

Aovita

OVERALL SOLUTIONS FOR ROBOTIC END-EFFECTOR

★ GRIPPING SYSTEMS ROBOTIC GRIPPING SYSTEMS

• PRESS AUTOMATION TOOLING

• TRANSFER GRIPPERS

• HOT STAMPING GRIPPERS

★ PNEUMATIC GRIPPERS

★ AUTOMATIC TOOL CHANGERS

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Ver. 2025-01

OVERALL SOLUTIONS FOR HOT STAMPING TOOLING



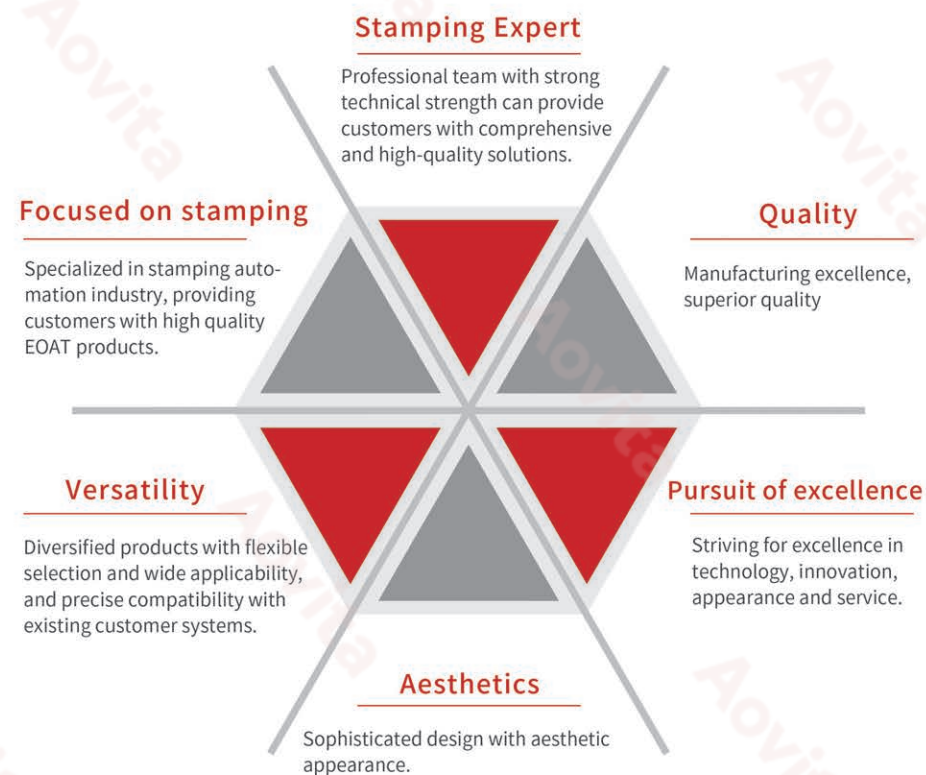
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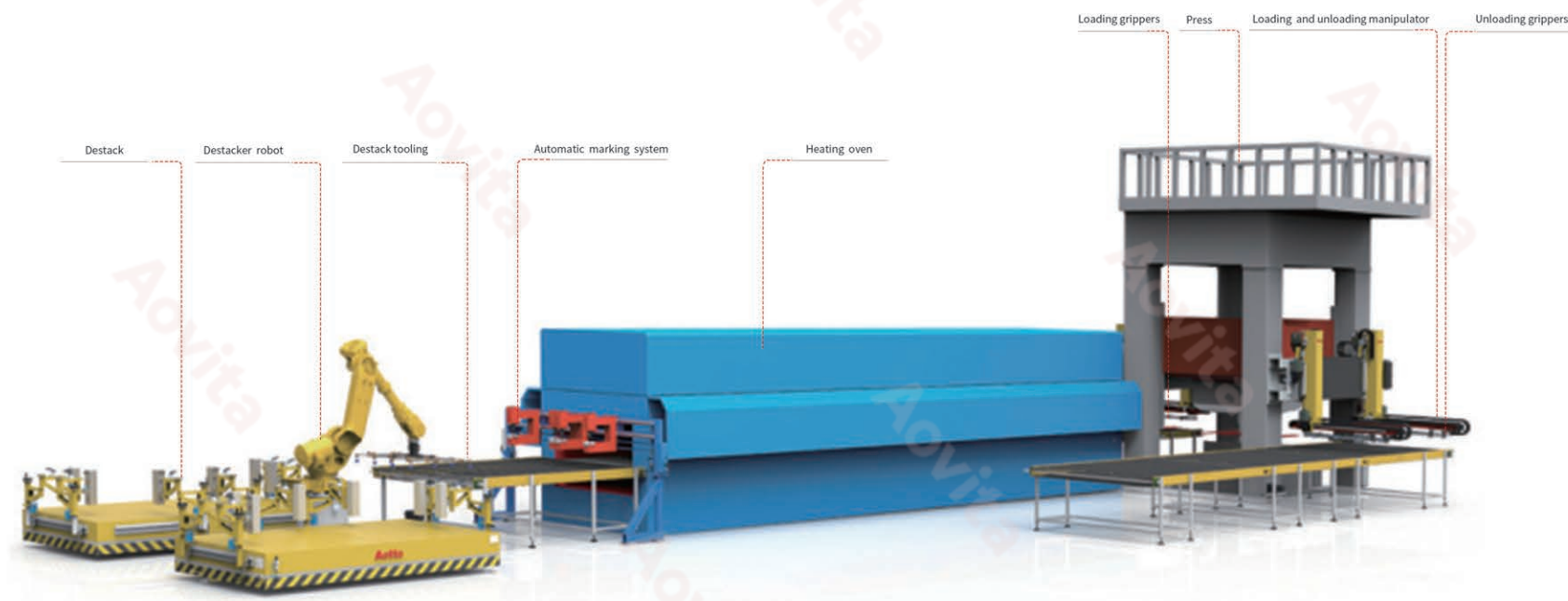


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□ Introduction of hot stamping grippers



De-stack tooling

Applied to the FOL of the stamping line, using the principle of vacuum grabbing, the sheet metal is picked up one by one from the stacking of the loading trolley and sent to the next process. Double material detection sensors and anti-pressur sensors are usually integrated to the de-stack tooling.



Loading grippers

Used at the front phase of the press, and transfer the heated centered blanks to the mold. The loading grippers could be worked at normal temperature.



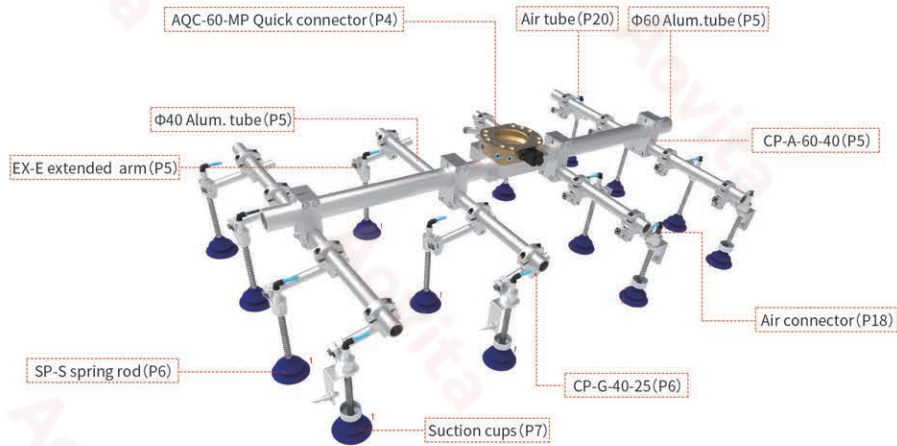
Unloading grippers

Used at next phase of the press, and transfer the part from the mold to the EOL conveyor. Panel exist sensors usually equipped at the unloading grippers.

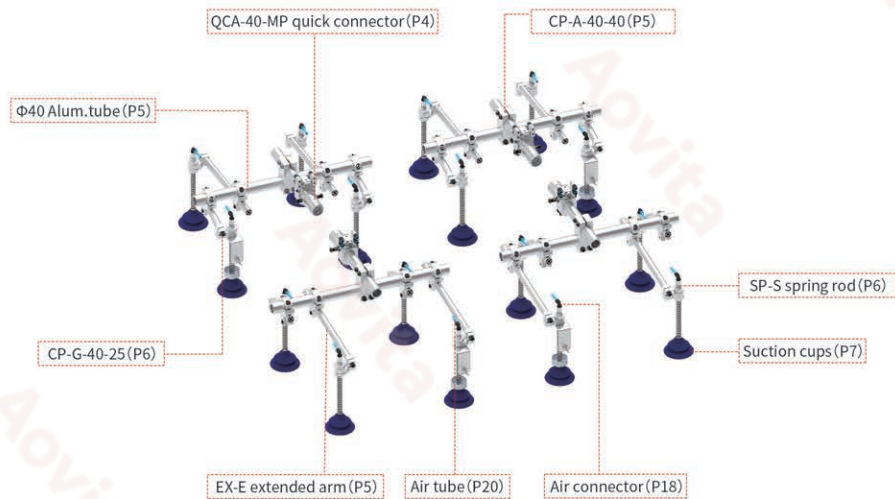
◆ Structures of De-stack tooling

□ AQC Manual quick changer crosses

ATC could be provided to update the speed of the automation line.



□ QCA Manual quick change crosses

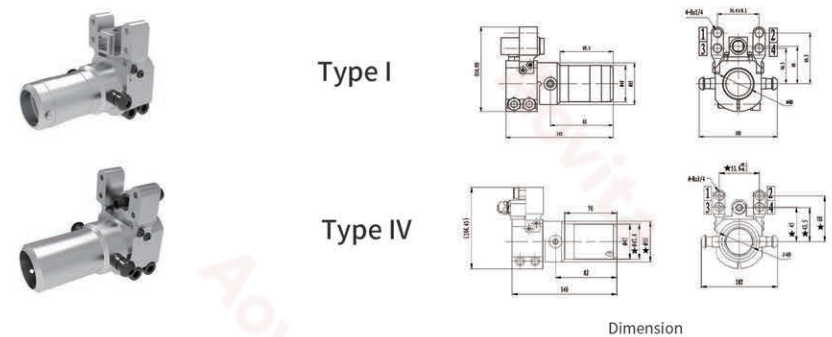


□ AQC-60-MP ATC



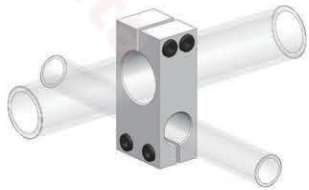
AQC-60-MP ATC configuration								
Item	Model	Tool model	Electric Module model	Flange model	D1 (mm)	D2 (mm)	H1 (mm)	H2 (mm)
ATC	AQC-60-MP-200-19-120	AQC-200-T	AQCE-19-3-P-RT	AQC-120FP-T	200	89	169	129
	AQC-60-MP-200-19-70	AQC-200-T	AQCE-19-3-P-RT	AQC-70FP-T-FB	200	70	165	125
	AQC-60-MP-200-19	AQC-200-T	AQCE-19-3-P-RT	-	200	-	125	86
	AQC-60-MP-120-19-70	AQC-120-T	AQCE-19-3-P-RT	AQC-70FP-T-FB	188	70	159	124
	AQC-60-MP-100-16-70	AQC-100-T	AQCE-16-3-P-RT	-	179	58	160	125

□ QCA-40-MP Quick connector

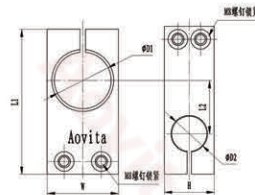


QCA-40-MP Quick connector configuration						
Item	Model	Air port (Rc1/4)	Electric path	Max. static load (N.M)	Weight (kg)	Material
Quick connector	QCA-40-MP-4-0-I	4	0	305	0.65	Main Body: Alloy steel, steel pins
	QCA-40-MP-4-5-I		5		0.70	
	QCA-40-MP-4-0-IV		0		0.54	
	QCA-40-MP-4-5-IV		5		0.59	

□ CP-A Wrist extension



Application example



Dimension

CP-A wrist extension configuration										
No.	Model	D1(mm)	D2(mm)	L1(mm)	L2(mm)	W(mm)	H(mm)	Weight(kg)	Material	
2	CP-A-40-40	40	40	121	45	50	50	0.41	High strength Alum. alloy	
3	CP-A-25-25	25	25	91	31	35	35	0.2		

□ AB-B Alum. tube



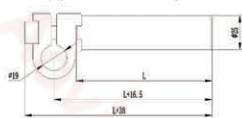
Application examples

□ Material: High strength alum. alloy			
Model	AB-B-----XXX-----L	weight(kg/m)	
Alum.tube			
1.Section	φ60*9	100-3000	3.96
2.Section	φ60*5	100-3000	2.37
3.Section	φ40*4	100-3000	1.24
100mm/size			

□ EX-E Extension arm(single head)



Application examples



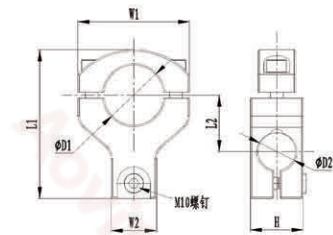
Dimension

EX-E Extension arm(single head) configuration				
No.	Model	L (mm)	Weight (kg)	Material
1	EX-E-19-25-100	100	0.18	High strength alum. alloy steel
2	EX-E-19-25-150	150	0.24	
3	EX-E-19-25-200	200	0.30	
4	EX-E-19-25-250	250	0.36	
5	EX-E-19-25-300	300	0.42	
6	EX-E-19-25-350	350	0.48	
7	EX-E-19-25-400	400	0.54	
8	EX-E-19-25-450	450	0.60	
9	EX-E-19-25-500	500	0.66	

□ CP-G Wrist extension



Application example



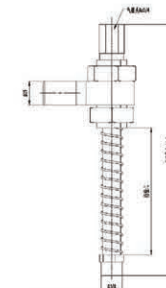
Dimension

CP-G wrist extension										
No.	Model	D1(mm)	D2(mm)	L1 (mm)	L2 (mm)	W1 (mm)	W2 (mm)	H (mm)	Weight (Kg)	Material
1	CP-G-60-40	60	40	140	60	100	50	50	0.7	High strength Alum. alloy
2	CP-G-60-30	60	30	125	50	100	40	40	0.5	
3	CP-G-60-25	60	25	125	50	100	40	40	0.52	
4	CP-G-40-25	40	25	98.5	37.5	74	35	35	0.3	

□ SP-S Spring rod



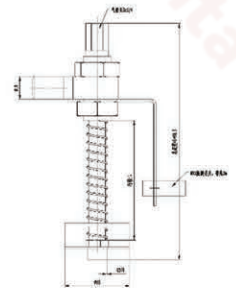
Application example



Dimension



Application example



Dimension

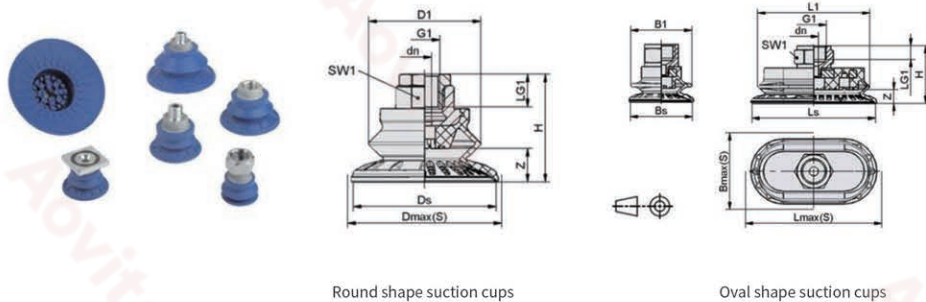
□ SP-S Spring rod configuration			
SP-	S-	Stroke-	DF-
SP: spring rod	S: outer spring 60mm	60mm	DF: anti-pressure detection (M12 screws, PNP, normally open, detection distance 8mm)
		75mm	
		100mm	
		150mm	
		200mm	

□ Suction cups

The suction cups are made of special material, which had excellent oil resistance, wear resistance and aging resistance, choosing proper suction cups can save the using cost, obtain a stable production condition, and improve the production efficiency. The special groove structure at the bottom of the suction cups can prevent the oil thin plate from sliding during transportation, ensuring the accuracy of workpiece handling.

Application: Used for transferring metal sheet, especially for stamping automation line.

Advantages: No denting and deforming when transferring the metal sheets.

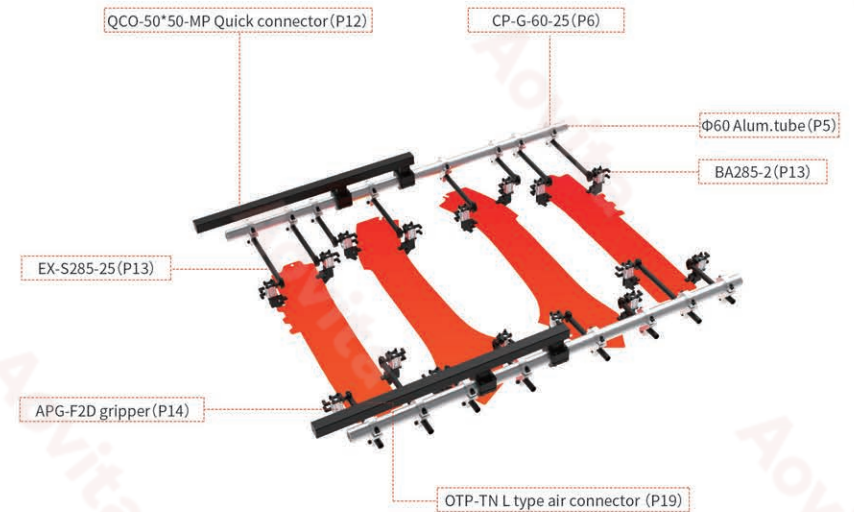


Round shape suction cups											
No.	Model	Suction(N)	Lateral force(N)	D1	dn	Ds	G1	H	LG1	SW1	Z(stroke)
1	VA-100-G3/8-IG	190	220	110	101	6	G3/8	56.6	15	22	25.8
2	VA-80-G3/8-IG	135	145	89	81	6	G3/8	49.9	15	22	22.1
3	VA-60-G3/8-IG	82	82	67	61	6	G3/8	41.3	15	22	14.5
4	VA-50-G3/8-IG	53	55	56	50	6	G3/8	36.9	15	22	11.5
5	VA-40-G1/4-IG	38	36	45	40	4	G1/4	28.8	12	17	10
6	VA-30-G1/4-IG	22	30	34	31	4	G1/4	28	12	17	9
7	VA-22-G1/4-IG	16	18	24	21	3.5	G1/4	25	12	16	5.8

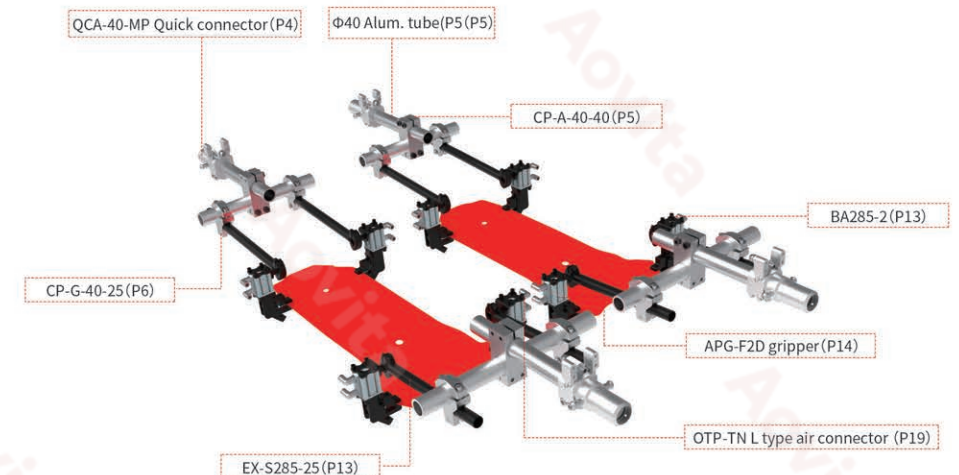
Oval shape suction cups												
No.	Model	Suction(N)	Lateral force(N)	B	B1	dn	G1	H	L	LG1	L1	SW1
1	VB-110*55-G3/8-IG	110	229	53	59	8	G3/8	43.5	99	9	114	22
2	VB-80*40-G1/4-IG	65	153	40	43	6	G1/4	37.2	73	8	83	17
3	VB-60*30-G1/4-IG	38	73	31	33	6	G1/4	34.5	56	8	63	17

◆ Crosses and structure of loading and unloading grippers

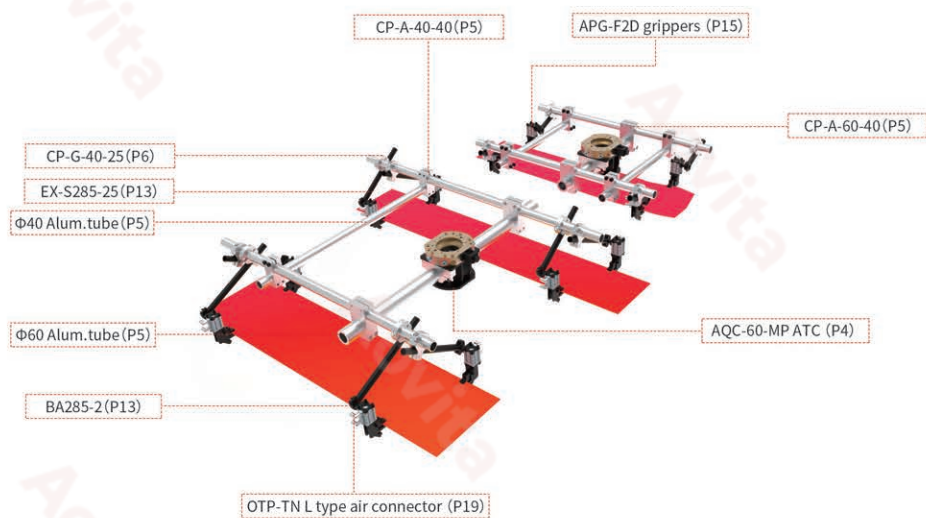
□ QCO crosses of quick change loading grippers



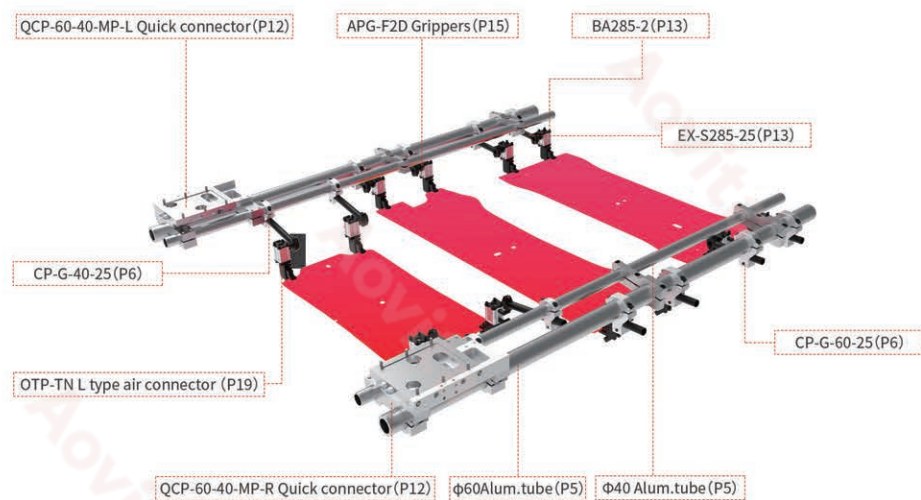
□ QCA Crosses of quick change loading grippers



□ QCQ Crosses of quick change loading grippers



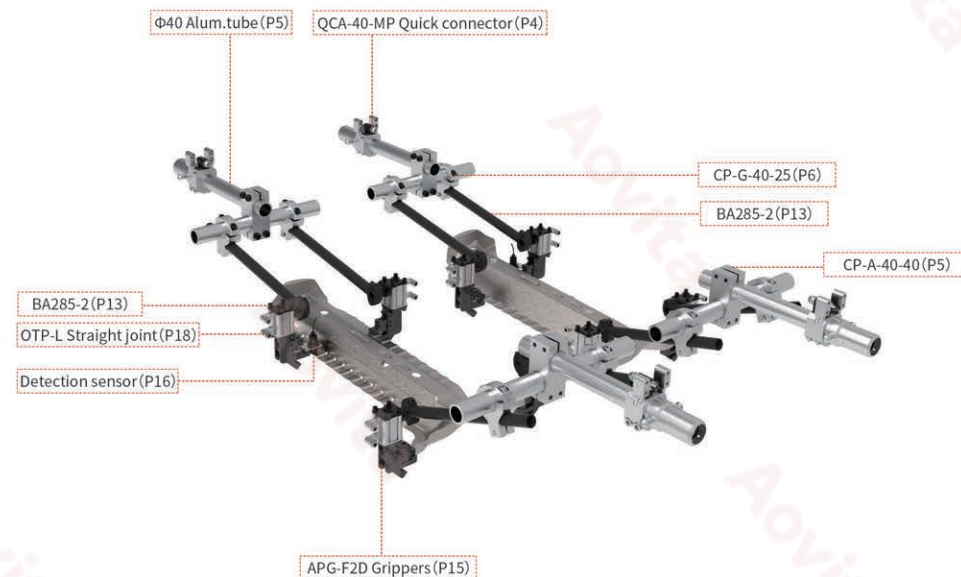
□ QCP Crosses of quick change loading grippers



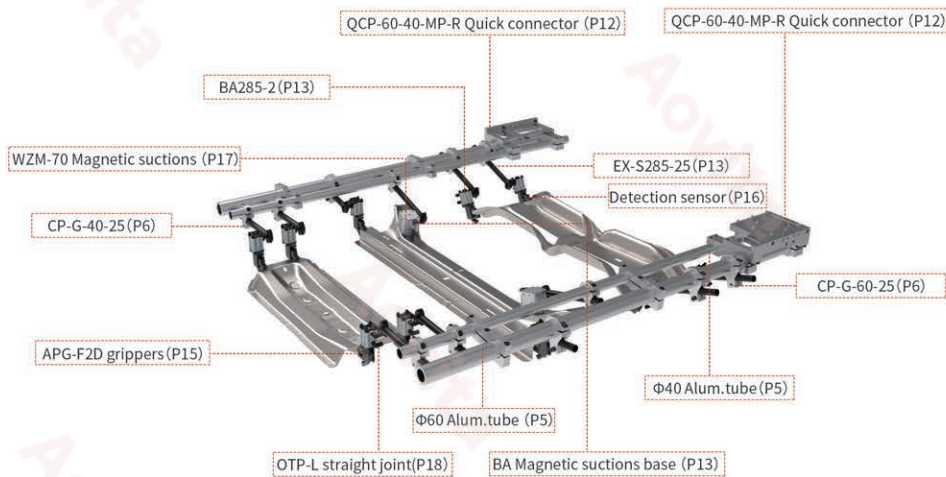
□ QCO Crosses of quick change unloading grippers



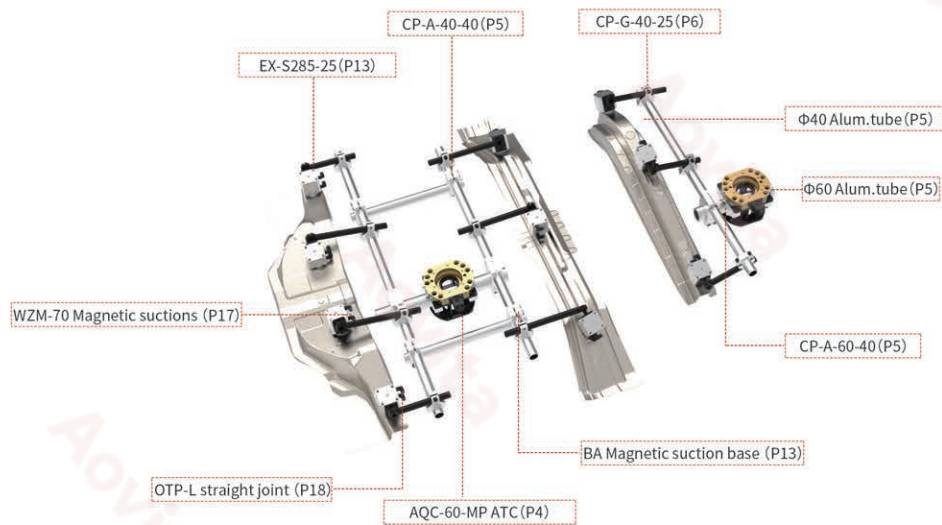
□ QCA Crosses of quick change unloading grippers



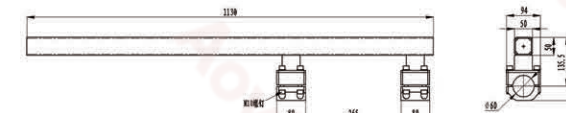
- QCP Crosses of quick change unloading grippers



- QCQ Crosses of quick change unloading grippers



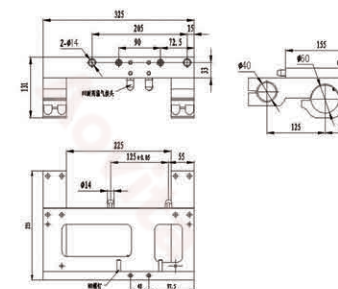
□ QCO-50*50-MP Quick connector



Dimension

QCO-50*50-MP Quick connector configuration					
Item	Model	Air port	Electric path	Weight (kg)	Material
Quick connector	QCO-50*50-MP	0	0	6.5	Steel,high strength alloy

□ QCP-60-40-MP Quick connector



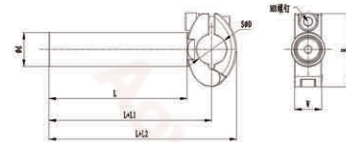
QCP-60-40-MP-L Dimension

QCP-60-40-MP Quick connector configuration					
Item	Model	Air port (Rc1/8)	Electric path	Weight (kg)	Material
Quick connector	QCP-60-40-MP-L	2	0	7.54	Main body: high strength alloy steel, steel pins
	QCP-60-40-MP-R				
Remarks: With 8mm air connector					

EX-S Extension arm



Application example



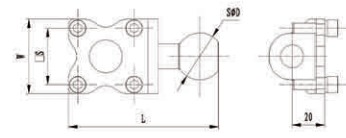
Dimension

EX-S Extension arm(ball head) configuration											
No.	Model	SΦD (mm)	Φd (mm)	W (mm)	H (mm)	L (mm)	L1 (mm)	L2 (mm)	L=100 Weight (Kg)	Kg/50mm	Material
1	EX-S285-25-L	28.5	25	20	54	Min: 100 Max: 500 50mm/size	16	36.5	0.27	0.05	Steel
2	EX-S36-30-L	36	30	22.5	67.5		24	46	0.45	0.07	

BA Ball grippers base



Application example



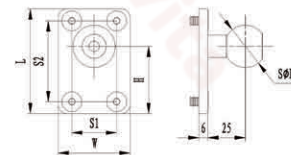
Dimension

BA Ball grippers base configuration								
No.	Model	SφD (mm)	L (mm)	W (mm)	S (mm)	Weight (kg)	Material	Application
1	BA285-1	28.5	85	40	28	0.15	Steel	Used for connecting the grippers
2	BA285-2	28.5	90	45	34	0.18		
3	BA36-1	36	90.5	40	28	0.25		
4	BA36-2	36	95.5	45	34	0.28		

BA Ball magnetic suction base



Application example



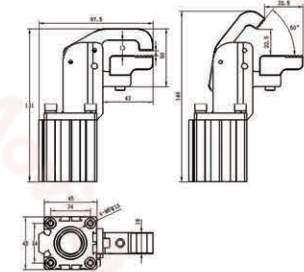
Dimension

BA Ball magnetic suction base configuration										
No.	Model	SφD (mm)	L (mm)	W (mm)	S1 (mm)	S2 (mm)	H (mm)	Weight (Kg)	Material	Application
1	BA285-40	28.5	58.5	30	18	46.5	40.5	0.14	Steel	Used for connecting the magnetic grippers
2	BA285-70	28.5	70	48	30	54	45	0.25		
3	BA36-40	36	58.5	30	18	46.5	40.5	0.19		
4	BA36-70	36	70	48	30	54	45	0.29		

APG Clamp

APG-F2D Clamp

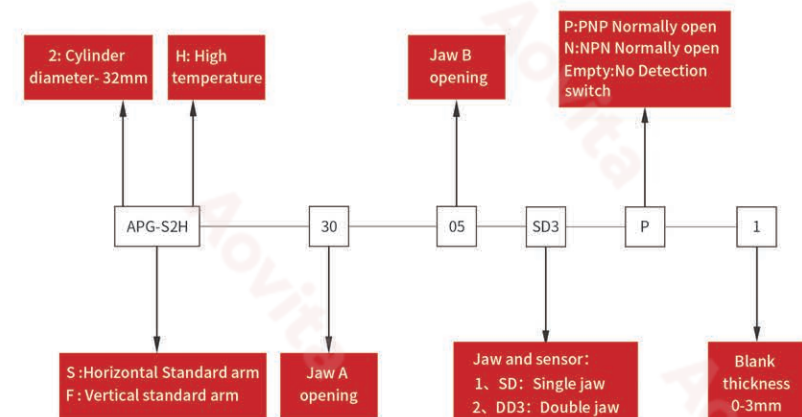
(Recommended)



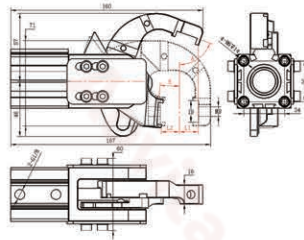
Specification	
Working temperature: 0.3-0.8MPa	0.6Mpa Forcing per Jaw B: 400N
Working temperature: Common	
High temperature: -20-200°C	temperature: -20-60°C
Locking/opening time: 0.2s	Weight: 0.8kg
Max. blank thickness: 3mm	Self locked function: No
Cylinder joint size: 2-G1/8	
Application:	
1. Vertical hinges clamp, without self locking requirement, high efficiency.	
2. Worked at transfer and feeder mode.	

APG Clamp(self locking)

Order specify:



□ APG-F2 Clamp(self locking)

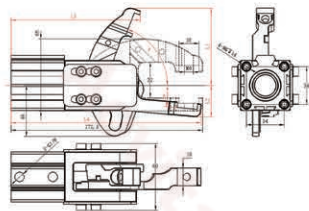


□ Specification

Working temperature:0.3-0.8MPa 0.6Mpa Forcing per Jaw B:400N
Working temperature: Common
High temperature: -20-200°C temperature:-20-60°C
Locking/opening time:0.2s
Max. blank thickness:3mm Weight:1kg
Cylinder joint size: 2-G1/8 Self locked function :Yes
Application:
1.Vertical large forced clamp, used for the blanks edges above 90 degree, and prevent to dropping the blanks.
2.Worked at transfer and feeder mode.

Model	A	B	L1 (mm)	L2 (mm)
APG-F2-50-05-X-X	50°	5°	23	16
APG-F2-70-05-X-X	70°	5°	16	16

□ APG-S2 Clamp(self-locking)



□ Specification

Working temperature:0.3-0.8MPa 0.6Mpa Forcing per Jaw
Working temperature: Common B:1000N
High temperature: -20-200°C temperature:-20-60°C
Locking/opening time:0.2s Weight:1kg
Max. blank thickness:3mm Self locked function :Yes
Cylinder joint size: 2-G1/8
Application:
1.Large forcing clamp, used for high requirement of the blanks, could be adjusted the angles through the sensor, widely application.
2.Worked at transfer and feeder mode.

Model	A	B	C	D	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)
APG-S2-45-05-X-X	45°	5°	/	/	64	29	144	172
APG-S2-70-05-X-X	75°	5°	/	/	70	29	117	172

□ Jaw

Installed on clamp to grip different blanks and parts

Model	SD Jaw	DD3 Jaw
Images		
Select instruction	Standard jaw, could equip with external sensors	Wider jaw with large grippers areas could equip with external sensors
Dimension		
Specification	Body material: steel	Body material: steel

□ Detection switch

To detect the panel exist condition, could prevent the damaging of the equipment.

Model	O/P	Images	Dimension	Specification
External sensor	PNP			Detect distance:8mm. Function: used together with the grippers, and to detect the panel exist condition Suitable for the APG-F2D clamp.
	NPN			

- WZM Magnetic suction

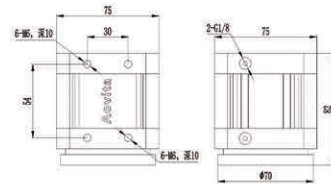
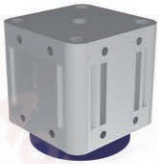


Functions:

1. Inserted permanent magnet, high strength performance, reliable suction force.
2. Rubbers installed at the bottom of the suctions to prevent the scratches of the part surface.
3. Could be sucked when air cut off suddenly.

Application: Used for multi-hole part, unloading of the parts suction.

- WZM-70 Magnetic suction

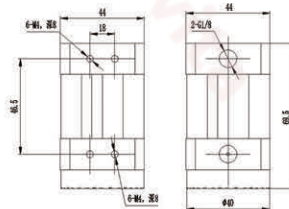


□ Specification

Working pressure: 0.3-0.8MPa
Suctions: 170N
Working temperature: -20-250°C
Cylinder joint size: 2-G1/8

WZM-70 Magnetic suctions configuration			
No.	Model	Weight (kg)	Material
1	WZM-70	0.9	Alloy& steel and Permanent magnet

- WZM-40 Magnetic suction

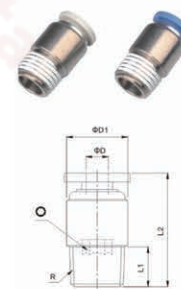


□ Specification

Working pressure:0.3-0.8MPa
Suctions: 70N
Working temperature: -20-250°C
Cylinder joint size: 2-G1/8

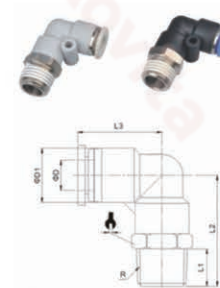
WZM-40 Magnetic suction configuration			
No.	Model	Weight(kg)	Material
1	WZM-40	0.36	Alloy& steel and Permanent magnet

- OTP-H Straight joint



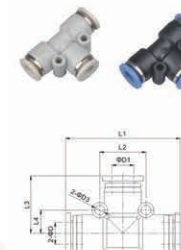
Model	ϕD	R	$\phi D1$	$\phi D2$	L1	L2	O	Y
OPT-H-06-G01	6	R1/8	14	14	5.5	22	4	12
OPT-H-06-G02	6	R1/4	14	14	7.5	22.5	4	12
OPT-H-06-G03	6	R3/8	14	20	7.5	20.3	4	12
OPT-H-06-G04	6	R1/2	14	24	10	23	4	12
OPT-H-08-G01	8	R1/8	16	14	5.5	25	4	14
OPT-H-08-G02	8	R1/4	16	17	7.5	24	5	14
OPT-H-08-G03	8	R3/8	16	20	7.5	20.5	6	14
OPT-H-08-G04	8	R1/2	16	24	10	24	6	14
OPT-H-10-G01	10	R1/8	19.5	14	5.5	29	4	17
OPT-H-10-G02	10	R1/4	19.5	17	7.5	30.5	6	17
OPT-H-10-G03	10	R3/8	19.5	20	7.5	27	8	17
OPT-H-10-G04	10	R1/2	19.5	24	10	30	8	17

- OTP-L Straight joint



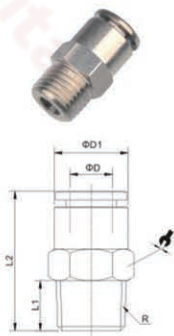
Model	ΦD	R	L1	L2	L3	ΦD1	Y
OPT-L-06-G01	6	R1/8	5.5	25.7	19.2	13.5	14
OPT-L-06-G02	6	R1/4	7.5	28.2	19.2	13.5	17
OPT-L-06-G03	6	R3/8	7.5	28.7	19.2	13.5	20
OPT-L-06-G04	6	R1/2	10	31.2	19.2	13.5	24
OPT-H-08-G01	8	R1/8	5.5	29	22.5	15	14
OPT-H-08-G02	8	R1/4	7.5	31.5	22.5	15	17
OPT-H-08-G03	8	R3/8	7.5	32	22.5	15	20
OPT-H-08-G04	8	R1/2	10	34.5	22.5	15	24
OPT-H-10-G01	10	R1/8	5.5	34	27.8	19	17
OPT-H-10-G02	10	R1/4	7.5	36.5	27.8	19	17
OPT-H-10-G03	10	R3/8	7.5	36.5	27.8	19	20
OPT-H-10-G04	10	R1/2	10	40	27.8	19	24

□ OTP-T T-Joint



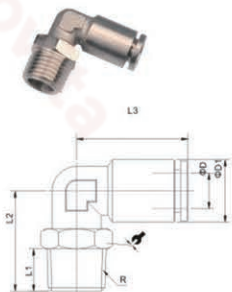
Model	ΦD	ΦD1	ΦD2	ΦD3	L1	L2	L3	L4
OTP-T-06	6	6	13.5	3.2	39	16	19.2	8
OTP-T-08	8	8	15	3.2	45	19	22.5	9.5
OTP-T-10	10	10	19	4.2	57	24	27.8	12

□ OTP-HN High temperature Straight joint



Model	φD	R	L1	L2	φD1	Y
OPT-HN-06-G01	6	R1/8	7.5	24.7	12	12
OPT-HN-06-G02	6	R1/4	9.5	24.5	12	14
OPT-HN-06-G03	6	R3/8	10.5	23	12	17
OPT-HN-06-G04	6	R1/2	13.5	26	12	21
OPT-HN-08-G01	8	R1/8	7.5	28.7	14	14
OPT-HN-08-G02	8	R1/4	9.5	27.7	14	14
OPT-HN-08-G03	8	R3/8	10.5	22.7	14	17
OPT-HN-08-G04	8	R1/2	13.5	26	14	21
OPT-HN-10-G01	10	R1/8	7.5	31	16	16
OPT-HN-10-G02	10	R1/4	9.5	33	16	16
OPT-HN-10-G03	10	R3/8	10.5	27	16	17
OPT-HN-10-G04	10	R1/2	13.5	26	16	21

□ OTP-TN High temperature L joint



Model	φD	R	L1	L2	L3	φD1	Y
OPT-TN-06-G01	6	R1/8	7.5	19.5	23.5	12	10
OPT-TN-06-G02	6	R1/4	9.5	21.5	23.5	12	14
OPT-TN-06-G03	6	R3/8	10.5	23.5	23.5	12	17
OPT-TN-06-G04	6	R1/2	13.5	26.5	23.5	12	21
OPT-TN-08-G01	8	R1/8	7.5	21	25.7	14	12
OPT-TN-08-G02	8	R1/4	9.5	23	25.7	14	14
OPT-TN-08-G03	8	R3/8	10.5	24.5	25.7	14	17
OPT-TN-08-G04	8	R1/2	13.5	27.5	25.7	14	21
OPT-TN-10-G01	10	R1/8	7.5	22.5	29	16	14
OPT-TN-10-G02	10	R1/4	9.5	24.5	29	16	14
OPT-TN-10-G03	10	R3/8	10.5	26	29	16	17
OPT-TN-10-G04	10	R1/2	13.5	29	29	16	21

□ OTP-TN High temperature T joint



Model	φD	φD1	L1	L2
OTP-TN-06	6	12	50	25
OTP-TN-08	8	14	54.4	27.2
OTP-TN-10	10	16	64	32

□ Air tubes

PU	8X5	100
PTFE	Diameter	Length



Model	Out diameter (mm)	Inner Diameter (mm)	Working pressure (23°C, bar)	Burst pressure (23°C, bar)	Bending radius (mm)	Length/ Roller (m)
3x2	φ3	φ2	7.5	30	6	200
4x2	φ4	φ2	8	44	8	200
4x2.5	φ4	φ2.5	8	35	10	200
5x3	φ5	φ3	8	35	15	200
6x4	φ6	φ4	7.5	30	15	200
8x5	φ8	φ5	8	35	20	100
8x5.5	φ8	φ5.5	6	24	20	100
8x6	φ8	φ6	4	16	25	100
10x6.5	φ10	φ6.5	8	32	25	100
10x7.5	φ10	φ7.5	4	16	35	100
12x8	φ12	φ8	7.5	30	35	100
12x9.5	φ12	φ9.5	4	16	50	100
14x10	φ14	φ10	6	24	60	50
16x11	φ16	φ11	8	35	70	50
16x12	φ16	φ12	7.5	30	80	50

□ High temperature air tubes



PA	8X6	100
PTFE	Diameter	Length

□ Speciation

Material : PTFE
Burst pressure: referred to the below sheet.
Working pressure: Referred to the below sheet.
Applicable fluid : Air, water
Working pressure: Referred to the below sheet.
Working temperature: -15-200°C

Model	Out diameter (mm)	Inner diameter (mm)	Working pressure (20°C, bar)	Burst pressure (20°C, bar)	Bending radius (mm)	Length/ Roller (m)
4x2.5	φ4	φ2.5	15	72	15	200
6x4	φ6	φ4	18	90	23	200
8x6	φ8	φ6	15	72	36	100
10x8	φ10	φ8	12	60	45	100
12x9	φ12	φ9	15	72	54	100

□ High temperature sleeve



PAT	Inner Diameter	Length	Color
High temperature sleeve	20	As requirement	Black Orange Blue Yellow

□ Specification

Temperature: could be continuously worked at the temperature of 260°C, could be worked with 5-10mins. at the temperature of 1090 °C, and could be worked with 15-30 sec. at the temperature of 1650°C.