

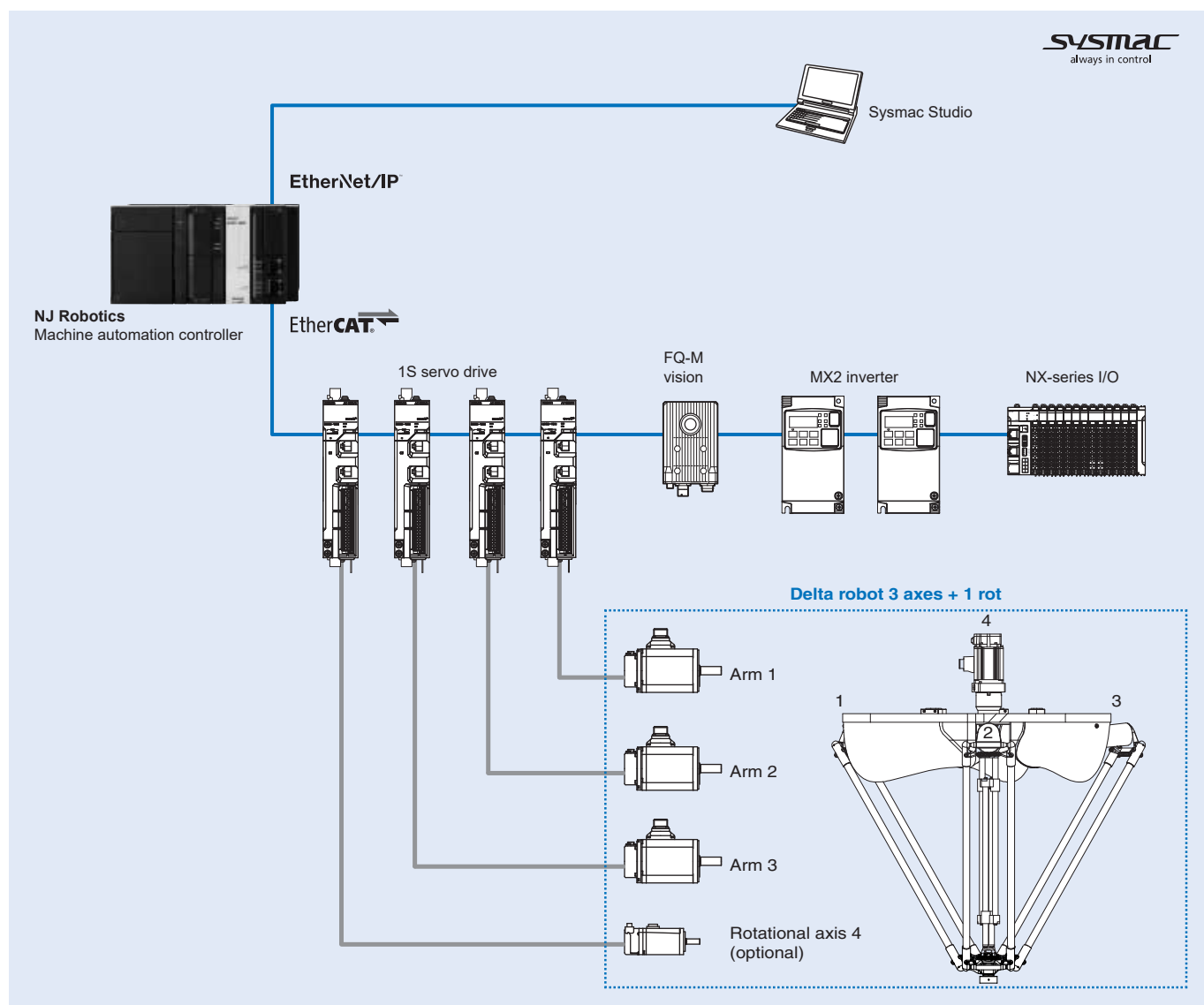
Delta robot 3 axes + 1 rot

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 minute
- Models from 500 to 1,600 mm working range
- Payload range: 1 to 10 kg
- Different types of Delta robot arms
- IP class range: IP65, IP69K
- Anti-collision detection option



System configuration



Note: Servo motors included in the Delta robot.

Specifications

Delta robot 3 axes + 1 rot series

IP69K protection class models

Model			CR_UGD4_XL_HD□		CR_UGD4_HD□		CR_UGD4_XS_HD□	
			With rotational axis	Without rotational axis	With rotational axis	Without rotational axis	With rotational axis	Without rotational axis
Working volume	X, Y axis (stroke)		Ø 1,300 mm		Ø 1,100 mm		Ø 650 mm	
	Z axis (stroke) ^{*1}		250 mm (maximum Ø 1,300 mm) 400 mm (center Ø 870 mm)		250 mm (maximum Ø 1,100 mm) 400 mm (center Ø 670 mm)		200 mm (maximum Ø 650 mm) 270 mm (center Ø 407.5 mm)	
	θ axis (rotation angle)		±180 deg (default setting, it can be changed)	-	±180 deg (default setting, it can be changed)	-	±180 deg (default setting, it can be changed)	-
Servo motor	Arm 1, 2, 3	Model	R88M-K1K030T-BS2-V2					
		Capacity	1,000 W					
	Rotational axis 4	Model	R88M-K75030T-BS2	-	R88M-K75030T-BS2	-	R88M-K75030T-BS2	-
		Capacity	750 W	-	750 W	-	750 W	-
Repeatability ^{*2}	X, Y, Z axis		±0.2 mm					
	θ axis		±0.3 deg	-	±0.3 deg	-	±0.3 deg	-
Maximum payload			2 kg					
Maximum through-put ^{*3}			120 CPM ^{*4}		150 CPM ^{*4}		170 CPM ^{*4}	
Gear box ratio	X, Y, Z axis		1:31					
	θ axis		1:10	-	1:10	-	1:10	-
θ axis torque limitation			7 Nm	-	7 Nm	-	7 Nm	-
Travel limit			1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)					
Noise level			< 68 dB (A)					
Ambient temperature			Operating: 5°C to 45°C Storage: -25°C to 60°C					
Relative humidity			Max. 90%					
Protection class			IP69K					
Weight			100 kg					

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

²2. This is the value at a constant ambient temperature.

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

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

IP65 protection class models

Model			CR_UGD4_XXLH		CR_UGD4_XXL1300H	
			With rotational axis	Without rotational axis	With rotational axis	Without rotational axis
Working volume	X, Y axis (stroke)		Ø 1,600 mm		Ø 1,300 mm	
	Z axis (stroke) ¹		350 mm (maximum Ø 1,600 mm) 550 mm (center Ø 814 mm)		300 mm (maximum Ø 1,300 mm) 450 mm (center Ø 780 mm)	
	θ axis (rotation angle)		±180 deg (default setting, it can be changed)		-	±180 deg (default setting, it can be changed)
Servo motor	Arm 1, 2, 3	Model	R88M-1L3K030C-BS2			
		Capacity	3,000 W			
	Rotational axis 4	Model	R88M-1L1K030C-BS2	-	R88M-1L1K030C-BS2	-
		Capacity	1,000 W	-	1,000 W	-
Repeatability ²	X, Y, Z axis		±0.5 mm			
	θ axis		±0.3 deg		-	±0.3 deg
Maximum payload			10 kg			
Maximum through-put ³			80 CPM ⁴		90 CPM ⁴	
Gear box ratio	X, Y, Z axis		1:38,5			
	θ axis		1:20		-	1:20
θ axis torque limitation			19 Nm		-	19 Nm
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			115 kg			

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

²2. This is the value at a constant ambient temperature.

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

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

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

Model			CR_UGD4_XL		CR_UGD4	
			With rotational axis	Without rotational axis	With rotational axis	Without rotational axis
Working volume	X, Y axis (stroke)		Ø 1,300 mm		Ø 1,100 mm	
	Z axis (stroke) ^{*1}		250 mm (maximum Ø 1,300 mm) 400 mm (center Ø 870 mm)		250 mm (maximum Ø 1,100 mm) 400 mm (center Ø 670 mm)	
	θ axis (rotation angle)		±180 deg (default setting, it can be changed)	-	±180 deg (default setting, it can be changed)	-
Servo motor	Arm 1, 2, 3	Model	R88M-1L1K030T-BS2			
		Capacity	1,000 W			
	Rotational axis 4	Model	R88M-1L1K030T-BS2	-	R88M-1L1K030T-BS2	-
		Capacity	1,000 W	-	1,000 W	-
Repeatability ^{*2}	X, Y, Z axis		±0.2 mm		±0.3 mm	
	θ axis		±0.3 deg	-	±0.4 deg	-
Maximum payload			2 kg			
Maximum through-put ^{*3}			120 CPM ^{*4}		150 CPM ^{*4}	
Gear box ratio	X, Y, Z axis		1:31			
	θ axis		1:10	-	1:10	-
θ axis torque limitation			7 Nm	-	7 Nm	-
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			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.

Model			CR_UGD4MINI	
			With rotational axis	Without rotational axis
Working volume	X, Y axis (stroke)		Ø 500 mm	
	Z axis (stroke) ^{*1}		130 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-1M40030T-BS2	
		Capacity	400 W	
	Rotational axis 4	Model	R88M-1M40030T-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}	
Gear box ratio	X, Y, Z axis		1:25	
	θ axis		1:1	
θ axis torque limitation			7 Nm	-
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 ^{*6}	
Weight			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.

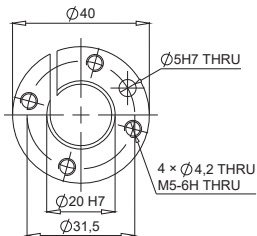
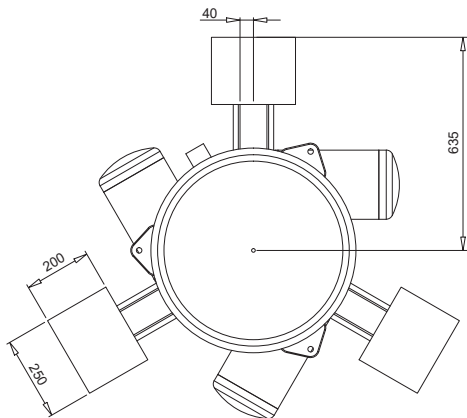
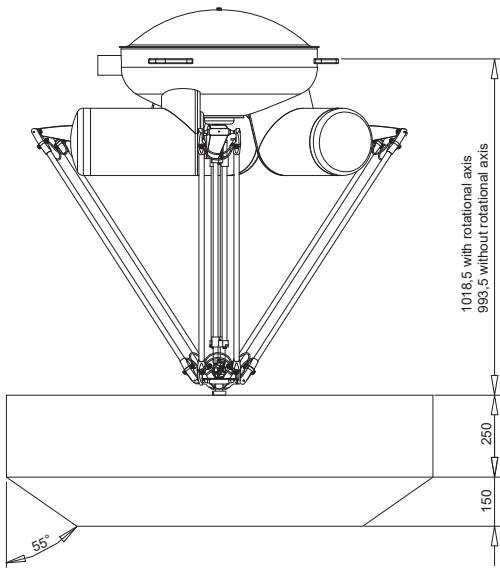
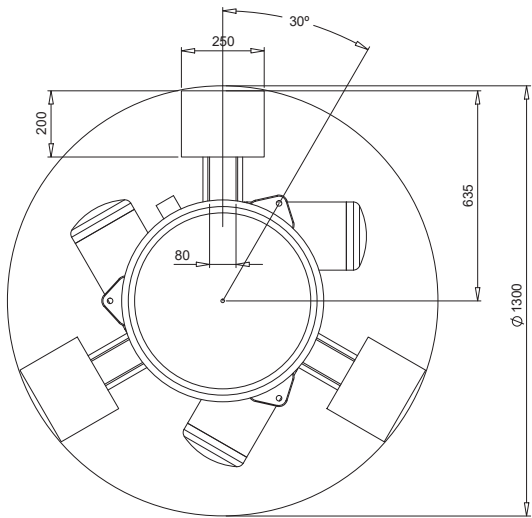
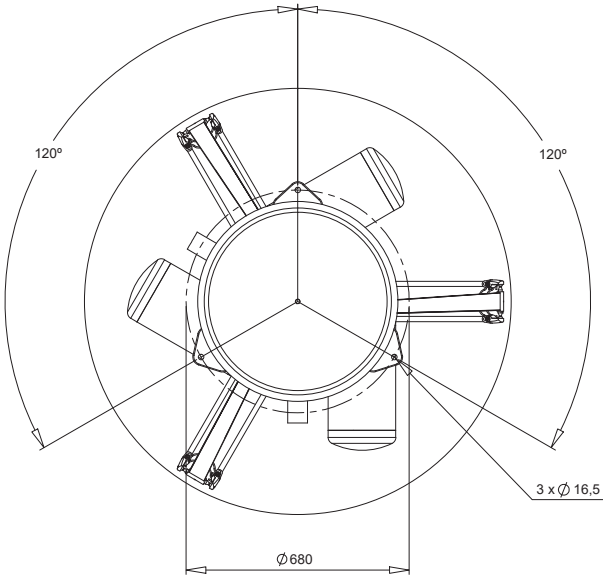
*5. Only for the air suctioning. The air injection is not allowed.

*6. The CR_UGD4MINI_□_TS models are delivered standard with stainless steel + titanium secondary arms.

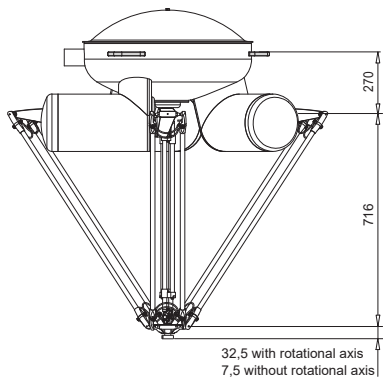
Dimensions

IP69K protection class models

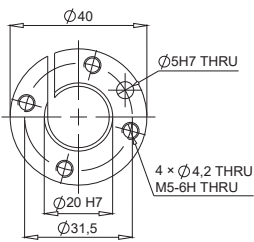
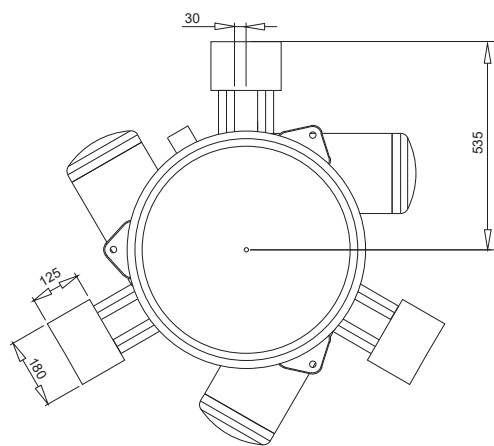
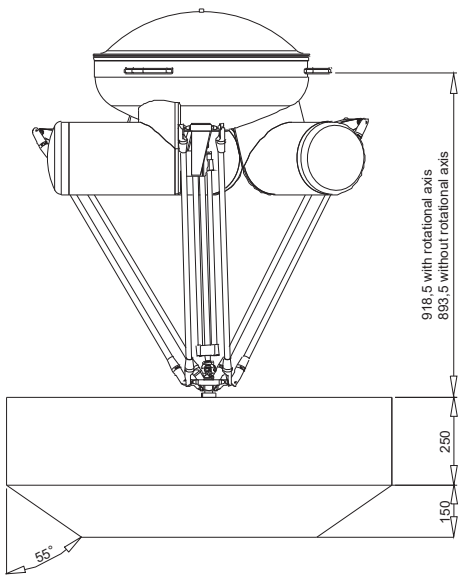
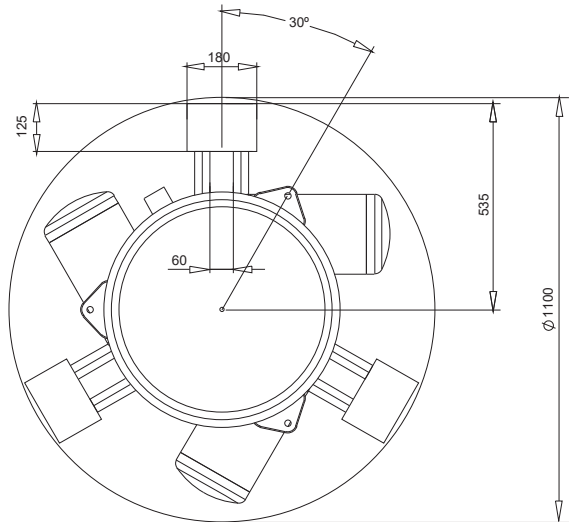
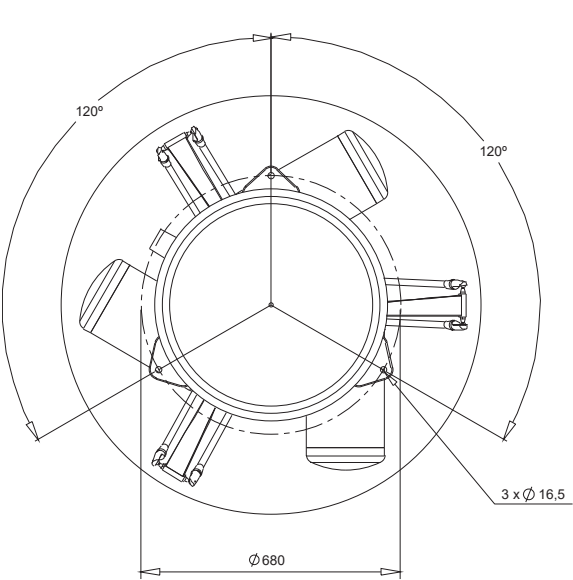
CR_UGD4_XL_□R_HD□



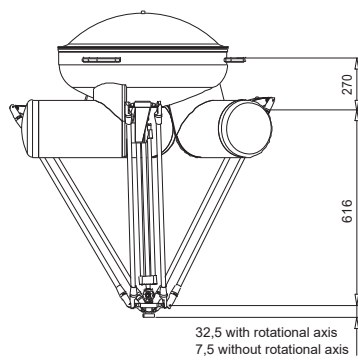
Gripper dimensions

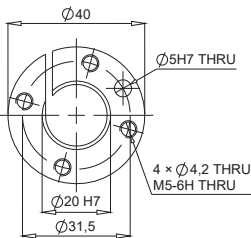
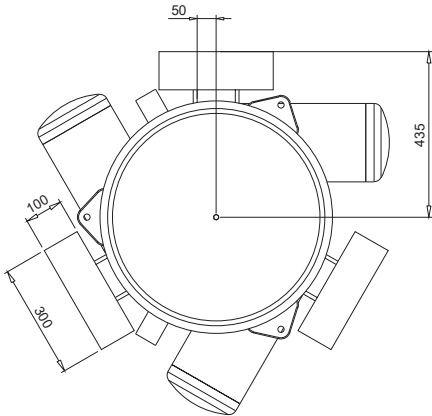
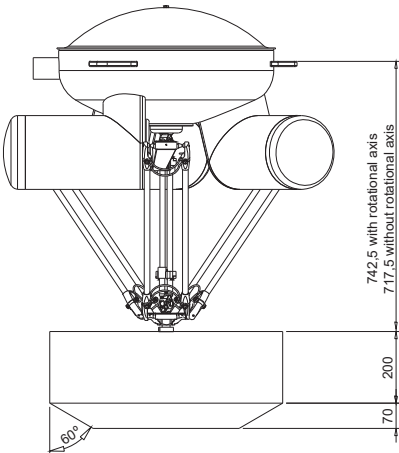
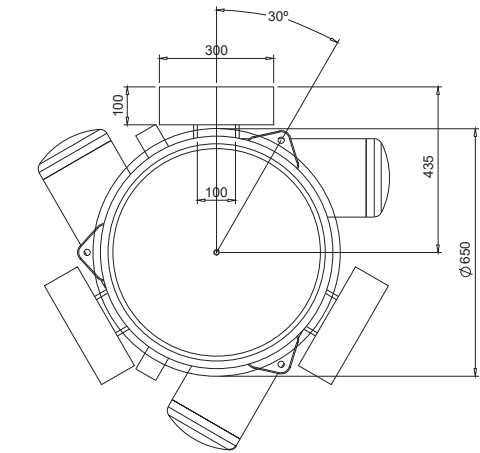
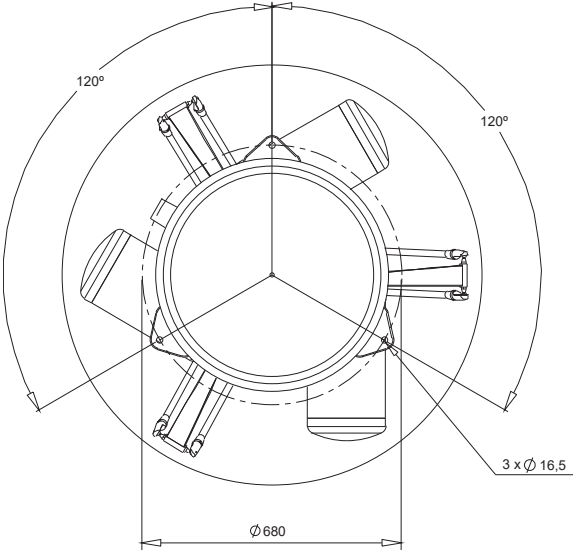


CR_UGD4_□R_HD□

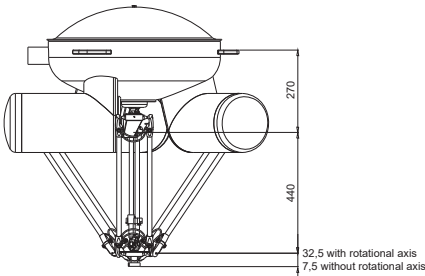


Gripper dimensions



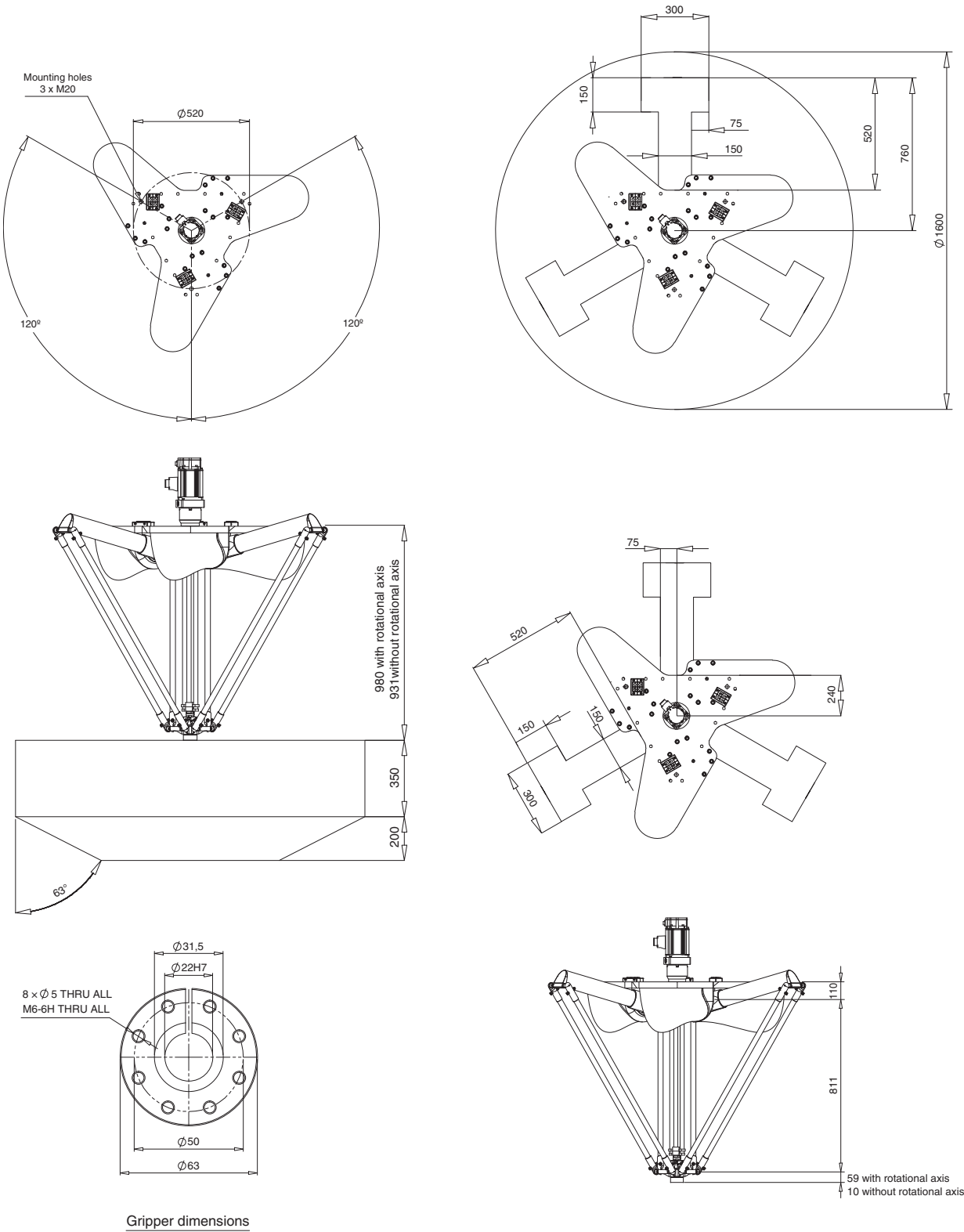


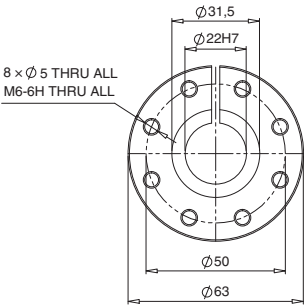
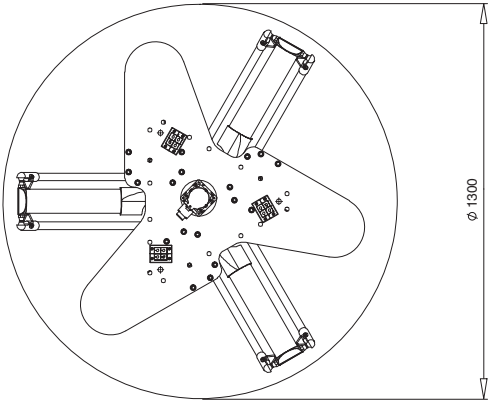
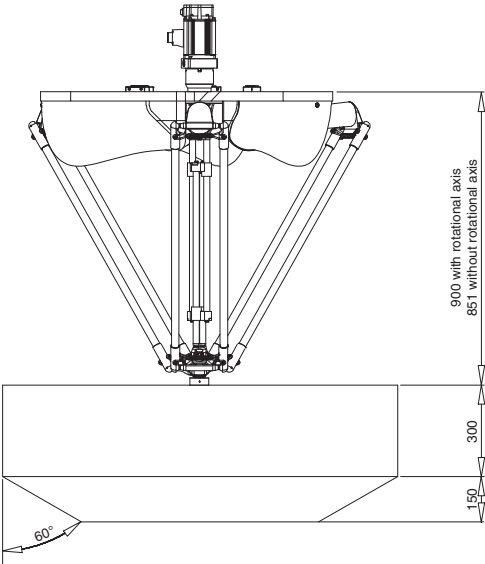
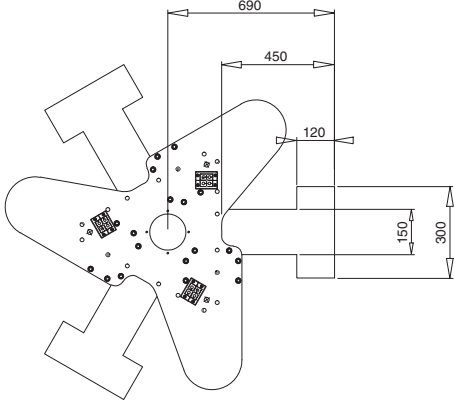
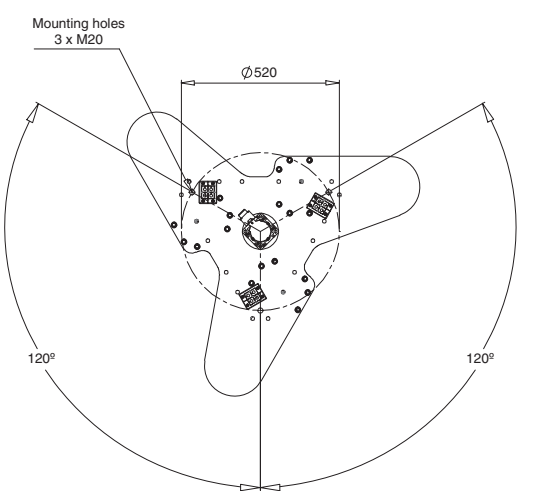
Gripper dimensions



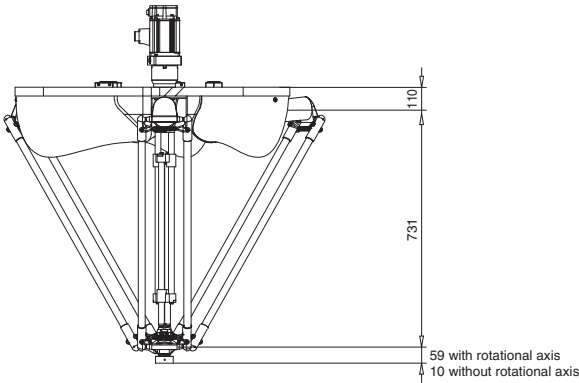
IP65 protection class models

CR_UGD4_XXLH_□R

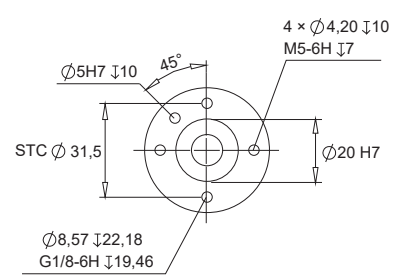
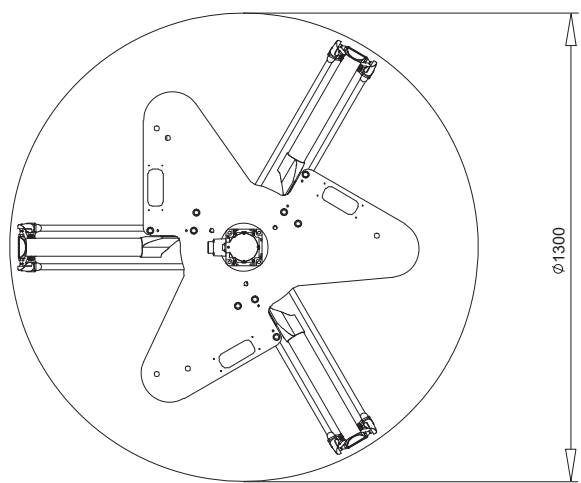
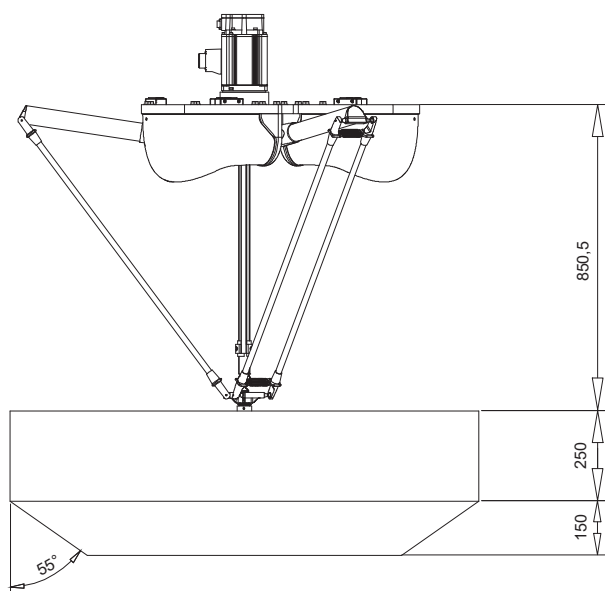
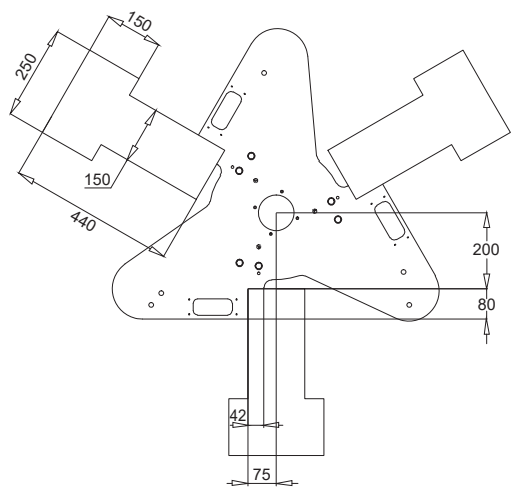
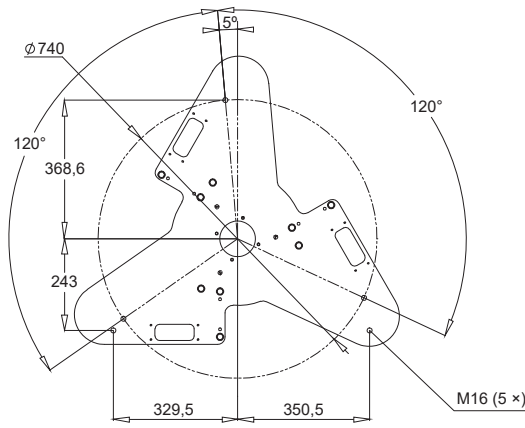




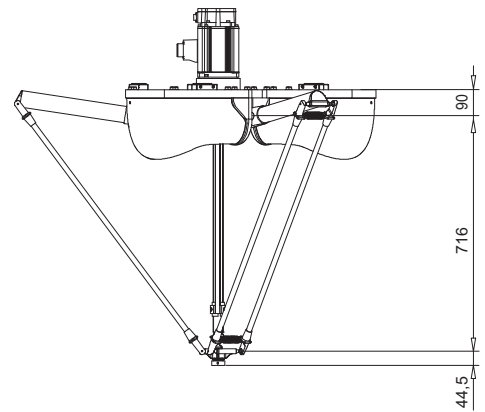
Gripper dimensions

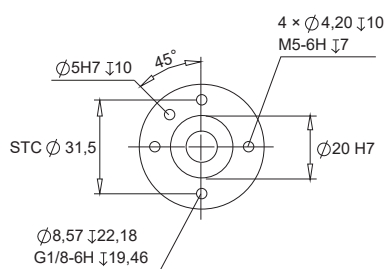
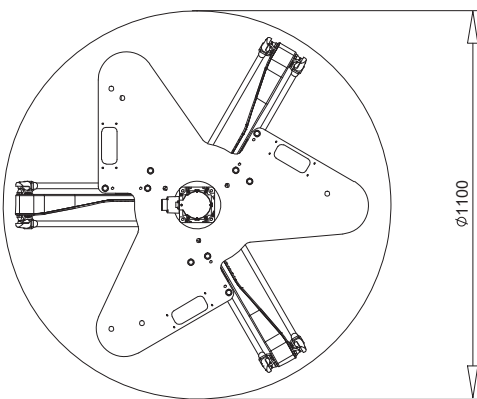
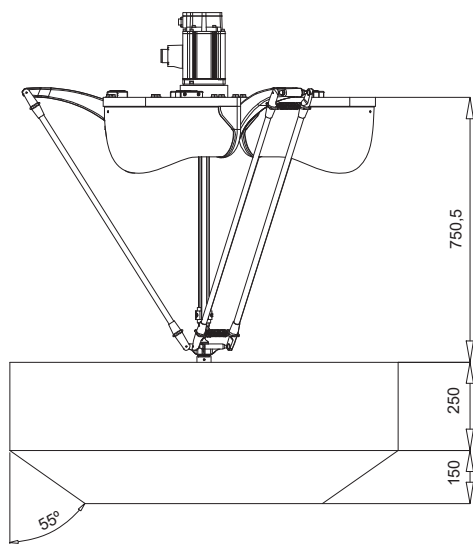
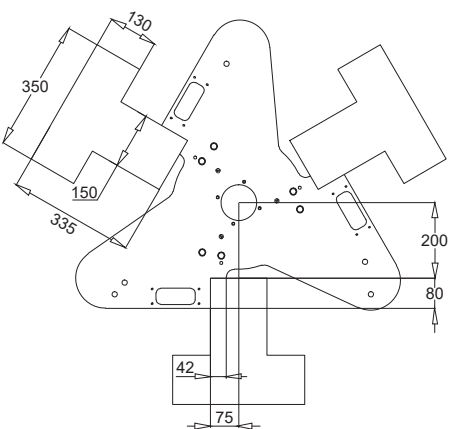
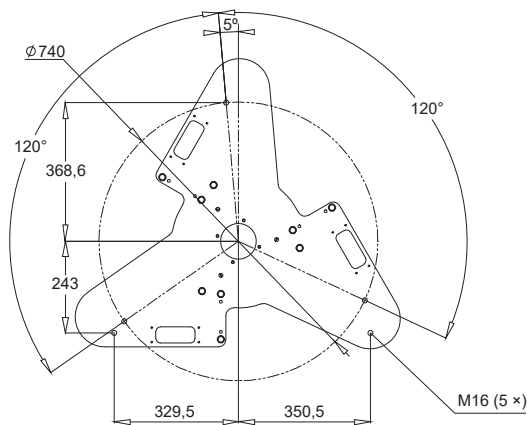


CR_UGD4_XL_□R

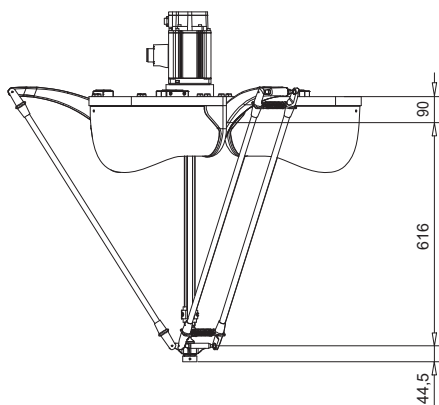


Gripper dimensions

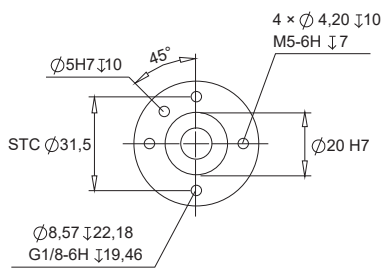
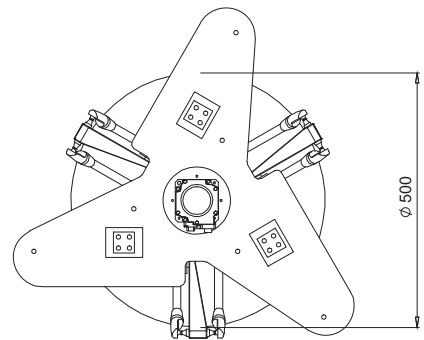
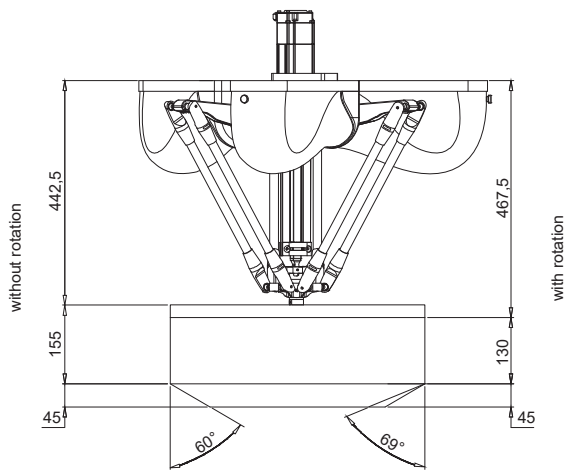
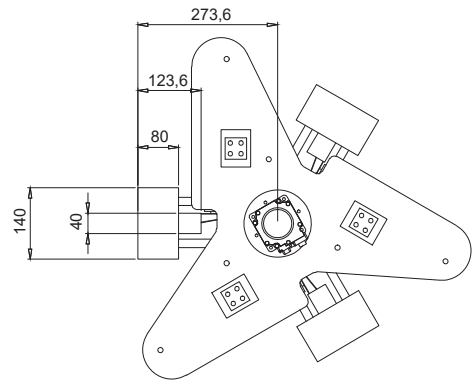
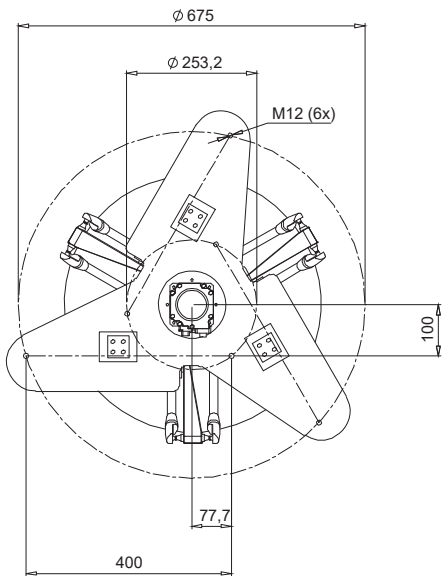




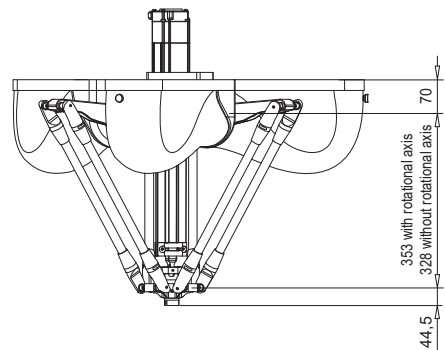
Gripper dimensions



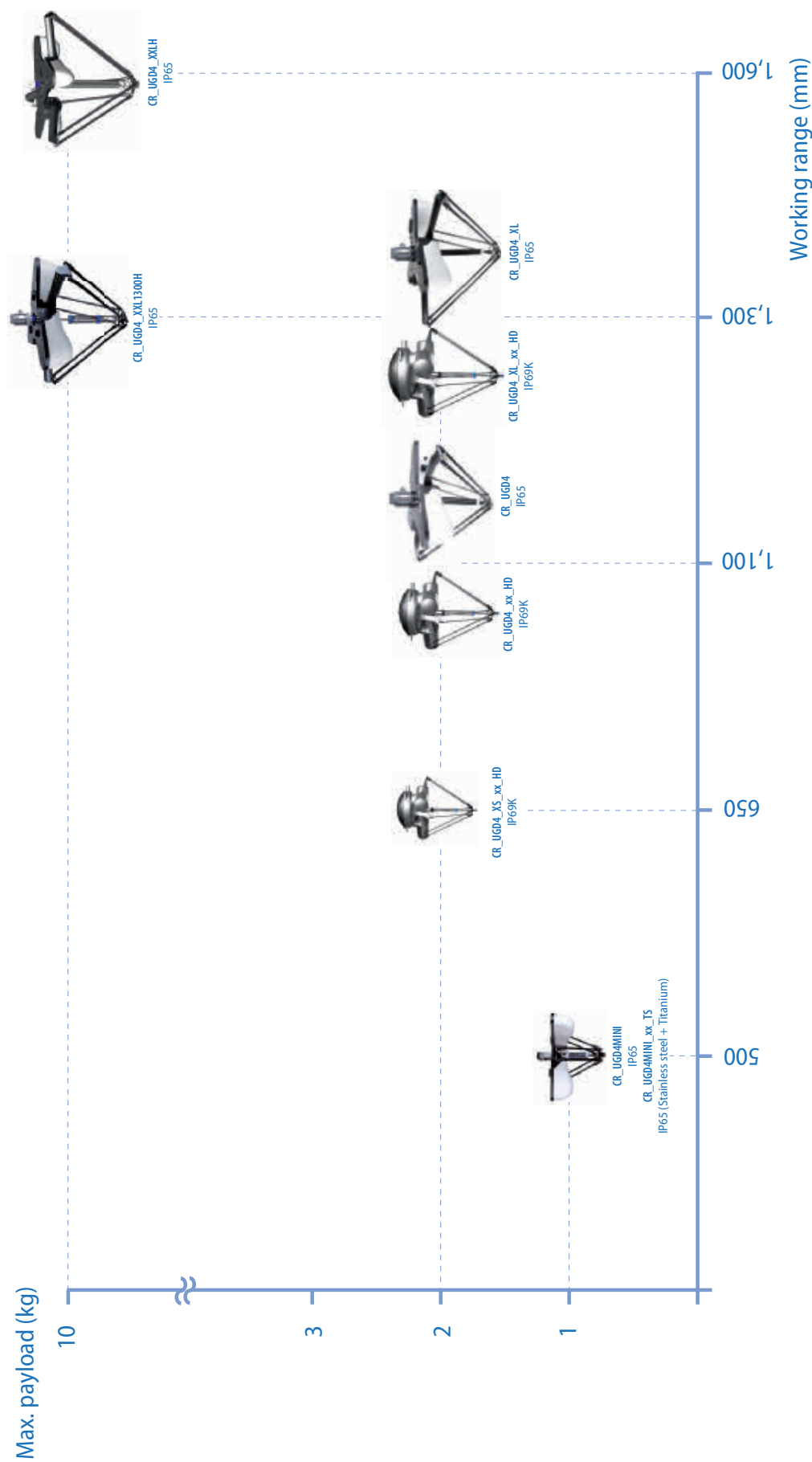
CR_UGD4MINI_□R□



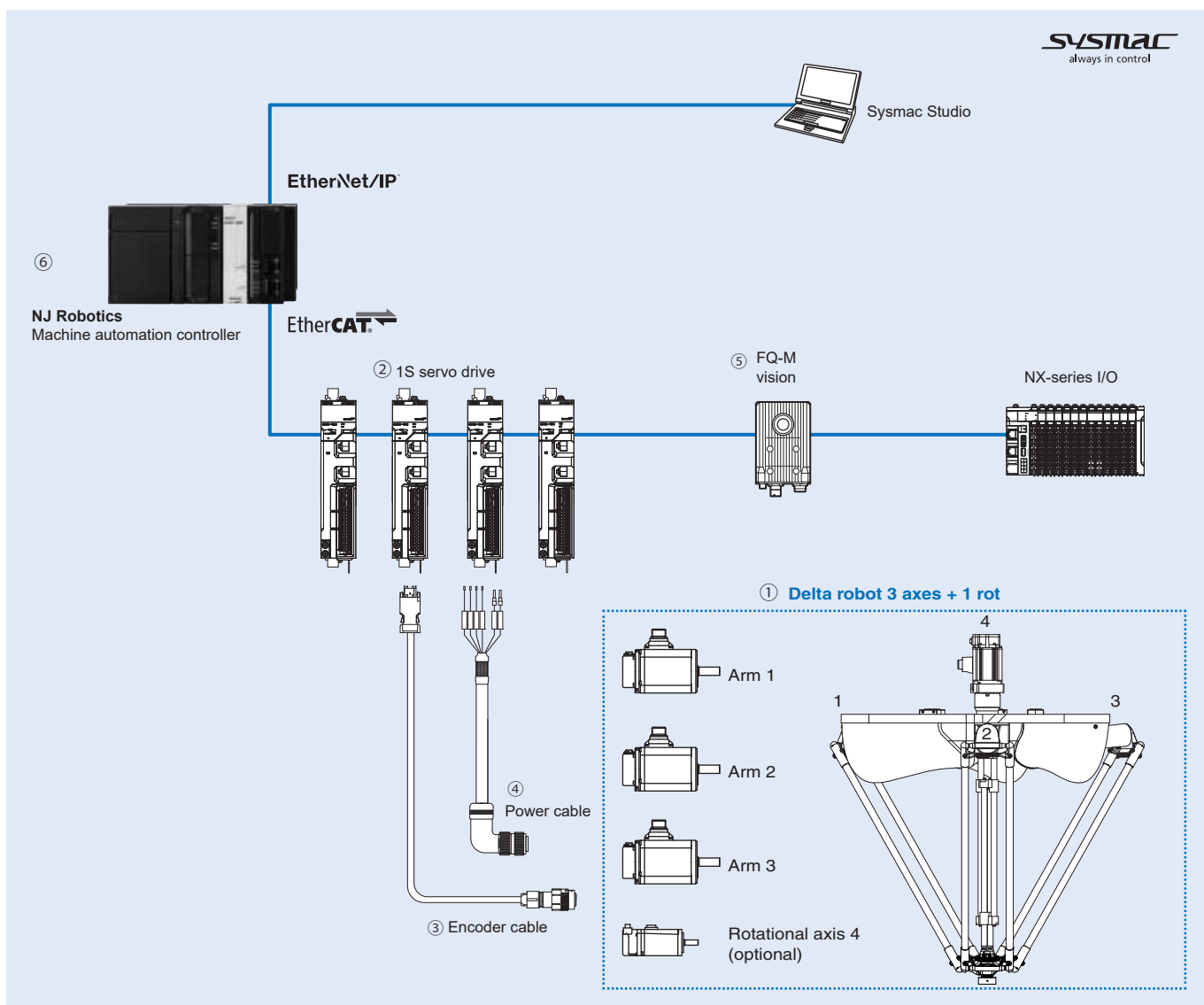
Gripper dimensions



Selection table



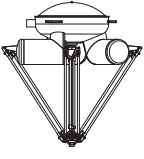
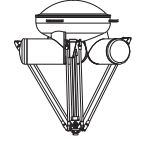
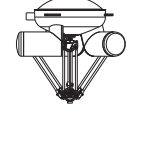
Ordering information



Note: Servo motors included in the Delta robot.

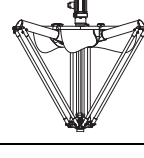
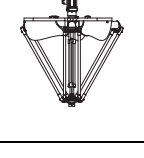
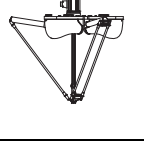
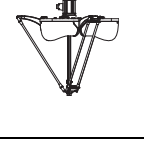
Delta robot 3 axes + 1 rot series

IP69K protection class models

Symbol	Model	Cable length	Max. payload	Working range	Description ^{*1}	Axis	②Applicable servo drive
① 	CR_UGD4_XL_R_HD3	3 m	2 kg	Ø 1,300 x 250 mm (Max. 400)	3 + 1 axes Hygienic Design	Arm 1	R88D-KN15H-ECT
	CR_UGD4_XL_R_HD5	5 m				Arm 2	R88D-KN15H-ECT
	CR_UGD4_XL_R_HD10	10 m				Arm 3	R88D-KN15H-ECT
	CR_UGD4_XL_R_HD15	15 m				Rotational 4	R88D-KN08H-ECT
	CR_UGD4_XL_R_HD20	20 m					
	CR_UGD4_XL_NR_HD3	3 m			3 axes Hygienic Design	Arm 1	R88D-KN15H-ECT
	CR_UGD4_XL_NR_HD5	5 m				Arm 2	R88D-KN15H-ECT
	CR_UGD4_XL_NR_HD10	10 m				Arm 3	R88D-KN15H-ECT
	CR_UGD4_XL_NR_HD15	15 m					
	CR_UGD4_XL_NR_HD20	20 m					
① 	CR_UGD4_R_HD3	3 m	2 kg	Ø 1,100 x 250 mm (Max. 400)	3 + 1 axes Hygienic Design	Arm 1	R88D-KN15H-ECT
	CR_UGD4_R_HD5	5 m				Arm 2	R88D-KN15H-ECT
	CR_UGD4_R_HD10	10 m				Arm 3	R88D-KN15H-ECT
	CR_UGD4_R_HD15	15 m				Rotational 4	R88D-KN08H-ECT
	CR_UGD4_R_HD20	20 m					
	CR_UGD4_NR_HD3	3 m			3 axes Hygienic Design	Arm 1	R88D-KN15H-ECT
	CR_UGD4_NR_HD5	5 m				Arm 2	R88D-KN15H-ECT
	CR_UGD4_NR_HD10	10 m				Arm 3	R88D-KN15H-ECT
	CR_UGD4_NR_HD15	15 m					
	CR_UGD4_NR_HD20	20 m					
① 	CR_UGD4_XS_R_HD3	3 m	2 kg	Ø 650 x 200 mm (Max. 270)	3 + 1 axes Hygienic Design	Arm 1	R88D-KN15H-ECT
	CR_UGD4_XS_R_HD5	5 m				Arm 2	R88D-KN15H-ECT
	CR_UGD4_XS_R_HD10	10 m				Arm 3	R88D-KN15H-ECT
	CR_UGD4_XS_R_HD15	15 m				Rotational 4	R88D-KN08H-ECT
	CR_UGD4_XS_R_HD20	20 m					
	CR_UGD4_XS_NR_HD3	3 m			3 axes Hygienic Design	Arm 1	R88D-KN15H-ECT
	CR_UGD4_XS_NR_HD5	5 m				Arm 2	R88D-KN15H-ECT
	CR_UGD4_XS_NR_HD10	10 m				Arm 3	R88D-KN15H-ECT
	CR_UGD4_XS_NR_HD15	15 m					
	CR_UGD4_XS_NR_HD20	20 m					

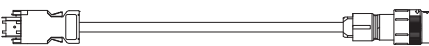
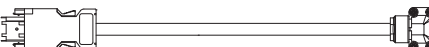
*1. The models with IP69K protection class include the encoder, power and brake cables.

IP65 protection class models

Symbol	Model	Max. payload	Working range	Description	Axis	②Applicable servo drive
① 	CR_UGD4_XXLH_R	10 kg	Ø 1,600 x 350 mm (Max. 550)	3 + 1 axes	Arm 1	R88D-1SN30F-ECT
					Arm 2	R88D-1SN30F-ECT
					Arm 3	R88D-1SN30F-ECT
					Rotational 4	R88D-1SN10F-ECT
	CR_UGD4_XXLH_NR			3 axes	Arm 1	R88D-1SN30F-ECT
① 	CR_UGD4_XXL1300H_R	10 kg	Ø 1,300 x 300 mm (Max. 450)	3 + 1 axes	Arm 1	R88D-1SN30F-ECT
					Arm 2	R88D-1SN30F-ECT
					Arm 3	R88D-1SN30F-ECT
					Rotational 4	R88D-1SN10F-ECT
	CR_UGD4_XXL1300H_NR			3 axes	Arm 1	R88D-1SN30F-ECT
① 	CR_UGD4_XL_R	2 kg	Ø 1,300 x 250 mm (Max. 400)	3 + 1 axes	Arm 1	R88D-1SN15H-ECT
					Arm 2	R88D-1SN15H-ECT
					Arm 3	R88D-1SN15H-ECT
					Rotational 4	R88D-1SN15H-ECT
	CR_UGD4_XL_NR			3 axes	Arm 1	R88D-1SN15H-ECT
① 	CR_UGD4_R	2 kg	Ø 1,100 x 250 mm (Max. 400)	3 + 1 axes	Arm 1	R88D-1SN15H-ECT
					Arm 2	R88D-1SN15H-ECT
					Arm 3	R88D-1SN15H-ECT
					Rotational 4	R88D-1SN15H-ECT
	CR_UGD4_NR			3 axes	Arm 1	R88D-1SN15H-ECT
① 	CR_UGD4MINI_R	1 kg	Ø 500 x 130 mm (Max. 175)	3 + 1 axes	Arm 1	R88D-1SN04H-ECT
	CR_UGD4MINI_R_TS ^{*1}				Arm 2	R88D-1SN04H-ECT
					Arm 3	R88D-1SN04H-ECT
					Rotational 4	R88D-1SN04H-ECT
	CR_UGD4MINI_NR			3 axes	Arm 1	R88D-1SN04H-ECT
	CR_UGD4MINI_NR_TS ^{*1}		Ø 500 x 155 mm (Max. 200)		Arm 2	R88D-1SN04H-ECT
					Arm 3	R88D-1SN04H-ECT

*1. The CR_UGD4MINI_□_TS models are delivered standard with stainless steel + titanium secondary arms.

Encoder cables

Symbol	Applicable Delta robots	Model	Appearance
③	CR_UGD4_XL□_HD□ (Arm 1, 2, 3) ^{*1} CR_UGD4□_HD□ (Arm 1, 2, 3) ^{*1} CR_UGD4_XS□_HD□ (Arm 1, 2, 3) ^{*1}	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	
	CR_UGD4_XL□_HD□ (Rotational axis 4) ^{*1} CR_UGD4□_HD□ (Rotational axis 4) ^{*1} CR_UGD4_XS□_HD□ (Rotational axis 4) ^{*1}	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	
	CR_UGD4_XXLH CR_UGD4_XXL1300H CR_UGD4_XL CR_UGD4	1.5 m R88A-CR1B001-5NF-E	
		3 m R88A-CR1B003NF-E	
		5 m R88A-CR1B005NF-E	
		10 m R88A-CR1B010NF-E	
		15 m R88A-CR1B015NF-E	
		20 m R88A-CR1B020NF-E	
	CR_UGD4MINI□_TS CR_UGD4MINI	1.5 m R88A-CR1A001-5CF-E	
		3 m R88A-CR1A003CF-E	
		5 m R88A-CR1A005CF-E	
		10 m R88A-CR1A010CF-E	
		15 m R88A-CR1A015CF-E	
		20 m R88A-CR1A020CF-E	

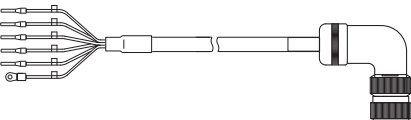
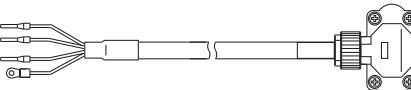
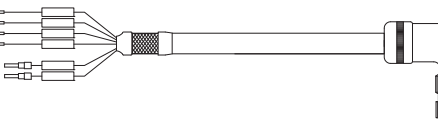
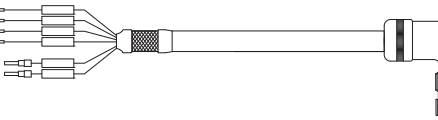
^{*1}. The models with IP69K protection class include the encoder cables.

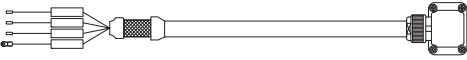
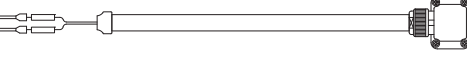
Absolute encoder battery cable (encoder extension cable only)^{*1}

Specifications	Model	Appearance
Absolute encoder battery cable	Battery not included 0.3 m R88A-CRGD0R3C-E	 Battery holder
	Battery included 0.3 m R88A-CRGD0R3C-BS-E	
Absolute encoder backup battery	2,000 mA, 3.6 V - R88A-BAT01G	

^{*1} Only for IP69K robot models.

Power and brake cables

Symbol	Applicable Delta robots			Model		Appearance
④	CR_UGD4_XL_□_HD□ ^{*1} CR_UGD4_□_HD□ CR_UGD4_XS_□_HD□	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-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	
	CR_UGD4_XXLH CR_UGD4_XXL1300H	Arm 1, 2, 3 and rotational axis 4	Power cable with brake	1.5 m	R88A-CA1E001-5BF-E	
				3 m	R88A-CA1E003BF-E	
				5 m	R88A-CA1E005BF-E	
				10 m	R88A-CA1E010BF-E	
				15 m	R88A-CA1E015BF-E	
	CR_UGD4_XL CR_UGD4	Arm 1, 2, 3 and rotational axis 4	Power cable with brake	20 m	R88A-CA1E020BF-E	
				1.5 m	R88A-CA1C001-5BF-E	
				3 m	R88A-CA1C003BF-E	
				5 m	R88A-CA1C005BF-E	
10 m				R88A-CA1C010BF-E		
15 m				R88A-CA1C015BF-E		
20 m				R88A-CA1C020BF-E		

Symbol	Applicable Delta robots				Model	Appearance
④	CR_UGD4MINI_□_TS CR_UGD4MINI	Arm 1, 2, 3 and rotational axis 4	Power cable without brake	1.5 m	R88A-CA1A001-5SF-E	
				3 m	R88A-CA1A003SF-E	
				5 m	R88A-CA1A005SF-E	
				10 m	R88A-CA1A010SF-E	
				15 m	R88A-CA1A015SF-E	
				20 m	R88A-CA1A020SF-E	
			Brake cable	1.5 m	R88A-CA1A001-5BF-E	
				3 m	R88A-CA1A003BF-E	
				5 m	R88A-CA1A005BF-E	
				10 m	R88A-CA1A010BF-E	
				15 m	R88A-CA1A015BF-E	
				20 m	R88A-CA1A020BF-E	

*1: The models with IP69K protection class include the power and brake cables.

Vision

Name	Type		Model
⑤ 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		Functions	Delta robot control	Axes	Model
⑥ NJ Robotics	CPU unit	Logic sequence, motion, robotics and database connection	Control of up to 8 Delta robot depending on the number of axes supported by the CPU	16	NJ501-4320
		Logic sequence, motion and robotics		64	NJ501-4500
				32	NJ501-4400
				16	NJ501-4300
	Power supply unit	Control of one Delta robot		16	NJ501-4310
		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.