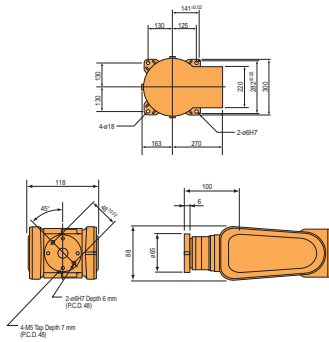
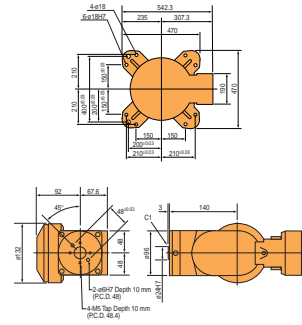


FOOTPRINTS & WRIST MOUNTING CONFIGURATIONS

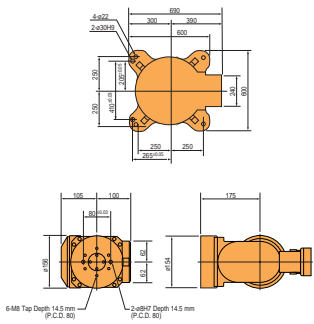
SC06F-02



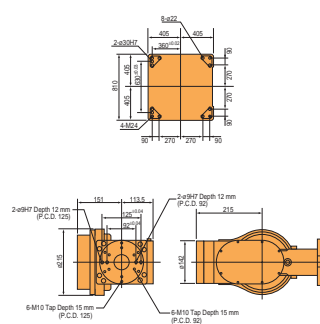
SC15F-02



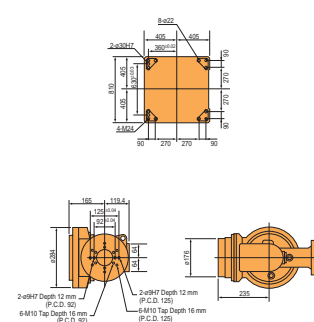
SC35F-01/SC50F-01



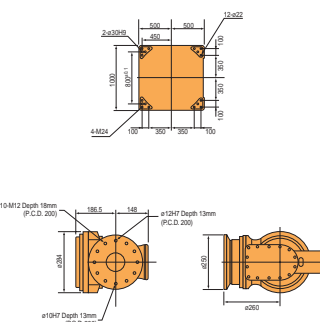
SC80LF-02/SC120LF-02



SC300F-02



SC400L-01/SC500-01



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Rev 07/04



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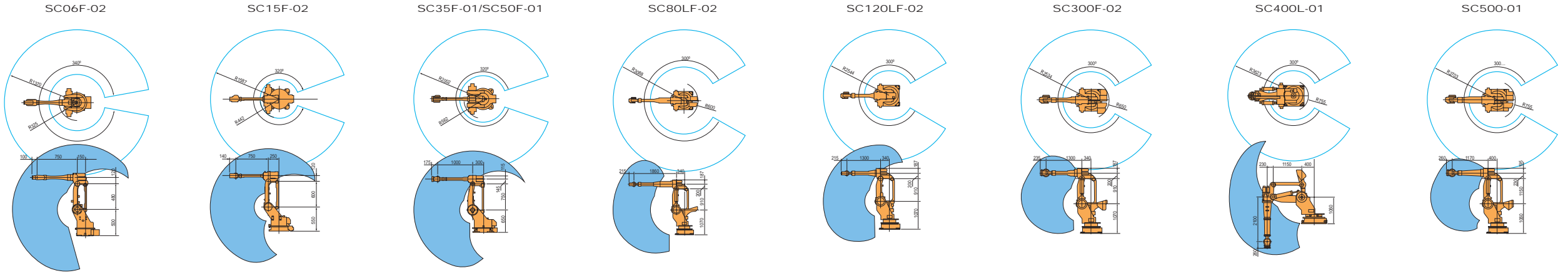
**SC**  
SERIES



**NACHI**  
NACHI ROBOTIC SYSTEMS INC.

### Benefits

- High Speed:**  
 Increased speeds for greater productivity
- Largest Payloads in its Class:**  
 Up to 500 kg for tooling and additional payload on the upper arm
- Space Saving Design:**  
 Allows shorter production lines
- Precise Movement:**  
 +/-0.1 to 0.5 mm repeatability
- Light-Weight Design:**  
 Allows easy robot installation and transport
- Flexible Mounting:**  
 Floor, inverted or wall (up to SC50)
- Low Maintenance:**  
 Greater uptime and reduced life cycle cost



### Applications

The Nachi family of SC Series robots supports the entire range of industrial applications.



SPECIFICATIONS			SC06F-02	SC15F-02	SC35F-01	SC50F-01	SC80LF-02	SC120LF-02	SC300F-02	SC400L-01	SC500-01	
Construction			Articulated	Articulated	Articulated	Articulated	Articulated	Articulated	Articulated	Articulated	Articulated	
Degrees of freedom			6	6	6	6	6	6	6	6	6	
Drive			AC Servo Motor	AC Servo Motor	AC Servo Motor	AC Servo Motor	AC Servo Motor	AC Servo Motor	AC Servo Motor	AC Servo Motor	AC Servo Motor	
Maximum Stroke	Arm	S Swivel	±170° (Wall mount ±30°)	±160° (Wall mount ±30°)	±160° (Wall mount ±30°)	±160° (Wall mount ±30°)	±150°	±150°	±150°	±150°	±150°	
		H Back & Forth	+150° ~ -90°	+150° ~ -90°	+150° ~ -90°	+150° ~ -80°	+75°	+90° ~ -75°	+105° ~ -75°	+75° ~ -75°	+105° ~ -25°	+75° ~ -55°
		V Up & Down	±120°	±120° ~ -140°	±120° ~ -140°	±132° ~ -140°	±132° ~ -140°	+35° ~ -115°	+80° ~ -129°	+30° ~ -125°	+120° ~ -25°	+30° ~ -125°
	Wrist	R2 Rotation 2	±360°	±270°	±270°	±270°	±270°	±360°	±360°	±360°	±300°	±300°
		B Bend	±142°	±125°	±125°	±125°	±125°	±135°	±135°	±125°	±120°	±120°
Maximum Velocity	Arm	S Swivel	±450°	±450°	±450°	±450°	±450°	±360°	±360°	±360°	±360°	±360°
		H Back & Forth	155°/sec	130°/sec	160°/sec	160°/sec	160°/sec	130°/sec	130°/sec	130°/sec	85°/sec	80°/sec
		V Up & Down	155°/sec	130°/sec	160°/sec	160°/sec	160°/sec	130°/sec	130°/sec	130°/sec	85°/sec	80°/sec
	Wrist	R2 Rotation 2	400°/sec	263°/sec	225°/sec	180°/sec	150°/sec	150°/sec	150°/sec	110°/sec	90°/sec	90°/sec
		B Bend	400°/sec	263°/sec	225°/sec	180°/sec	150°/sec	150°/sec	110°/sec	90°/sec	90°/sec	90°/sec
Loading Weight	Wrist	R1 Rotation 1	500°/sec	450°/sec	320°/sec	256°/sec	200°/sec	200°/sec	180°/sec	145°/sec	145°/sec	
		Upper Arm	6 kg	15 kg	35 kg	50 kg	80 kg	120 kg	300 kg	400 kg	500 kg	
Wrist Torque	R2	Rotation 2	13 kg	5 kg	30 kg	15 kg	20 kg	25 kg	20 kg	30 kg	30 kg	
		B Bend	2.0 kg · m	3.2 kg · m	15 kg · m	20 kg · m	55 kg · m	70 kg · m	170 kg · m	200 kg · m	200 kg · m	
	R1	Rotation 1	2.0 kg · m	3.2 kg · m	15 kg · m	20 kg · m	55 kg · m	70 kg · m	170 kg · m	200 kg · m	200 kg · m	
		B Bend	0.9 kg · m	1.6 kg · m	8 kg · m	10 kg · m	30 kg · m	40 kg · m	70 kg · m	147 kg · m	147 kg · m	
Allowable Moment of Inertia	R2	Rotation 2	0.67 kg · m²	0.682 kg · m²	6.43 kg · m²	8 kg · m²	37.8 kg · m²	40.8 kg · m²	96.3 kg · m²	200 kg · m²	200 kg · m²	
		B Bend	0.67 kg · m²	0.682 kg · m²	6.43 kg · m²	8 kg · m²	37.8 kg · m²	40.8 kg · m²	96.3 kg · m²	200 kg · m²	200 kg · m²	
	R1	Rotation 1	0.135 kg · m²	0.17 kg · m²	1.83 kg · m²	2 kg · m²	11.3 kg · m²	13.3 kg · m²	16.3 kg · m²	147 kg · m²	147 kg · m²	
Repeatability			±0.1 mm	±0.1 mm	±0.1 mm	±0.3 mm	±0.4 mm	±0.4 mm	±0.5 mm	±0.5 mm	±0.5 mm	
Ambient Temperature			0-45°C (32-113°F)	0-45°C (32-113°F)	0-45°C (32-113°F)	0-45°C (32-113°F)	0-45°C (32-113°F)	0-45°C (32-113°F)	0-45°C (32-113°F)	0-45°C (32-113°F)	0-45°C (32-113°F)	
Installation			Floor, wall, angle	Floor, inverted, wall	Floor, inverted, wall	Floor, inverted, wall	Floor, inverted, wall	Floor, inverted, wall	Shelf	Shelf	Floor	
Robot Body Weight			128 kg	145 kg	400 kg	400 kg	1,600 kg	1,300 kg	1,800 kg	3,800 kg	3,000 kg	

# SC15F/ 35F/50F



## Light Payload Series

### Robot Features

- > High-speed
- > Space-saving design
- > Low maintenance
- > Largest payloads in class
- > Precise movement
- > Lightweight design
- > Reduced lifecycle cost
- > Flexible installation options
- > Greater uptime

The SC Series of general purpose, lightweight robots have the fastest speed in their weight class.



## APPLICATIONS

Arc Welding  
Sealing  
Deburring  
Palletizing

Press-to-Press  
Handling  
Assembly  
Material Handling

Loading  
Die Casting  
Press Brake



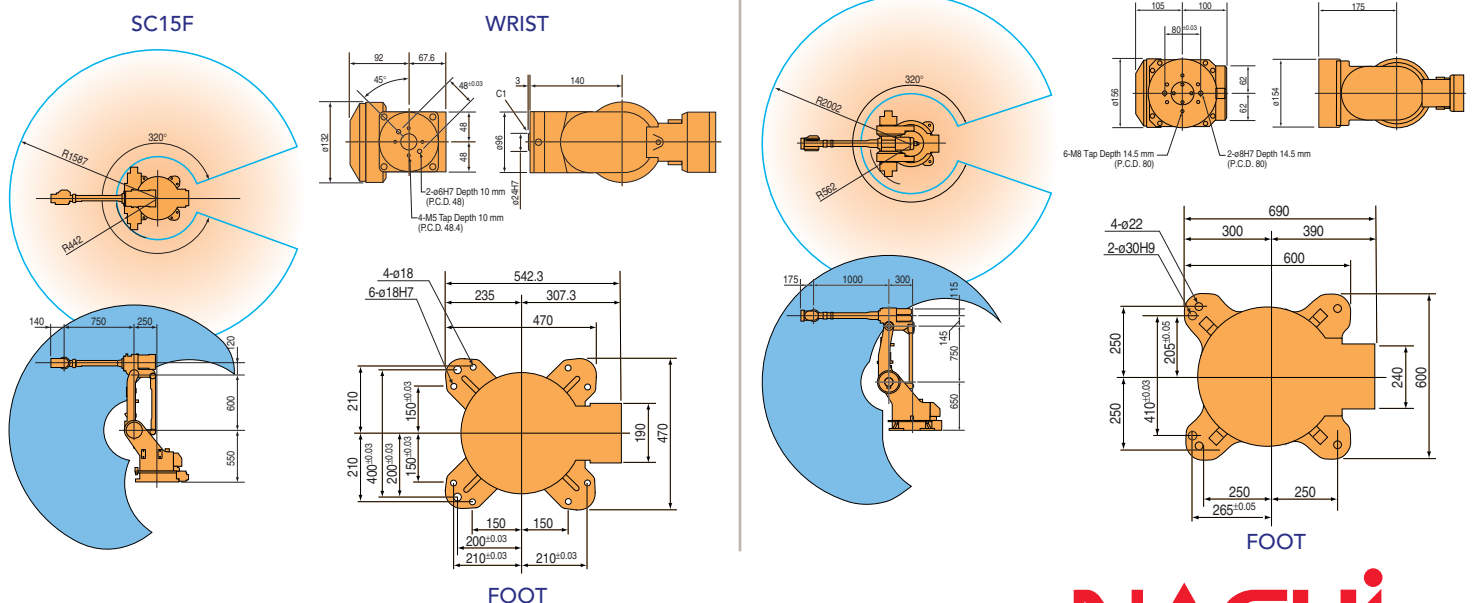
# SC15F/35F/50F



## BASIC SPECIFICATIONS

		SC15F	SC35F	SC50F
Construction		Articulated	Articulated	Articulated
Number of Axes		6	6	6
Drive		AC Servo Motor	AC Servo Motor	AC Servo Motor
Maximum Stroke	Arm	J1 Swivel	$\pm 170^\circ$ (wall mount $\pm 30^\circ$ )	$\pm 160^\circ$ (Wall mount $\pm 30^\circ$ )
		J2 Back & Forth	$+150^\circ \sim -90^\circ$	$+150^\circ \sim -80^\circ$
		J3 Up & Down	$+120^\circ \sim -140^\circ$	$+132^\circ \sim -140^\circ$
	Wrist	J4 Rotation 2	$\pm 270^\circ$	$\pm 270^\circ$
		J5 Bend	$\pm 125^\circ$	$\pm 125^\circ$
		J6 Rotation 1	$\pm 450^\circ$	$\pm 450^\circ$
Maximum Velocity	Arm	J1 Swivel	130°/sec	160°/sec
		J2 Back & Forth	130°/sec	160°/sec
		J3 Up & Down	130°/sec	160°/sec
	Wrist	J4 Rotation 2	263°/sec	225°/sec
		J5 Bend	263°/sec	225°/sec
		J6 Rotation 1	450°/sec	320°/sec
Loading Weight	Wrist	15 kg	35 kg	50 kg
	Upper Arm	5 kg	30 kg	15 kg
Wrist Torque	J4 Rotation 2	3.2 kg · m	15 kg · m	20 kg · m
	J5 Bend	3.2 kg · m	15 kg · m	20 kg · m
	J6 Rotation 1	1.6 kg · m	8 kg · m	10 kg · m
Allowable Moment of Inertia	J4 Rotation 2	0.682 kg · m <sup>2</sup>	6.43 kg · m <sup>2</sup>	8 kg · m <sup>2</sup>
	J5 Bend	0.682 kg · m <sup>2</sup>	6.43 kg · m <sup>2</sup>	8 kg · m <sup>2</sup>
	J6 Rotation 1	0.17 kg · m <sup>2</sup>	1.83 kg · m <sup>2</sup>	2 kg · m <sup>2</sup>
Repeatability		$\pm 0.1$ mm	$\pm 0.1$ mm	$\pm 0.3$ mm
Ambient Temperature		0~45°C (32~113°F)	0~45°C (32~113°F)	0~45°C (32~113°F)
Installation		Floor, inverted, wall	Floor, inverted, wall	Floor, inverted, wall
Robot Body Weight		145 kg	400 kg	400 kg

## OPERATING RANGES



# SC300F/400L/500/ 700DL



SC700DL

## Heavy Payload Series

### Robot Features

- > Increased speeds for greater productivity
- > Largest payloads in the industry designed to be used to transfer large and heavy parts
- > Precise movement enables  $\pm 0.5$  mm repeatability
- > Space saving design allows for flexible installation
- > Low maintenance results in greater uptime and reduced lifecycle cost



SC400L

SC300F

## APPLICATIONS

Loading  
Handling

Palletizing  
Heavy Load Conveying

# SC300F/400L/500/700DL



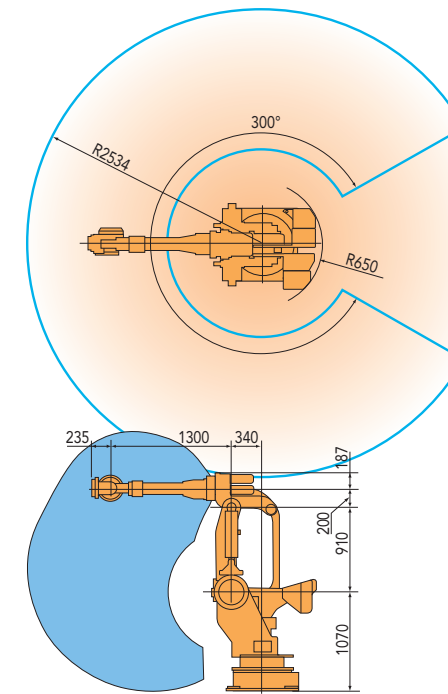
## BASIC SPECIFICATIONS

		SC300F	SC400L	SC500	SC700DL
Construction		Articulated	Articulated	Articulated	Articulated
Degrees of freedom		6	6	6	6
Drive		AC Servo Motor	AC Servo Motor	AC Servo Motor	AC Servo Motor
Maximum Stroke	Arm J1 Swivel	±150°	±150°	±150°	±160°
	J2 Back & Forth	+75°	+105° ~ -25°	+75° ~ -55°	+85° ~ -45°
	J3 Up & Down	+30° ~ -125°	+120° ~ -25°	+30° ~ -125°	+40° ~ -90°
	Wrist J4 Rotation 2	±360°	±300°	±300°	±125°
	J5 Bend	±125°	±120°	±120°	+120° ~ -10°*
	J6 Rotation 1	±360°	±360°	±360°	±10°
Maximum Velocity	Arm J1 Swivel	95°/sec	80°/sec	80°/sec	450°/sec
	J2 Back & Forth	85°/sec	80°/sec	80°/sec	30°/sec
	J3 Up & Down	85°/sec	80°/sec	80°/sec	40°/sec
	Wrist J4 Rotation 2	110°/sec	90°/sec	90°/sec	50°/sec
	J5 Bend	110°/sec	90°/sec	90°/sec	40°/sec
	J6 Rotation 1	180°/sec	145°/sec	145°/sec	30°/sec
Loading Weight	Wrist	300 kg	400 kg	500 kg	700 kg
	Upper Arm	20 kg	30 kg	30 kg	—
Wrist Torque	J4 Rotation 2	170 kg · m	200 kg · m	200 kg · m	400 kg · m
	J5 Bend	170 kg · m	200 kg · m	200 kg · m	1408 kg · m
	J6 Rotation 1	70 kg · m	147 kg · m	147 kg · m	300 kg · m
Allowable Moment of Inertia	J4 Rotation 2	96.3 kg · m <sup>2</sup>	200 kg · m <sup>2</sup>	200 kg · m <sup>2</sup>	1800 kg · m <sup>2</sup>
	J5 Bend	96.3 kg · m <sup>2</sup>	200 kg · m <sup>2</sup>	200 kg · m <sup>2</sup>	3000 kg · m <sup>2</sup>
	J6 Rotation 1	16.3 kg · m <sup>2</sup>	147 kg · m <sup>2</sup>	147 kg · m <sup>2</sup>	1000 kg · m <sup>2</sup>
Repeatability		±0.5 mm	±0.5 mm	±0.5 mm	±0.5 mm
Ambient Temperature		0~45°C (32~113°F)	0~45°C (32~113°F)	0~45°C (32~113°F)	0~45°C (32~113°F)
Installation		Floor	Shelf	Floor	Floor
Robot Body Weight		1,800 kg	3,800 kg	3,000 kg	7,000 kg

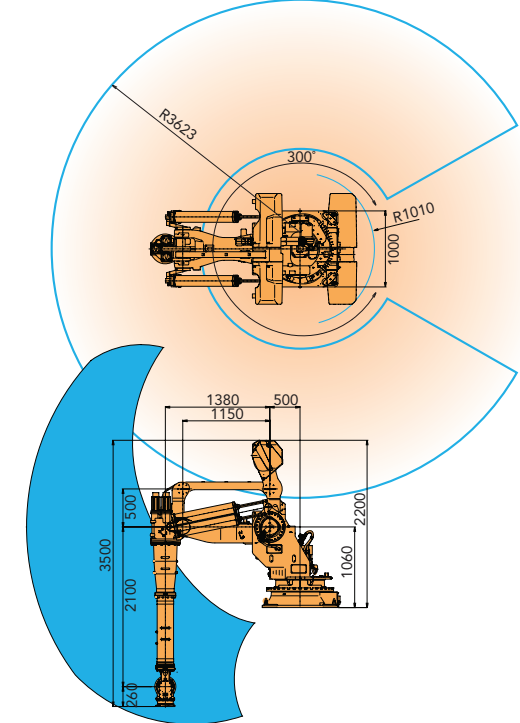
\*Net stroke at a given pose is +15° / -5°

## OPERATING RANGES

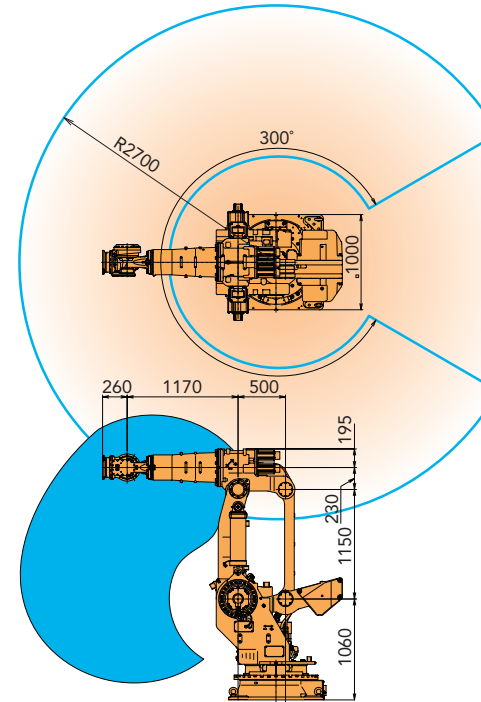
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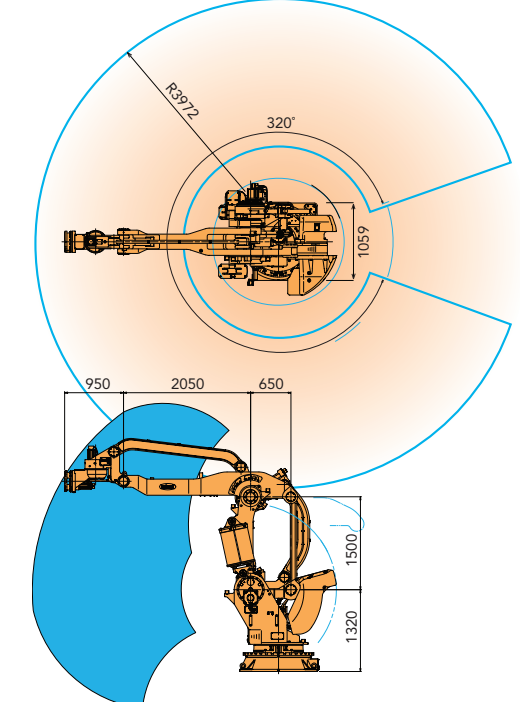
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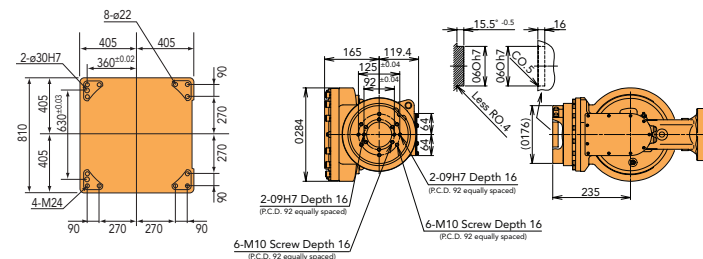
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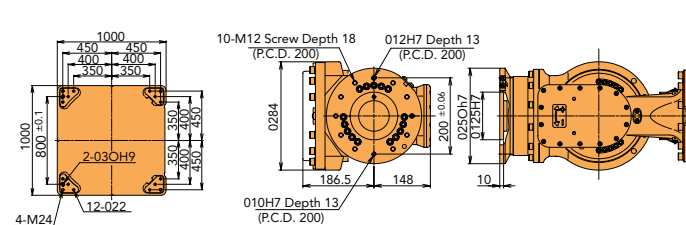
SC700



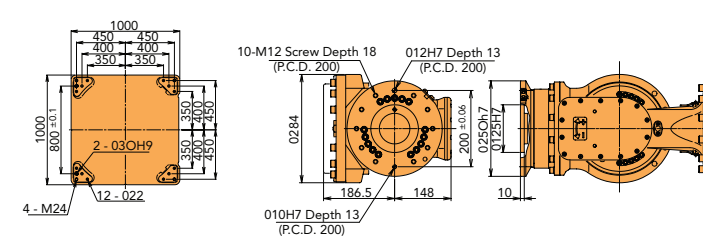
SC300F FOOT AND WRIST



SC400L FOOT AND WRIST



SC500 FOOT AND WRIST



SC700 FOOT AND WRIST

