

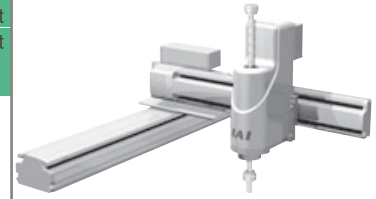
ICSA4-BB□HZRS

Cartesian Robot 4-axis Combination of XY and ZR Unit

ICSPA4-BB□HZRS

Cartesian Robot 4-axis Combination of XY and ZR Unit

High-precision Specification



Model	□ - BB□HZRS - □ - □ - □ - □ - □ - □ - □ - □ - □ - □ - □ - □
Series	Refer to model table below
Type	Refer to model table below
Encoder	A: Absolute I: Incremental
Stroke/options for axis 1	20:200mm S 80:800mm (100mm steps)
Stroke/options for axis 2	10:100mm S 40:400mm (100mm steps)
Stroke/options for axis 3	15:150mm S Refer to options table below
Operation range/Options for axis 4	36:360 Deg Refer to options table below
Controller	T2:XSEL-P/Q
Cable Length	3L: 3m 5L: 5m □: Specified Length
Cable wiring for Y-axis	Refer to Explanation of Symbols in Model Names below
Cable wiring for Z-axis	Refer to Explanation of Symbols in Model Names below

Model

* Models of high-precision specification are shown in [].

Encoder Model	XY combination direction (*1)	Z-axis Type	Model
Absolute	1	H	ICSA4 [ICSPA4]-BB1HZRS-A- <u>1</u> - <u>2</u> - <u>3</u> B- <u>4</u> BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	2	H	ICSA4 [ICSPA4]-BB2HZRS-A- <u>1</u> - <u>2</u> - <u>3</u> B- <u>4</u> BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	3	H	ICSA4 [ICSPA4]-BB3HZRS-A- <u>1</u> - <u>2</u> - <u>3</u> B- <u>4</u> BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	4	H	ICSA4 [ICSPA4]-BB4HZRS-A- <u>1</u> - <u>2</u> - <u>3</u> B- <u>4</u> BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
Incremental	1	H	ICSA4 [ICSPA4]-BB1HZRS-I- <u>1</u> - <u>2</u> - <u>3</u> B- <u>4</u> BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	2	H	ICSA4 [ICSPA4]-BB2HZRS-I- <u>1</u> - <u>2</u> - <u>3</u> B- <u>4</u> BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	3	H	ICSA4 [ICSPA4]-BB3HZRS-I- <u>1</u> - <u>2</u> - <u>3</u> B- <u>4</u> BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	4	H	ICSA4 [ICSPA4]-BB4HZRS-I- <u>1</u> - <u>2</u> - <u>3</u> B- <u>4</u> BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>

*1 See the figure below for the XY combination directions.

* For the descriptions of 1 to 8 in the above model names, refer to the table provided in the top right.

* The following adjustment jig (sold separately) is required for models of absolute specification:
Absolute reset adjustment jig (model: JG-ZRS)

Explanation of Symbols in Model Names

No.	Description	Value
①	X-axis stroke (Note 1)	20 : 200mm S 80 : 800mm
②	Y-axis stroke (Note 1)	10 : 100mm S 40 : 400mm
③	Z-axis stroke (Note 1)	15 : 150mm
④	R-axis Operation Range	36 : 360deg
⑤	Applicable Controllers	T2 : XSEL-P/Q
⑥	Cable Length (Note 2)	3L : 3m 5L : 5m
⑦	Y-axis Cable Wiring	CTM: Cable track size M (Standard) CTL: Cable track size L CTXL: Cable track size XL
⑧	Z-axis Cable Wiring	CT: Cable Track (Standard) CTM: Cable track size M CTL: Cable track size L CTXL: Cable track size XL

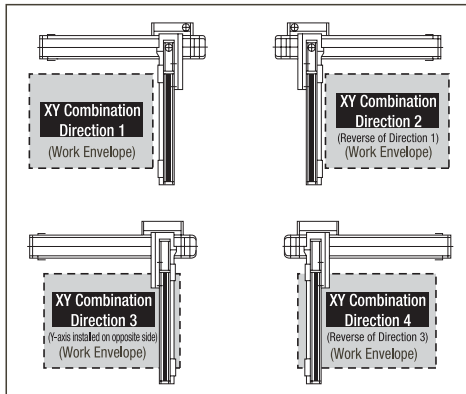
*The above table describes 1 to 8 in the model names shown to the left.

Options

Enter the applicable option symbol after the stroke of each axis. If multiple options are selected, enter them in alphabetical order.

Name	Model
AQ Seal	AQ
Brake	B
Creep Sensor	C
Home Limit Switch	L
Reversed Home Specification	NM
Guide with ball retention mechanism	RT

XY Combination Directions



Common Specifications

* Models of high-precision specification are shown in [].

Drive Method	Ball screw, rolled C10 [rolled C5 or equivalent]
Positioning Repeatability	±0.02mm [±0.01mm]
Lost Motion	0.05mm max [0.02mm max]
Guide	Base integrated type
Base	Material: Aluminum with white alumite treatment
X-axis motor output/lead	100W/20mm
Y-axis motor output/lead	60W/16mm
Z-axis motor output/lead	100W/16mm
Motor output of rotational axis	100W
Allowable inertial moment of rotational axis	0.015kg · m ²
Allowable torque of rotational axis	1.9N · m

Axis Configuration

* Models of high-precision specification are shown in [].

Axis Name	Axis Name
X-axis	ISA [SPA]-MXM-□ - 100-20-(Stroke)
Y-axis	ISA [SPA]-SYM-□ - 60-16-(Stroke)
Z-axis/rotational-axis	ZR-S-□-100-16-150-T2-#-B-L

* In the □ in the above model names, enter A (absolute) or I (incremental) as the applicable encoder type.

- Cable length



Caution

(Note 1) Strokes are expressed in cm (centimeters) in the model names.

(Note 2) The cable length is measured from the X-axis connector box to the controller.

Although the standard length is 3m or 5m, other lengths can also be specified in m (Meters). Cable lengths of up to 20 meters are supported.

(Note 3) The actual value may be lower depending on the conditions of use.

(Note 4) The rated acceleration is 0.3G. When the acceleration is increased, the loading capacity decreases.

(Note 5) Take note that the maximum speed drops when the stroke becomes longer. If the robot is to be moved with the vertical axis lowered, raise the speed and acceleration.

ICSA4 [ICSPA4] - BE□HZRS

Loading Capacities (kg) (Note 4)

BB□HZRS

		Y-axis Stroke			
		100	200	300	400
Z-axis Stroke	150	Rated: 1.0 kg (at acceleration/deceleration of 0.3 G) Maximum: 3.0 kg (at acceleration /deceleration of 0.1 G)			

Maximum Speeds by Stroke (mm/s) (Note 5)

BB□HZRS

		Stroke						
		100	200	300	400	500	600	700
X-axis	—	1000						795
Y-axis		800	—	—	—	—	—	—

Stroke : 150mm	
Z-axis	1005mm/s
Stroke: ±360°	
Rotational Axis	2200°/s

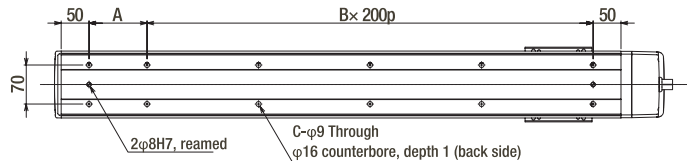
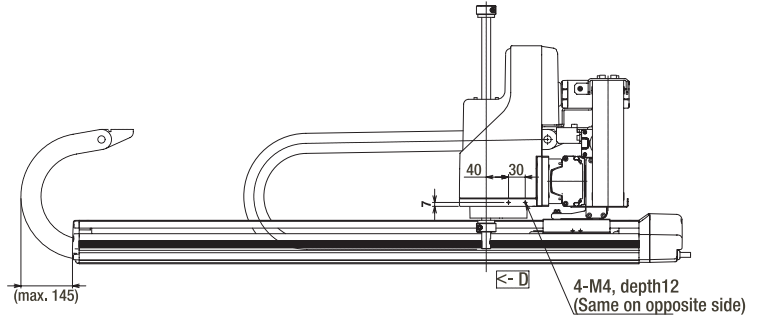
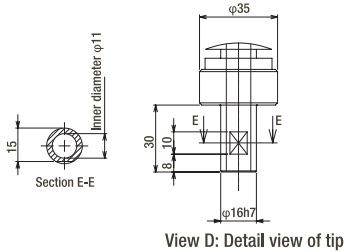
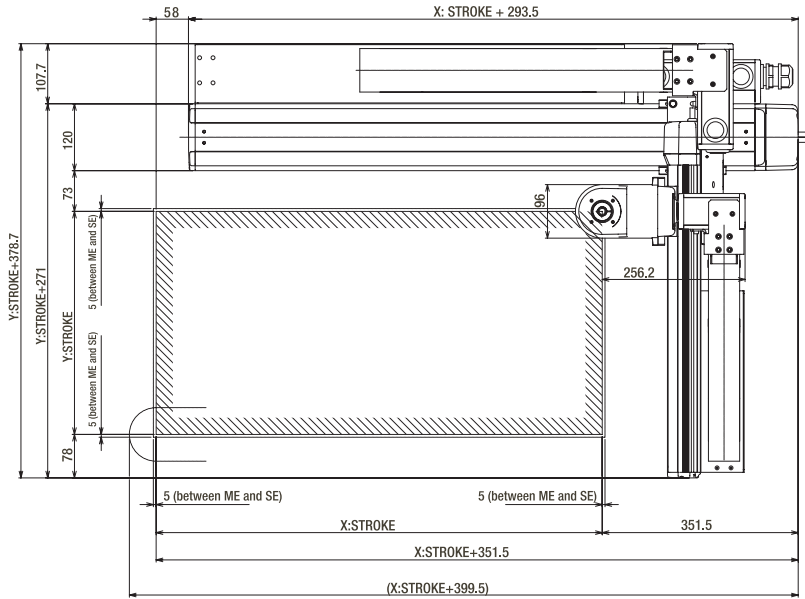
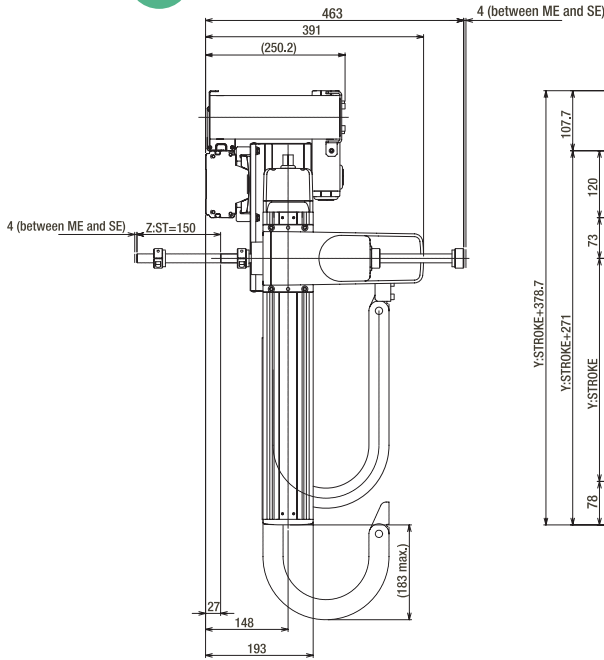
Dimensions

* The figure below is the figure for XY combination direction 1.

CAD drawings can be downloaded from the website



* In the figure below, the cable track dimensions is CTM for the Y-axis and CT for the ZR-axes. (CT cannot be used for the Y-axis)



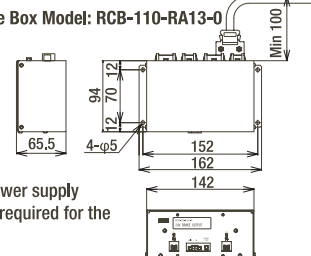
* The combination position shown in the drawing defines the home position. If you want to change the home position, specify the option "NM." Take note that to change the home position after the delivery, the robot must be returned for adjustment.

X Stroke	200	300	400	500	600	700	800
A	104	204	104	204	104	204	104
B	1	1	2	2	3	3	4
C	6	6	8	8	10	10	12

Brake Box (Accessory)

This device must be installed along the cable wired between the actuator and the actuator's encoder.

Brake Box Model: RCB-110-RA13-0



Note
A 24-VDC power supply (1A max.) is required for the brake box.

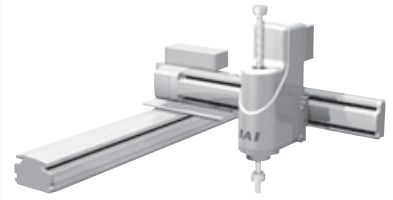
ICSA4-BE □ HZRM

Cartesian Robot 4-axis Combination of X/Y and ZR Unit

ICSPA4-BE □ HZRM

Cartesian Robot 4-axis Combination of X/Y and ZR Unit

High-precision Specification



Model

Series - BE □ HZRM - Encoder - Stroke/options for axis 1 - Stroke/options for axis 2 - Stroke/options for axis 3 - B - Operation range/Options for axis 4 - BL - T2 - Controller - Cable Length - Cable wiring for Y-axis - Cable wiring for Z-axis

ICSA4: Standard 4-axis Specification Refer to model table below
 ICSPA4: High-precision 4-axis Specification Refer to model table below

A: Absolute
 I: Incremental

30:300mm
 20:200mm
 100:1000mm (100mm steps)

Refer to options table below

20:200mm
 70:700mm (100mm steps)

Refer to options table below

20:200mm
 36:360 Deg

Refer to options table below

T2: XSEL-P/Q

3L: 3m
 5L: 5m

Refer to Explanation of Symbols in Model Names below

□: Specified Length

Model

* Models of high-precision specification are shown in [].

Encoder Model	XY combination direction (*1)	Z-axis Type	Model
Absolute	1	H	ICSA4 [ICSPA4]-BE1HZRM-A- <u>1</u> - <u>2</u> - <u>3</u> - <u>4</u> -B- <u>4</u> -BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	2	H	ICSA4 [ICSPA4]-BE2HZRM-A- <u>1</u> - <u>2</u> - <u>3</u> - <u>4</u> -B- <u>4</u> -BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	3	H	ICSA4 [ICSPA4]-BE3HZRM-A- <u>1</u> - <u>2</u> - <u>3</u> - <u>4</u> -B- <u>4</u> -BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	4	H	ICSA4 [ICSPA4]-BE4HZRM-A- <u>1</u> - <u>2</u> - <u>3</u> - <u>4</u> -B- <u>4</u> -BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
Incremental	1	H	ICSA4 [ICSPA4]-BE1HZRM-I- <u>1</u> - <u>2</u> - <u>3</u> - <u>4</u> -B- <u>4</u> -BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	2	H	ICSA4 [ICSPA4]-BE2HZRM-I- <u>1</u> - <u>2</u> - <u>3</u> - <u>4</u> -B- <u>4</u> -BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	3	H	ICSA4 [ICSPA4]-BE3HZRM-I- <u>1</u> - <u>2</u> - <u>3</u> - <u>4</u> -B- <u>4</u> -BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>
	4	H	ICSA4 [ICSPA4]-BE4HZRM-I- <u>1</u> - <u>2</u> - <u>3</u> - <u>4</u> -B- <u>4</u> -BL- <u>5</u> - <u>6</u> - <u>7</u> - <u>8</u>

*1 See the figure below for the XY combination directions.

* For the descriptions of 1 to 8 in the above model names, refer to the table provided in the top right.

* The following adjustment jig (sold separately) is required for models of absolute specification:
 Absolute reset adjustment jig (model: JG-ZRM)

Explanation of Symbols in Model Names

No.	Description	Indication
①	X-axis stroke (Note 1)	30 : 300mm 100 : 1000mm
②	Y-axis stroke (Note 1)	20 : 200mm 70 : 700mm
③	Z-axis stroke (Note 1)	20 : 200mm
④	R-axis Operation Range	36 : 360deg
⑤	Applicable Controllers	T2 : XSEL-P/Q
⑥	Cable Length (Note 2)	3L : 3m 5L : 5m
⑦	Y-axis Cable Wiring	CTM: Cable track size M (Standard) CTL: Cable track size L CTXL: Cable track size XL
⑧	Z-axis Cable Wiring	CT: Cable Track (Standard) CTM: Cable track size M CTL: Cable track size L CTXL: Cable track size XL

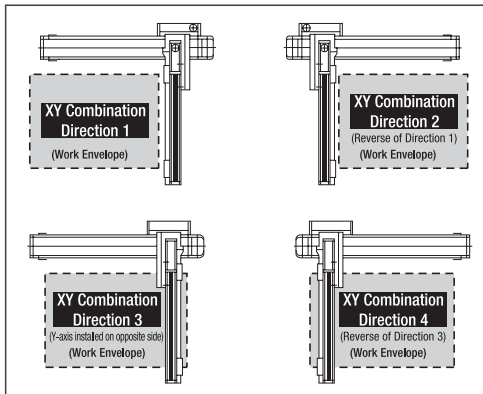
*The above table describes 1 to 8 in the model names shown to the left.

Options

Enter the applicable option symbol after the stroke of each axis. If multiple options are selected, enter them in alphabetical order.

Name	Model
AQ Seal	AQ
Brake	B
Creep Sensor	C
Home Limit Switch	L
Reversed Home Specification	NM
Guide with ball retention mechanism	RT

XY Combination Directions



Axis Configuration

* Models of high-precision specification are shown in [].

Axis Name	Axis Name
X-axis	ISA [ISPA]-LXM- □ - 400-20-(Stroke)
Y-axis	ISA [ISPA]-MYM- □ -200-20-(Stroke)
Z-axis/rotational-axis	ZR-M-□-200-20-200-T2-#-B-L

* In the □ in the above model names, enter A (absolute) or I (incremental) as the applicable encoder type.
 # - Cable length

Common Specifications

* Models of high-precision specification are shown in [].

Drive Method	Ball screw, rolled C10 [rolled C5 or equivalent]
Positioning Repeatability	±0.02mm [±0.01mm]
Lost Motion	0.05mm max [0.02mm max]
Guide	Base integrated type
Base	Material: Aluminum with white alumite treatment
X-axis motor output/lead	400W/20mm
Y-axis motor output/lead	200W/20mm
Z-axis motor output/lead	200W/20mm
Motor output of rotational axis	200W
Allowable inertial moment of rotational axis	0.03kg · m ²
Allowable torque of rotational axis	3.8N · m



Caution

(Note 1) Strokes are expressed in cm (centimeters) in the model names.
 (Note 2) The cable length is measured from the X-axis connector box to the controller. Although the standard length is 3m or 5m, other lengths can also be specified in m (Meters). Cable lengths of up to 20 meters are supported.
 (Note 3) The actual value may be lower depending on the conditions of use.
 (Note 4) The rated acceleration is 0.3G. When the acceleration is increased, the loading capacity decreases.
 (Note 5) Take note that the maximum speed drops when the stroke becomes longer. If the robot is to be moved with the vertical axis lowered, raise the speed and acceleration.

ICSA4 [ICSPA4] - BE□HZRM

Loading Capacities (kg) (Note 4)

BB□HZRM

		Y-axis Stroke					
		200	300	400	500	600	700
Z-axis Stroke	200	Rated: 2.0 kg (at acceleration/deceleration of 0.3 G) Maximum: 6.0 kg (at acceleration /deceleration of 0.1 G)					

Maximum Speeds by Stroke (mm/s) (Note 5)

BB□HZRM

	Stroke										
	100	200	300	400	500	600	700	800	900	1000	
X-axis	1000									830	690
Y-axis	1000										

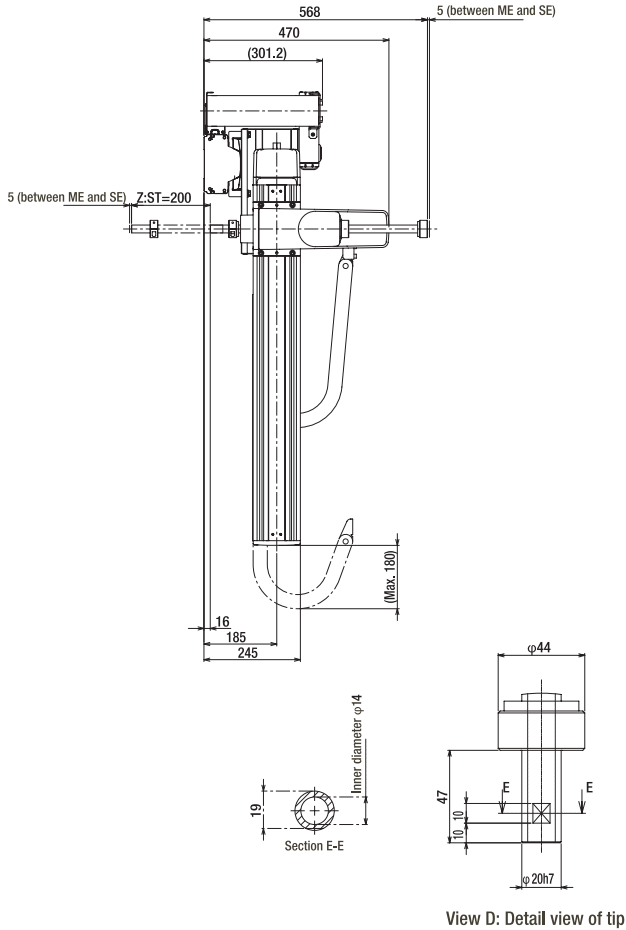
Stroke : 200mm	
Z-axis	1256mm/s
Stroke: ±360°	
Rotational Axis	2200°/s

Dimensions

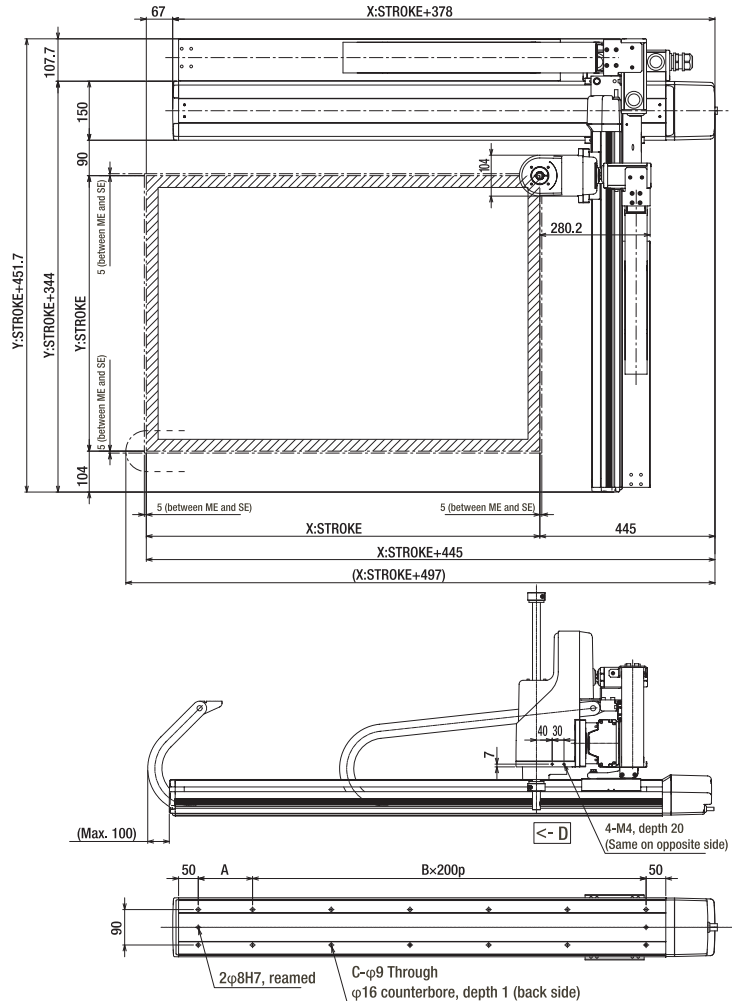
* The figure below is the figure for XY combination direction 1.

CAD drawings can be downloaded from the website

2D CAD



* In the figure below, the cable track dimensions is CTM for the Y-axis and CT for the ZR-axes. (CT cannot be used for the Y-axis)

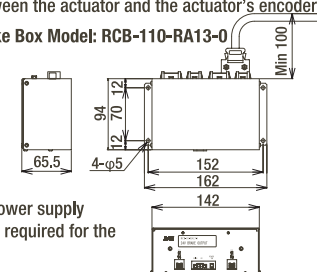


* The combination position shown in the drawing defines the home position. If you want to change the home position, specify the option "NM." Take note that to change the home position after the delivery, the robot must be returned for adjustment.

Brake Box (Accessory)

This device must be installed along the cable wired between the actuator and the actuator's encoder.

Brake Box Model: RCB-110-RA13-0



Note

A 24-VDC power supply (1A max.) is required for the brake box.

X Stroke	300	400	500	600	700	800	900	1000
A	238	138	238	138	238	138	238	138
B	1	2	2	3	3	4	4	5
C	6	8	8	10	10	12	12	14