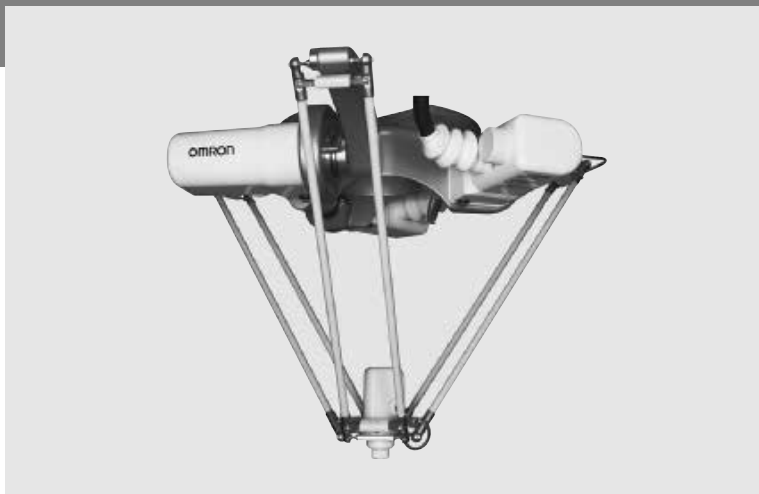


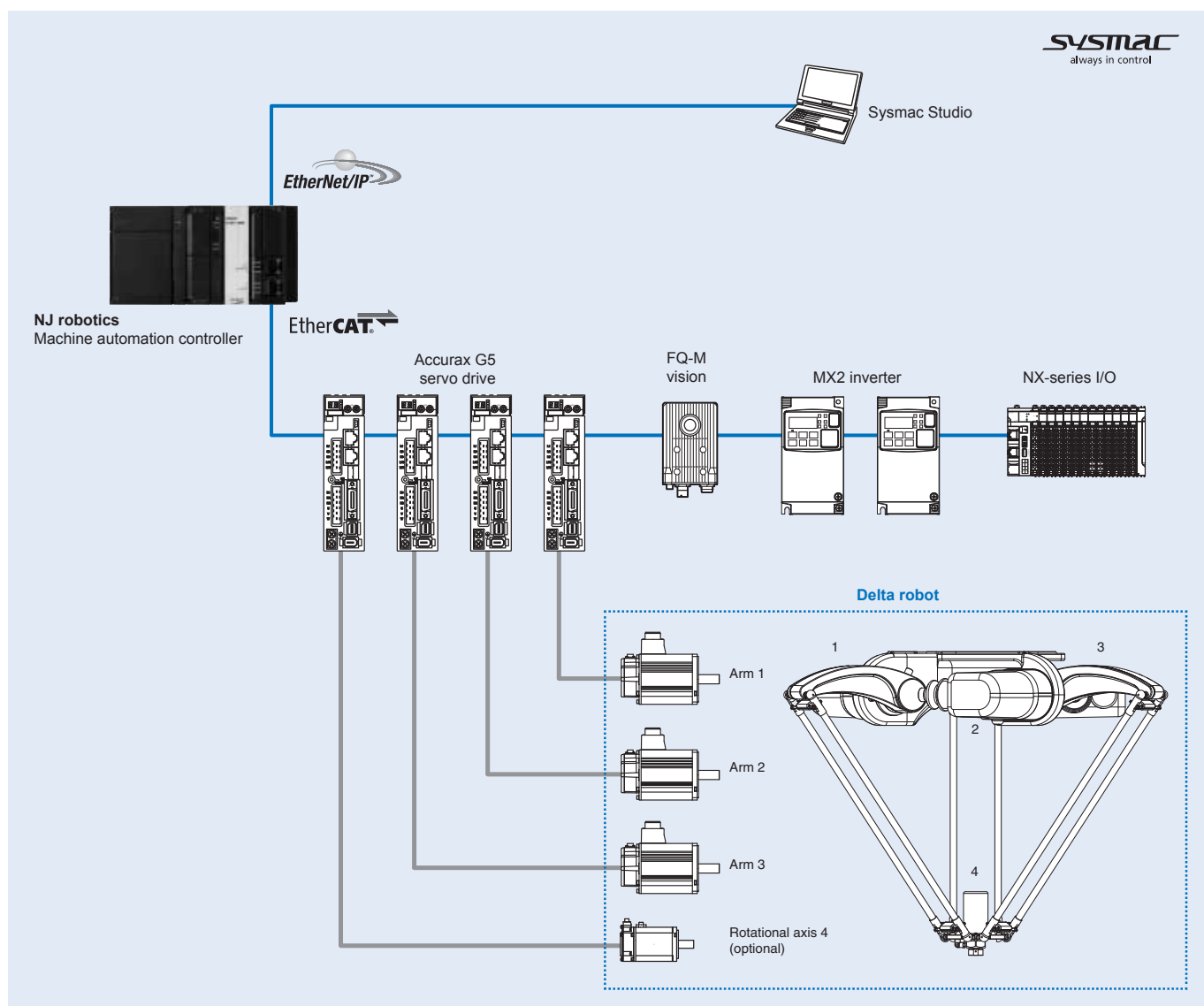
Delta robot

The fastest picking system integrated in the Sysmac platform

- Robot control integrated in the NJ robotics controller
- Control of up to 8 robots by one controller
- Degrees of freedom: 3 + 1 (rotational axis optional)
- Up to 200 cycle per minutes
- Up to 3 kg payload
- 2 different types of robot arms: Delta and Mini Delta robot models
- IP67 and IP65 models



System configuration



Note: Servo motors included in the Delta robot.

Specifications

Washdown Delta robot specifications

Model		R6Y31110H03067NJ5	R6Y31110L03067NJ5	R6Y30110S03067NJ5	
Working volume	X, Y axis (stroke)	Ø 1100 mm			
	Z axis (stroke) ¹	300 mm (maximum Ø 1100 mm) / 450 mm (center Ø 580 mm)			
	θ axis (rotation angle)	±180 deg (default setting, it can be changed)		–	
Servo motor	Arm 1, 2, 3	Model	R88M-K1K030T-BS2		
		Capacity	1000 W		
	Rotational axis 4	Model	R88M-K10030T-S2	R88M-K05030T-S2	–
		Capacity	100 W	50 W	–
Repeatability ²	X, Y, Z axis	±0.2 mm			
	θ axis	±0.1 deg		–	
Maximum payload	3 kg				
Maximum through-put ³	150 CPM ⁴				
θ axis tolerable moment of inertia ⁵	0.035 kgm ²		0.01 kgm ²	–	
User tubing (outer diameter)	Ø 6				
Travel limit	1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)				
Noise level	< 73.7 dB (A)				
Ambient temperature	0 to 45°C				
Relative humidity	Max. 85%				
Protection class	IP67				
Weight (kg)	75 kg				

¹ For further details please check the dimensional drawing in the next section.
² This is the value at a constant ambient temperature.
³ With 0.1 kg payload. When reciprocating 305 mm in horizontal and 25 mm in vertical directions.
⁴ CPM: Cycle per minutes. Check the note 3 for the cycle definition.
⁵ There are limits to acceleration coefficient settings.

Delta robot specifications

Model		CR_UGD4_R	CR_UGD4_NR	
Working volume	X, Y axis (stroke)	Ø 1100 mm		
	Z axis (stroke) ¹	250 mm (maximum Ø 1100 mm) / 400 mm (center Ø 580 mm)		
	θ axis (rotation angle)	±180 deg (default setting, it can be changed) –		
Servo motor	Arm 1, 2, 3	Model	R88M-K1K030T-BS2	
		Capacity	1000 W	
	Rotational axis 4	Model	R88M-K1K030T-BS2	–
		Capacity	1000 W	–
Repeatability ²	X, Y, Z axis	±0.3 mm		
	θ axis	±0.4 deg –		
Maximum payload	2 kg			
Maximum through-put ³	150 CPM ⁴			
θ axis maximum torque	According to the servo motor		–	
User tubing (outer diameter)	Ø 8 ⁵			
Travel limit	1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)			
Noise level	< 68 dB (A)			
Ambient temperature	5°C to 45°C			
Relative humidity	Max. 90%			
Protection class	IP65			
Weight (kg)	65 kg			

¹ For further details please check the dimensional drawing in the next section.
² This is the value at a constant ambient temperature.
³ With 0.1 kg payload. When reciprocating 305 mm in horizontal and 25 mm in vertical directions.
⁴ CPM: Cycle per minutes. Check the note 3 for the cycle definition.
⁵ Only for the air suctioning. The air injection is not allowed.

Mini Delta robot specifications

Model		CR_UGD4MINI_R	CR_UGD4MINI_NR	
Working volume	X, Y axis (stroke)	Ø 500 mm		
	Z axis (stroke) ¹	135 mm (maximum Ø 450 mm)	155 mm (maximum Ø 500 mm)	
	θ axis (rotation angle)	±180 deg (default setting, it can be changed)	–	
Servo motor	Arm 1, 2, 3	Model	R88M-K40030T-BS2	
		Capacity	400 W	
	Rotational axis 4	Model	R88M-K40030T-BS2	–
		Capacity	400 W	–
Repeatability ²	X, Y, Z axis	±0.2 mm		
	θ axis	±0.3 deg	–	
Maximum payload		1 kg		
Maximum through-put ³		200 CPM ⁴		
θ axis maximum torque		According to the servo motor		
User tubing (outer diameter)		Ø 8 ⁵		
Travel limit		1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)		
Noise level		< 68 dB (A)		
Ambient temperature		5°C to 45°C		
Relative humidity		Max. 90%		
Protection class		IP65		
Weight (kg)		25 kg		

¹ For further details please check the dimensional drawing in the next section.

² This is the value at a constant ambient temperature.

³ With 0.1 kg payload. When reciprocating 305 mm in horizontal and 25 mm in vertical directions.

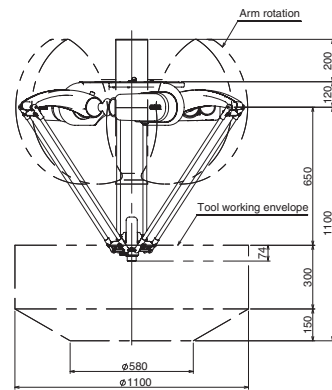
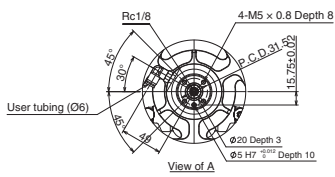
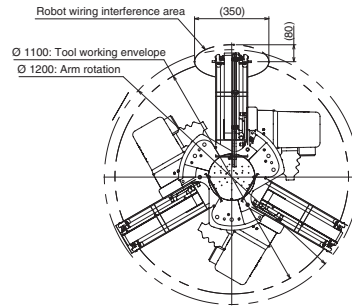
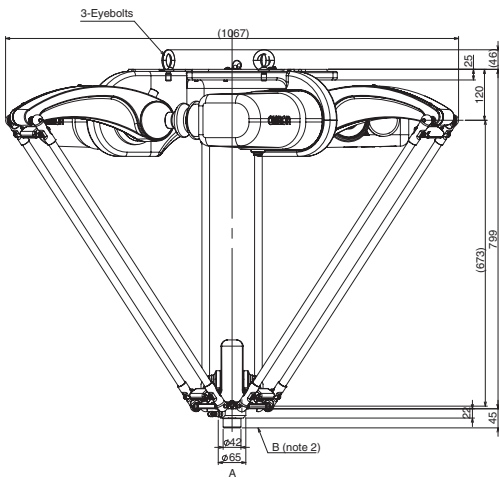
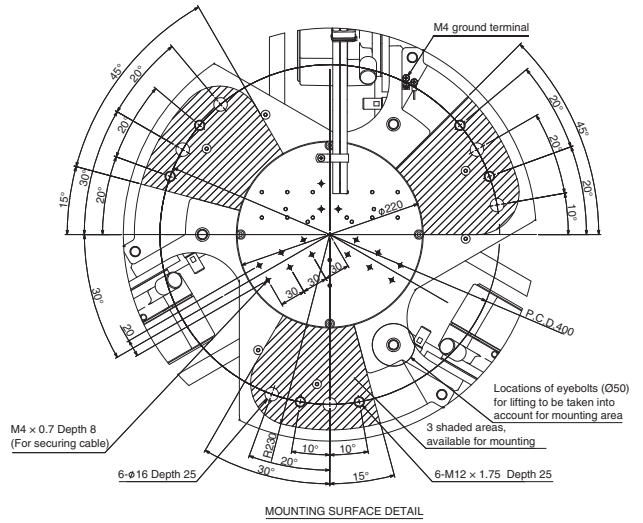
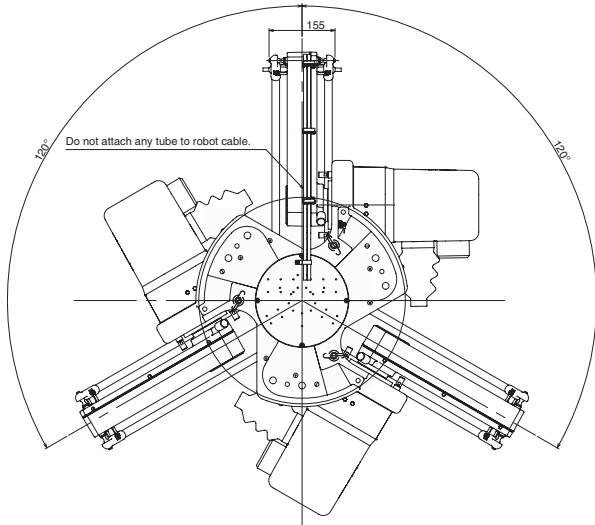
⁴ CPM: Cycle per minutes. Check the note 3 for the cycle definition.

⁵ Only for the air suctioning. The air injection is not allowed.

Dimensions

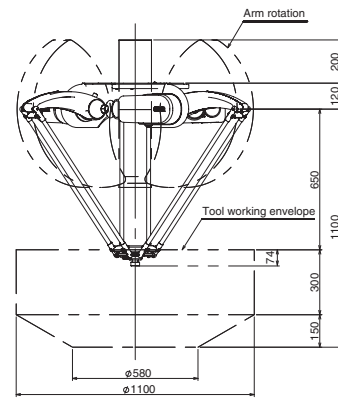
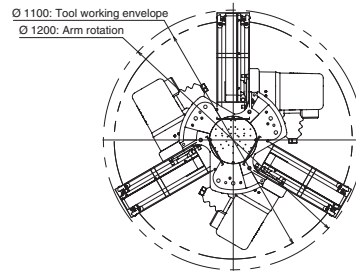
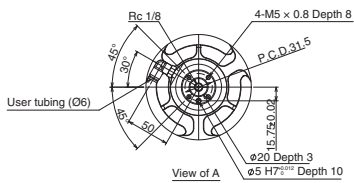
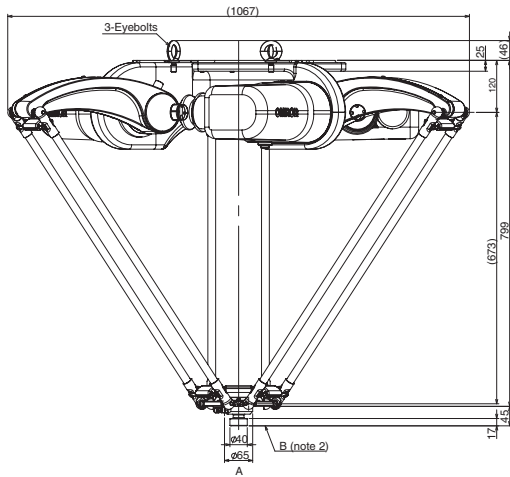
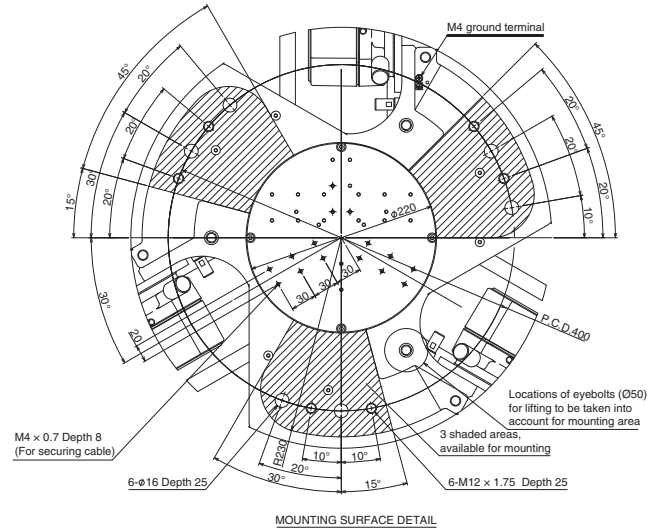
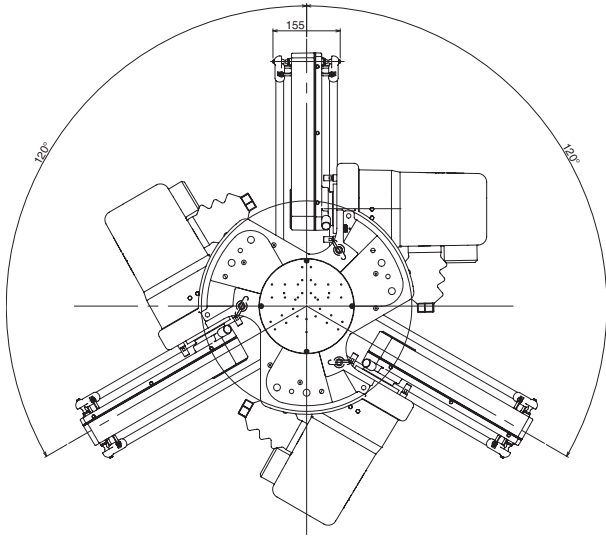
Washdown Delta robot dimensions

R6Y31110□03067NJ5 (3 axes + 1 rotational axis)



Note: The three areas of the robot base are available for mounting. Leave other area unoccupied for other needs (e.g. wiring). Also note the locations of the eyebolts when designing a mounting frame. Any part of end-effector should not stick out above the surface of B.

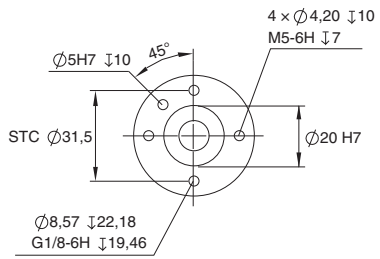
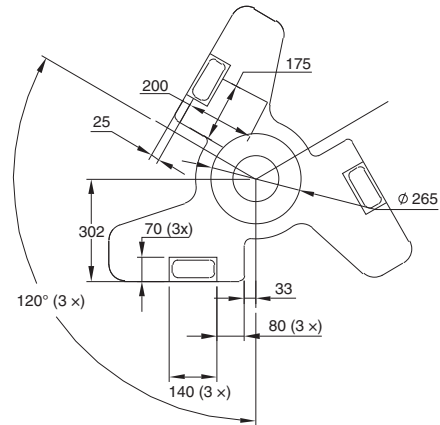
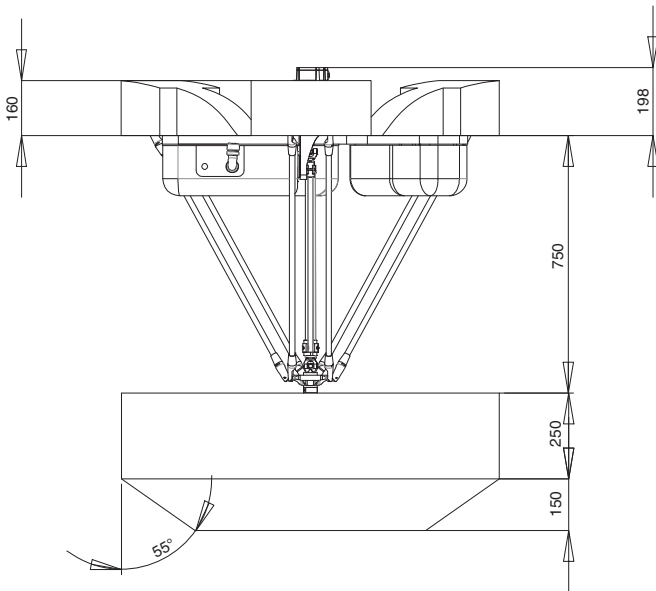
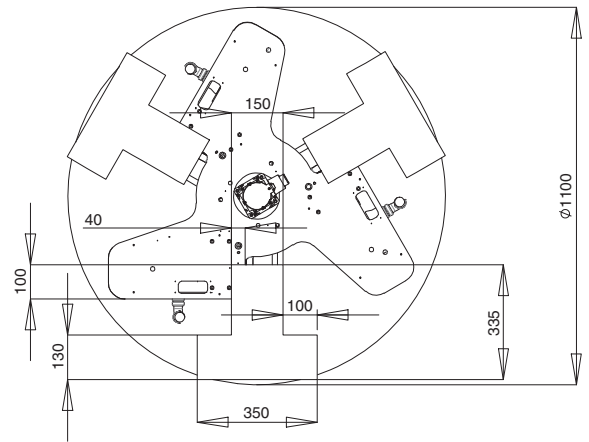
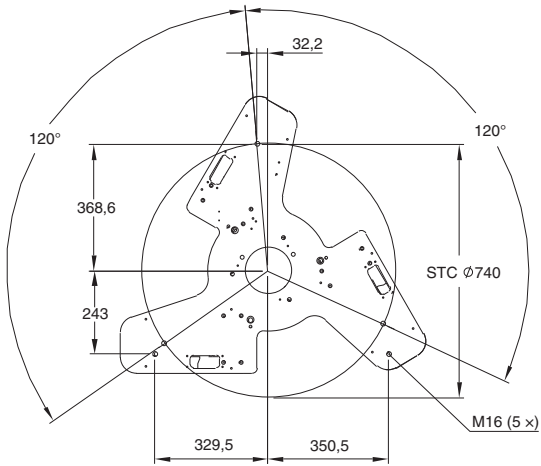
R6Y30110S03067NJ5 (3 axes)



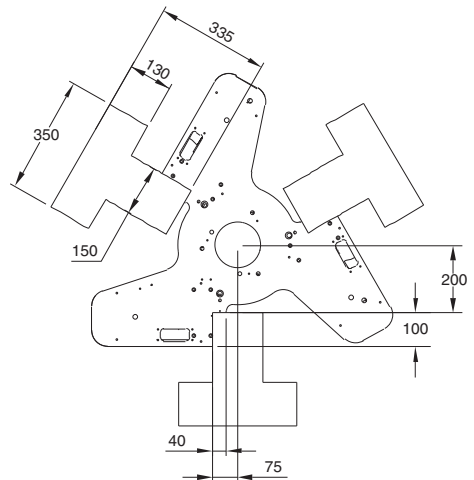
Note: The three areas of the robot base are available for mounting. Leave other area unoccupied for other needs (e.g. wiring). Also note the locations of the eyebolts when designing a mounting frame. Any part of end-effector should not stick out above the surface of B.

Delta robot dimensions

CR_UGD4_□R

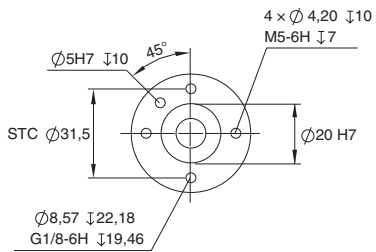
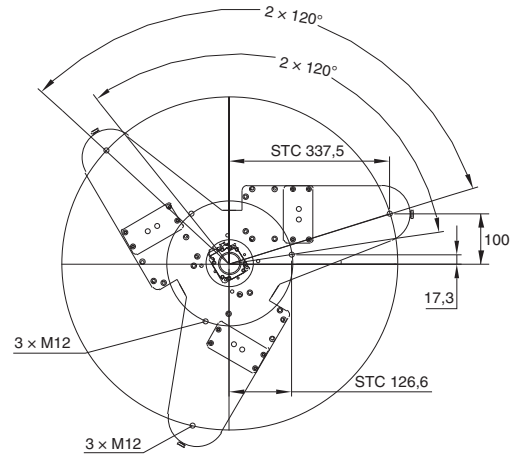
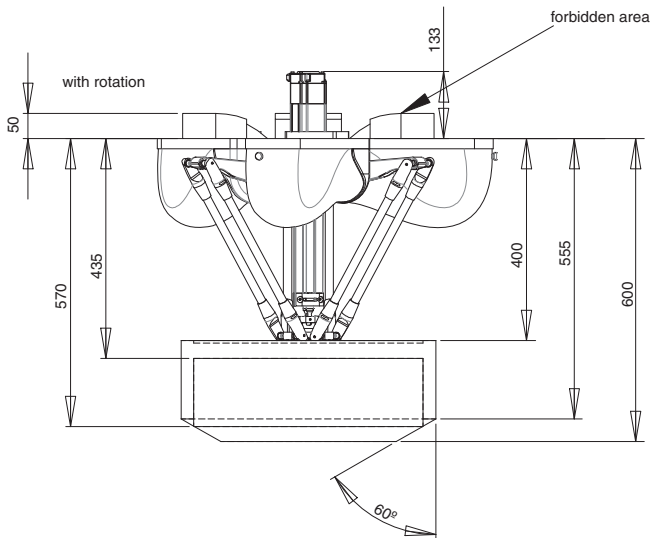
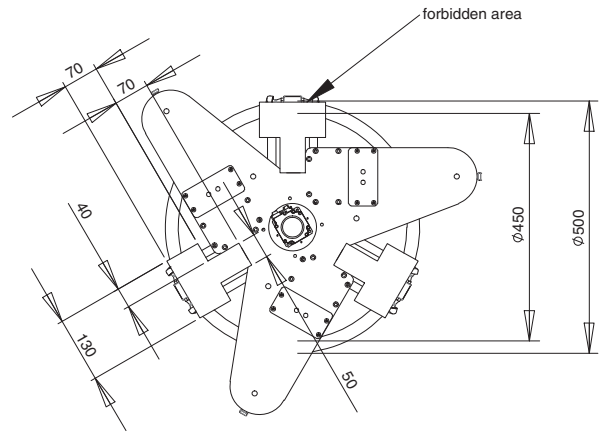
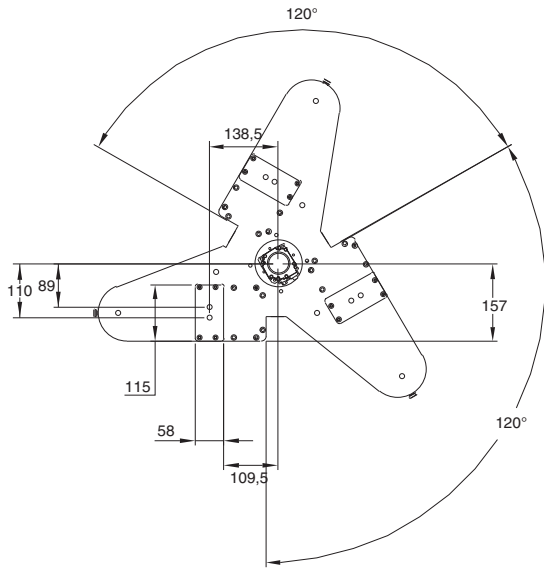


Gripper dimensions

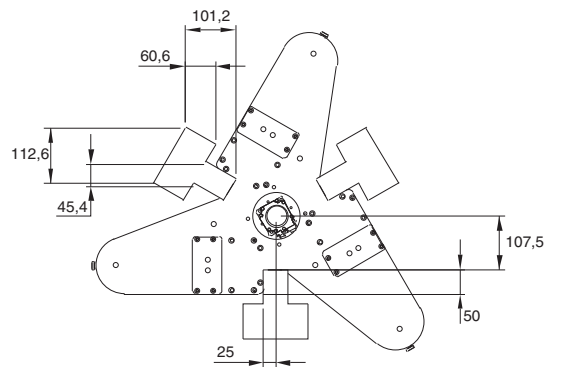


Mini Delta robot dimensions

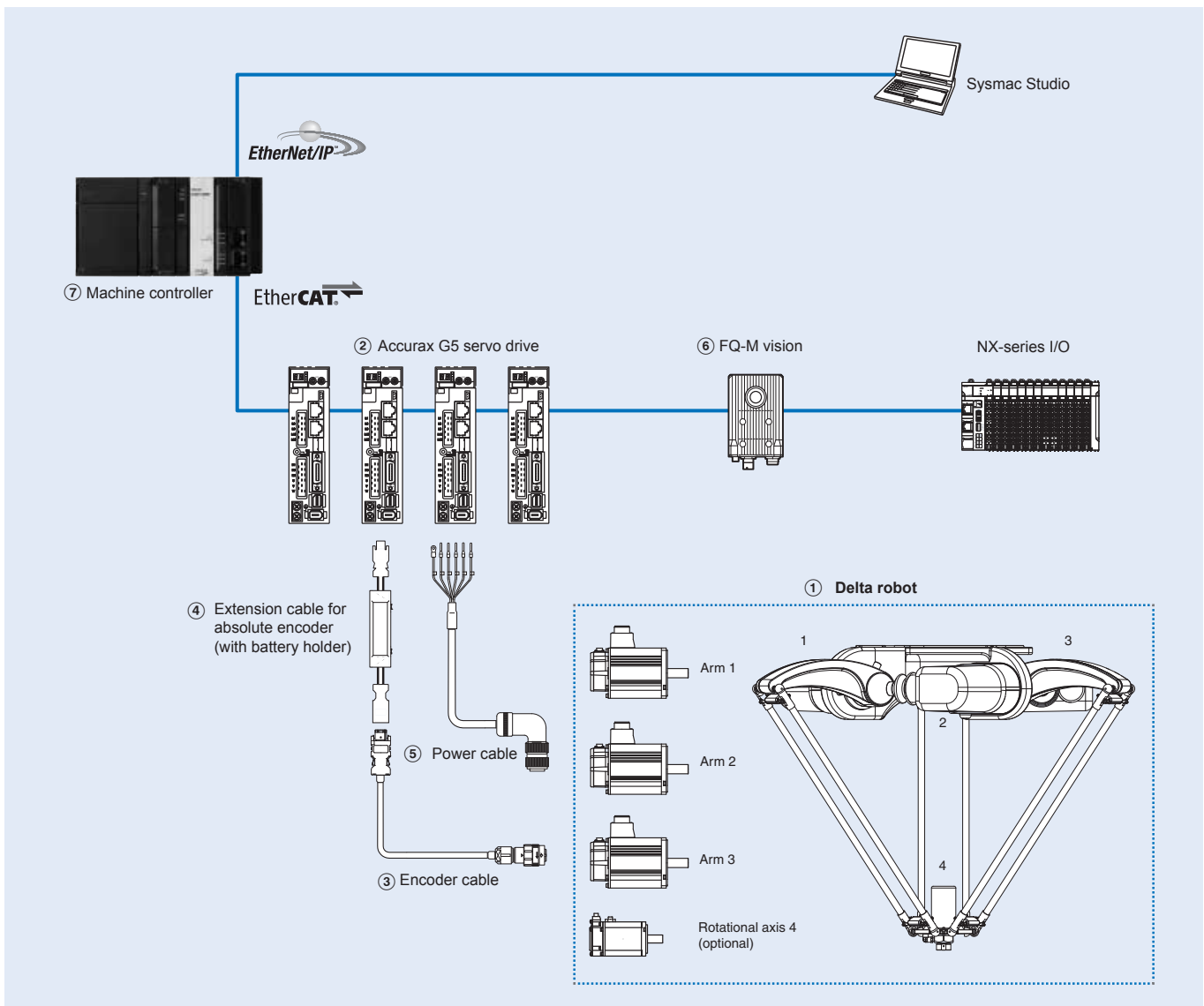
CR_UGD4MINI_□R



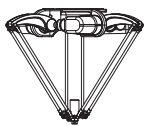
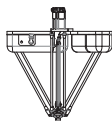

Gripper dimensions



Ordering information



Delta robot

Symbol	Model	Max. payload	Description	Axis	② Applicable servo drive		
 Washdown Delta robot	R6Y31110H03067NJ5	3 kg	3 axes	With high inertia rotational axis	Arm 1	R88D-KN15H-ECT	
					Arm 2	R88D-KN15H-ECT	
					Arm 3	R88D-KN15H-ECT	
					Rotational 4	R88D-KN01H-ECT	
		R6Y31110L03067NJ5	3 kg	3 axes	With low inertia rotational axis	Arm 1	R88D-KN15H-ECT
		Arm 2				R88D-KN15H-ECT	
		Arm 3				R88D-KN15H-ECT	
		Rotational 4				R88D-KN01H-ECT	
		R6Y30110S03067NJ5	3 kg	3 axes	Without rotational axis	Arm 1	R88D-KN15H-ECT
	Arm 2	R88D-KN15H-ECT					
	Arm 3	R88D-KN15H-ECT					
 Delta robot	CR_UGD4_R	2 kg	3 axes	With rotational axis	Arm 1	R88D-KN15H-ECT	
					Arm 2	R88D-KN15H-ECT	
					Arm 3	R88D-KN15H-ECT	
					Rotational 4	R88D-KN15H-ECT	
		CR_UGD4_NR	2 kg	3 axes	Without rotational axis	Arm 1	R88D-KN15H-ECT
	Arm 2	R88D-KN15H-ECT					
	Arm 3	R88D-KN15H-ECT					
 Mini Delta robot	CR_UGD4MINI_R	1 kg	3 axes	With rotational axis	Arm 1	R88D-KN04H-ECT	
					Arm 2	R88D-KN04H-ECT	
					Arm 3	R88D-KN04H-ECT	
					Rotational 4	R88D-KN04H-ECT	
		CR_UGD4MINI_NR	1 kg	3 axes	Without rotational axis	Arm 1	R88D-KN04H-ECT
		Arm 2				R88D-KN04H-ECT	
					Arm 3	R88D-KN04H-ECT	

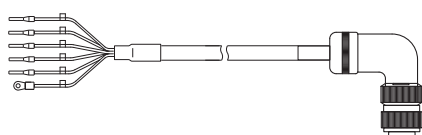
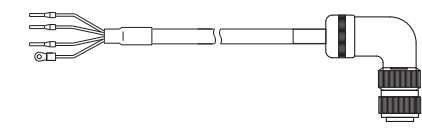
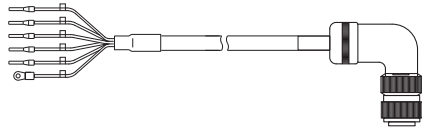
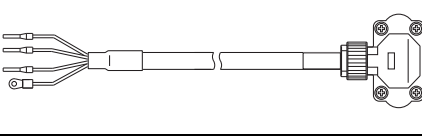
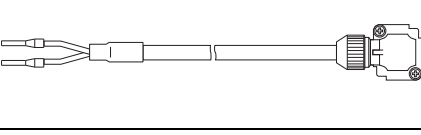
Encoder cables

Symbol	Applicable Delta robots	Model	Appearance
③	Washdown Delta robot / Delta robot	1.5 m	R88A-CRKC001-5NR-E
		3 m	R88A-CRKC003NR-E
		5 m	R88A-CRKC005NR-E
		10 m	R88A-CRKC010NR-E
		15 m	R88A-CRKC015NR-E
		20 m	R88A-CRKC020NR-E
	Mini Delta robot	1.5 m	R88A-CRKA001-5CR-E
		3 m	R88A-CRKA003CR-E
		5 m	R88A-CRKA005CR-E
		10 m	R88A-CRKA010CR-E
		15 m	R88A-CRKA015CR-E
		20 m	R88A-CRKA020CR-E

Absolute encoder battery cable (encoder extension cable only)

Symbol	Specifications	Model	Appearance	
④	Absolute encoder battery cable	Battery not included	0.3 m	R88A-CRGD0R3C-E
		Battery included	0.3 m	R88A-CRGD0R3C-BS-E
	Absolute encoder backup battery	2.000 mA.h, 3.6 V	—	R88A-BAT01G

Power cables

Symbol	Applicable Delta robots			Model	Appearance					
⑤	Washdown Delta robot	Arm 1, 2, 3	Power cable with brake	1.5 m	R88A-CAGB001-5BR-E					
				3 m	R88A-CAGB003BR-E					
				5 m	R88A-CAGB005BR-E					
				10 m	R88A-CAGB010BR-E					
				15 m	R88A-CAGB015BR-E					
		20 m	R88A-CAGB020BR-E							
		Rotational axis 4	Power cable without brake	1.5 m	R88A-CAGB001-5SR-E					
				3 m	R88A-CAGB003SR-E					
				5 m	R88A-CAGB005SR-E					
				10 m	R88A-CAGB010SR-E					
15 m	R88A-CAGB015SR-E									
20 m	R88A-CAGB020SR-E									
	Delta robot	Arm 1, 2, 3 and rotational axis 4	Power cable with brake	1.5 m	R88A-CAGB001-5BR-E					
				3 m	R88A-CAGB003BR-E					
				5 m	R88A-CAGB005BR-E					
				10 m	R88A-CAGB010BR-E					
				15 m	R88A-CAGB015BR-E					
20 m	R88A-CAGB020BR-E									
	Mini Delta robot	Arm 1, 2, 3 and rotational axis 4	Power cable	1.5 m	R88A-CAKA001-5SR-E					
				3 m	R88A-CAKA003SR-E					
				5 m	R88A-CAKA005SR-E					
				10 m	R88A-CAKA010SR-E					
				15 m	R88A-CAKA015SR-E					
			20 m	R88A-CAKA020SR-E						
			Brake cable					1.5 m	R88A-CAKA001-5BR-E	
								3 m	R88A-CAKA003BR-E	
								5 m	R88A-CAKA005BR-E	
								10 m	R88A-CAKA010BR-E	
15 m	R88A-CAKA015BR-E									
20 m	R88A-CAKA020BR-E									

Vision

Name	Type		Model
⑥ FQ-M series	Color	NPN	FQ-MS120-ECT
		PNP	FQ-MS125-ECT
	Monochrome	NPN	FQ-MS120-M-ECT
		PNP	FQ-MS125-M-ECT

Machine controller

Name	Delta robot		Axes	Model
⑦ NJ robotics	CPU unit	Control of up to 8 Delta robot depending on the number of axes supported by the CPU	64	NJ501-4500
			32	NJ501-4400
			16	NJ501-4300
			16	NJ501-4310
	Power supply unit			NJ-PA3001 (220 VAC)
			NJ-PD3001 (24 VDC)	

Computer software

Specifications	Model
Sysmac Studio version 1.03 or higher	SYSMAC-SE2□□□

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.