50	67.0



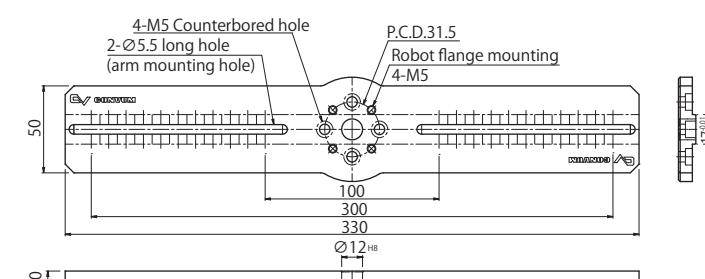
Model number	Lmax	Lmin	Mass(g)
CRK-FH150	150	100	98.0



Model number	Lmax	Lmin	Mass(g)
CRK-FH200	200	80	238.0



Model number	Lmax	Lmin	Mass(g)
CRK-FH250	250	80	289.0

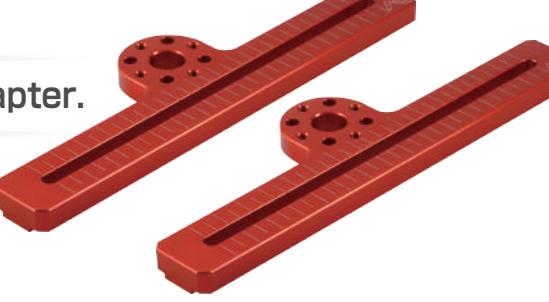
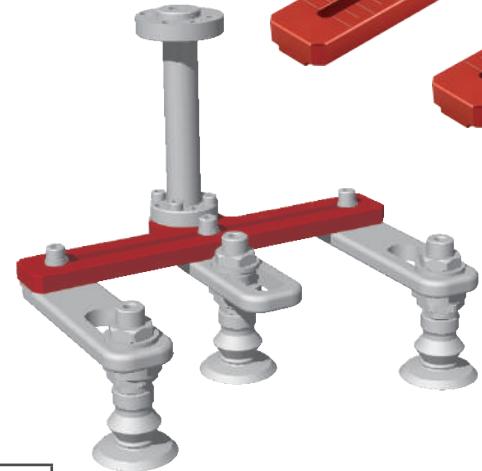


Model number	Lmax	Lmin	Mass(g)
CRK-FH300	300	100	343.0

Guide base

FE type

It is a part to connect the arm with flange/ adapter.



[How to order]

CRK - FE 100 - W

① ②

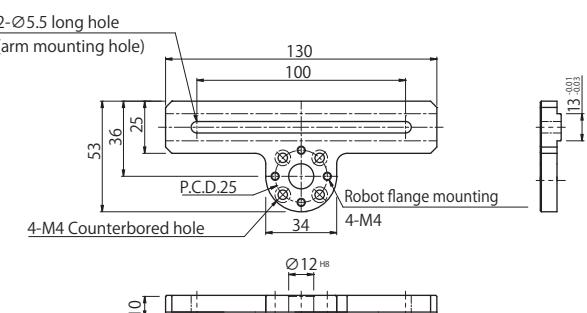
① Guide base specifications

Symbol	Adjustable range (mm)	Mounting P.C.D.	Payload (kg)
100	50~100	25.0	Less than 3
150	100~150		

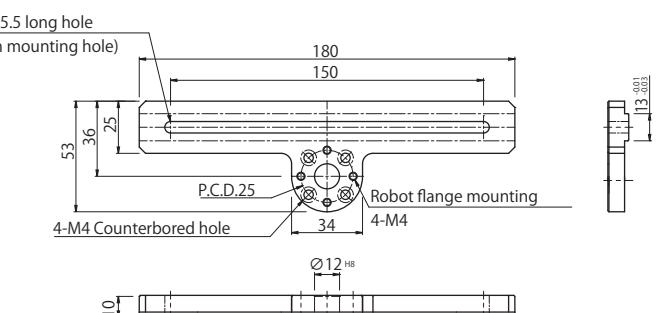
② Surface treatment

Symbol	Color of anodizing
Blank	Red
W	White
B	Blue

[Dimensions]



Model number	Mass(g)
CRK-FE100	74.5

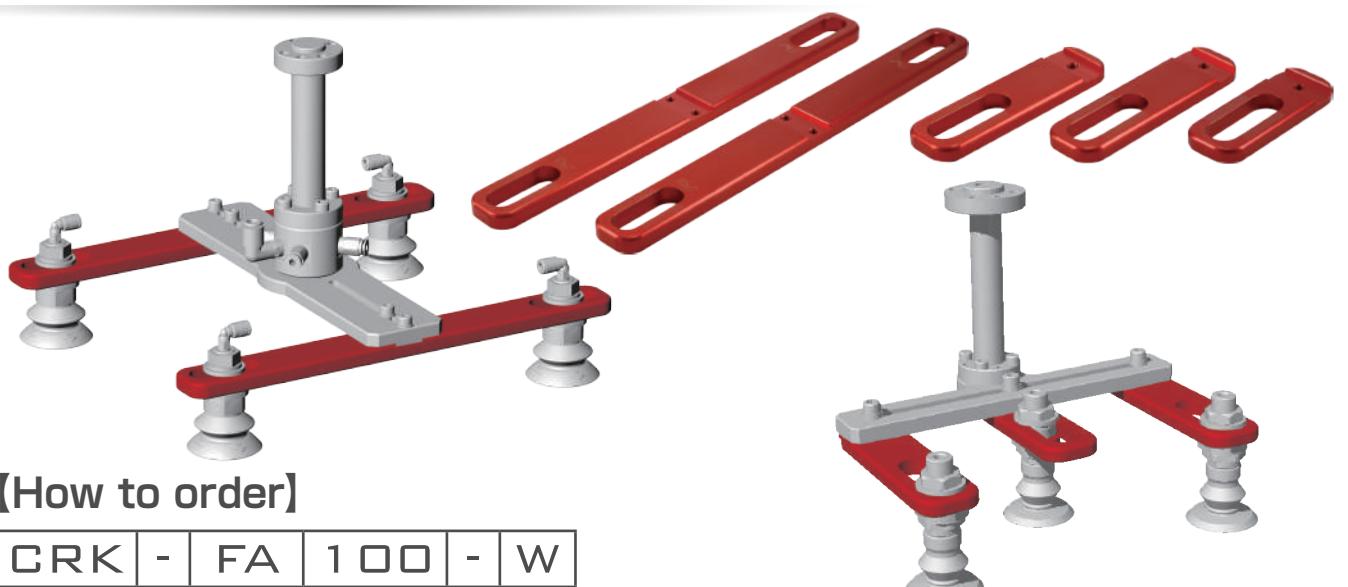


Model number	Mass(g)
CRK-FE150	96.0

Arm

FH/FE type

It is a part to adjust the pitch between the suction cups.



[How to order]

CRK - FA 100 - W

① ②

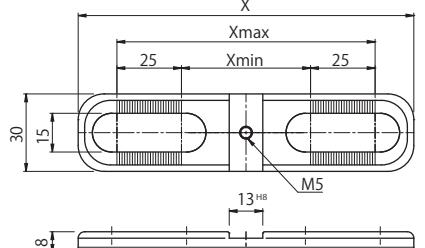
① Guide base specifications

Symbol	Adjustable range (mm)	Applicable guide base	Payload (kg)
100	50~100		
150	100~150	FH100/150	Less than 3
200	150~200		
250	200~250	FH200/250/300	Less than 7
300	250~300		
100H	-	FH100/150	
150H	-	FE100/150	Less than 3
200H	-		
250H	-	FH200/250/300	Less than 7
300H	-		

② Surface treatment

Symbol	Color of anodizing
Blank	Red
W	White
B	Blue

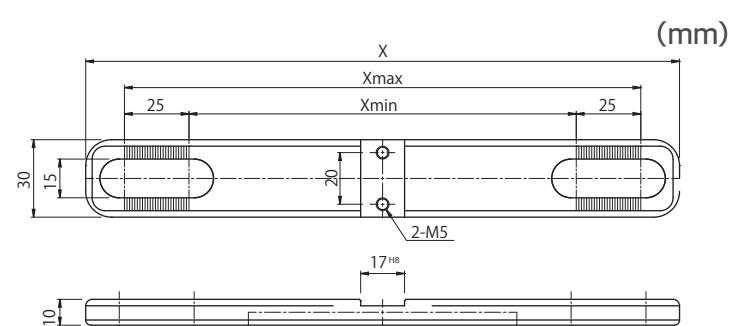
[Dimensions]



Model number	X	Xmax	Xmin	Mass (g)
CRK-FA100	130	100	50	54.5
CRK-FA150	180	150	100	87.5

* 1pcs of hex socket head bolt and 1pcs of washer are attached.

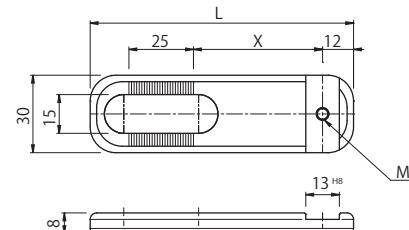
* Mounting screws to mount guide base are attached.



Model number	X	Xmax	Xmin	Mass (g)
CRK-FA200	230	200	150	99.8
CRK-FA250	280	250	200	120.8
CRK-FA300	330	300	250	143.8

* 2pcs of hex socket head bolt and 2pcs of washer are attached.

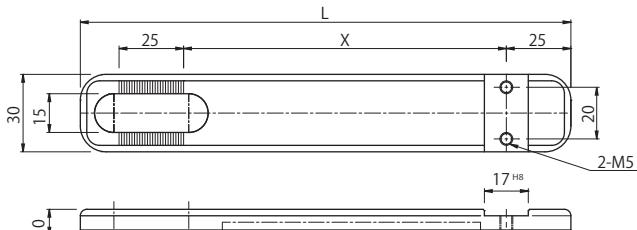
* Mounting screws to mount guide base are attached.



Model number	L	X	Mass (g)
CRK-FA100H	77	25	31.0
CRK-FA150H	102	50	46.5

* 1pcs of hex socket head bolt and 1pcs of washer are attached.

* Mounting screws to mount guide base are attached.



Model number	L	X	Mass (g)
CRK-FA200H	140	75	79.5
CRK-FA250H	165	100	94.5
CRK-FA300H	190	125	109.5

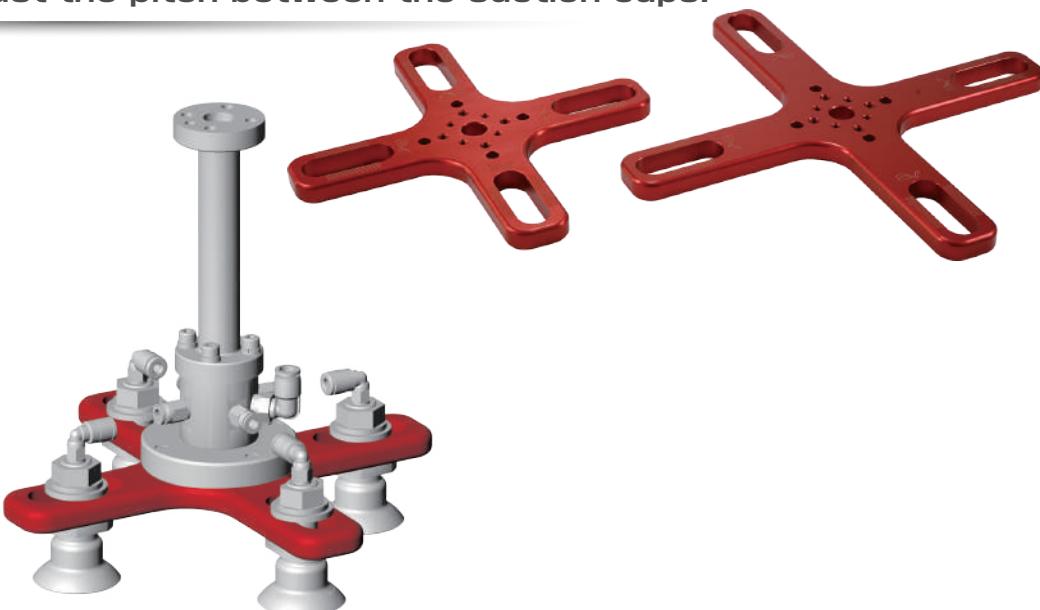
* 2pcs of hex socket head bolt and 2pcs of washer are attached.

* Mounting screws to mount guide base are attached.

Arm

FX type

It is a part to adjust the pitch between the suction cups.



[How to order]

CRK - FX 150 - W

① ②

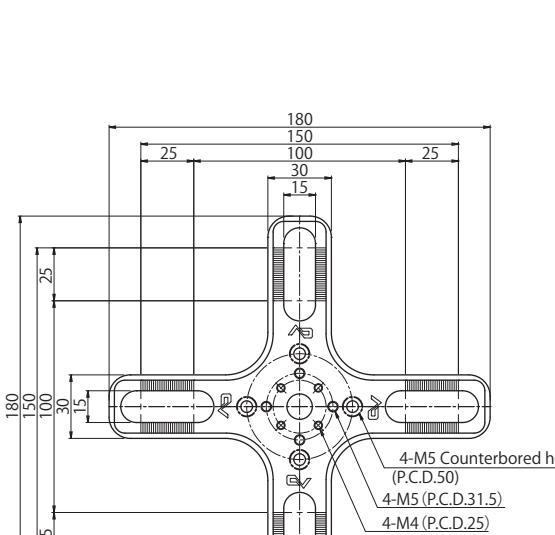
① Arm size

Symbol	Pitch between suction cups (mm)	Payload (kg)
150	100~150	
200	150~200	Less than 7

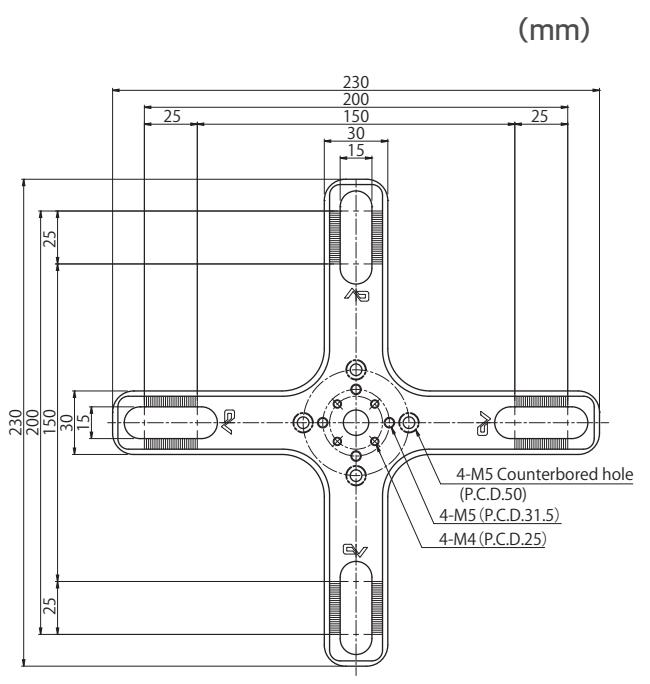
② Surface treatment

Symbol	Color of anodizing
Blank	Red
W	White
B	Blue

[Dimensions]



Model number	Mass (g)
CRK-FX150	189.0

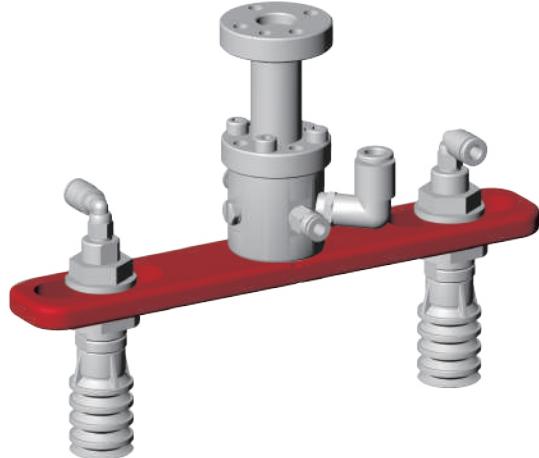


Model number	Mass (g)
CRK-FX200	275.0

Arm

FI type

It is a part to adjust the pitch between the suction cups.



[Model number]

CRK	-	FI	P250	L150	-	W
①	②	③				

① Flange pitch (P.C.D.)

Symbol	P.C.D.	Payload (kg)
P250	25.0	Less than 3
P315	31.5	Less than 7

② Arm size (mm)

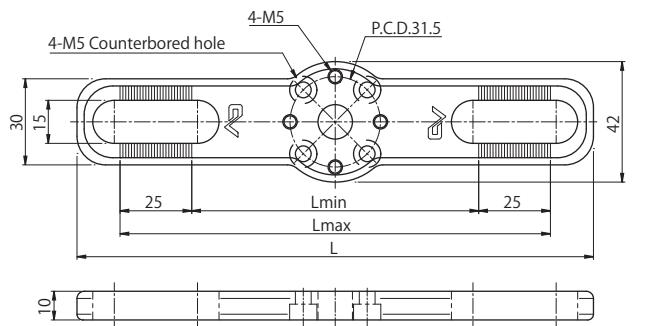
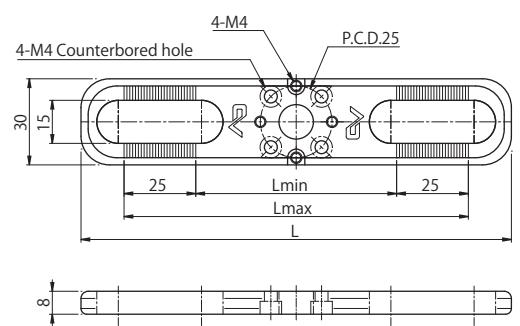
Symbol	Adjustable range (mm)
L120*	70~120
L150	100~150
L200	150~200
L250	200~250
L300	250~300

③ Surface treatment

Symbol	Color of anodizing
Blank	Red
W	White
B	Blue

Note) Only when selecting P250 in ①.

[Dimensions]



Model number	L	Lmax	Lmin	Mass (g)
CRK-FIP250L120	150	120	70	60.0
CRK-FIP250L150	180	150	100	80.0
CRK-FIP250L200	230	200	150	111.0
CRK-FIP250L250	280	250	200	143.0
CRK-FIP250L300	330	300	250	175.0

Model number	L	Lmax	Lmin	Mass (g)
CRK-FIP315L150	180	150	100	105.0
CRK-FIP315L200	230	200	150	145.0
CRK-FIP315L250	280	250	200	185.0
CRK-FIP315L300	330	300	250	224.0

Flange set to mount suction cup with spring fitting

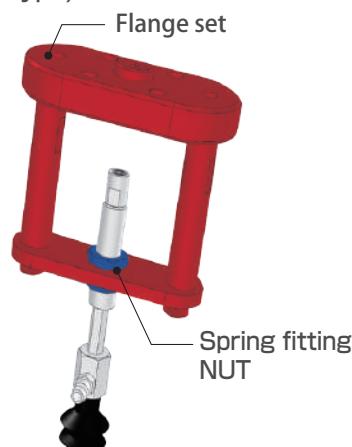
※Myotoku(CONVUM) suction cup with fitting is mountable.(Only for side port type)
※Flange set to mount to robot directly.
※Please purchase the suction cup with fitting separately.

[How to order]

CRK - FL3P315 M08 B12

Flange pitch ① ②

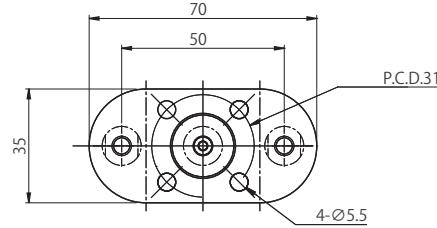
① Spring fitting NUT size		② Flange boss diameter	
Symbol	Screw size	Symbol	Specification
M08	M8	B12	φ12
M14	M14	B14	φ14
		B20	φ20



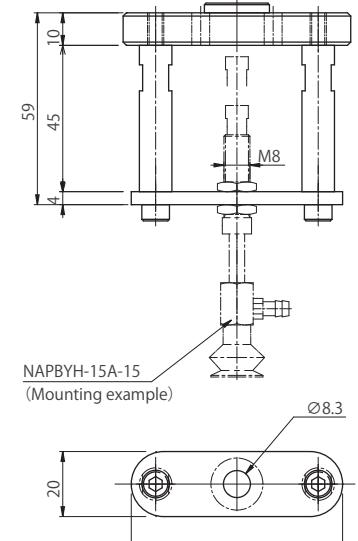
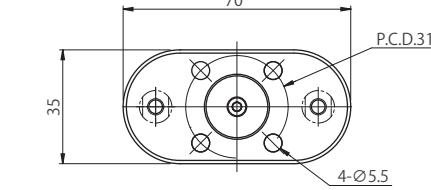
NAPBYH-15-15 mounting

Spring fitting NUT size (M8X0.75)/M14

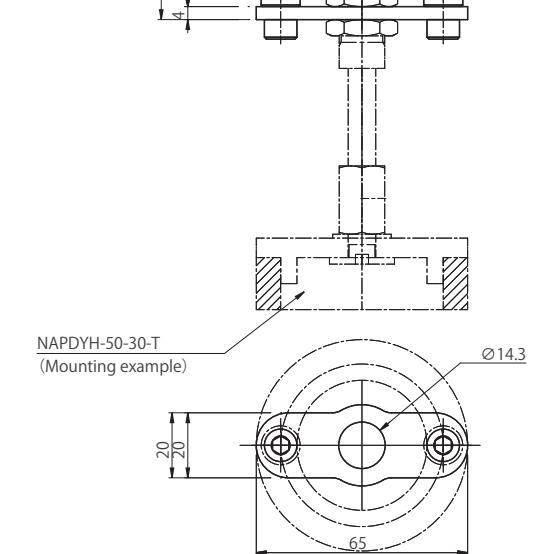
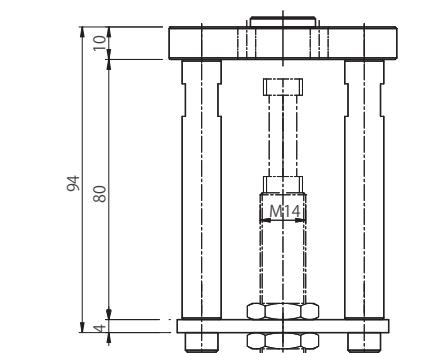
※for all our spring fitting with M8/M14 NUT.
Please refer the applicable model list when selecting.



[Dimensions] (mm)



Model number	Mass (g)
CRK-FL3P315M08B12	152.0
CRK-FL3P315M08B14	
CRK-FL3P315M08B20	



Model number	Mass (g)
CRK-FL3P315M14B12	241.0
CRK-FL3P315M14B14	
CRK-FL3P315M14B20	

Flange set to mount suction cup with spring fitting

Suction cup with NA fitting list to mount with CRK-FL3P315-M08-B#

[How to order]

NAP A Y S - 10A - 3 - N

① ② ③ ④ ⑤

① Suction cup series ② Fitting type ③ Suction cup diameter ④ Stroke (mm) ⑤ Suction cup rubber material

Symbol	Suction cup series(Shape)	Symbol	Fitting type	Symbol
A	PA(Flat + Thin lip type)	S	Spring type	10A/15A/20A/ 10B/15B/20B
	H		Non-rotation spring type	
B	PB (2 bellows with thick lip)	S	Spring type	10A/15A
	H		Non-rotation spring type	
C	PC (3 bellows)	S	Spring type	10/15/18/20
	H		Non-rotation spring type	
F	PF (Flat type)	S	Spring type	10A/15A
	H		Non-rotation spring type	
J	PJ (2 bellows with thin lip)	S	Spring type	10/15
	H		Non-rotation spring type	
N	PN (Flat + Thin type)	S	Spring type	109/114/116/ 117/123/ 125/ 130A/130B/131
	H		Non-rotation spring type	
Q	PQ(Flat + Non-rotation)	H	Non-rotation spring type	6/8/10
W	PW (Oval)	H	Non-rotation spring type	3.5×7/4×10/4×20/ 4×30/ 5×10/5×20/ 5×30/6×10/ 6×20/ 6×30/8×20/8×30
U	PU(Swivel)	SB	Swivel spring type	10/15



⑤ Suction cup rubber material

Symbol	Suction cup rubber material
N	NBR (Nitrile rubber)
S	Silicone rubber

Flange set to mount suction cup with spring fitting

Suction cup with NA fitting list to mount with CRK-FL3P315-M14-B#

[How to order]

NAP A Y S - 20 - 6 - N

① ② ③ ④ ⑤

① Suction cup series ② Fitting type ③ Suction cup diameter ④ Stroke (mm) ⑤ Suction cup rubber material

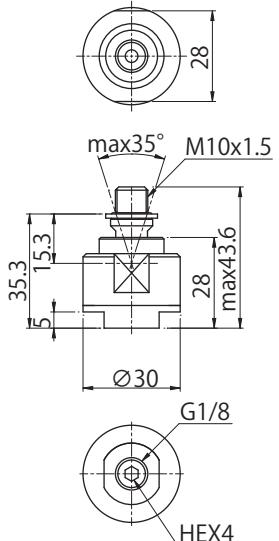
Symbol	Suction cup series(Shape)	Symbol	Fitting type	Symbol
A	PA(Flat + Thin lip type)	S	Spring type	20/30/30B/40/50
	H		Non-rotation spring type	
B	PB (2 bellows with thick lip)	S	Spring type	20/30/40/50
	H		Non-rotation spring type	
C	PC (3 bellows)	S	Spring type	30/40/60
	H		Non-rotation spring type	
D	PD (Sponge)	S	Spring type	20/30/40/50
	H		Non-rotation spring type	
F	PF (Flat type)	S	Spring type	20B/25/30/35/ 40/50
	H		Non-rotation spring type	
FO	PFO (Flat + with lubrication grooves)	S	Spring type	25/30/35/40
	H		Non-rotation spring type	
H	PH (Deep cup)	S	Spring type	30/40
	H		Non-rotation spring type	
J	PJ (2 bellows with thin lip)	S	Spring type	30/35/40/50
	H		Non-rotation spring type	
N	PN (Flat + Thin type)	S	Spring type	101/102/103/104/ 106/110/112/122
	H		Non-rotation spring type	
R	PR(for round rods)	S	Non-rotation spring type	9.25×25/12.5×23/ 15×35/32×32
U	PU(Swivel)	SB	Swivel spring type	40/50



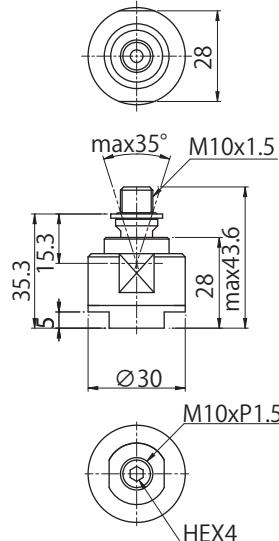
⑤ Suction cup rubber material

Symbol	Suction cup rubber material
N	NBR(Nitrile rubber)
S	Silicone rubber
Blank	When selecting D in ①

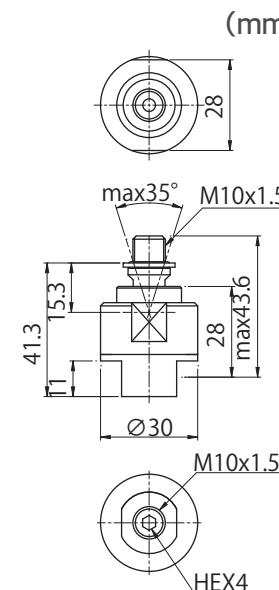
[Dimensions]



Model number	Mass (g)
CRK-FJG1	117.5

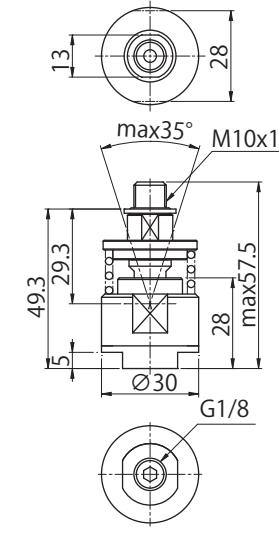


Model number	Mass (g)
CRK-FJM1	117.5

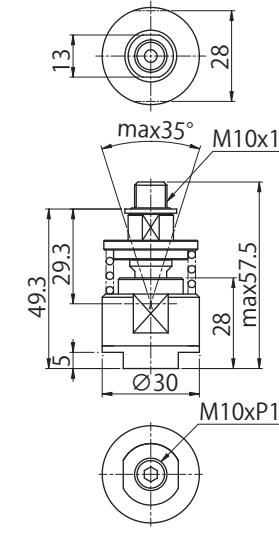


Model number	Mass (g)
CRK-FJM1L	127.5

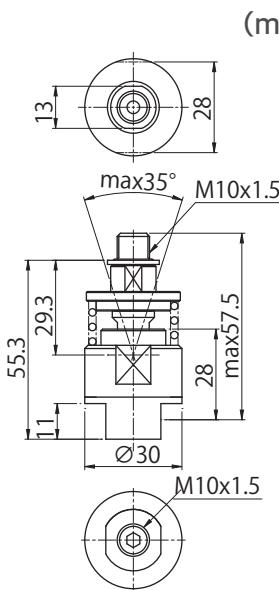
[Dimensions]



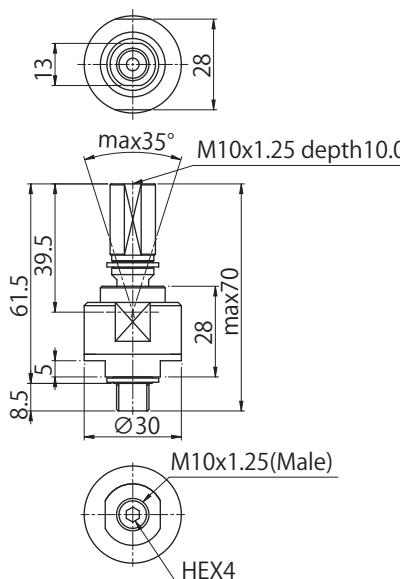
Model number	Mass (g)
CRK-FJG1-R	157.0



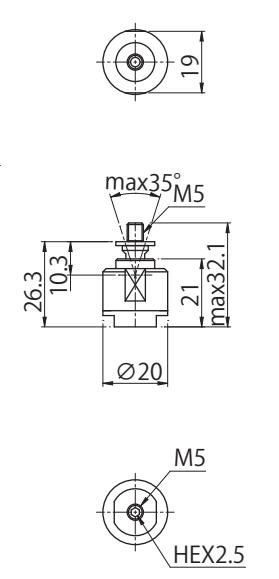
Model number	Mass (g)
CRK-FJM1-R	157.0



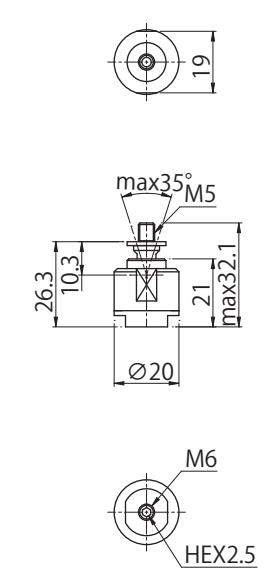
Model number	Mass (g)
CRK-FJM1L-R	167.5



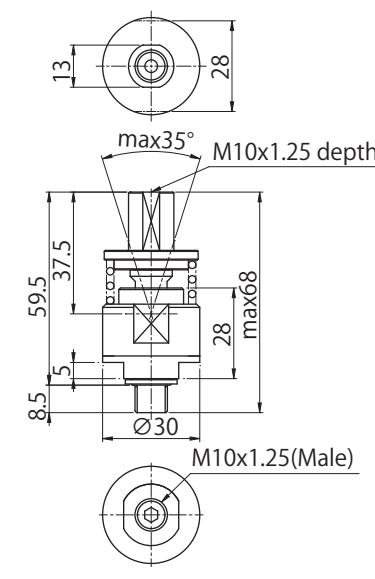
Model number	Mass (g)
CRK-FJM1NA	142.0



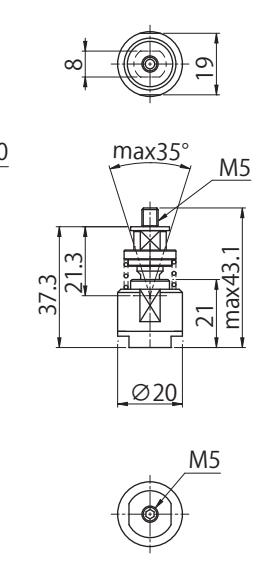
Model number	Mass (g)
CRK-FJM5	41.0



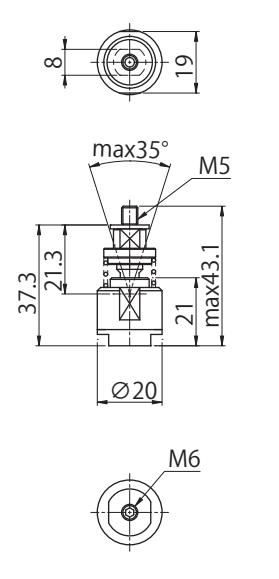
Model number	Mass (g)
CRK-FJM6	41.0



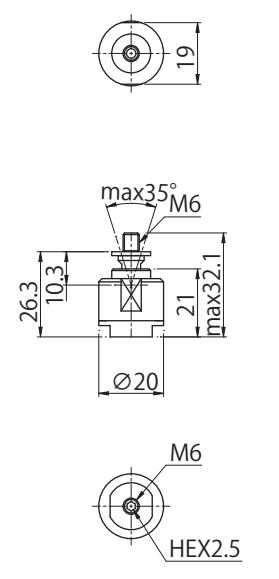
Model number	Mass (g)
CRK-FJM1NA-R	182.0



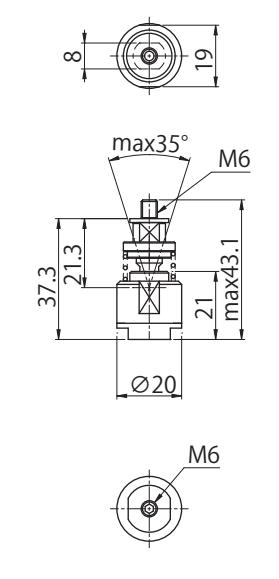
Model number	Mass (g)
CRK-FJM5-R	53.0



Model number	Mass (g)
CRK-FJM6-R	53.0



Model number	Mass (g)
CRK-FJM6NA	41.0



Model number	Mass (g)
CRK-FJM6NA-R	53.0

Robot flange

Payload 20 kg

for medium size robot, the payload is 20kg.

It's a part to connect robot interface and hand.

It can also connect the multiple arm that the payload is 3kg/7kg.



[Model number list]

Model number	P.C.D.	Length of flange (mm)	Type · Boss diameter	Mass (g)
CRK-FL20P560L90A	56.0	90	Hollow type	582
CRK-FL20P640L90A	64.0			617
CRK-FL20P400L70B25	40.0	70	B25(Φ25)	470
CRK-FL20P500L70B31	50.0		B31(Φ31.5)	562
CRK-FL20P630L70B40	63.0		B40(Φ40)	582

*8 pcs of hex socket head bolts to mount hand are attached.

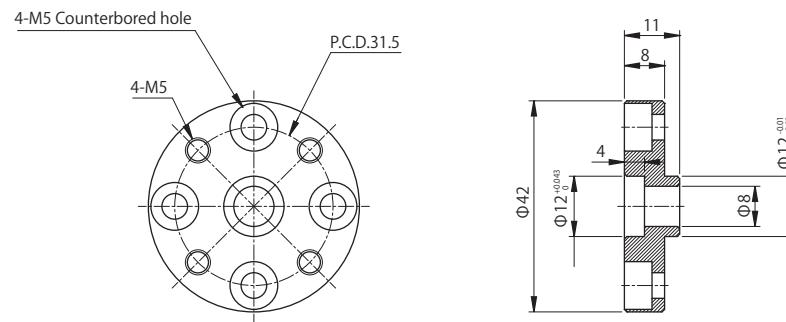
[Option model number]

■ Height adjustment spacer

CRK-FB20SC

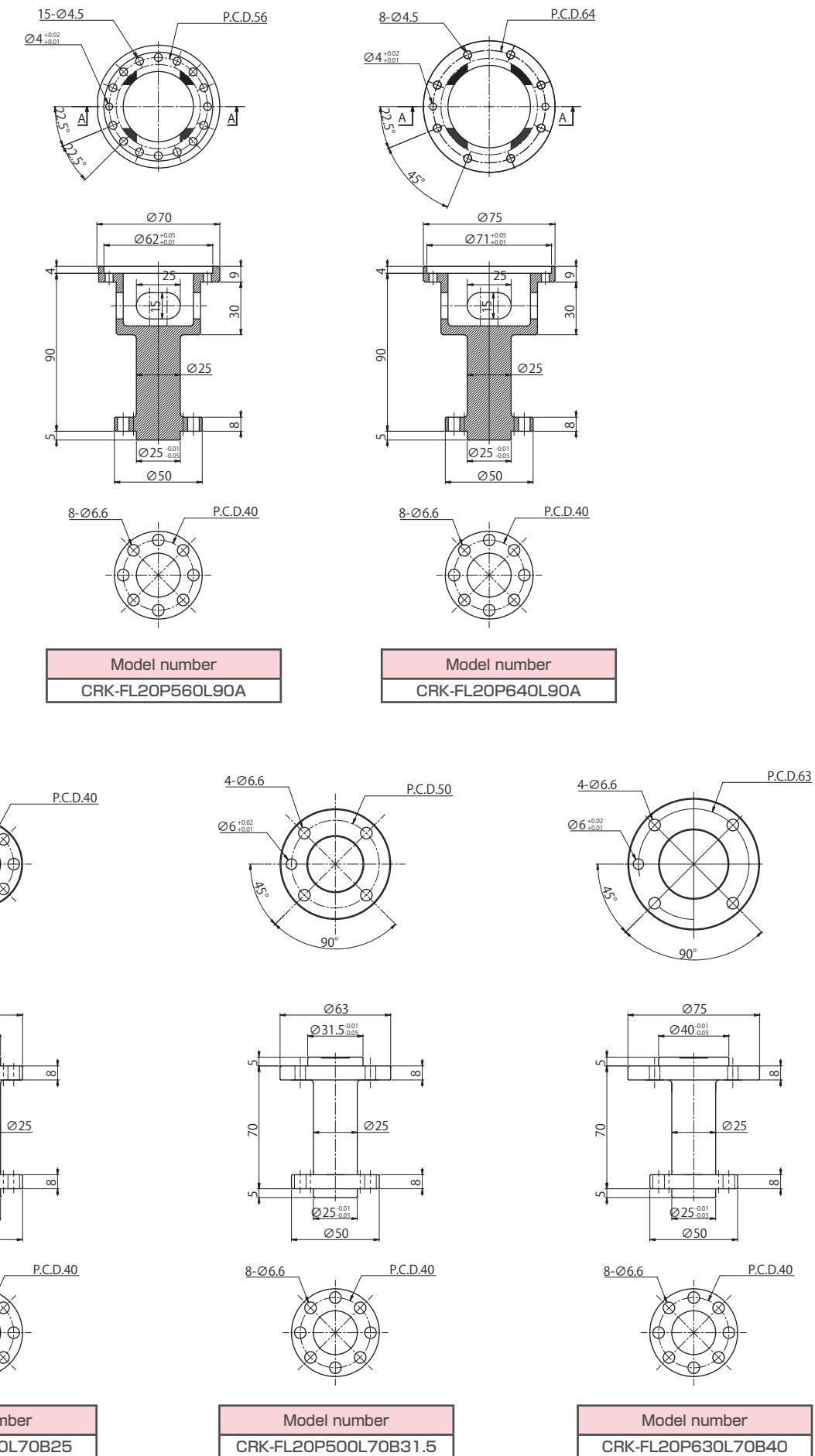
*The spacer that adjust the height between the FH guide base and FI arm

[Dimensions]



(mm)

[Dimensions]



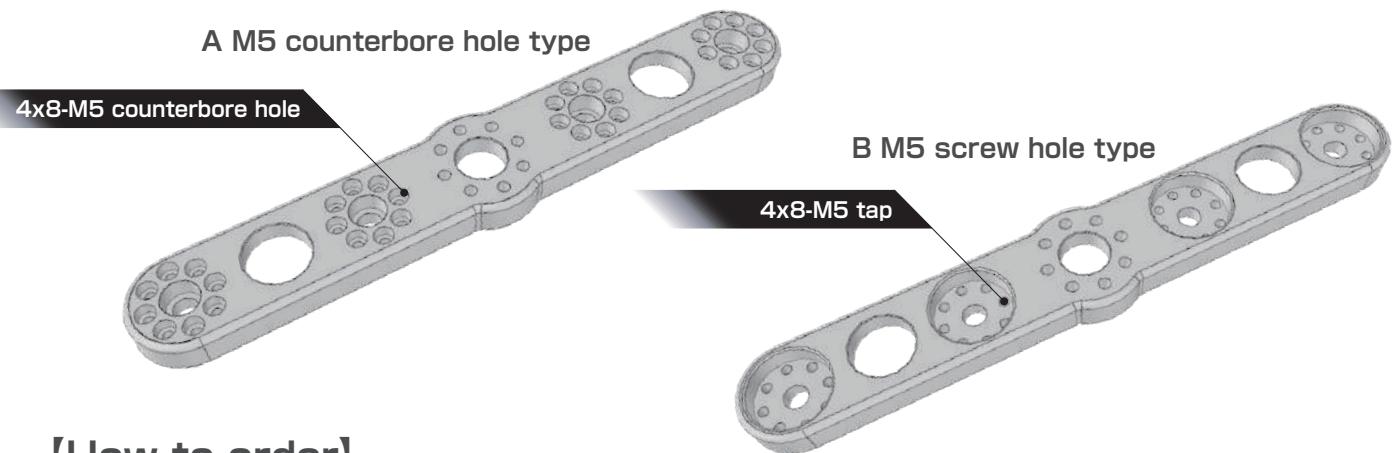
Applicable robot list

Brand	Category	Robot model	Payload(kg)	P.C.D		Flange boss diameter	Mounting screw	Applied flange model				
FANUC	Articulated robot	M-10iA/7L	7.0	56		Outer diameter $\phi 62h6$	8-M4	CRK-FL20P560L90A				
		M-10iA/8L	8.0									
		M-10iA/12	12.0									
		M-10iA/12S	12.0									
		M-20iA/12L	12.0									
		M-20iA/20T	20.0				15-M4					
		M-710iC/12L	12.0				8-M4					
		CR-15iA	15.0	64		Outer diameter $\phi 71h7$	8-M4	CRK-FL20P640L90A				
		ARC Mate 100iD/10L	10.0									
		ARC Mate 100iD	12.0									
		CR-35iA	35.0	40		Inside diameter $\phi 25H7$	7-M6	CRK-FL20P400L70B25				
		M-10iA/10M	10.0				4-M6					
		M-10iA/10MS	10.0									
		M-20iA/20M	20.0									
		M-20iA/35M	35.0									
		M-20iA/20MT	20.0									
		M-20iA/35MT	35.0									
		M-20iB/25	25.0									
		M-20iB/25C	25.0									
		M-20iB/35S	35.0									
		M-710iC/20L	20.0									
		M-710iC/20M	20.0				4-M6					
Yaskawa	Articulated robot	MOTOMAN-GP12	12.0	56		Outer diameter $\phi 62h6$	8-M4	CRK-FL20P560L90A				
		MOTOMAN-GP-25-12	12.0									
		MOTOMAN-MH12	12.0									
		MOTOMAN-MH24-10	10.0	40		Inside diameter $\phi 25H7$	4-M6	CRK-FL20P400L70B25				
		MOTOMAN-HP20F	20.0									
		MOTOMAN-MH50II-20	20.0									
MITSUBISHI ELECTRIC	Articulated robot	RV-13FR(M)(C)	13.0	40		Inside diameter $\phi 25H7$	4-M6	CRK-FL20P400L70B25				
		RV-13FRL(M)(C)	13.0									
		RV-13F(M)(C)	13.0									
		RV-13FL(M)(C)	13.0									
		RV-20FR(M)(C)	20.0									
		RV-20F(M)(C)	20.0									
Kawasaki	Articulated robot	RS010N	10.0	40		Inside diameter $\phi 25H7$	4-M6	CRK-FL20P400L70B25				
		RS010L	10.0	63								
		RS015X	15.0									
		RS020N	20.0									
TOSHIBA MACHINE	Articulated robot	TV1000H	10.0	40		Inside diameter $\phi 25H7$	4-M6	CRK-FL20P400L70B25				
		TVM1500	10.0	50								
		TVM1200	15.0									
		TVM900	20.0									
DENSO WAVE	Articulated robot	VM-6083	13.0	40		Inside diameter $\phi 25H7$	4-M6	CRK-FL20P400L70B25				
		VM-60B1	13.0									
OMRON	Articulated robot	TM12	12.0	50		Inside diameter $\phi 31.5H7$	4-M6	CRK-FL20P500L70B31				
		TM14	14.0									
ABB	Articulated robot	IRB260-30/1.5	30.0	40		Inside diameter $\phi 25H7$	4-M6	CRK-FL20P400L70B25				
UNIVERSAL ROBOTS	Articulated robot	UR10	10.0	50								

Guide base

Payload 20 kg

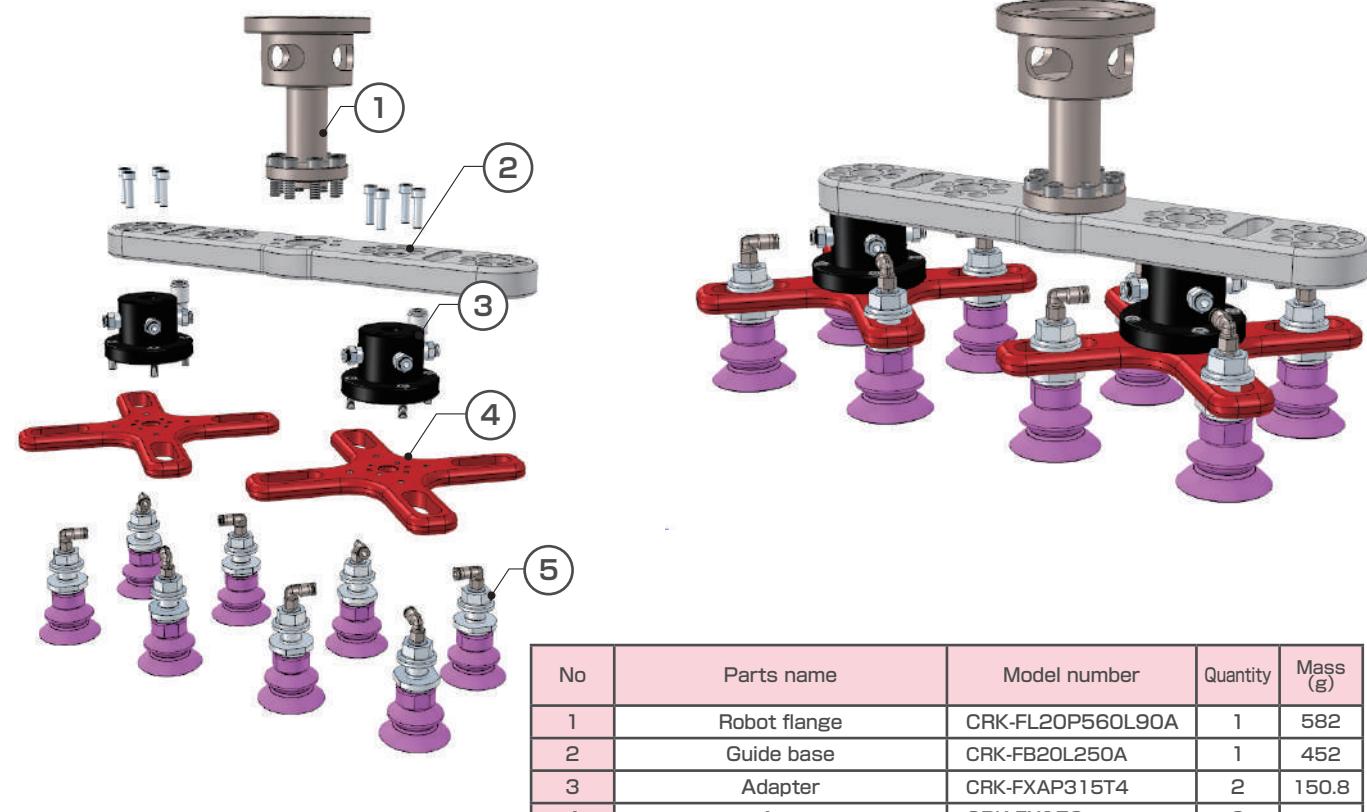
It is a part to connect the arm with flange/ adapter.



[How to order]

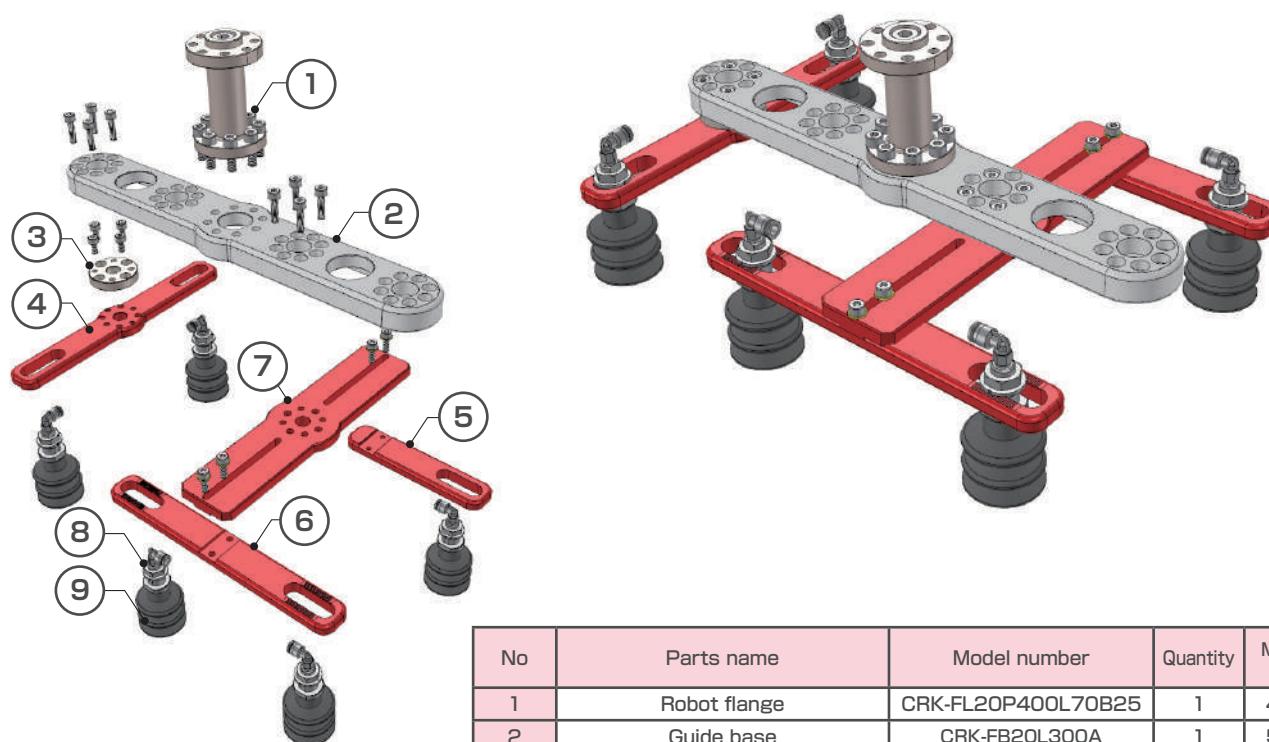
Model number	Mounting length (mm)	Base type	Mass(g)
CRK-FB20L250A	250	M5 counterbore hole	452
CRK-FB20L300A	300		504
CRK-FB20L350A	350		534
CRK-FB20L250B	250	M5 screw hole	393
CRK-FB20L300B	300		440
CRK-FB20L350B	350		470

*16 pcs of hex socket head bolts to mount hand are attached.



*Mass is the value per piece.

Total mass : 2119.2g

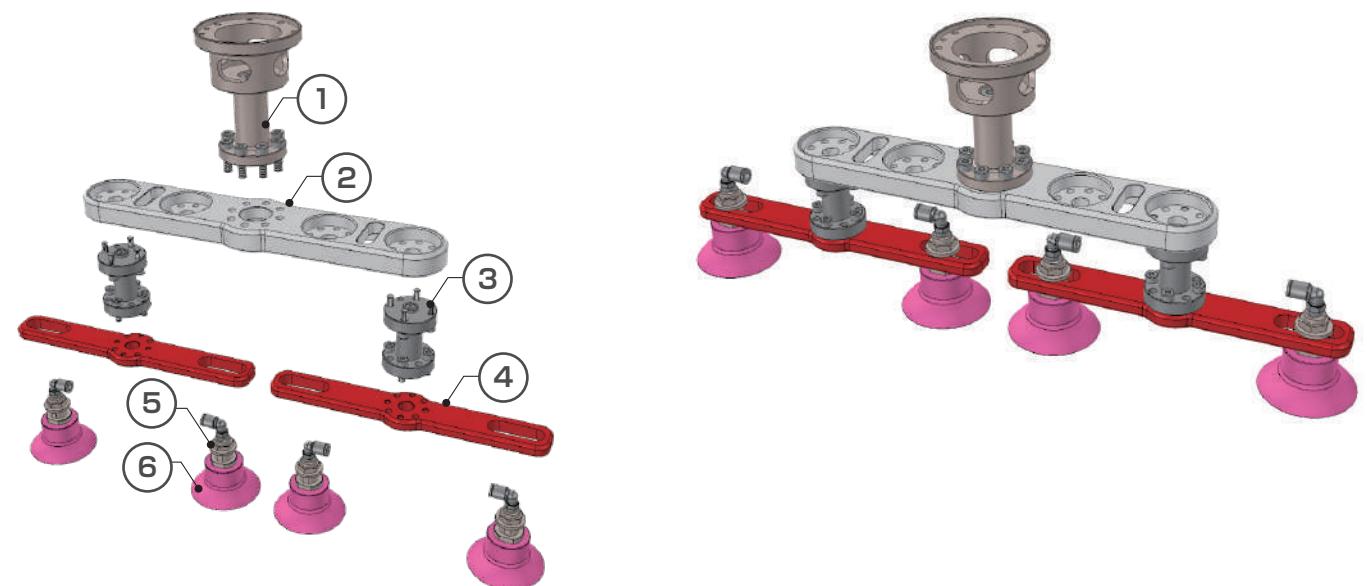


No	Parts name	Model number	Quantity	Mass(g)
1	Robot flange	CRK-FL20P400L70B25	1	470
2	Guide base	CRK-FB20L300A	1	504
3	Spacer	CRK-FB20SC	1	23
4	Arm	CRK-FIP315L200	1	145
5	Arm	CRK-FH200	1	238
6	Arm	CRK-FA200H	1	79.5
7	Arm	CRK-FA200	1	100
8	Mounting fitting for suction cup	CRK-FPM6T6	5	16.5
9	Suction cup	PCG-40-□	5	19.5
	Setting screw	TN-PC-30-M6	5	8.7

*Mass is the value per piece.

□ in the table indicates the cup material.

Total mass : 1783g

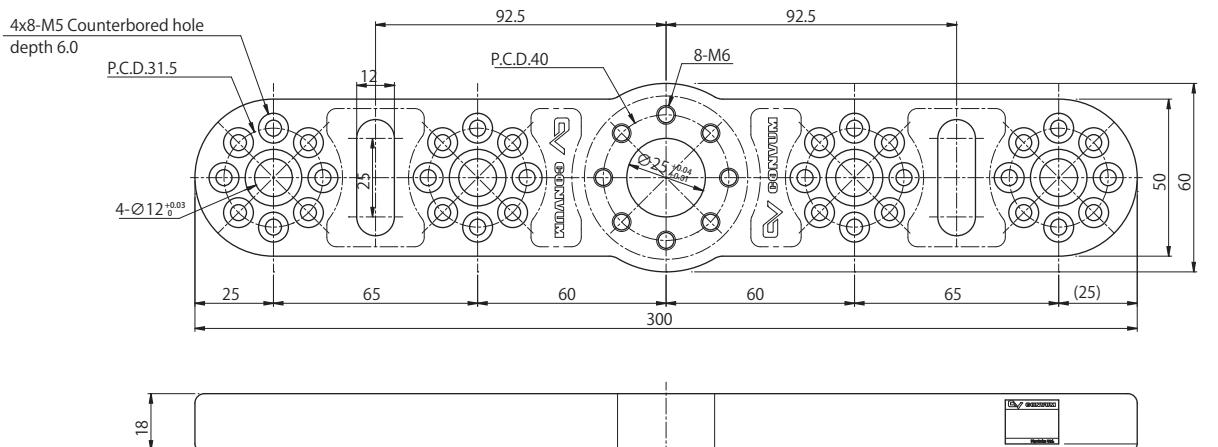


No	Parts name	Model number	Quantity	Mass(g)
1	Robot flange	CRK-FL20P640L90A	1	617
2	Guide base	CRK-FB20L250B	1	397
3	Robot flange	CRK-FL7P315L50B12	2	90
4	Arm	CRK-FIP315L200	2	145
5	Mounting fitting for suction cup	CRK-FPM1T6-R	4	22.5
6	Suction cup	PK2B-60-T-M10	4	48.9

*Mass is the value per piece.

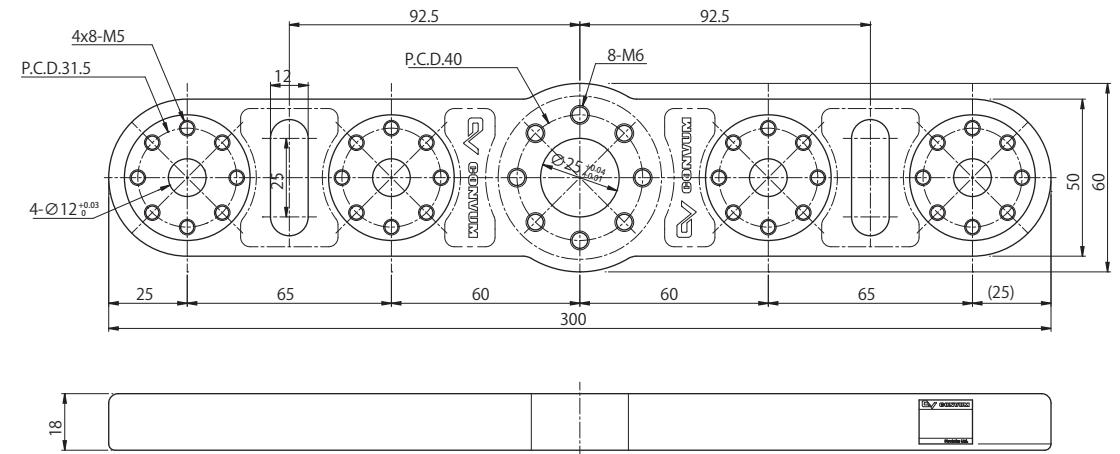
Total mass : 1769.6g

[Dimensions]

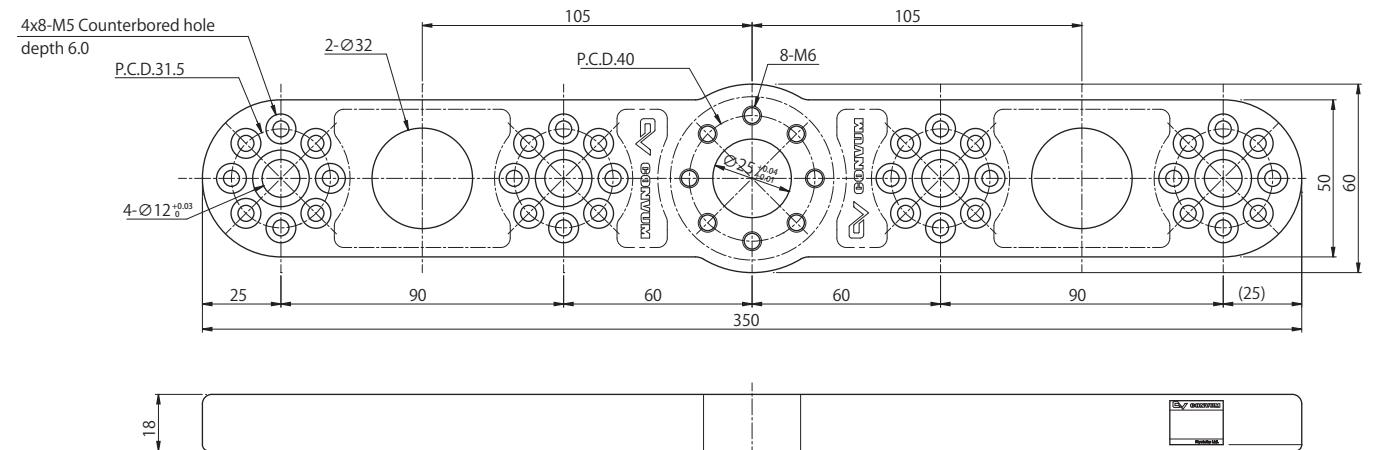


Model number
CRK-FB20L250A

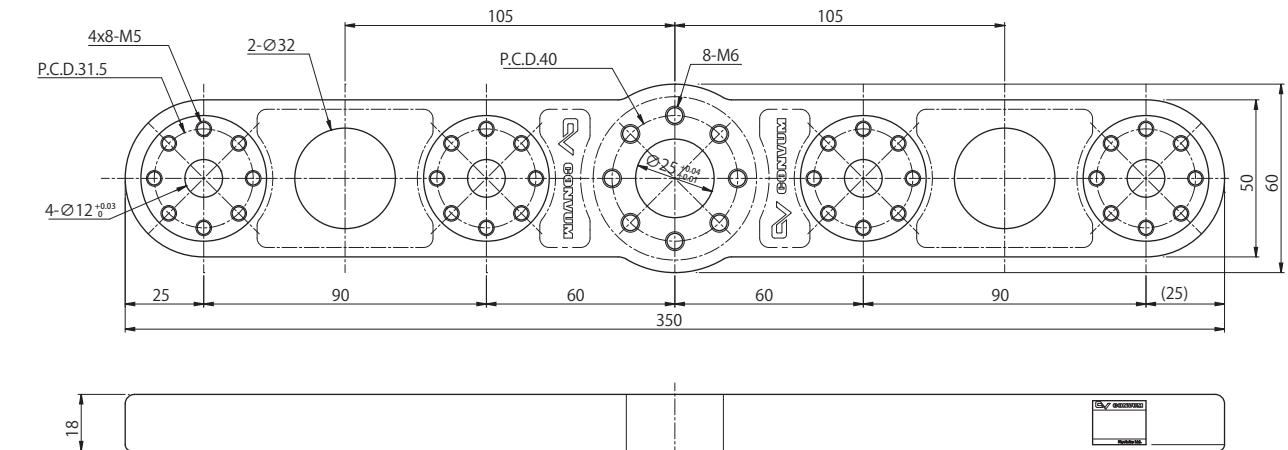
[Dimensions]



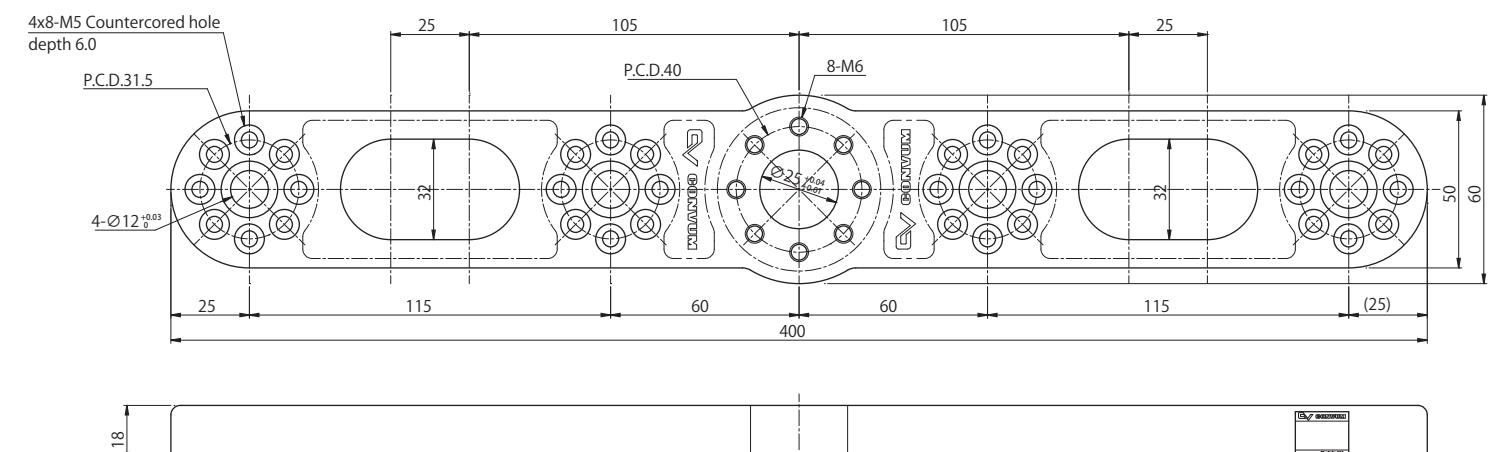
Model number
CRK-FB20L250B



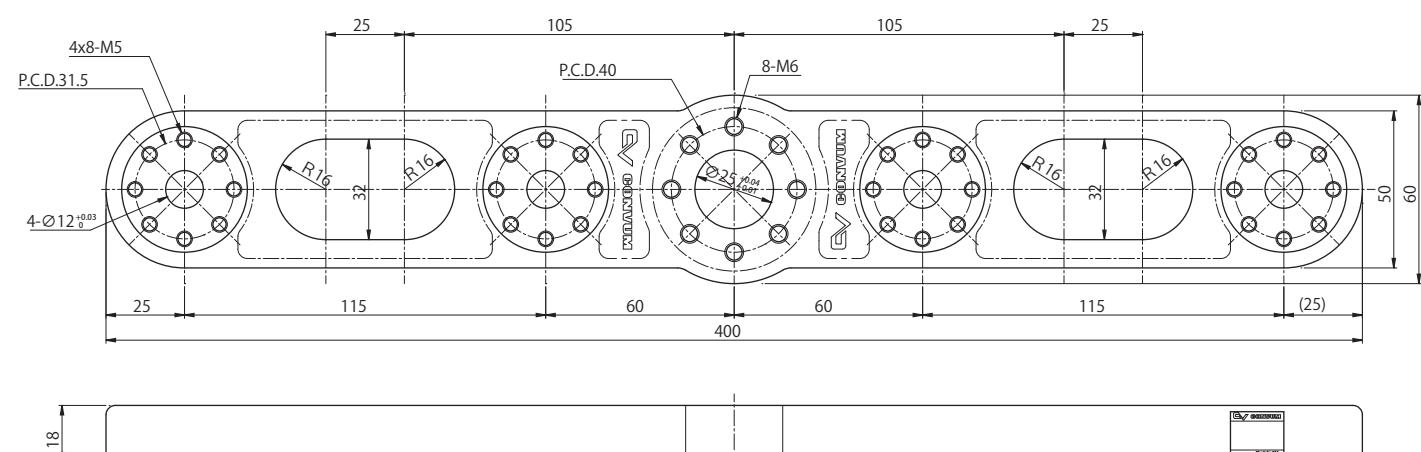
Model number
CRK-FB20L300A



Model number
CRK-FB20L300B



Model number
CRK-FB20L350A



Model number
CRK-FB20L350B

CONVUM for CRK

Vacuum ejector that can be set near suction cups
and it can be mounted to the robot arm.
It's suitable for handing small workpieces.



[How to order]

CRK - CV □5 - T6 - M5

① ② ③

① Nozzle type

Symbol	Specification
05	φ0.5
07	φ0.7

② Push-in connector

Symbol	Specification
T4	φ4 elbow
T6	φ6 elbow

③ Screw size

Symbol	Specification
M5	M5X0.8
M6	M6X1.0
G1	G1/8

[Applicable model list]

05 nozzle	07 nozzle
CRK-CV05-T4-M5	CRK-CV07-T4-M5
CRK-CV05-T4-M6	CRK-CV07-T4-M6
CRK-CV05-T4-G1	CRK-CV07-T4-G1
CRK-CV05-T6-M5	CRK-CV07-T6-M5
CRK-CV05-T6-M6	CRK-CV07-T6-M6
CRK-CV05-T6-G1	CRK-CV07-T6-G1

[CONVUM specification]

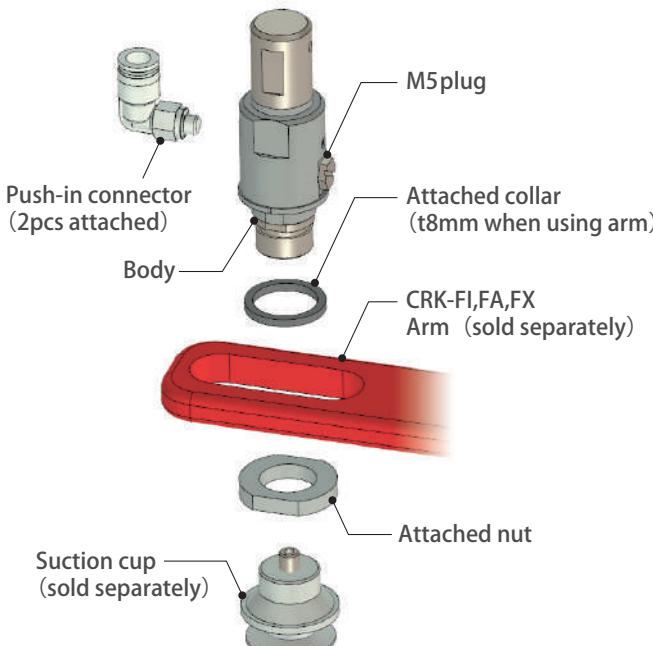
Specification	Unit	CRK-CV05	CRK-CV07
Nozzle size	Φmm	0.5	0.7
Fluid		Non-lubricated compressed air	
Ambient temperature	°C	0~50 (No Freezing)	
Operating pressure range	Mpa	0.2~0.5	
Rated pressure	Mpa	0.5	
Maximum vacuum pressure	kPa	-90	
Suction flow	L/min(ANR)	5.5	10.8
Air consumption	L/min(ANR)	14	26
Noise level	dB	64	70
Mass	g	45.3	

[Maintenance Parts]

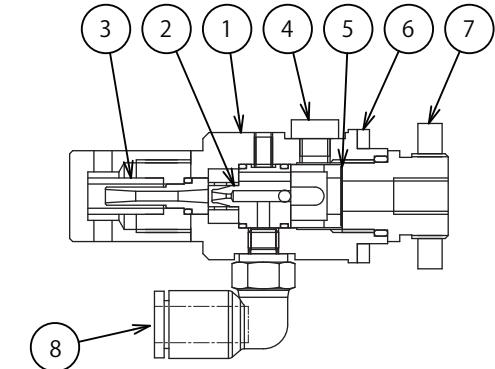
Filter element

CRK-CV-E (4 per set)

[How to mount to arm]



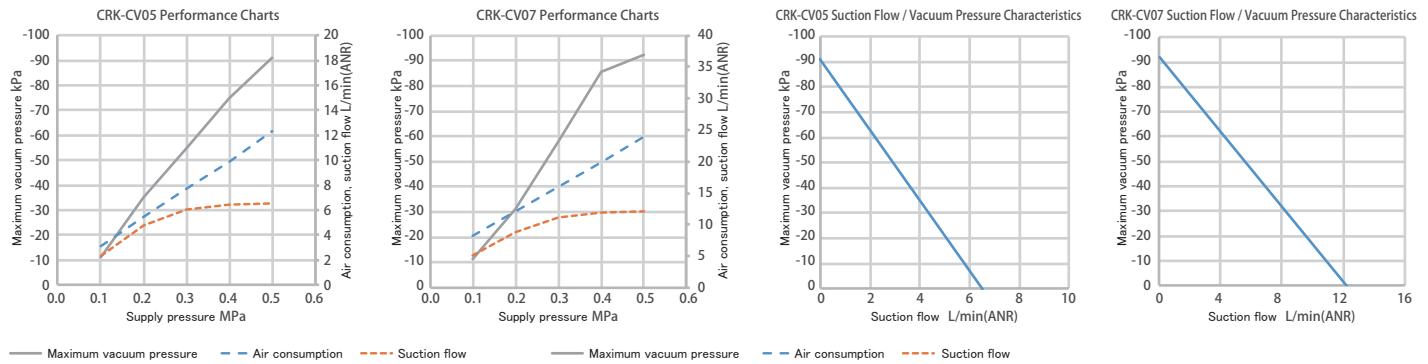
[Construction]



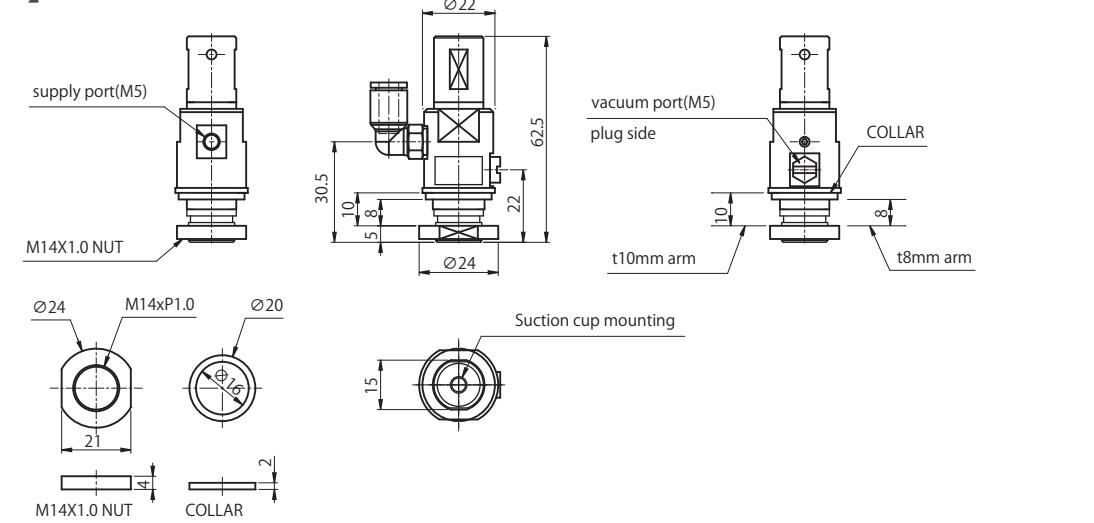
Component Parts

No.	Parts name	Material
1	Body	Aluminum, NBR, SUS
2	Nozzle kit	Aluminum, NBR
3	Silencer element	PVF
4	Plug	SUS
5	Filter	SUS
6	Collar	SUS
7	Nut	Aluminum
7	Push-in connector	-

[Performance Charts]



[Dimensions]



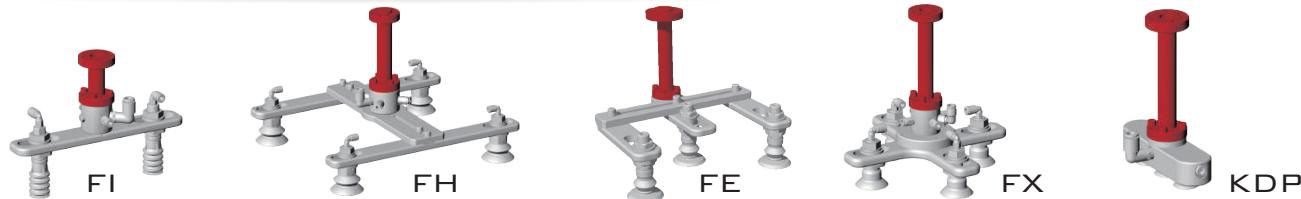
CRK Light (light type)

- Robot hand for collaborative robot.
- The specifies safety requirements for collaborative industrial robot systems and the work environment, 「ISO/TS15066」 is applied.



Robot flange for collaborative robot

It's a part to connect robot interface and hand.



[How to order]

CRK - LFL2 P250 L50 BZ

(1) (2) (3) (4)

① Flange payload
(kg)

Symbol	Payload
FL2	Less than 2
FL3	Less than 3
FL7	Less than 7

② Robot mounting pitch
(P.C.D.)

Symbol	P.C.D.
P220	22.0
P250	25.0
P315	31.5

③ Length of flange
(mm)

Symbol	Length
L50	50

④ Robot flange
boss diameter

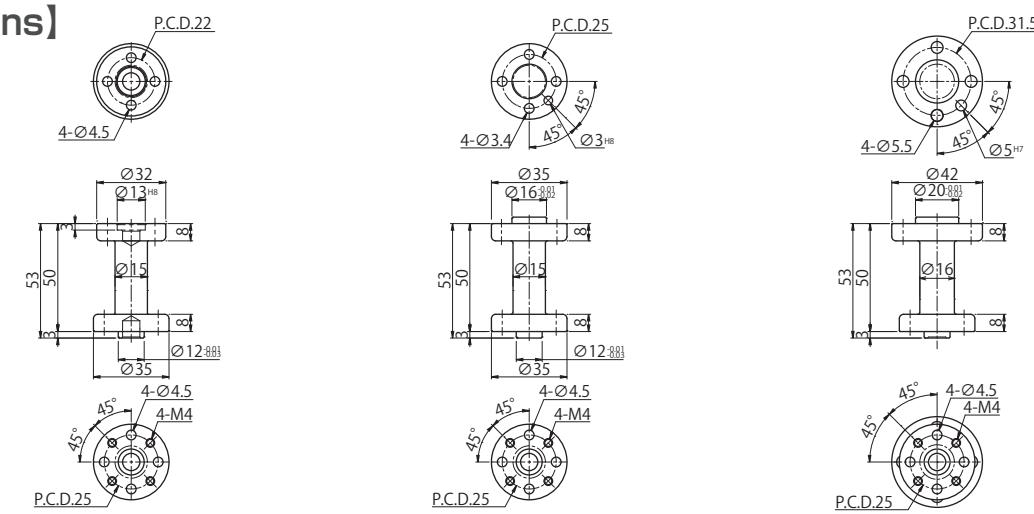
Symbol	Boss diameter
BZ	N/A
B16	φ16
B20	φ20

* Please refer the applicable model list when selecting.
* 4pcs of hex socket head bolts to mount hand are attached.

[Applicable model list]

Series	① Payload	② P.C.D.	③ Length of flange	④ Boss diameter	Model number
CRK-	LFL2	P220	50	BZ	CRK-LFL2P220L50BZ
	LFL3	P250		B16	CRK-LFL3P250L50B16
	LFL7	P315		B20	CRK-LFL7P315L50B20

[Dimensions]



Model number Mass (g)
CRK-LFL2P220L50BZ 42.0

Model number Mass (g)
CRK-LFL3P250L50B16 50.0

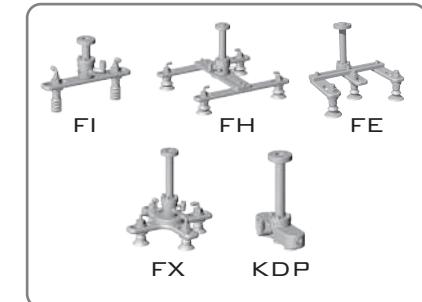
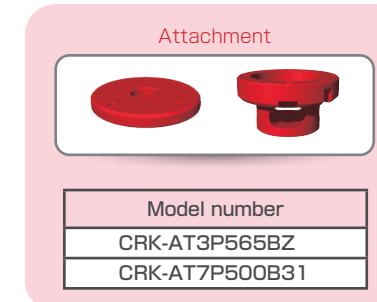
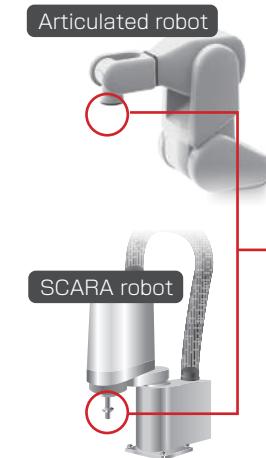
Model number Mass (g)
CRK-LFL7P315L50B20 62.0

Attachment

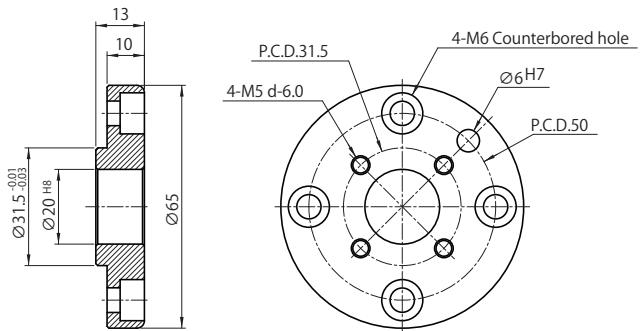
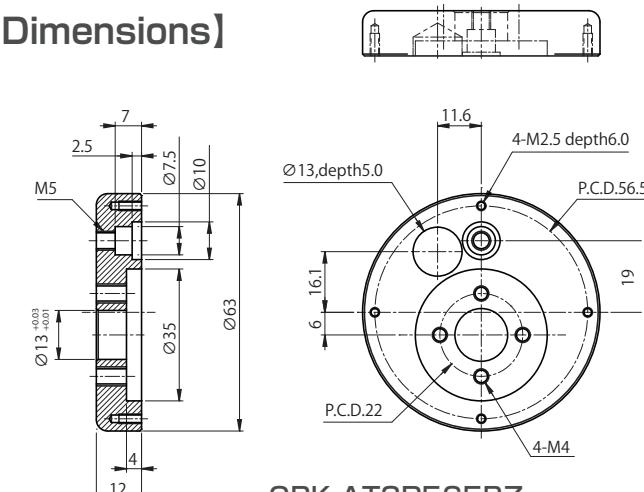
CRK Light (light type)
LF1/LFH/LFE/LKDP type

It's a part to connect brand robot and robot flange.

[Structure diagram]



[Dimensions]



Applicable robot list

Brand	Category	Robot model	Payload(kg)	P.C.D.	Flange boss inner diameter	Mounting screw	Applied flange model	Applied attachment model
DENSO WAVE	Collaborative robot	CVR038A1-NV6-NNC-NNN***-NNN*	0.5	P.C.D.25	φ16H7	4-M3	CRK-LFL3P250L50B16	N/A
		CR-4iA	4.0		φ20H7	4-M5	CRK-LFL7P315L50B20	N/A
		CR-7iA(L)	7.0					
FANUC	Collaborative robot	CR-14iA	14.0	P.C.D.31.5	7-M5	CRK-LFL7P315L50B20	N/A	CRK-AT3P565BZ
		DSR-02-400	2.0					
ABB	Double arm collaborative robot	IRB 14000	Each arm 0.5	P.C.D.56.5	φ15H7	4-M2.5	CRK-LFL2P220L50BZ	CRK-AT3P565BZ
OMRON	Collaborative robot	TM5(M)-700	6.0	P.C.D.50	φ31.5H7	4-M6	CRK-LFL7P315L50B20	CRK-AT7P500B31
		TM5(M)-900	4.0					
Kawasaki	Double arm collaborative robot	duAro1	Each arm 2.0	P.C.D.31.5	φ20H7	4-M5	CRK-LFL7P315L50B20	N/A
		duAro2	Each arm 3.0					
KAWADA Robotics	Double arm collaborative robot	NEXTAGE	Each arm 3.0	P.C.D.50	φ31.5H7	4-M6	CRK-LFL7P315L50B20	CRK-AT7P500B31

Adapter

CRK Light(Light type)

LKD P type

It is a part to connect suction cup and flange.



LKDP1 type



LKDP3 type
Suction cup 2pcs, plug 1pcs



LKDP3 type
Suction cup 3pcs

[Model number]

CRK - LKDP3 P15 G1 T4

① ② ③ ④

① Quantity of suction cup

Symbol	Suction cup quantity	Payload (kg)
LKDP1	1 pcs	Less than 3
LKDP3	3 pcs ^{Note}	

Note) The disuse screw holes need to be closed by plug when mounting 1 or 2pcs of suction cup.

Note) When selecting LKDP1 in ①

* Please refer the applicable model list when selecting.

* 4pcs of hex socket head bolts to mount hand are attached.

② Pitch between suction cups (mm)

Symbol	Pitch specification
Z	N/A ^{Note}
P15	15×3 holes

Note) When selecting LKDP1 in ①

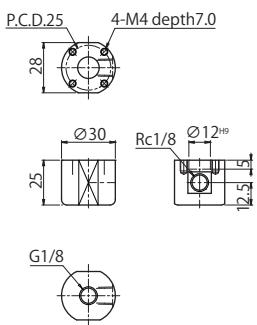
③ Suction cup mounting screw size

Symbol	Screw size
G1	G1/8
M6	M6

④ Push-in connector

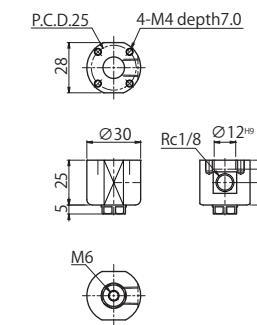
Symbol	Specification
TZ	N/A
T4	φ4 elbow

[Dimensions]



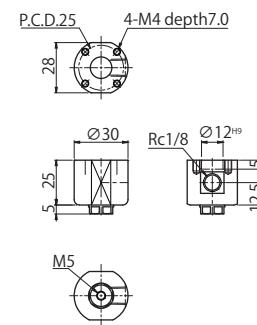
Model number
CRK-LKDP1ZG1□

*□ in the table indicates the push-in connector.



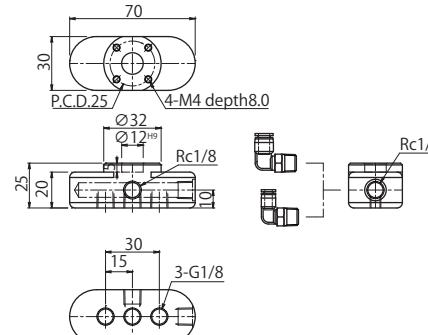
Model number
CRK-LKDP1ZM6T□

*□ in the table indicates the push-in connector.



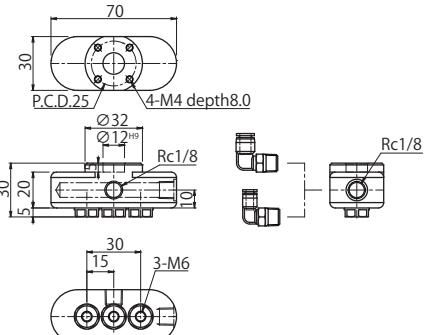
Model number
CRK-LKDP1ZM5T□

*□ in the table indicates the push-in connector.



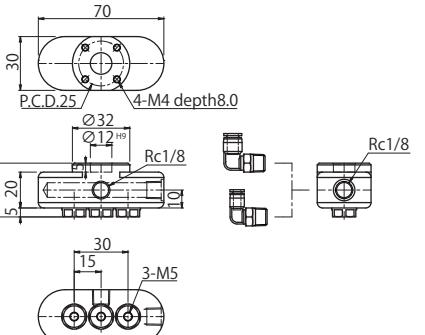
Model number
CRK-LKDP3P15G1T□

*□ in the table indicates the push-in connector.



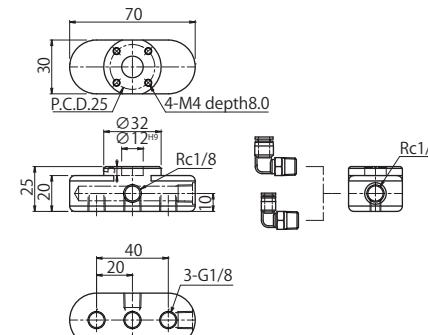
Model number
CRK-LKDP3P15M6T□

*□ in the table indicates the push-in connector.



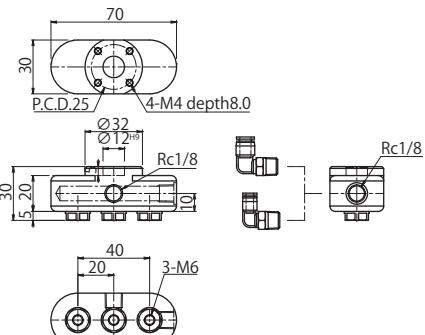
Model number
CRK-LKDP3P15M5T□

*□ in the table indicates the push-in connector.



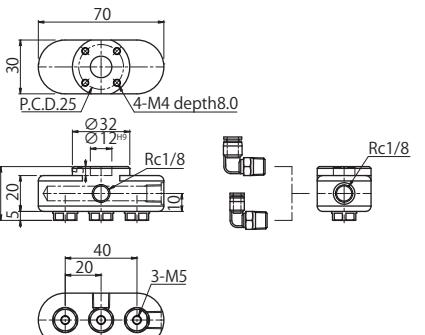
Model number
CRKL-KDP3P20G1T□

*□ in the table indicates the push-in connector.



Model number
CRK-LKDP3P20M6T□

*□ in the table indicates the push-in connector.

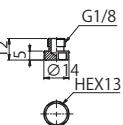


Model number
CRKL-KDP3P1520T□

*□ in the table indicates the push-in connector.

(mm)

[Plug model number • Dimensions]



Model number
CRK-LPZ

Mass (g)
2.0

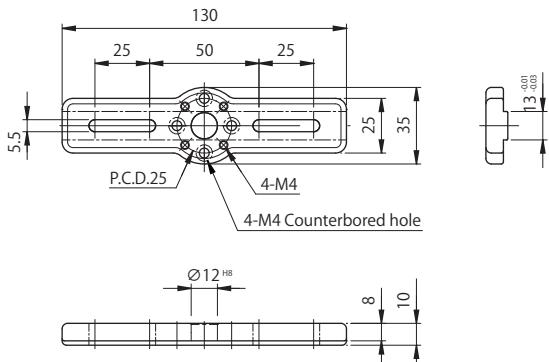
*It is a plug to be used with 1-2pcs suction cups when selecting KDP3.

Guide base

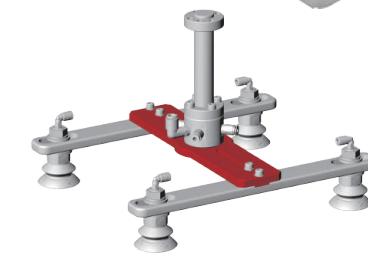
CRK Light (Light type)
L FH type

It is a part to connect the arm with flange/ adapter.

Model number	Adjustable range (mm)	Mass(g)
CRK-LFH100	50~100	34.0
CRK-LFH150	100~150	50.0



CRK-LFH100



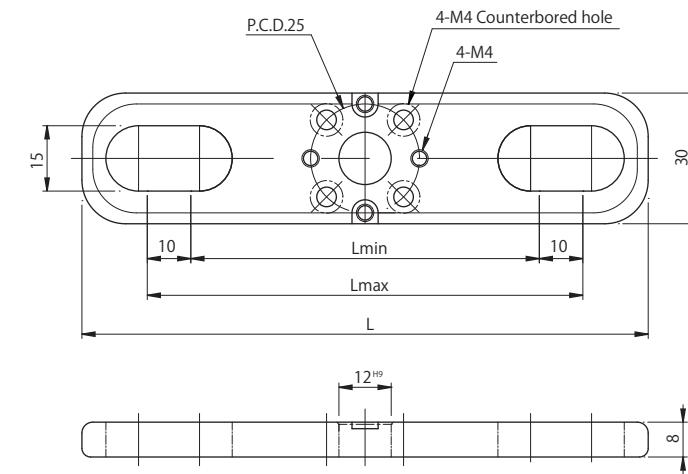
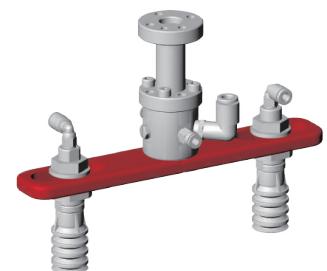
CRK-LFH150

Arm

CRK Light (Light type)
L FI type

It is part to adjust the pitch between the suction cups.

Model number	Adjustable range (mm)	Mass(g)
CRK-LFI100	80~100	29.0
CRK-LFI120	100~120	36.0
CRK-LFI140	120~140	43.0



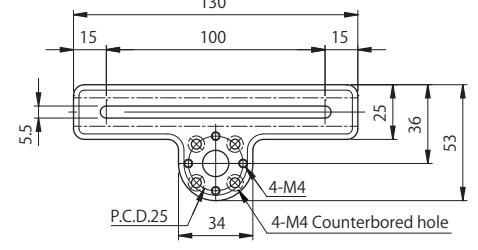
Model number	L	Lmax	Lmin
CRK-LFI100	130	100	80
CRK-LFI120	150	120	100
CRK-LFI140	170	140	120

Guide base

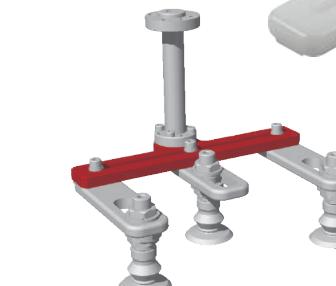
CRK Light (Light type)
L FE type

It is a part to connect the arm with flange/ adapter.

Model number	Mass(g)
CRK-LFE100	38.0
CRK-LFE150	50.0



CRK-LFE100



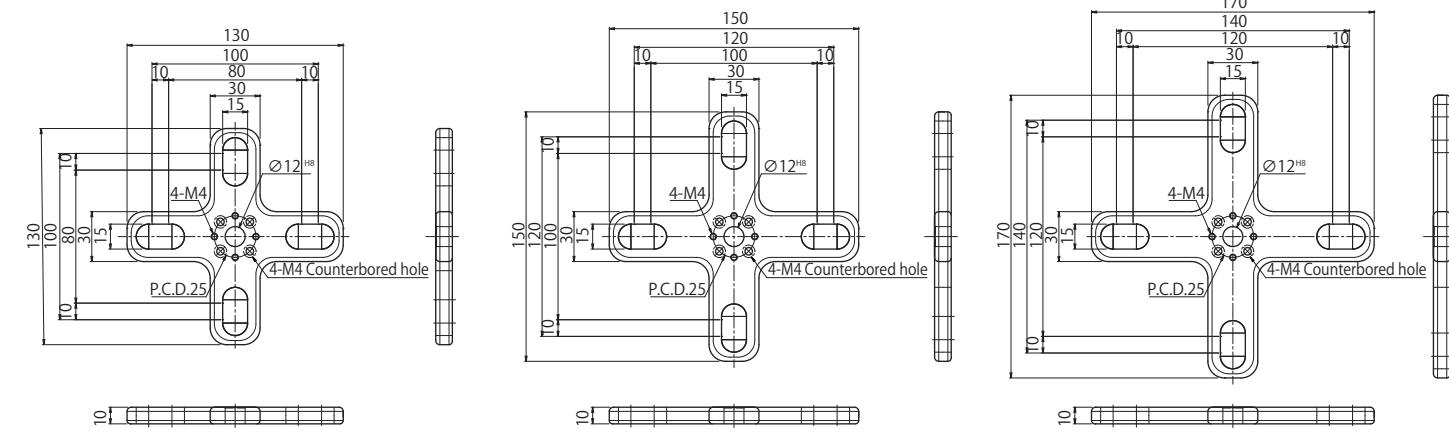
CRK-LFE150

Arm

CRK Light (Light type)
L FX type

It is part to adjust the pitch between the suction cups.

Model number	Adjustable range (mm)	Mass(g)
CRK-LFX100	80~100	69.0
CRK-LFX120	100~120	85.0
CRK-LFX140	120~140	101.0



CRK-LFX100

CRK-LFX120

CRK-LFX140

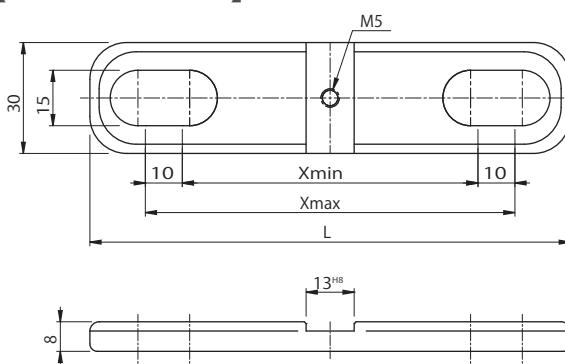
Arm

CRK Light (Light type) LFH/LFE type

It is part to adjust the pitch between the suction cups.

Model number	Adjustable range (mm)	Mass(g)
CRK-LFA80	60~80	25.0
CRK-LFA100	80~100	32.0
CRK-LFA120	100~120	38.0
CRK-LFA140	120~140	45.0
CRK-LFA80H	-	15.0
CRK-LFA100H	-	18.0
CRK-LFA120H	-	22.0
CRK-LFA140H	-	25.0

[Dimensions]



Model number	L	Lmax	Lmin
CRK-LFA80	110	80	60
CRK-LFA100	130	100	80
CRK-LFA120	150	120	100
CRK-LFA140	170	140	120

Model number	L	X
CRK-LFA80H	67	30
CRK-LFA100H	77	40
CRK-LFA120H	87	50
CRK-LFA140H	97	60

Fitting to mount suction cups

CRK Light (Light type) LFI/LFH/LFE/LFX type

It's a fitting to mount suction cup to arm. (2pcs in 1 set)



[How to order]

CRK - LFP G1 T4

(1) (2)

*2pcs in 1 set
*Please refer the applicable model list when selecting.

① Suction cup mounting screw

Symbol	Screw specification	Included items
G1	G1/8	
M6	M6	1pcs of washer 1pcs of M12 NUT
M5	M5	

② Push-in connector

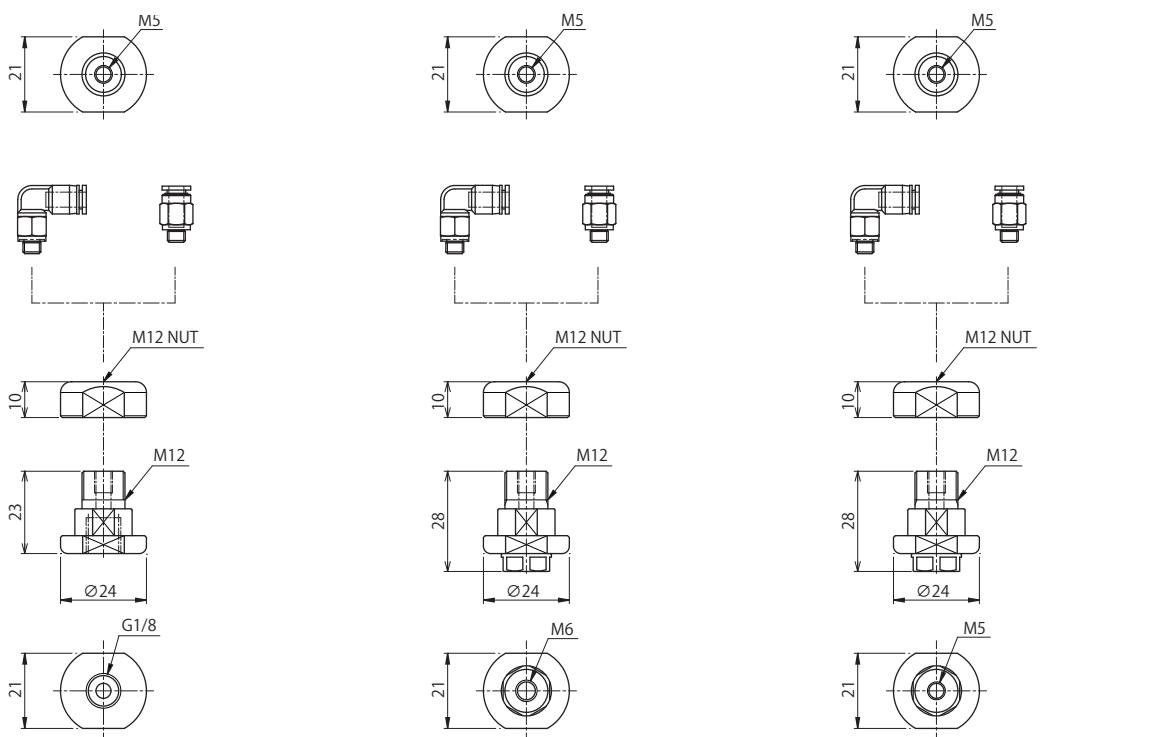
Symbol	Specification	Screw specification
TZ	N/a	M5
T4	φ4 elbow	M5
T6	φ6 elbow	M5
S4	φ4 straight	M5
S6	φ6 straight	M5

[Applicable model list]

Series	Model symbol	①Screw size	②Push-in connector			Model number	Delivery status	Mass(g)
			Symbol	Specification	Screw specification			
CRK-	LFP	G1	TZ	N/A	M5	CRK-LFPG1TZ	2pcs in 1set	15.0
			T4	φ4 elbow	M5	CRK-LFPG1T4	2pcs in 1set	18.9
			T6	φ6 elbow	M5	CRK-LFPG1T6	2pcs in 1set	18.9
			S4	φ4 straight	M5	CRK-LFPG1S4	2pcs in 1set	18.9
			S6	φ6 straight	M5	CRK-LFPG1S6	2pcs in 1set	18.9
	M6	M6	TZ	N/A	M5	CRK-LFPM6TZ	2pcs in 1set	17.0
			T4	φ4 elbow	M5	CRK-LFPM6T4	2pcs in 1set	20.9
			T6	φ6 elbow	M5	CRK-LFPM6T6	2pcs in 1set	20.9
			S4	φ4 straight	M5	CRK-LFPM6S4	2pcs in 1set	20.9
			S6	φ6 straight	M5	CRK-LFPM6S6	2pcs in 1set	20.9
	M5	M5	TZ	N/A	M5	CRK-LFPM5TZ	2pcs in 1set	17.0
			T4	φ4 elbow	M5	CRK-LFPM5T4	2pcs in 1set	20.9
			T6	φ6 elbow	M5	CRK-LFPM5T6	2pcs in 1set	20.9
			S4	φ4 straight	M5	CRK-LFPM5S4	2pcs in 1set	20.9
			S6	φ6 straight	M5	CRK-LFPM5S6	2pcs in 1set	20.9

*The mass is the value per 1set(2pcs).

[Dimensions]



Model number
CRK-LFPG1□

*□in the table indicates the push-in connector.

Model number
CRK-LFPM6□

*□in the table indicates the push-in connector.

Model number
CRK-LFPM5□

*□in the table indicates the push-in connector.

CRK SUS304 type

Robot hand for sanitary industry, food industry.



Robot flange

SUS304

It's a part to connect robot interface and hand.



[How to order]

CRK - SFL3 P250 L50 BZ

① ② ③ ④

* Please refer the applicable model list when selecting.
* 4pcs of hex socket head bolts to mount hand are attached

① Flange weight capacity (kg)

Symbol	Payload
SFL3	Less than 3

*Material : SUS304

② Robot mounting diameter (P.C.D.)

Symbol	P.C.D.
P200	20.0
P250	25.0
P315	31.5

③ Length of flange (mm)

Symbol	Length
L50	50

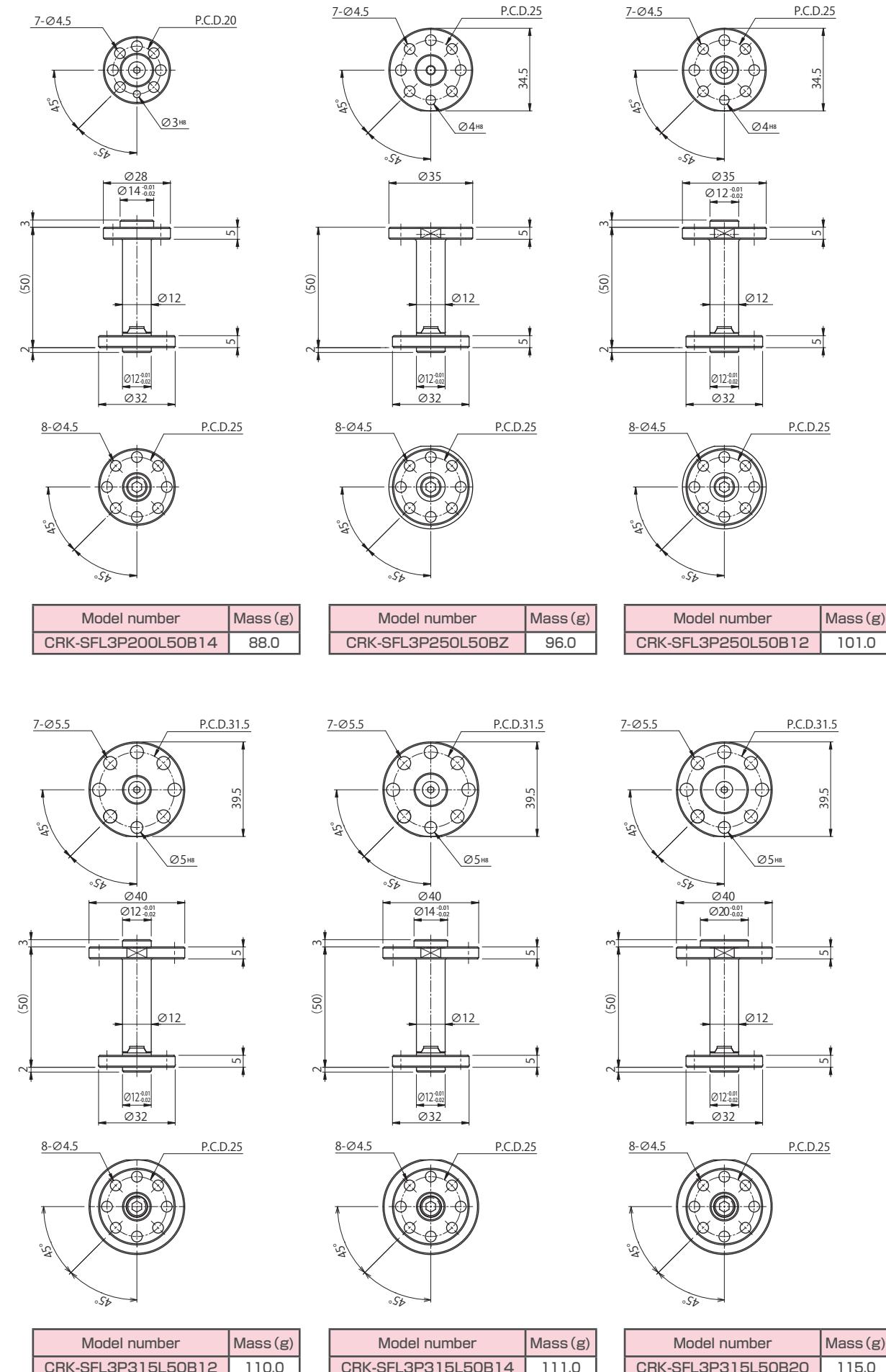
④ Robot flange boss diameter

Symbol	Boss diameter
BZ	N/A
B12	φ 12
B14	φ 14
B20	φ 20

[Applicable model list]

Series	① Payload	② P.C.D.	③ Length of flange	④ Boss diameter	Model number
CRK-	SFL3	P200	50	B14	CRK-SFL3P200L50B14
		P250		BZ	CRK-SFL3P250L50BZ
		B12		B12	CRK-SFL3P250L50B12
		B12		B14	CRK-SFL3P315L50B12
		B14		B14	CRK-SFL3P315L50B14
		B20		B20	CRK-SFL3P315L50B20

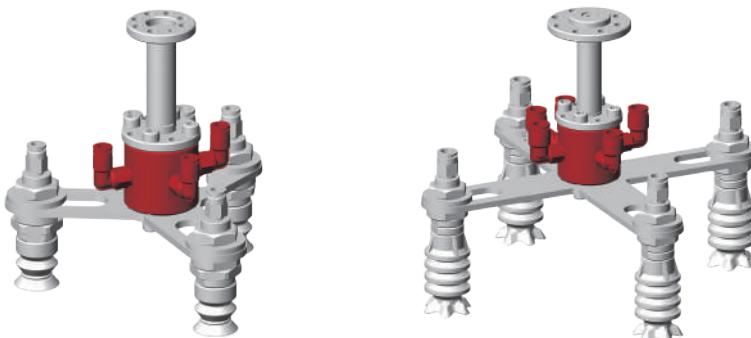
[Dimensions]



Adapter

CRK SUS304 type
SFI/SFX/SFY type

It is a fitting that branches air piping.



[How to order]

CRK - SFX AP250 TZ

① ② ③

*Please refer the applicable model list when selecting.
*Mounting plug and bolt are attached.

① Applicable arm

Symbol	Applicable guide base・arm
SFI	SFI arm
SFX	SFX arm
SFY	SFY arm

*Material : SUS304

② Intermediate adapter pitch (P.C.D.)

Symbol	P.C.D.	Applicable arm
AP250	25.0	SFI, SFX, SFY type

③ Push-in connector

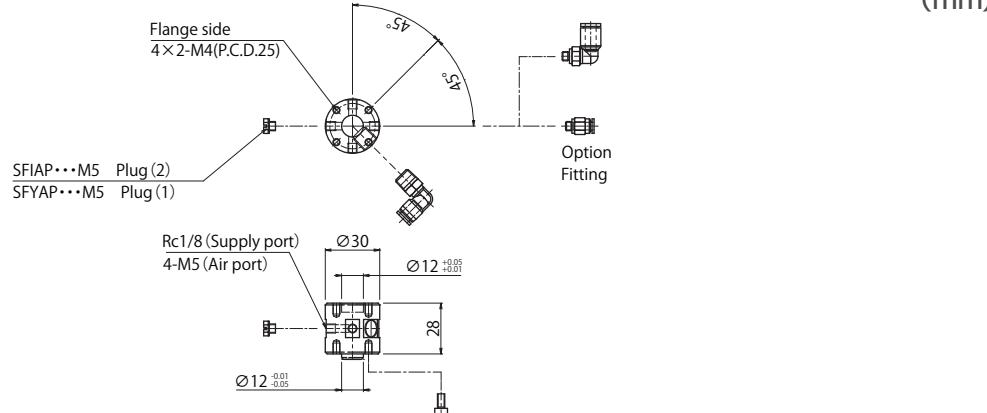
Symbol	Specification
TZ	N/A
T4	φ4 elbow
T6	φ6 elbow
S4	φ4 straight
S6	φ6 straight

Note) The material of push-in connector is not SUS.

[Applicable model list]

Series	①Applicable arm	②P.C.D.	③Push-in connector	Model number	Mass (g)	Included items	
CRK-	SFI	AP250	TZ	CRK-SFIAP250TZ	137.0	2 pcs of M5 plug	
			T4	CRK-SFIAP250T4	150.0		
			T6	CRK-SFIAP250T6	152.0		
			S4	CRK-SFIAP250S4	166.0		
			S6	CRK-SFIAP250S6	168.0		
	SFX		TZ	CRK-SFXAP250TZ	135.0	N/A	
			T4	CRK-SFXAP250T4	154.0		
			T6	CRK-SFXAP250T6	155.0		
			S4	CRK-SFXAP250S4	154.0		
			S6	CRK-SFXAP250S6	163.0		
	SFY		TZ	CRK-SFYAP250TZ	136.0	1 pcs of M5 plug	
			T4	CRK-SFYAP250T4	163.1		
			T6	CRK-SFYAP250T6	155.0		
			S4	CRK-SFYAP250S4	152.9		
			S6	CRK-SFYAP250S6	159.2		

[Dimensions]



Arm

CRK SUS304 type
SFI/SFX/SFY type

It is part to adjust the pitch between the suction cups.

[How to order]

CRK - SFX 100

①

②

① Applicable arm

Symbol	Type
SFI	SFI type
SFX	SFX type
SFY	SFY type

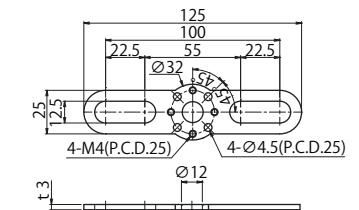
② Arm size (mm)

Symbol	Size
100	100
150	150

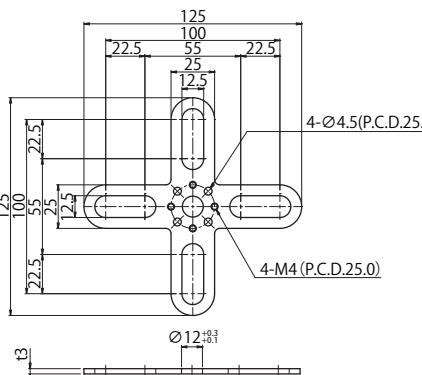
*Material : SUS304



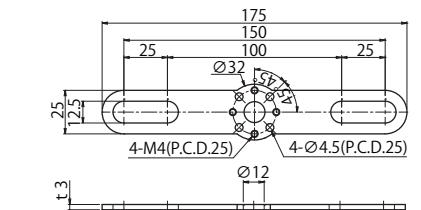
[Dimensions]



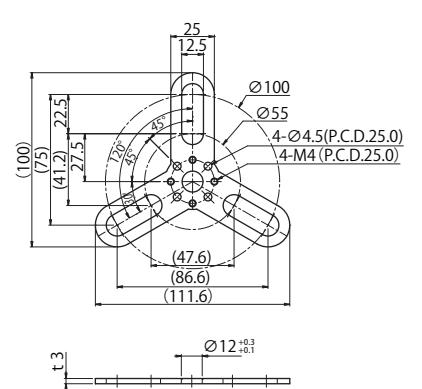
Model number	Mass (g)
CRK-SFI100	46.0



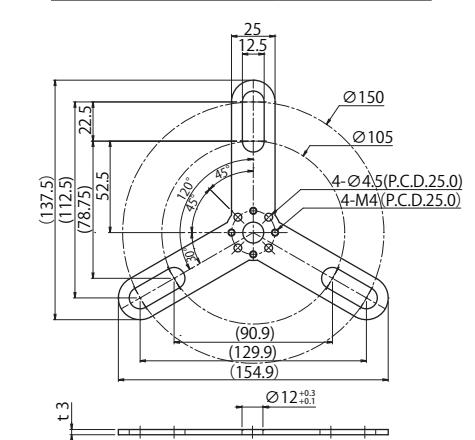
Model number	Mass (g)
CRK-SFX100	73.0



Model number	Mass (g)
CRK-SFY100	136.0



Model number	Mass (g)
CRK-SFI125	63.0



Model number	Mass (g)
CRK-SFX125	105.0

Fitting to mount suction cups

CRK SUS304 type
SFI/SFX/SFY type

It's a fitting to mount suction cup to arm.



[How to order]

CRK - SFP G1 T4

① ②

*Please refer the applicable model list when selecting.

① Suction cup mounting screw

Symbol	Screw size	Included items
G1	G1/8	
M6	M6	1pcs of washer 1pcs of M12 NUT
M5	M5	

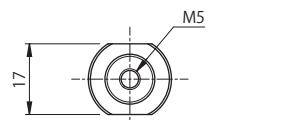
*Material : SUS304

② Push-in connector

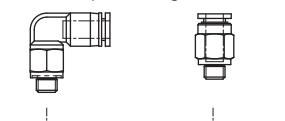
Symbol	Specification	Screw specification
TZ	N/A	M5
T4	φ4 elbow	M5
T6	φ6 elbow	M5
S4	φ4 straight	M5
S6	φ6 straight	M5

Note) The material of push-in connector is not SUS.

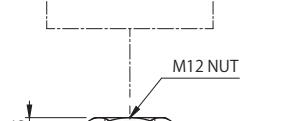
[Dimensions]



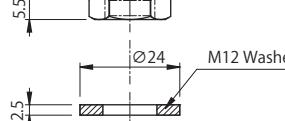
Option Fitting



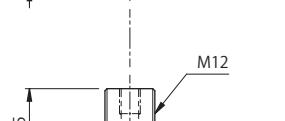
Option Fitting



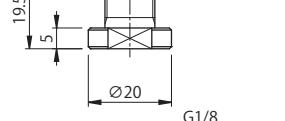
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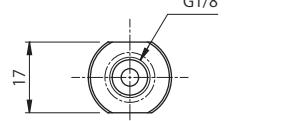
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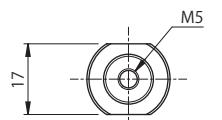
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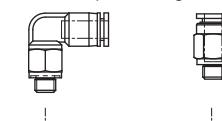
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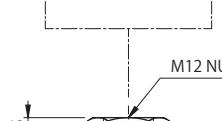
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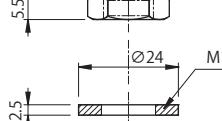
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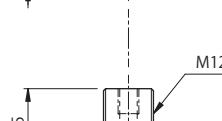
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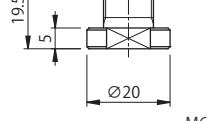
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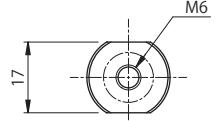
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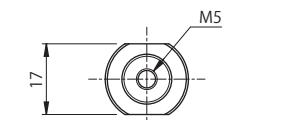
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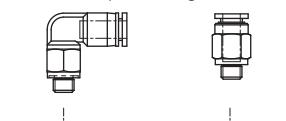
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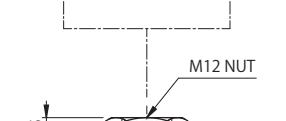
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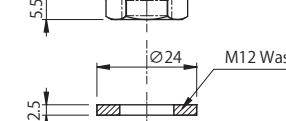
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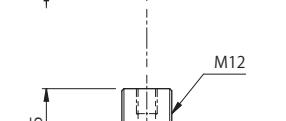
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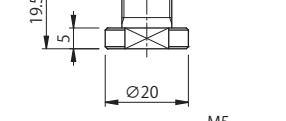
Option Fitting



Option Fitting



Option Fitting



Option Fitting

(mm)

[Applicable model list]

Series	Model symbol	①Screw size	②Push-in connector			Model number	Mass (g)
			Symbol	Specification	Screw specification		
CRK-	SFP	G1	TZ	N/A	M5	CRK-SFPG1TZ	27.0
			T4	φ4 elbow	M5	CRK-SFPG1T4	30.0
			T6	φ6 elbow	M5	CRK-SFPG1T6	31.0
			S4	φ4 straight	M5	CRK-SFPG1S4	30.0
			S6	φ6 straight	M5	CRK-SFPG1S6	32.0
		M6	TZ	N/A	M5	CRK-SFPM6TZ	30.0
			T4	φ4 elbow	M5	CRK-SFPM6T4	33.0
			T6	φ6 elbow	M5	CRK-SFPM6T6	34.0
			S4	φ4 straight	M5	CRK-SFPM6S4	33.0
			S6	φ6 straight	M5	CRK-SFPM6S6	35.0
		M5	TZ	N/A	M5	CRK-SFPM5TZ	31.0
			T4	φ4 elbow	M5	CRK-SFPM5T4	34.0
			T6	φ6 elbow	M5	CRK-SFPM5T6	35.0
			S4	φ4 straight	M5	CRK-SFPM5S4	34.0
			S6	φ6 straight	M5	CRK-SFPM5S6	36.0

Model number
CRK-SFPG1□

*□ in the table indicates the push-in connector.

Model number
CRK-SFPM6□

*□ in the table indicates the push-in connector.

Model number
CRK-SFPM5□

*□ in the table indicates the push-in connector.

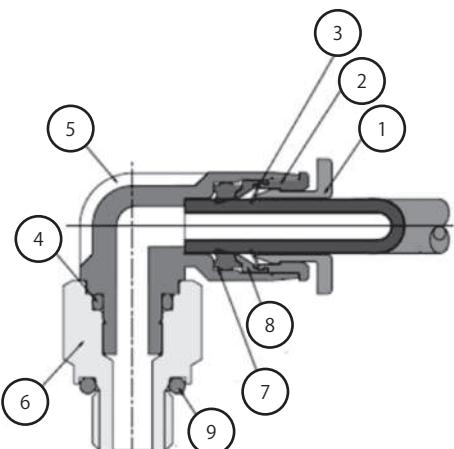
Compact type push-in connectors



A newly designed lock ring assures a tight tube connection and smooth insertion

Tube can be inserted with light force. High airtight reliability

Standard flame-resistant resin material PA and F/G



Component Parts

No.	Parts name	Material
1	Release ring	PA+F/G(Polyamide)
2	Guide	Zinc Die Casting
3	Lock ring	SUS
4	O-ring	NBR
5	Body	PA+F/G (Polyamide)
6	Male adapter	Brass
7	Packing	NBR
8	Back ring	Zinc Die Casting
9	Seat O-ring	NBR

Specifications

Description	unit	
Fluid		Compressed air
Working temperature range	°C	0~60(No freezing)
Max. working pressure	MPa	0.9
Min. working pressure	kPa	-100
Applicable tube		Polyurethane tube

Note) Working pressure value is when the temperature is 20°C .

[How to order /Specifications]

Note) Please order by 10pcs lot.

WPC - 06 - 01 C

① Connector type

WPC-C	Male connector
WPL-C	Male elbow
WPUT-C	Union T
WPT-C	Male branch T
WPUC-C	Union

② Applicable tube (mm)

04	4
06	6

③ Screw size

M3	M3×0.5
M5	M5×0.8
01	R1/8

[Dimensions]

(mm)

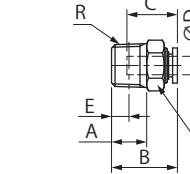
Male connector



Model number

Model number	A	B	C	φ D	E Note	H	R	Mass (g)
WPC04-M3C	3.0	15.5	10.5	4	-	8.0	M3×0.5	2.9
WPC04-M5C	3.5	15.7	11.5		-		M5×0.8	3.2
WPC04-01C	8.0	15.0	11.7	6	3.9	10.0	R1/8	6.0
WPC06-M5C	3.5	16.3			-		M5×0.8	3.8
WPC06-01C	8.0	18.5	11.7	6	3.9	R1/8	5.3	

Note) The reference dimensions of screw-in length of R screw.



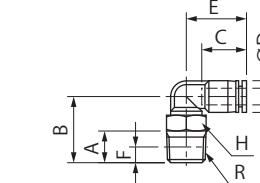
Male elbow



Model number

Model number	A	B	C	φ D	E	F Note	H	φ P	R	Mass (g)
WPL04-M3C	3.0	15.8	11.3	4	15.2	-	8.0	8.0	M3×0.5	3.3
WPL04-M5C	3.5	15.1				-			M5×0.8	
WPL04-01C	8.0	16.7	11.7	6	16.5	3.9	10.0	10.4	R1/8	6.1
WPL06-M5C	3.5	15.0				-			M5×0.8	3.9
WPL06-01C	8.0	18.0	11.7	6	16.5	3.9	10.0	10.4	R1/8	6.8

Note) The reference dimensions of screw-in length of R screw.



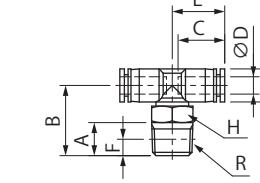
Male branch T



Model number

Model number	A	B	C	φ D	E	F Note	H	φ P	R	Mass (g)
WPT04-M3C	3.5	15.4	11.3	4	12.7	-	8.0	8.0	M5×0.8	4.1
WPT04-01C	8.0	17.0				3.9			R1/8	6.9
WPT06-M5C	3.5	16.4	11.7	6	14.0	-	8.0	10.4	M5×0.8	5.4
WPT06-01C	8.0	18.0				3.9			R1/8	8.2

Note) The reference dimensions of screw-in length of R screw.

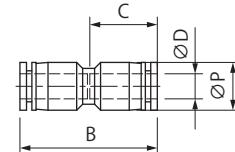


Polyurethane tubes

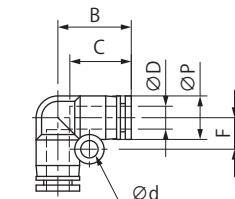
[Dimensions]

(mm)

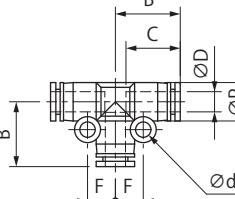
Union	Model number	B	C	ϕD	ϕP	Mass (g)
	WPUC04C	23.0	11.3	4	8.0	2.0
	WPUC06C	24.4	11.7	6	10.4	3.2



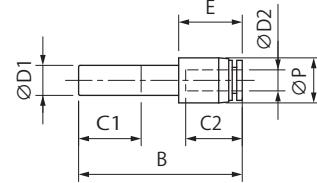
Union elbow	Model number	B	C	ϕD	ϕd	F	ϕP	Mass (g)
	WPUL04C	13.5	11.3	4		3.2	8.0	2.1
	WPUL06C	15.0	11.7	6		6.5	10.4	3.4



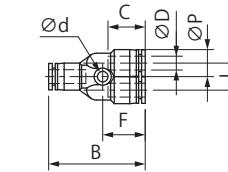
Union T	Model number	B	C	ϕD	ϕd	F	ϕP	Mass (g)
	WPUT04C	13.5	11.3	4		3.2	8.0	3.1
	WPUT06C	15.0	11.7	6		6.5	10.4	5.0



Reducer	Model number	B	C1	C2	$\phi D1$	$\phi D2$	E	ϕP	Mass (g)
	WPGJ06-04C	32.7	12.5	11.3	6	4	12.7	9.0	1.8



Union Y	Model number	B	C	ϕD	ϕd	F	J	ϕP	Mass (g)
	WPY04C	29.3	11.3	4		3.2	12.9	8.2	3.4
	WPY06C	31.4	11.7	6		13.2	10.5	10.4	5.3



Model number	O.D x I.D (mm)	Min. bending radius (mm)	O.D Accuracy (mm)	Tube length (m)	Mass (g/m)	Color
WU-04025-BK	4x2.5	20	± 0.10	20	9	Black
WU-06040-BK	6x4	30	± 0.12	20	19	



[Specifications]

	Unit	
Fluid		Non-lubricated compressed air
Operating temperature range	°C	0~60
Max. operating pressure	MPa	0.8
Min. operating pressure	kPa	-100
Material		Polyurethane

Note) Working pressure value is when the temperature is 20°C .

PK2B

[How to order] PK2B - **① 20 - ② T - ③ G1**

① Cup diameter (mm)	② Cup material	③ Screw size
20 $\phi 20$	T TPU	M6 M6x1.0
30 $\phi 30$	G1 G1/8	



[How to order] PK2B - **① 40 - ② T - ③ M10 - ④ F**

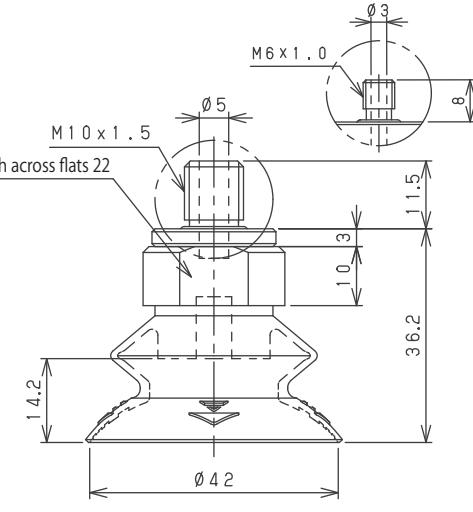
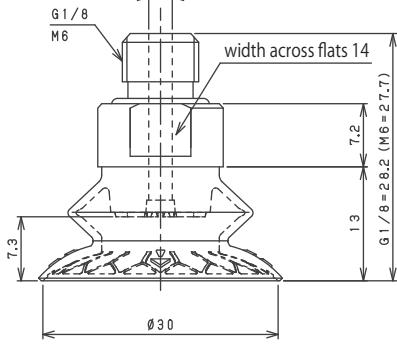
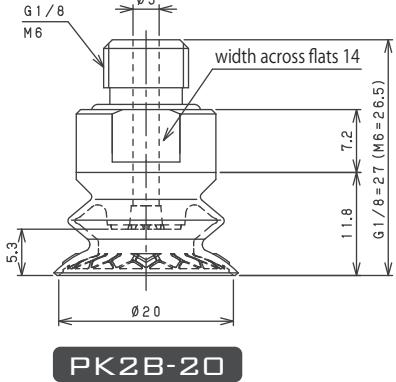
① Cup diameter (mm)	② Cup material	③ Screw size	④ Filter
40 $\phi 40$	T TPU	M6 M6x1.0	Blank Without filter
		M10 M10x1.5	F With filter

Mass (g)	
Model / Material	T
PK2B-20-T-M6	5.6
PK2B-20-T-G1	6.4
PK2B-30-T-M6	6.6
PK2B-30-T-G1	7.4
PK2B-40-T-M10	22.3
PK2B-40-T-M6	22.3

Cup material specifications

Material symbol	Material	Hardness	Ambient temperature	Color
T	TPU	A85/S	-10 ~ 70°C	Translucent pink

Dimensions



PD

Suction cup with spring fitting, non-rotation/NAPDTH/YH

[How to order] NAPDTHYS - **① 20-6**

①



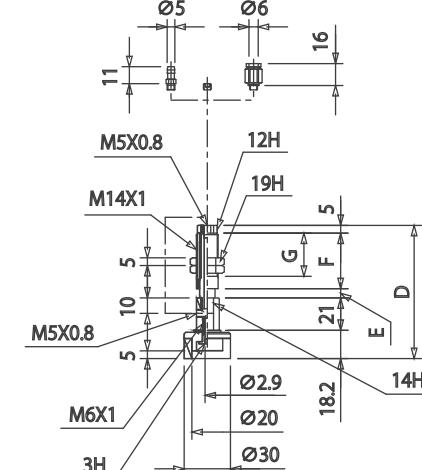
① Cup diameter · Stroke (mm)

Symbol	Cup diameter · Stroke
20-6	$\phi 20-6$
20-15	$\phi 20-15$
20-30	$\phi 20-30$
30-6	$\phi 30-6$
30-15	$\phi 30-15$
30-30	$\phi 30-30$
40-6	$\phi 40-6$
40-15	$\phi 40-15$
40-30	$\phi 40-30$
50-6	$\phi 50-6$
50-15	$\phi 50-15$
50-30	$\phi 50-30$

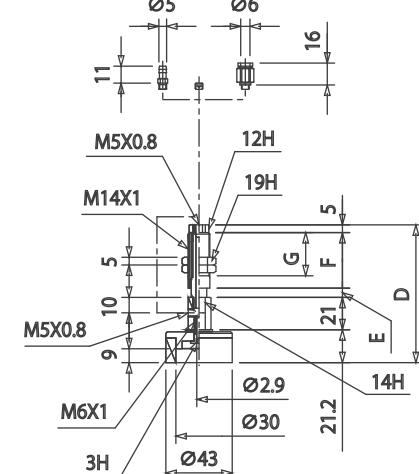
Spring specifications

Cup diameter	Unit	$\phi 20 \sim 50$		
Stroke	mm	6	10	30
Spring load at 0(zero) stroke	N	2.45	2.9	
Spring load at full stroke	N	3.43	4.9	5.88

Dimensions (mm)



NAPDT/YS-20



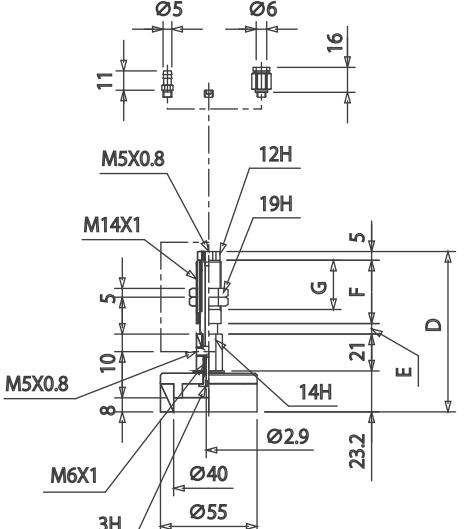
NAPDT/YS-30

Model number	D	E	F	G	Mass (g)
NAPDT/YS-20-6 (-T/O)	86.2	6	36	28	82.5
NAPDT/YS-20-15 (-T/O)	95.2	15			87.5
NAPDT/YS-20-30 (-T/O)	132.2	30	58	50	112.5

*The mass is value without the connector.

Model number	D	E	F	G	Mass (g)
NAPDT/YS-30-6 (-T/O)	89.2	6	36	28	89
NAPDT/YS-30-15 (-T/O)	98.2	15			94
NAPDT/YS-30-30 (-T/O)	135.2	30	58	50	119

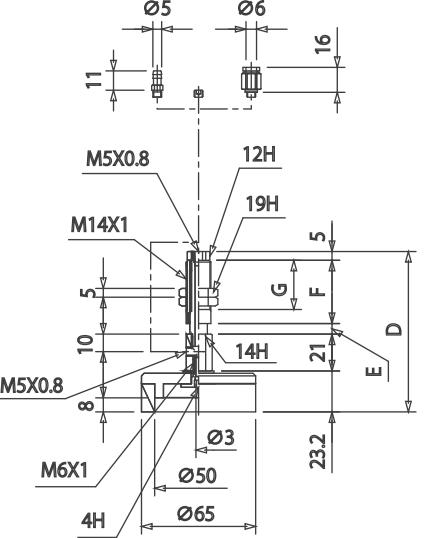
*The mass is value without the connector.



NAPDT/YS-40

Model number	D	E	F	G	Mass (g)
NAPDT/YS-40-6 (-T/O)	91.2	6			116.5
NAPDT/YS-40-15 (-T/O)	100.2	15			121.5
NAPDT/YS-40-30 (-T/O)	137.2	30	58	50	146.5

※The mass is value without the connector.



NAPDT/YS-50

Model number	D	E	F	G	Mass (g)
NAPDT/YS-50-6 (-T/O)	91.2	6			140
NAPDT/YS-50-15 (-T/O)	100.2	15			145
NAPDT/YS-50-30 (-T/O)	137.2	30	58	50	170

※The mass is value without the connector.

PM

[How to order] PM - ① 40 - ② L - ③ G1 - ④ S4 - ⑤ F

① Cup diameter (mm)

24	Equivalent to $\phi 20$
40	Equivalent to $\phi 34$
56	Equivalent to $\phi 48$

② Type

L	Bellows
S	Flat

③ Screw size

Symbol	Specifications	Applicable cup size
G1	G1/8	All size
G2	G1/4	40, 56
G3	G3/8	40, 56

④ Cup material

S4	Silicone rubber 40°
S5	Silicone rubber 55°
SM	Metal detectable silicone

⑤ Filter

F	With
Blank	Without



Spring specifications

Cup diameter	24	40	56
Male screw	G1/8	G1/8 / G1/4 / G3/8	
Material			Aluminum
Filter		SUS(MESH60)*	
Packing		NBR	

※1)When selecting with filter

PL

[How to order] PL - ① 20 - ② G1 - ③ S4 - ④ F

① Cup diameter (mm)	② Screw size	③ Cup material
20	$\phi 20$	G1 / 8
30	$\phi 30$	S4 Silicone rubber 40°
40	$\phi 40$	S5 Silicone rubber 55°

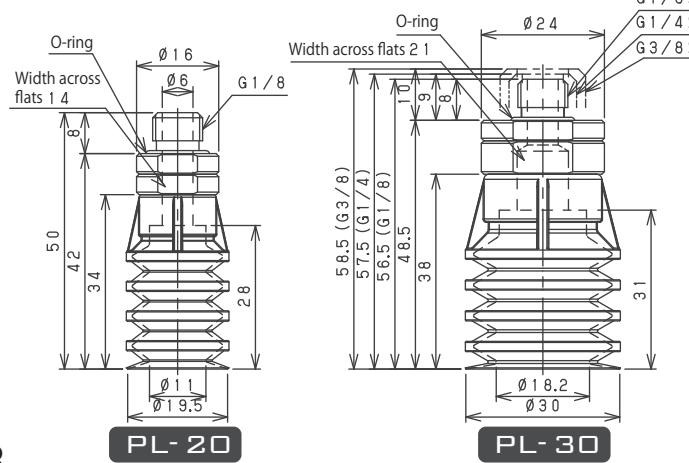
④ Filter
With filter #60
Blank Without filter

Cup material specification

Material symbol	Material	Hardness (Hs)	Ambient temperature	Color
S4	Silicone rubber	40	-60 ~ 250°C	Translucent light blue
S5	Silicone rubber	50		Translucent white

[Mass]

Model / Material	N	S3
PLG-30	5.5	2.9
PLG-40	13.2	6.9
	14.8	15.7



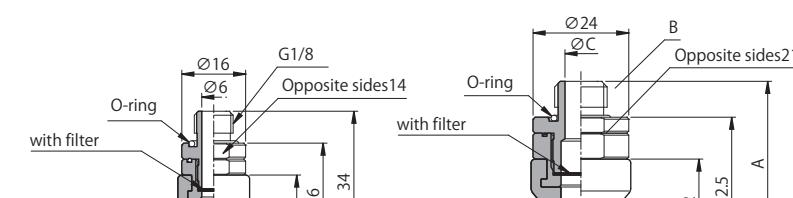
PM-24L

PM-40L

Model number	A	B	C
PM-40L-G1-□-(F)	65.5	G1/8	6
PM-40L-G2-□-(F)	66.5	G1/4	8
PM-40L-G3-□-(F)	67.5	G3/8	10

Model number	A	B	C
PM-56L-G1-□-(F)	74	G1/8	6
PM-56L-G2-□-(F)	75	G1/4	8
PM-56L-G3-□-(F)	76	G3/8	10

※□ in the table indicates the cup material.



PM-24S

PM-40S

Model number	A	B	C
PM-40S-G1-□-(F)	40.5	G1/8	6
PM-40S-G2-□-(F)	41.5	G1/4	8
PM-40S-G3-□-(F)	42.50	G3/8	10

Model number	A	B	C
PM-56S-G1-□-(F)	42.5	G1/8	6
PM-56S-G2-□-(F)	43.5	G1/4	8
PM-56S-G3-□-(F)	44.5	G3/8	10

※□ in the table indicates the cup material.

Selecting method

1. Study of workpiece

Please check below points about the workpiece

① Characteristics

Surface condition, porosity, conductivity, shape morphing (paper, flexibility (paper, vinyl etc.)

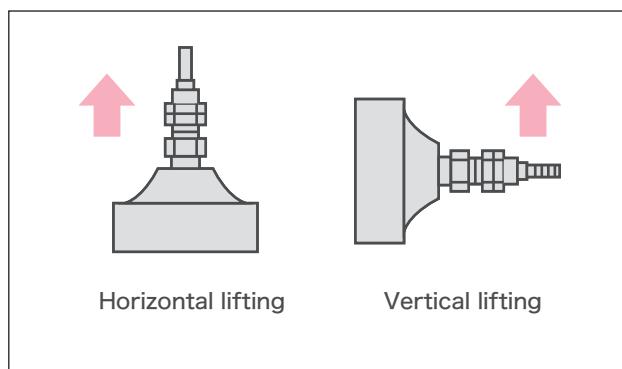
② Shape

Suction surface, flatness (angles checking), shape (long, spherical, oval)

③ Workpiece mass

④ Lifting direction

Horizontal / Vertical



2. Selection of suction pad

1) Vacuum pressure setting

We select the vacuum generation source specifications with a safety margin. In the case of CONVUM vacuum ejectors -66.6kPa of vacuum level is the minimum value. However, in case of porosity of the workpiece, the vacuum level does not increase enough. A lifting test will be necessary in some cases. Please consult with us.

2) Suction pad diameter selection

In the case of round pad we use the following formula.

$$D=2\sqrt{\frac{M \times 9.8 \times S \times 1000}{\pi \times n \times P}}$$

D : Pad diameter (mm) M : Workpiece mass (kg)
Horizontal : S=4 Vertical : S=8
S : Safety factor

n : Pad quantity
P : Vacuum pressure (-kPa)

Note) In this example we set the lifting force needed at 9.8N.

We select the pad diameter (D) based on catalog selection requirements.

If the required value is higher than the recommended value, use at least 2 suction pads to make the calculation.

In the case the pad shape is not round, please consult with us.

Calculation example

Horizontal

Round pad calculation

Workpiece mass	: M=0.5kg
Vacuum pressure	: P=-70kPa
Pad quantity	: n=1piece
Safety factor when horizontal lifting	: S=4

$$D=2\sqrt{\frac{M \times 9.8 \times S \times 1000}{\pi \times n \times P}}$$

$$D=2\sqrt{\frac{0.5 \times 9.8 \times 4 \times 1000}{\pi \times 1 \times 70}}$$

$$=18.8(\text{mm})$$

The suitable suction pad diameter will be $\phi 20$.

The real suction surface decreases as the pad diameter is shrinking when generating vacuum. The change depends on the pad material, shape, rubber hardness. Please never forget the safety factor when selecting the suction pads.

3) Suction surface

We calculate the suction surface with pad diameter information.

$$A=\frac{3.14 \times D^2}{4 \times 100}$$

A : Suction surface (cm^2)
D : Suction pad diameter (mm)

4) Effective suction surface

The pad diameter values do not show the reality. When there is a vacuum generation, the vacuum pad shrinks and its shape may increase. This is what we call the effective suction surface. At that time we call the pad diameter: the effective pad diameter.

The elongation of the effective pad diameter depends on several factors such as the rubber thickness, vacuum pressure rate, friction coefficient etc. but in general it increases about 10%.

Theoretical suction force

Round pad table

Pad diameter (ϕmm)	Suction surface (cm^2)	(N) Vacuum pressure (kPa)					
		-40	-50	-60	-70	-80	-90
15	1.77	7.069	8.836	10.6	12.37	14.14	15.9
20	3.14	12.57	15.71	18.85	21.99	25.13	28.27
25	4.91	19.63	24.54	29.45	34.36	39.27	44.18
30	7.07	28.27	35.34	42.41	49.48	56.55	63.62
35	9.62	38.48	48.11	57.73	67.35	76.97	86.59
40	12.57	50.27	62.83	75.4	87.96	100.5	113.1

5) Theoretical suction force

a. In the case of horizontal lifting

The Vacuum pressure is calculated from the suction force.

$$F=0.1 \times A \times P$$

F : Theoretical suction force (N)

A : Pad suction effective surface (cm^2)

P : Vacuum pressure (-kPa)

b. In the case of vertical lifting

The lifting force depends on the suction force of the vacuum pressure and the frictional force of the suction pad against the workpiece.

$$F=\mu \times 0.1 \times A \times P$$

F: Theoretical suction force (N)

μ : Friction coefficient

A : Suction surface (cm^2)

P : Vacuum pressure (-kPa)

The frictional force may be very different depending on characteristics of workpiece and pad material. We recommend to measure in real condition of operation.