

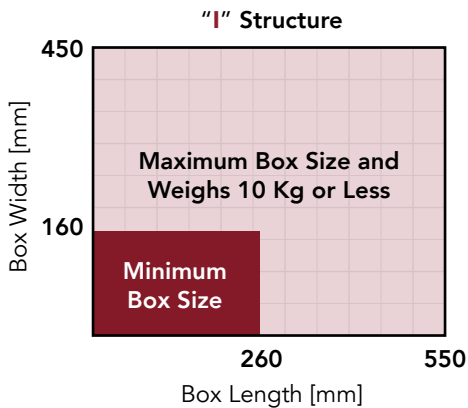
MICROTOOL PALLETIZING END EFFECTORS



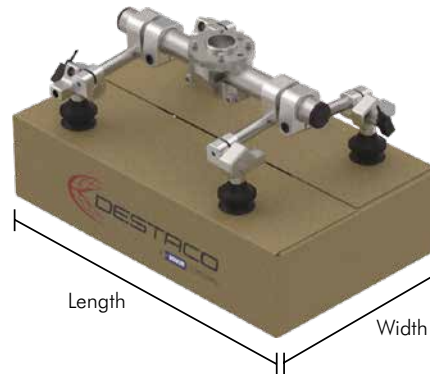
Palletization Tooling Selection

Microtool Palletizing End Effectors use an H and I structure to palletize boxes for Robots with a payload capacity up to 10Kg. The compatible "H" and "I" structure is determined by the box dimensions supported for each. Weight of the boxes is already considered within the 10Kg max payload.

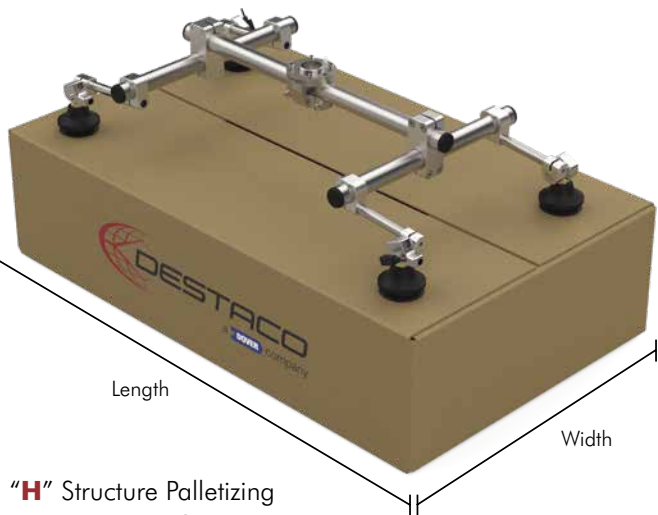
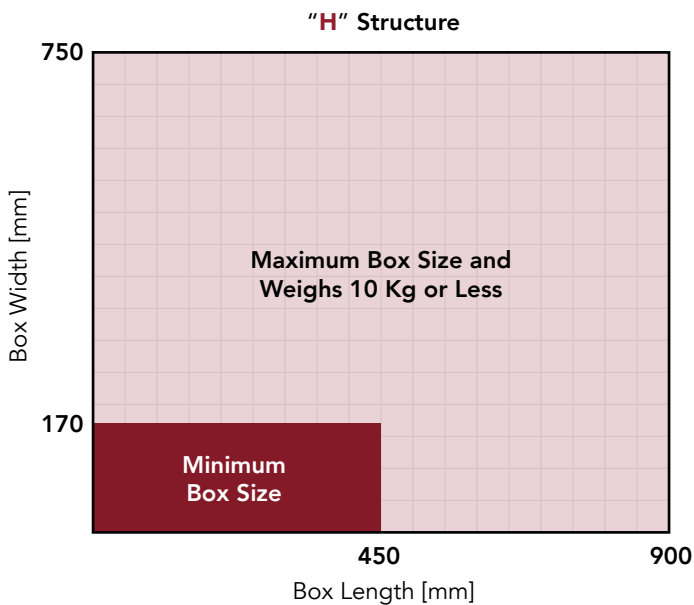
I-Structure Small to Medium Boxes <10kg



"I" Structure Palletizing
Box Length
260mm to 550mm
Box Width
160mm to 450mm



H-Structure Medium to Large Boxes <10kg



"H" Structure Palletizing
Box Length
450mm to 900mm
Box Width
170mm to 750mm

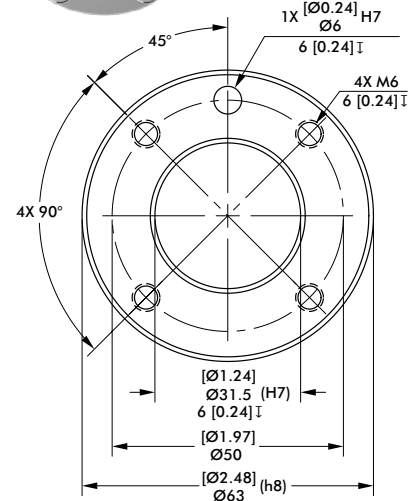
Contact DESTACO for additional Palletizing Solutions

MICROTOOL PALLETIZING END EFFECTORS

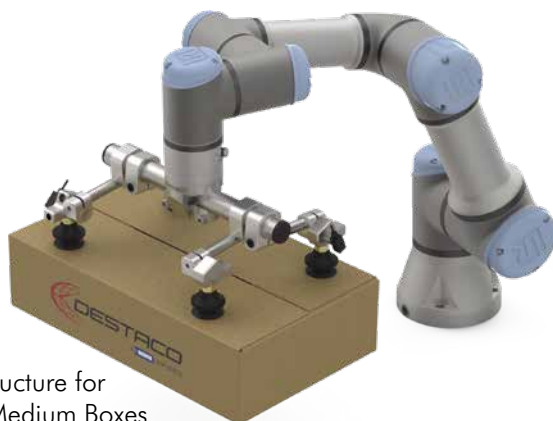
Compatibility Chart

CA-050-01 Robot Mounting Compatibility

Robot Manufacturer	Model
GENERIC	Any model with ISO-9409-1-50-4-M6 Pattern
ABB	CRB 15000
AUBO	I3, I5, I7, I10
DOBOT	CR - 5
Doosan Robotics	M0609,M1509,M1013,M0617
ESI	C-7, C-15
F&P PERSONAL ROBOTICS	P-ROB 2R-24V, 48V
FRANKA EMIKA	PANDA
HAN'S ROBOTS	ELFIN 3, 5, 10
HANWHA PRECISION MACHINERY	HCR-3, 5, 12
JAKA/KUNLIN	ZU 7, 12
KAWADA INDUSTRIES	NEXTAGE
KUKA	LBR iiwa 7 R800, LBR iiwa 14 R820
MODBOT	Robot, SCARA
Omron TM	TM 5 - 700, TM 5 - 900, TM 12, TM 14
RAINBOW ROBOTICS	RB5
REIS	RV10-6, RV20-6
ROZUM	PULSE 75, 90
SIASUN	GCR5, GCR14, GCR20, SCR3, SCR5
STAUBLI	TX2 90, TX2 TOUCH 90, TX2 TOUCH 90L, TX2 TOUCH 90XL
TECHMAN	TM5M-700, TM5M-900, TM12M, TM14M
UNIVERSAL ROBOTS	UR3, UR5, UR10, UR16



ISO-9409-1-50-4-M6
Robot Mounting Pattern



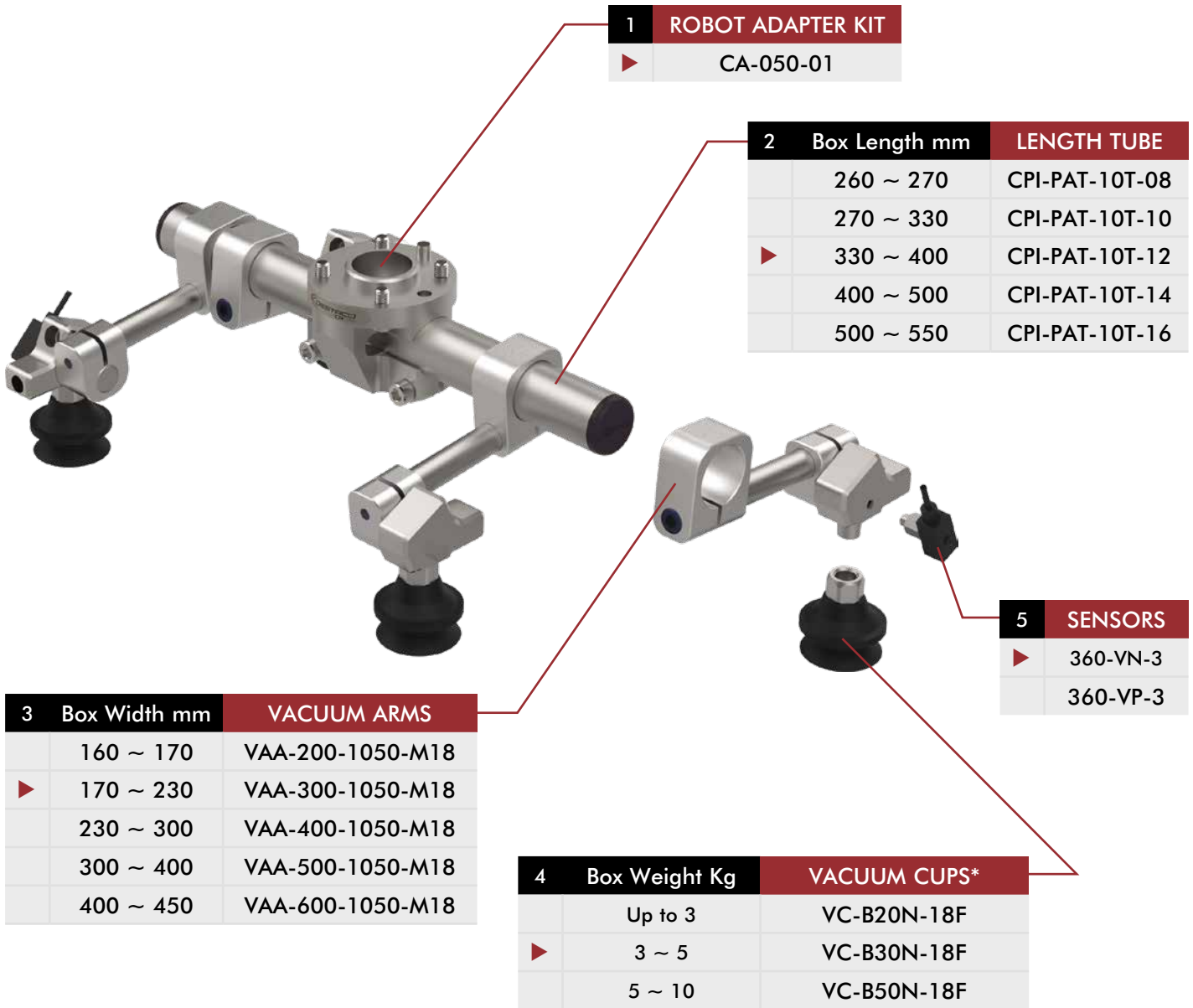
"I" Structure for
Small to Medium Boxes



"H" Structure for
Medium to Large Boxes

MICROTOOL PALLETIZING END EFFECTORS

"I" Structure for Small to Medium Boxes | Ordering Information



*Use next size cup if package weighs ≤ 3 kg, but length of box ≥ 360 or width of box ≥ 260 .
Use next size cup if package weighs between 3 to 5kg, but length of box ≥ 450 or width of box ≥ 350 .

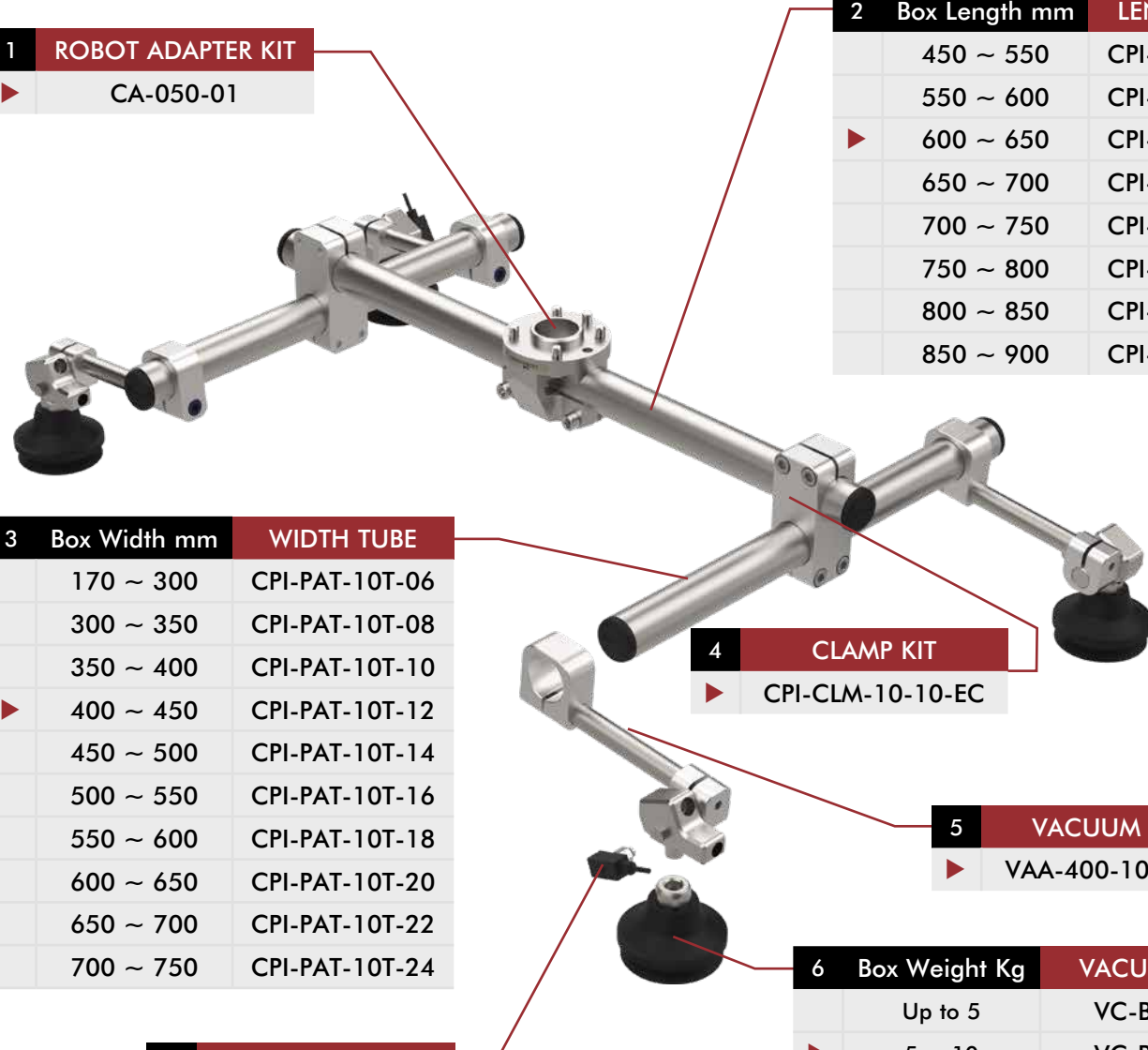
How To Order: (Example for above configured product)

Length of Box (mm) = 400 Width of Box (mm) = 220 Weight of Box (kg) = 6

	Order #	Description	Qty	Page
1	CA-050-01	Robot Adapter Kit	1	5
2	CPI-PAT-10T-12	Length Tube	1	6
3	VAA-300-1050-M18	Vacuum Arms	4	7
4	VC-B30N-18F	Vacuum Cups	4	9
5	360-VN-3	NPN Sensors	2	10

MICROTOOL PALLETIZING END EFFECTORS

"H" Structure for Medium to Large Boxes | Ordering Information



1 ROBOT ADAPTER KIT
▶ CA-050-01

2	Box Length mm	LENGTH TUBE
	450 ~ 550	CPI-PAT-10T-10
	550 ~ 600	CPI-PAT-10T-12
▶	600 ~ 650	CPI-PAT-10T-14
	650 ~ 700	CPI-PAT-10T-16
	700 ~ 750	CPI-PAT-10T-18
	750 ~ 800	CPI-PAT-10T-20
	800 ~ 850	CPI-PAT-10T-22
	850 ~ 900	CPI-PAT-10T-24

3	Box Width mm	WIDTH TUBE
	170 ~ 300	CPI-PAT-10T-06
	300 ~ 350	CPI-PAT-10T-08
	350 ~ 400	CPI-PAT-10T-10
▶	400 ~ 450	CPI-PAT-10T-12
	450 ~ 500	CPI-PAT-10T-14
	500 ~ 550	CPI-PAT-10T-16
	550 ~ 600	CPI-PAT-10T-18
	600 ~ 650	CPI-PAT-10T-20
	650 ~ 700	CPI-PAT-10T-22
	700 ~ 750	CPI-PAT-10T-24

4 CLAMP KIT
▶ CPI-CLM-10-10-EC

5 VACUUM ARMS
▶ VAA-400-1050-M18

6 Box Weight Kg **VACUUM CUPS***

	Up to 5	VC-B30N-18F
▶	5 ~ 10	VC-B50N-18F

7 VACUUMSENSORS

	360-VN-3
▶	360-VP-3

* Use next size cup, If package weighs ≤ 5kg, but length of box ≥ 550 or width of box ≥ 250.

How To Order: (Example for above configured product)

Length of Box (mm) = 600 Width of Box (mm) = 450 Weight of Box (kg) = 8

	Order #	Description	Qty	Page
1	CA-050-01	Robot Adapter Kit	1	5
2	CPI-PAT-10T-14	Length Tube	1	6
3	CPI-PAT-10T-12	Width Tube	2	7
4	CPI-CLM-10-10-EC	Clamp Kit	2	11
5	VAA-400-1050-M18	Vacuum Arms	4	7
6	VC-B50N-18F	Vacuum Cups	4	9
7	360-VP-3	PNP Sensors	2	10

MICROTOOL PALLETIZING END EFFECTORS

Robot Arm Adapter Kit | Ordering Information, Dimensions, Specifications

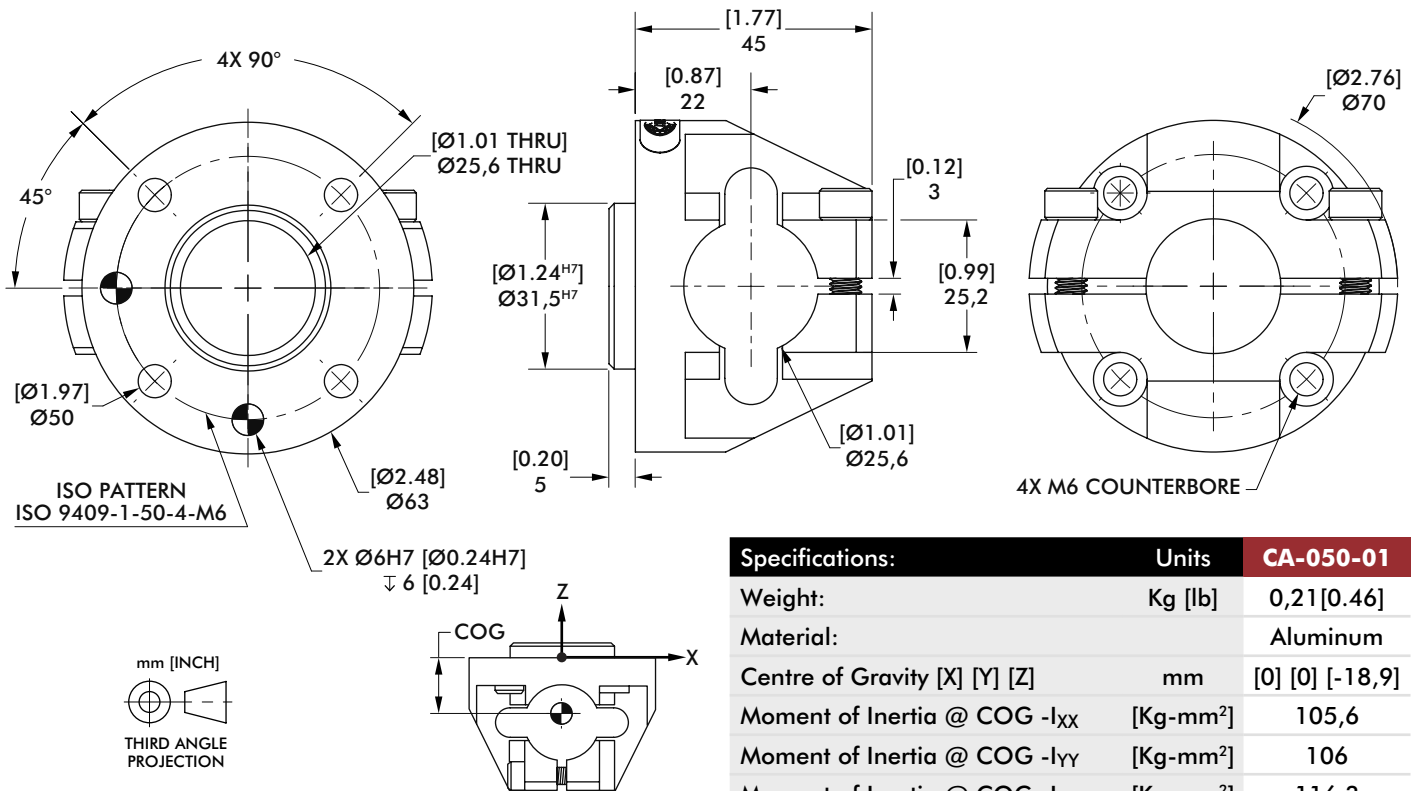


CA-050-01 Robot Adapter Kit



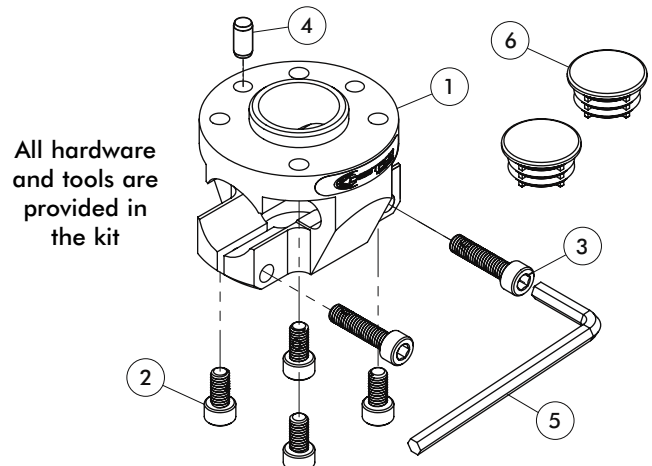
Fasteners, dowel pins included.

(general unit dimensions and specification shown)



CA-050-01 Robot Adapter Kit Components

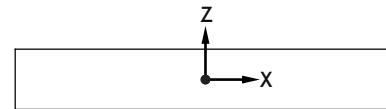
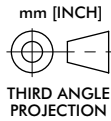
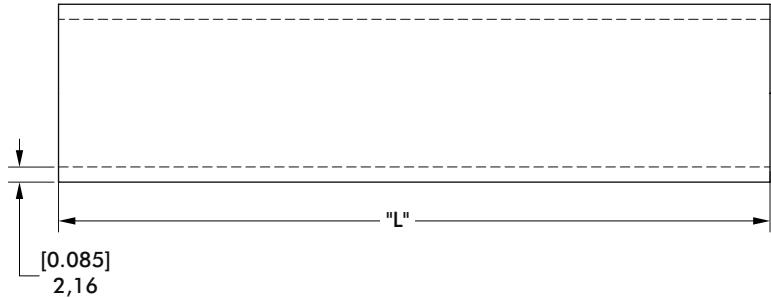
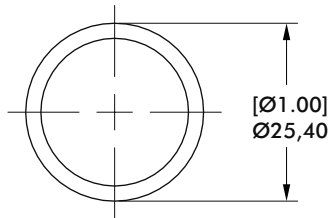
Item	Description	Quantity
1	ISO 50 Compound Adaptor Base	1
2	SHCS, M6 x 12mm, Stainless, Patchlock	4
3	SHCS, M6 x 25mm, Stainless, Patchlock	2
4	Dowel Pin, Ø6mm x 12mm, Stainless, 316	1
5	Wrench, Allen, 5mm Hex	1
6	1" Tube End Cap	2



MICROTOOL PALLETIZING END EFFECTORS

Length Tube | Ordering Information, Dimensions, Specifications

Length Tube Series Dia. Length [L]
CPI – **PAT** – **10T** – **XX**



Model	For Structure	Weight Kg [lb]	Material	Centre of Gravity			Moment of Inertia @ COG			Tube Length [L]: mm [In]
				[X]	[Y]	[Z]	I _{xx} [Kg-mm ²]	I _{yy} [Kg-mm ²]	I _{zz} [Kg-mm ²]	
CPI-PAT-10T-06	H	0,06 [0.13]	Aluminum	[0]	[0]	[0]	130	130	8,83	152,4 [6]
CPI-PAT-10T-08	I, H	0,09 [0.2]		[0]	[0]	[0]	303,5	303,5	11,78	203,2 [8]
CPI-PAT-10T-10	I, H	0,11 [0.24]		[0]	[0]	[0]	588,6	588,6	14,72	254 [10]
CPI-PAT-10T-12	I, H	0,13 [0.29]		[0]	[0]	[0]	1013,2	1013,2	17,7	304,8 [12]
CPI-PAT-10T-14	I, H	0,15 [0.33]		[0]	[0]	[0]	1605,2	1605,2	20,61	355,6 [14]
CPI-PAT-10T-16	I, H	0,17 [0.38]		[0]	[0]	[0]	2392,46	2392,46	23,56	406,4 [16]
CPI-PAT-10T-18	H	0,19 [0.42]		[0]	[0]	[0]	3402,93	3402,93	26,5	457,2 [18]
CPI-PAT-10T-20	H	0,22 [0.48]		[0]	[0]	[0]	4664,5	4664,5	29,5	508 [20]
CPI-PAT-10T-22	H	0,24 [0.53]		[0]	[0]	[0]	6205,03	6205,03	32,4	558,8 [22]
CPI-PAT-10T-24	H	0,26 [0.57]		[0]	[0]	[0]	8052,5	8052,5	35,34	609,6 [24]

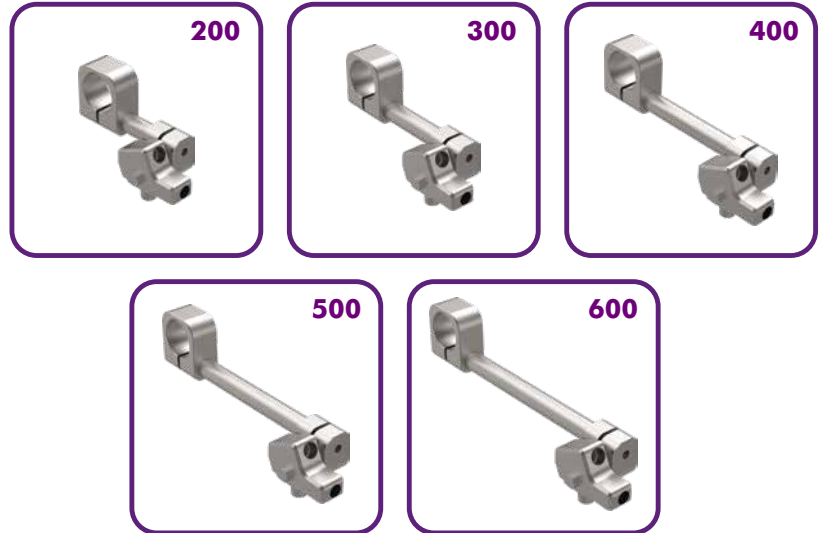
MICROTOOL PALLETIZING END EFFECTORS

Vacuum Arm | Ordering Information, Dimensions, Specifications

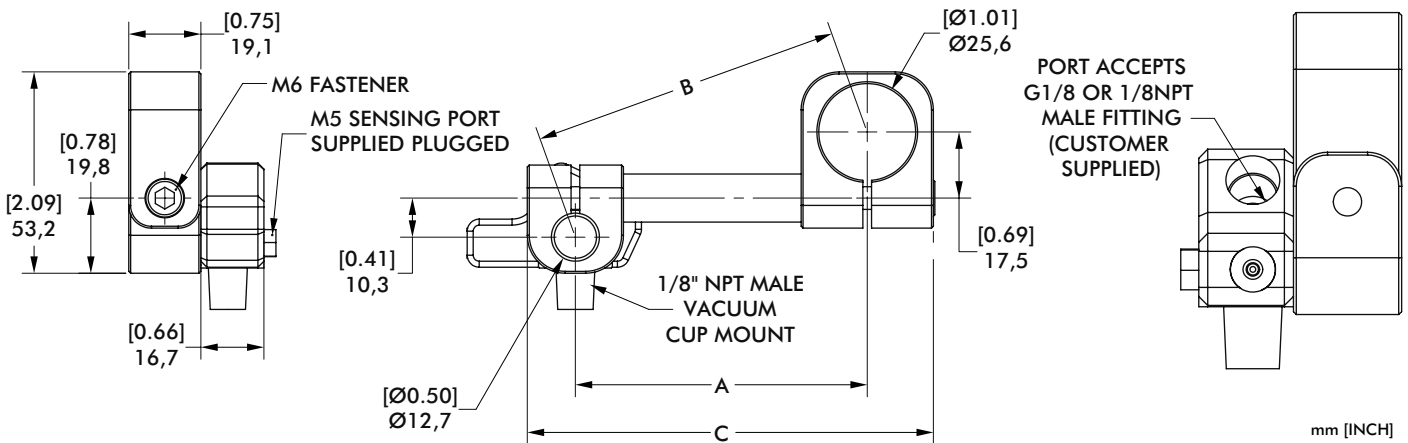


VAA-200-1050-M18
Shown

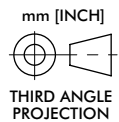
Vacuum Arm Assembly: **VAA** - Model: **XXX** - Tube Size: **1050** - Thread Size: **M18**



Model	For Structure	Weight: Kg [lb]	Material:	Min Operating Pressure: bar [psi]	Max Operating Pressure: bar [psi]	Air Consumption, Vacuum @ 1s: l/m [scfm]
VAA-200-1050-M18	I	0,09 [0.20]	Aluminum	3,4 [50]	5,5 [80]	40 [1.4]
VAA-300-1050-M18	I	0,10 [0.22]				
VAA-400-1050-M18	I, H	0,11 [0.24]				
VAA-500-1050-M18	I	0,12 [0.26]				
VAA-600-1050-M18	I	0,13 [0.28]				



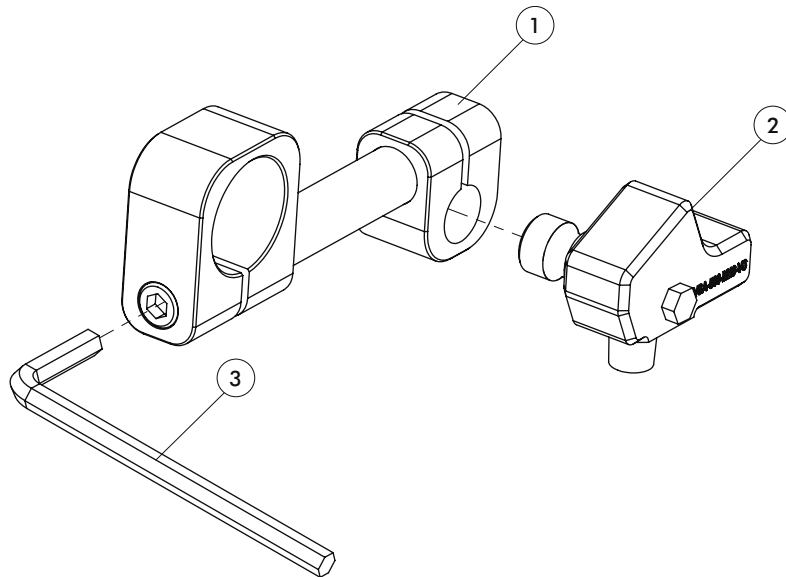
Dimension: mm [in]	VAA-200-1050-M18	VAA-300-1050-M18	VAA-400-1050-M18	VAA-500-1050-M18	VAA-600-1050-M18
A	50,7 [2.00]	76,1 [3.00]	101,6 [4.00]	127,0 [5.00]	152,4 [6.00]
B	56,6 [2.23]	80,2 [3.16]	104,7 [4.12]	129,5 [5.10]	154,4 [6.08]
C	77,7 [3.06]	104,4 [4.11]	129,0 [5.08]	156,0 [6.14]	180,0 [7.09]



MICROTOOL PALLETIZING END EFFECTORS

Vacuum Arm | Ordering Information

Part #	Item	Description	Quantity
VAA-200-1050-M18	1	Swivel Arm; CPI-200-1050-MSA	1
	2	Micro Tooling Venturi; CPI-VSA-500-M18	1
	3	5mm Hex Key Wrench	1
VAA-300-1050-M18	1	Swivel Arm; CPI-300-1050-MSA	1
	2	Micro Tooling Venturi; CPI-VSA-500-M18	1
	3	5mm Hex Key Wrench	1
VAA-400-1050-M18	1	Swivel Arm; CPI-400-1050-MSA	1
	2	Micro Tooling Venturi; CPI-VSA-500-M18	1
	3	5mm Hex Key Wrench	1
VAA-500-1050-M18	1	Swivel Arm; CPI-500-1050-MSA	1
	2	Micro Tooling Venturi; CPI-VSA-500-M18	1
	3	5mm Hex Key Wrench	1
VAA-600-1050-M18	1	Swivel Arm; CPI-600-1050-MSA	1
	2	Micro Tooling Venturi; CPI-VSA-500-M18	1
	3	5mm Hex Key Wrench	1



MICROTOOL PALLETIZING END EFFECTORS

Vacuum Cups | Ordering Information, Dimensions, Specifications



VC-B30N-18F
Shown

Vacuum Cup **VC** - Style **XXXX** - Thread Size **18F**



B20N

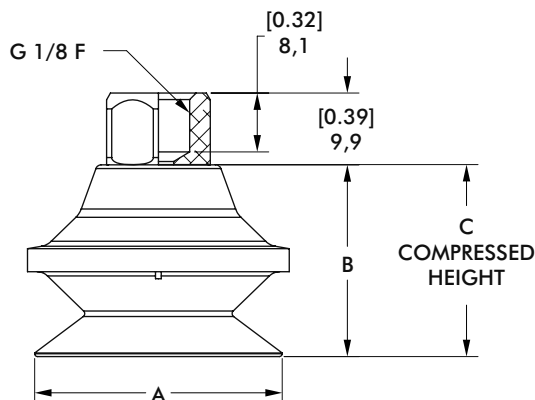
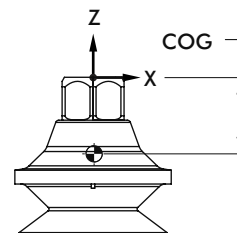
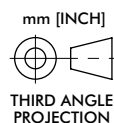
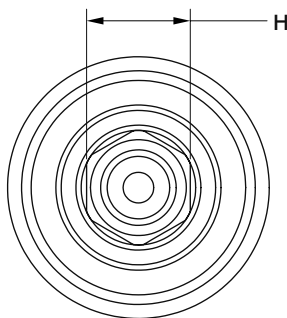


B30N



B50N

Model	For Structure	Weight: gm [oz]	Load: Kg [lb]	Cup Material	Center of Gravity [X] [Y] [Z]: mm	Moment of Inertia @ COG			Duro-meter:	Operating Temp: °C
						I _{xx} [Kg-mm ²]	I _{yy} [Kg-mm ²]	I _{zz} [Kg-mm ²]		
VC-B20N-18F	I	6,2 [0.20]	1,02 [2.25]	Nitrile	[0] [0] [11,2]	0,29	0,46	0,46	A50	-40 to 135
VC-B30N-18F	I, H	11,5 [0.37]	2,21 [4.88]		[0] [0] [17,6]	1,46	1,81	1,81		
VC-B50N-18F	H	30,5 [0.98]	6,63 [14.6]		[0] [0] [20,2]	7	7	7,31		



Application

- Non-porous cardboard
- Dry surfaces
- Moderately flat surfaces
- Moderate compression distance
- Minor misalignments via bellows compliance

Dimensions: mm [in]	VC-B20N-18F	VC-B30N-18F	VC-B50N-18F
A	22,4 [0.88]	34 [1.34]	52,8 [2.08]
B	17,5 [0.69]	26,4 [1.04]	34,5 [1.36]
C	7,6 [0.30]	11,4 [0.45]	14,5 [0.57]
H	14,2 [0.56]	14,2 [0.56]	14,2 [0.56]

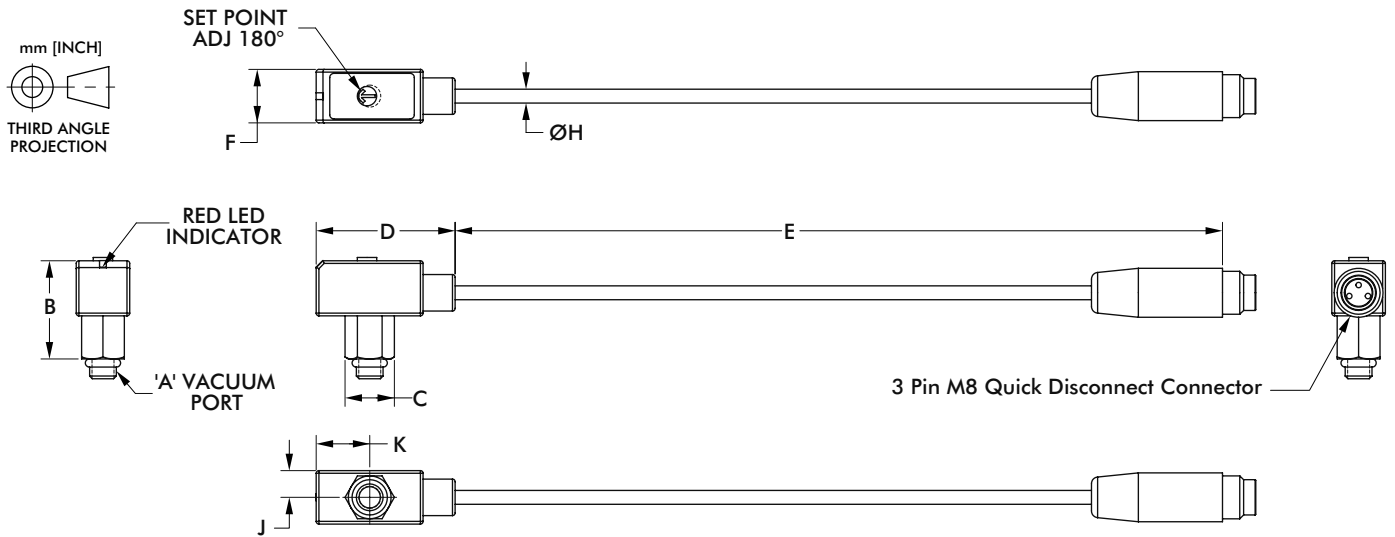
MICROTOOL PALLETIZING END EFFECTORS

Vacuum Sensors | Ordering Information, Dimensions, Specifications

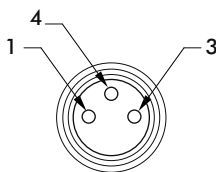


Series 360 - **Sensor Type** XX - **No. of Pins** 3

Part Number	Description
360-VN-3	NPN Vacuum Sensor
360-VP-3	PNP Vacuum Sensor



Part #	A	B	C	D	E	F	H	J	K
360-VX-3	[10-32] M5	[0.73] 18.57	[0.31] 7.95	[1.01] 25.73	[6.0] 152.4	[0.40] 10.11	[0.10] 2.54	[0.20] 5.05	[0.39] 9.96



QUICK DISCONNECT PIN OUT
PIN 1, BROWN, + VDC
PIN 4, BLACK, SWITCHED OUTPUT
PIN 3, BLUE, - VDC

Specification	360-VN-3/360-VP-3
Maximum Pressure:	29 psi [200 kPa]
Rated Vacuum Pressure Range:	0 to -29.5 inHG [0 to 100 kPa]
Temperature Range:	14°F to 122°F [-10°C to 60°C]
Electrical Connection:	-3 = 3-Pin Pico 8 mm Connector
Operating Voltage:	10.8 to 30 V DC (including ripple)
Current Consumption:	20 mA Max
Display:	Red LED
Circuit:	NPN, PNP
NPN Output Voltage	0.8 V DC Max
PNP Output Voltage:	1.8 V DC Max
Max Temperature	120 [250]

Easy Vacuum Setpoint Adjust

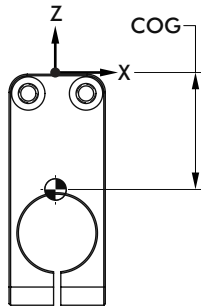
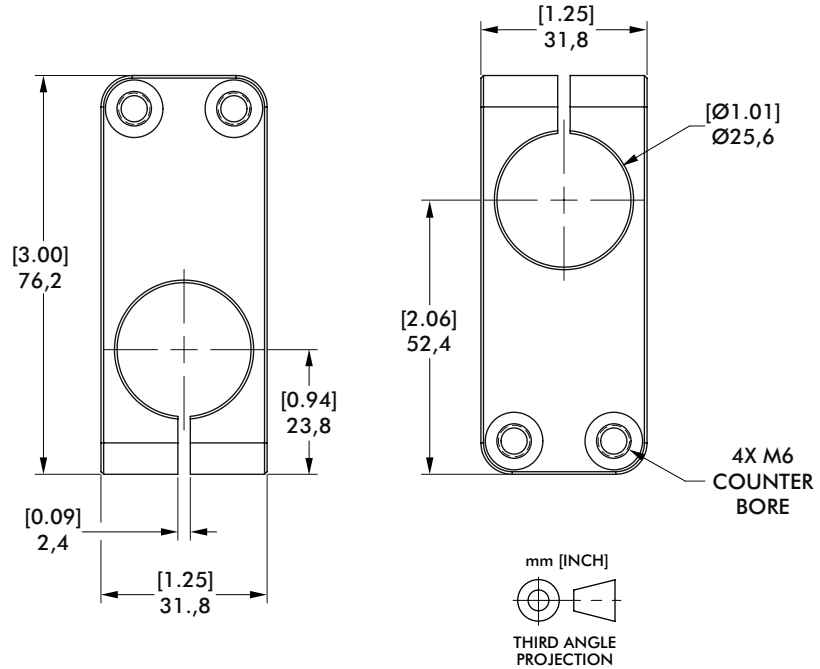
- Remove power and wire sensor per pin diagram.
- Set vacuum setpoint while vacuum cup maintains a gripped part.
- Increase vacuum by rotating setpoint clockwise.
- Decrease vacuum by rotating setpoint counter-clockwise.

MICROTOOL PALLETIZING END EFFECTORS

Clamp Kit Assembly | Ordering Information, Dimensions, Specifications



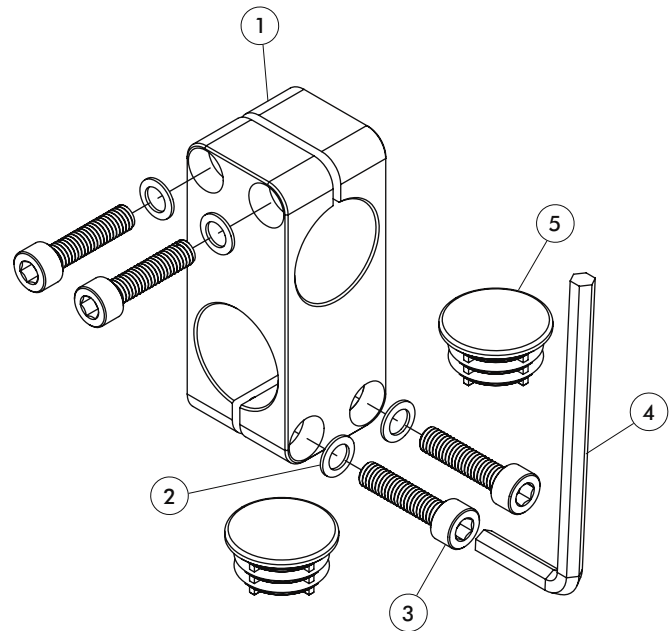
CPI-CLM-10-10-EC Clamp Kit



Specification	Units	CPI-CLM-10-10-EC
Weight:	Kg [lb]	0,13 [0.29]
Material:		Aluminum
Centre of Gravity [X] [Y] [Z]	mm	[0] [38,10] [0]
Moment of Inertia @ COG -I _{XX}	[Kg-mm ²]	106,54
Moment of Inertia @ COG -I _{YY}	[Kg-mm ²]	26,73
Moment of Inertia @ COG -I _{ZZ}	[Kg-mm ²]	106,54

CPI-CLM-10-10-EC Clamp Kit Components

Item	Description	Quantity
1	Clamp Block 1"	1
2	Ø6 Washer	4
3	Screw M6 x 25	4
4	Wrench Allen, 5mm	1
5	Tube End Cap 1"	2





MICROTOOL PALLETIZING END EFFECTORS

Notes

