

SCARA Robots **IXA**

Arm length
800/1000mm types are newly added



IXA



Fastest in the industry!

Introducing the new SCARA Robot IXA!

Industry Top

1 Fastest cycle time - **0.26s**

Standard cycle time

High-speed type
(IXA-NSN)

0.26s

0.12s
Faster

Standard type
(IXA-NNN)

0.38s

Continuous cycle time (duty 100%)

High-speed type
(IXA-NSN)

0.45s

0.10s
Faster

Standard type
(IXA-NNN)

0.55s

Operational conditions

- ▶ 2kg transport
- ▶ Horizontal movement 300mm/
Vertical movement 25mm

Horizontal movement



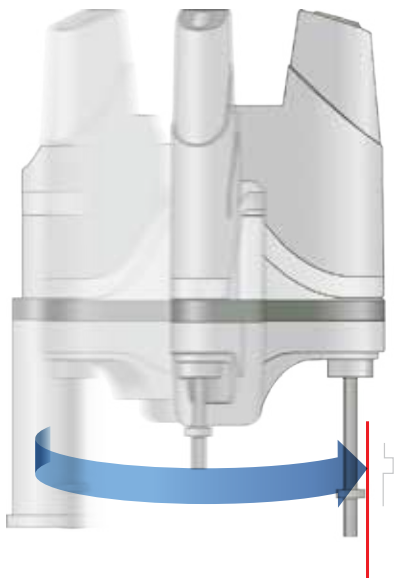
* The cycle times are measured under the operating conditions of an arch-motion shown above.

2 Achieves a lower price

Our new SCARA robot is even more affordable than previous models. It offers even better performance and functionality.

3 Low vibration and accurate positioning

Higher rigidity and optimized control results in significantly less vibration at the time of stopping.



Stops on a dime!

Operational conditions

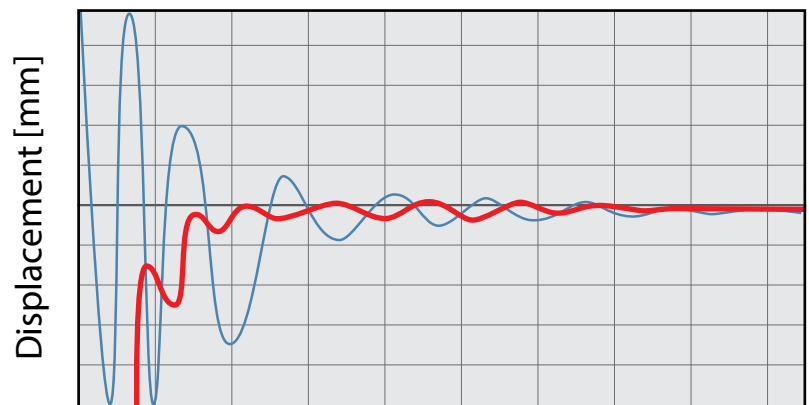
X direction

— IX (IX-NSN5016H)

Cyclotime 0.29s

— IXA (IXA-4NSN4518)

Cyclotime 0.26s



Time [s]

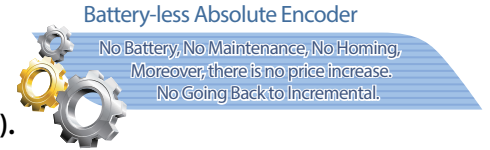
Payload: 2 kg



4 Equipped with a battery-less absolute encoder as standard

Advantages of Battery-less Absolute

- ▶ The machine will no longer stop due to battery error (voltage drop, etc.).
- ▶ There is no need to purchase replacement batteries.
- ▶ No tiresome battery replacement or absolute reset.



5 Dust / Splash-proof specification suitable for environment

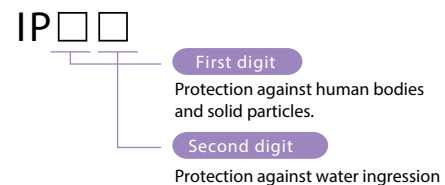
Compliant to degree of protection of **IP65**.



IP65	Solid particle	(Summary) dust-proof * Dusts are totally shut out and do not ingress the main body.
	Water	(Summary) Protection against water jet * Direct water jet from any direction shall have no harmful effects.

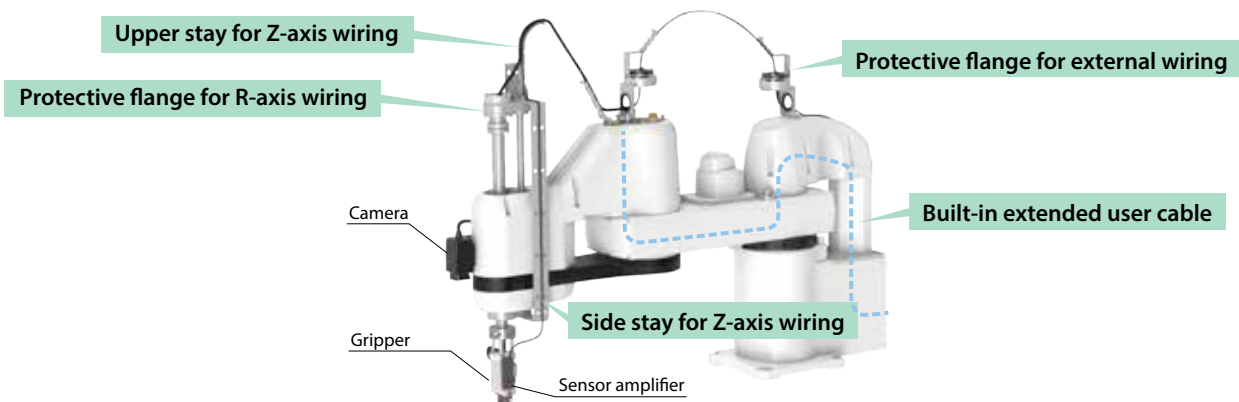
*IEC 60529 / JIS C 0920

Indication for the degree of protection



6 Full Options for Supporting Wires and Pipes

For the arm length 800mm and 1000mm types, customers can choose options for supporting wiring to the end effector.



7 Mechanical structure / features

Standard / High-speed type

Fully covered structure

The operating parts are covered for improved dust-proof rating.

Patent pending

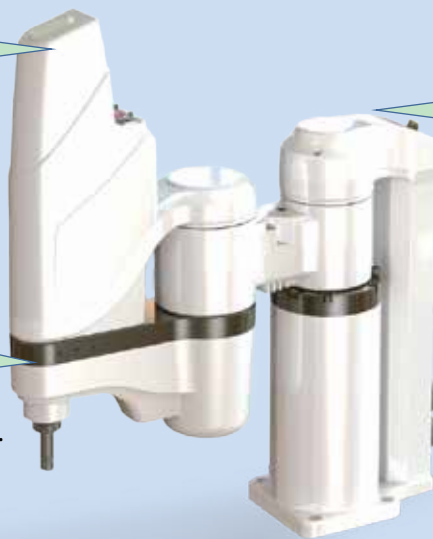
Double arm structure*

Less vibration thanks to higher rigidity. Shorter continuous cycle times thanks to better heat dissipation.

Patent pending

Built-in cables

Cables are built in for reduced height and effective use of space.



* Excluding arm length 180

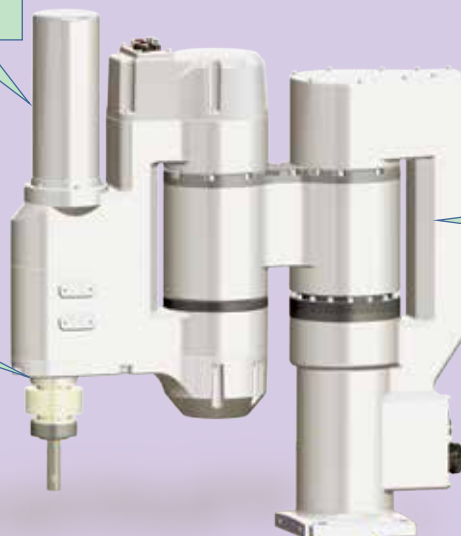
Dust / Splash-proof specification

Aluminum cover is used

When receiving direct water jet, the cover is not deformed, and water does not ingress inside. There is no swelling caused by coolant, either.

Double arm structure*

Built-in cables



*: Excluding arm length 300

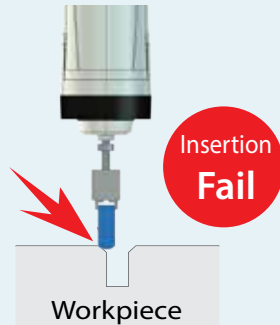
8 Control functions by controller

■ Compliance control

It controls the robot motion softly by sensing external forces and supports fitting of the workpiece by reducing the contact force at the time of insertion.

(Example) In case positional errors exist when inserting a pin into a part (workpiece).

Normal control
The pin collides with the chamfered part of the inserting hole, making insertion impossible.



Compliance control
The pin moves along the chamfered surface, enabling the pin to insert.



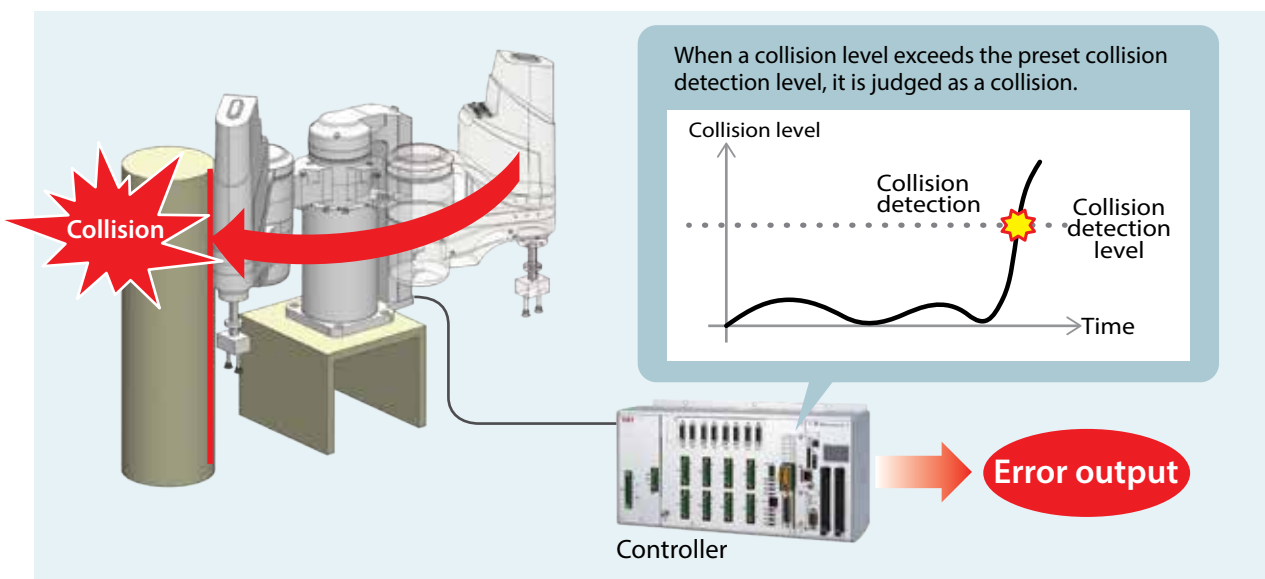
[Note]

- * Workpieces may not be inserted depending on the condition of use.
- * Inclination to the Z-axis cannot be traced.
- * Depending on the materials of the workpiece and the hole, damages may occur.

* This is not applicable to the arm length of 180 and dust- and splash-proof specification.

■ Collision detection function

If the SCARA robot detects a collision with an object, it stops the operation immediately. It reduces damages on the gripper, workpiece and robot when a collision occurs.



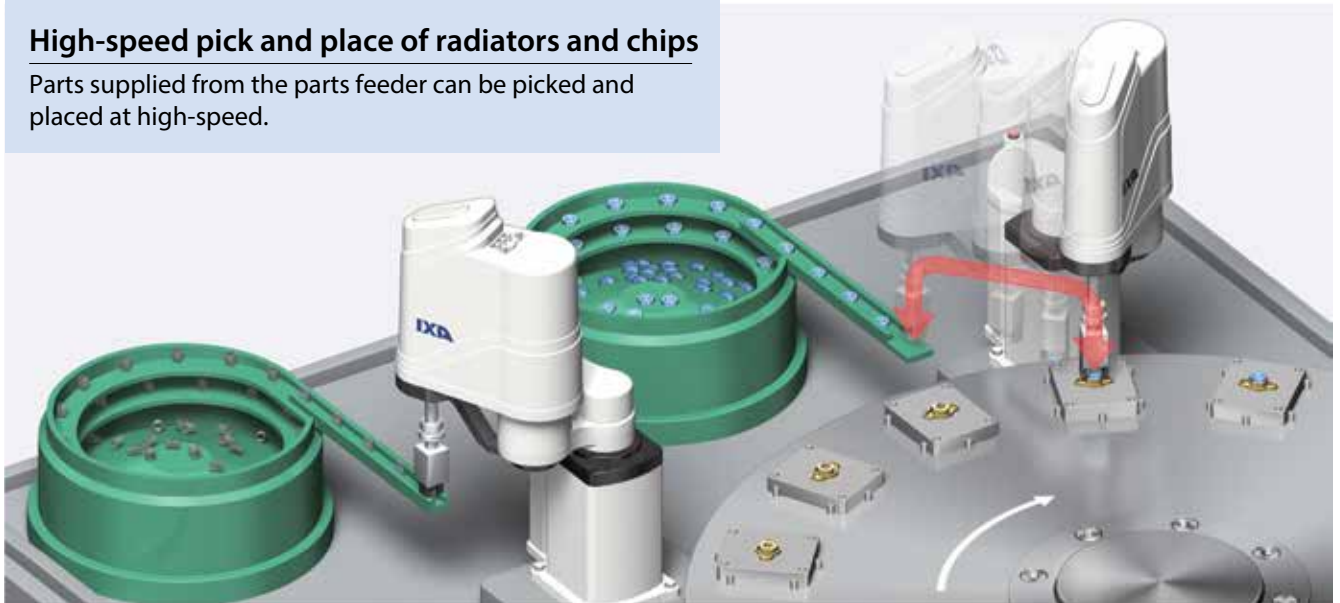
[Note]

- * It does not guarantee safety for the human body.
- * It is an auxiliary function to reduce damages on the peripheral devices or the like. This function will not prevent damage 100%.

* This is not applicable to the arm length of 180 and dust- and splash-proof specification.

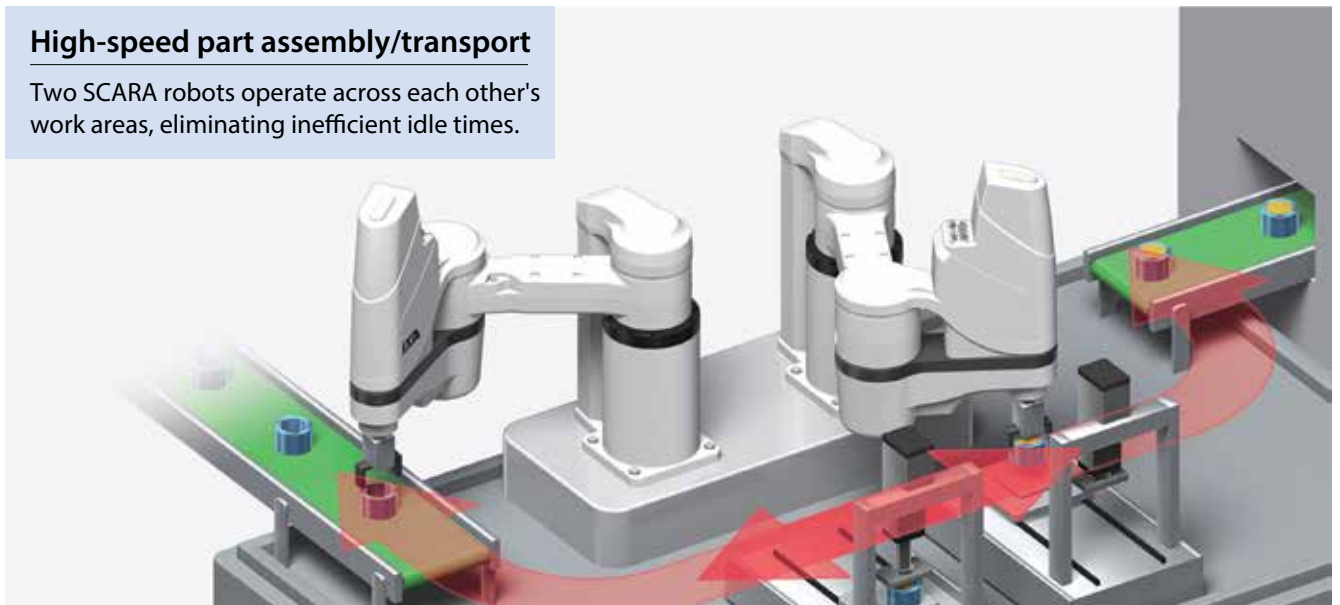
High-speed pick and place of radiators and chips

Parts supplied from the parts feeder can be picked and placed at high-speed.



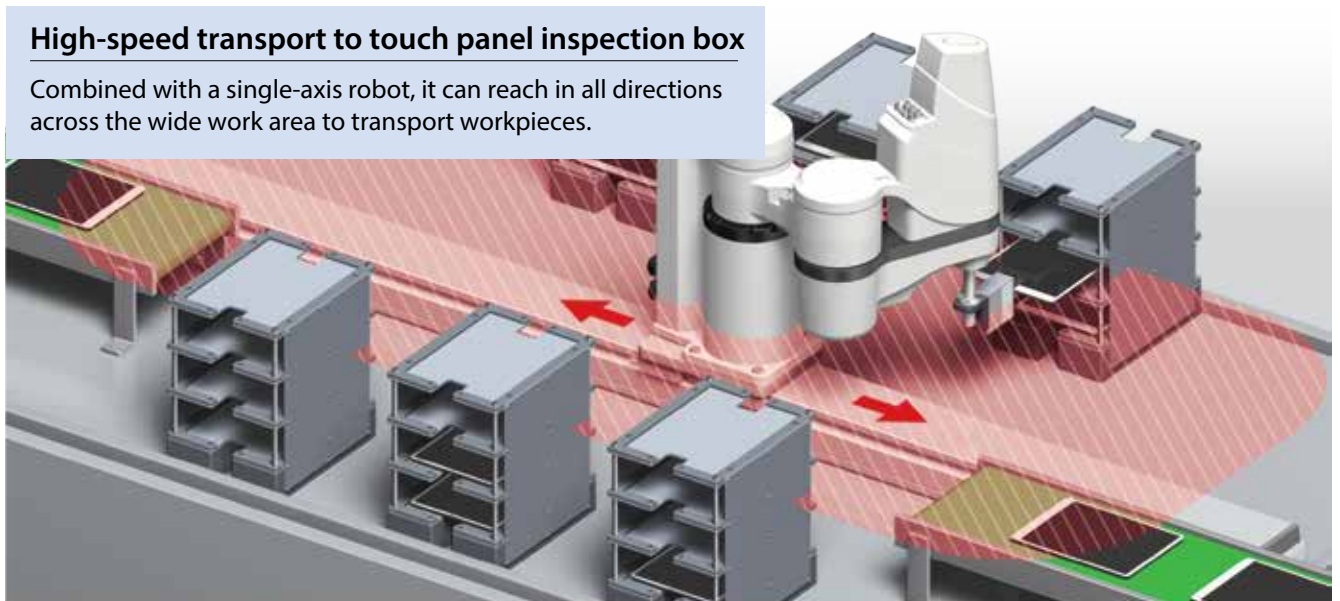
High-speed part assembly/transport

Two SCARA robots operate across each other's work areas, eliminating inefficient idle times.



High-speed transport to touch panel inspection box

Combined with a single-axis robot, it can reach in all directions across the wide work area to transport workpieces.



IXA	Type	Cable Length	T2	Options
Series			Applicable Controllers	
3NNN1805	3-axis standard type/arm length 180mm/vertical axis 50mm		T2	XSEL-RAX/SAX
4NNN1805	4-axis standard type/arm length 180mm/vertical axis 50mm			EXC Built-in extended user cable specification
3NNN3015	3-axis standard type/arm length 300mm/vertical axis 150mm			LED Pilot lamp
4NNN3015	4-axis standard type/arm length 300mm/vertical axis 150mm			
3NNN4518	3-axis standard type/arm length 450mm/vertical axis 180mm			
4NNN4518	4-axis standard type/arm length 450mm/vertical axis 180mm			
3NNN4533	3-axis standard type/arm length 450mm/vertical axis 330mm			
4NNN4533	4-axis standard type/arm length 450mm/vertical axis 330mm			
3NNN6018	3-axis standard type/arm length 600mm/vertical axis 180mm			
4NNN6018	4-axis standard type/arm length 600mm/vertical axis 180mm			
3NNN6033	3-axis standard type/arm length 600mm/vertical axis 330mm			
4NNN6033	4-axis standard type/arm length 600mm/vertical axis 330mm			
4NNN8020	4-axis standard type/arm length 800mm/vertical axis 200mm			
4NNN8040	4-axis standard type/arm length 800mm/vertical axis 400mm			
4NNN10020	4-axis standard type/arm length 1000mm/vertical axis 200mm			
4NNN10040	4-axis standard type/arm length 1000mm/vertical axis 400mm			
3NSN3015	3-axis high-speed type/arm length 300mm/vertical axis 150mm			
4NSN3015	4-axis high-speed type/arm length 300mm/vertical axis 150mm			
3NSN4518	3-axis high-speed type/arm length 450mm/vertical axis 180mm			
4NSN4518	4-axis high-speed type/arm length 450mm/vertical axis 180mm			
3NSN4533	3-axis high-speed type/arm length 450mm/vertical axis 330mm			
4NSN4533	4-axis high-speed type/arm length 450mm/vertical axis 330mm			
3NSN6018	3-axis high-speed type/arm length 600mm/vertical axis 180mm			
4NSN6018	4-axis high-speed type/arm length 600mm/vertical axis 180mm			
3NSN6033	3-axis high-speed type/arm length 600mm/vertical axis 330mm			
4NSN6033	4-axis high-speed type/arm length 600mm/vertical axis 330mm			
4NSW3015	Dust/Splash Proof Specification, 4-axis high-speed type/arm length 300mm/vertical axis 150mm			
4NSN8020	4-axis high-speed type/arm length 800mm/vertical axis 200mm			
4NSN8040	4-axis high-speed type/arm length 800mm/vertical axis 400mm			
4NSN10020	4-axis high-speed type/arm length 1000mm/vertical axis 200mm			
4NSN10040	4-axis high-speed type/arm length 1000mm/vertical axis 400mm			
4NSW4518	Dust/Splash Proof Specification, 4-axis high-speed type/arm length 450mm/vertical axis 180mm			
4NSW4533	Dust/Splash Proof Specification, 4-axis high-speed type/arm length 450mm/vertical axis 330mm			
4NSW6018	Dust/Splash Proof Specification, 4-axis high-speed type/arm length 600mm/vertical axis 180mm			
4NSW6033	Dust/Splash Proof Specification, 4-axis high-speed type/arm length 600mm/vertical axis 330mm			

T2	XSEL-RAX/SAX	EXC	Built-in extended user cable specification
		LED	Pilot lamp

N	Nil
5L	5m
10L	10m
<input type="checkbox"/> L	Specified length (1m increments), maximum length 15m

* Selectable options vary depending on the type.
For details, refer to the page for individual types.

(Example) **IXA - 3 NNN 45 18 - 5L - T2 - LED**

Number of axes: 3	Type: Standard	Arm length: 450mm	Vertical axis stroke: 180mm	Cable length: 5m	Controller: XSEL-RAX/SAX	Option: Pilot lamp
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Type	Model	Number of axes	Arm length(mm)		Vertical axis stroke(mm)	Standard cycle time (s)	Continuous cycle time (s)	Maximum payload (kg)	Reference page
			First arm	Second arm					
Standard type	IXA-3NNN1805	3 axes	80	100	50	0.26	0.45	1	▶P9
	IXA-4NNN1805	4 axes							▶P9
	IXA-3NNN3015	3 axes	120	180	150	0.38	0.55	3	▶P13
	IXA-4NNN3015	4 axes							▶P13
	IXA-3NNN4518	3 axes	200	250	180			3	▶P17
	IXA-4NNN4518	4 axes							▶P17
	IXA-3NNN4533	3 axes			330				▶P17
	IXA-4NNN4533	4 axes							▶P17
	IXA-3NNN6018	3 axes	350	250	180			6	▶P21
	IXA-4NNN6018	4 axes							▶P21
	IXA-3NNN6033	3 axes			330				▶P21
	IXA-4NNN6033	4 axes							▶P21
	<div>NEW</div> IXA-4NNN8020	4 axes	400	400	200	0.43	21	▶P25	
	<div>NEW</div> IXA-4NNN8040	4 axes			400			▶P25	
	<div>NEW</div> IXA-4NNN10020	4 axes	600	400	200	0.45	21	▶P29	
	<div>NEW</div> IXA-4NNN10040	4 axes			400			▶P29	
High-speed type	IXA-3NSN3015	3 axes	120	180	150	0.26	0.45	8	▶P33
	IXA-4NSN3015	4 axes							▶P33
	IXA-3NSN4518	3 axes	200	250	180			10	▶P37
	IXA-4NSN4518	4 axes							▶P37
	IXA-3NSN4533	3 axes			330				▶P37
	IXA-4NSN4533	4 axes							▶P37
	IXA-3NSN6018	3 axes	350	250	180			12	▶P41
	IXA-4NSN6018	4 axes							▶P41
	IXA-3NSN6033	3 axes			330				▶P41
	IXA-4NSN6033	4 axes							▶P41
	<div>NEW</div> IXA-4NSN8020	4 axes	400	400	200	0.29	24	▶P45	
	<div>NEW</div> IXA-4NSN8040	4 axes			400			▶P45	
	<div>NEW</div> IXA-4NSN10020	4 axes	600	400	200	0.32	24	▶P49	
	<div>NEW</div> IXA-4NSN10040	4 axes			400			▶P49	
Dust / splash-proof specification, high-speed type	IXA-4NSW3015	4 axes	155	145	150	0.38	0.69	6	▶P53
	IXA-4NSW4518	4 axes	200	250	180	0.38	0.55	8	▶P57
	IXA-4NSW4533				330				▶P57
	IXA-4NSW6018	4 axes	350	250	180	0.38	0.57	10	▶P61
	IXA-4NSW6033				330				▶P61

IXA-3NNN1805

IXA-4NNN1805

Battery-less
AbsoluteArm Length:
180
mmVertical Axis:
50
mm

Model Specification Items

IXA		NNN		18		05		T2	
Series		Type		Arm length		Vertical stroke		Cable length	Applicable controller
3	3 axes	NNN	Standard type	18	180mm	5	50mm	N	Nil
4	4 axes							5L	5m
								10L	10m
								<input type="checkbox"/> L	Specified length (1m increments)
								T2	XSEL-RAX/SAX



Main specifications

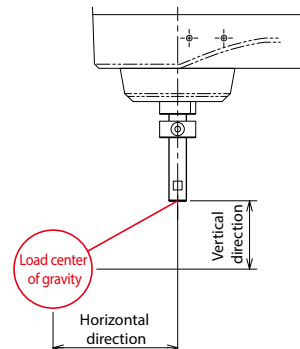
Item		Description	
		3-axis specification	4-axis specification
Max. payload (kg) (Note 1)		1	
Speed (Note 2)	Combined max. speed (mm/s)	2638	
	1st arm (deg/s)	540	
	2nd arm (deg/s)	540	
	Vertical axis (mm/s)	850	
	Rotational axis (deg/s)	—	1600
Push force (N) (Note 3)		Upper limit	40
		Lower limit	5
Arm length (mm)		180	
Individual arm length (mm)	1st arm	80	
	2nd arm	100	
Operation range of individual axes	1st arm (deg)	±125	
	2nd arm (deg)	±145	
	Vertical axis (mm)	50	
	Rotational axis (deg)	—	±360

Item		Description	
		3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm	
	Vertical axis	±0.01mm	
User wiring	Rotational axis	—	
		±0.01 degrees	
User piping		10-core (9-core + shield) AWG25 (rated 30V/Max. 1A)	
Alarm lamp (Note 5)		Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)		Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	0.35 N · m	0.35 N · m
	Allowable load moment	0.5 N · m	
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection		IP20	
Vibration- and impact-resistance		No impact or vibration should be applied.	
Noise (Note 7)		80 dB or lower	
International standard		CE marking, RoHS	
Motor type		AC servo motor	
Motor wattage	1st arm	50W	
	2nd arm	50W	
	Vertical axis	50W	
	Rotational axis	—	50W
Encoder type		Battery-less absolute	
Encoder pulse		16384 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.004 kg · m ²
4-axis specification	

Make sure that the offset dimensions from the spline tip to the horizontal and vertical directions are within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter life time. Adjust the speed, acceleration/deceleration or center of gravity. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
30mm or less	20mm or less



- (1) Please refer to P67 for Notes 1 - 9.
- (2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance and the location. Operating continuously at the maximum set value could cause an overload error. For a continuous operation, either lower the acceleration/deceleration values or set a stop time after acceleration/deceleration, referring to the duty (guideline)
- (3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
- (4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR□□□-CS	71
Flange	IX-FL-4	70

(Note) Please purchase separately.

Cable length

Type	Cable code	3-axis specification	4-axis specification
Standard type	5L(5m)	<input type="radio"/>	<input type="radio"/>
	10L(10m)	<input type="radio"/>	<input type="radio"/>
	11L(11m) ~ 4L(4m)	<input type="radio"/>	<input type="radio"/>
Specified length	6L(6m) ~ 9L(9m)	<input type="radio"/>	<input type="radio"/>
	11L(11m)	<input type="radio"/>	<input type="radio"/>
	12L(12m)	<input type="radio"/>	<input type="radio"/>
	13L(13m)	<input type="radio"/>	<input type="radio"/>
	14L(14m)	<input type="radio"/>	<input type="radio"/>
	15L(15m)	<input type="radio"/>	<input type="radio"/>

(Note) Total amount of the following cables:
[3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.26 seconds
Continuous cycle time	0.45 seconds

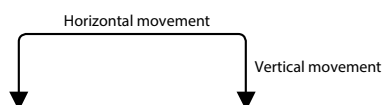
The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.
0.2kg transport, vertical movement 25mm, horizontal movement 100mm (rough positioning arch motion)

[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

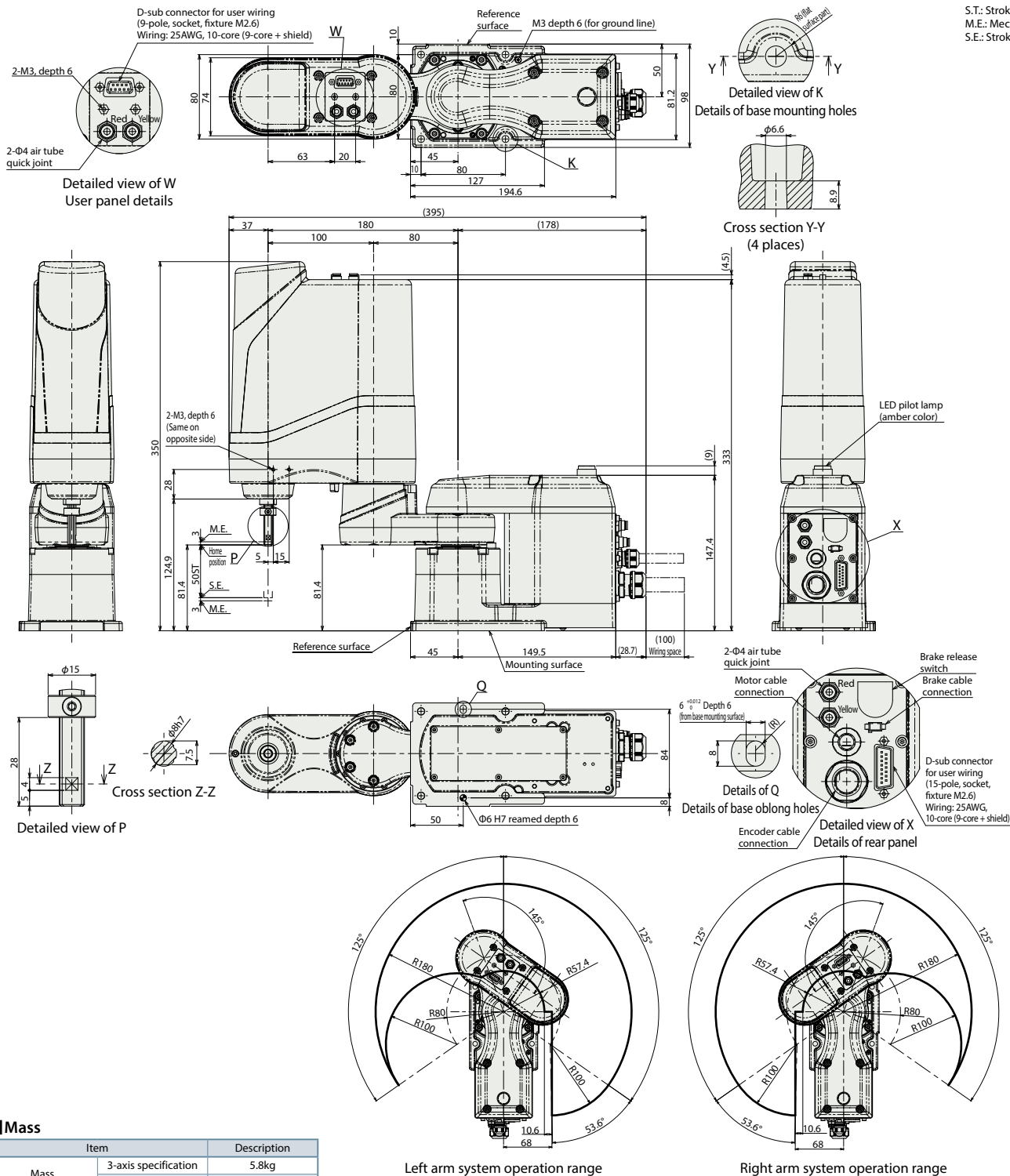
The cycle time for continuous operation.



Dimensions

(Note) Refer to P68 (Note 9) for cable connections

CAD drawings can be downloaded from our website.
www.intelligentactuator.com




■ **Mass**

Item		Description
Mass	3-axis specification	5.8kg
	4-axis specification	6.2kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method														Max. number of positioning points	Reference page
				Positioner	Pulse train	Program	Network* option												
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN		
XSEL-RAX/SAX		8	3-phase AC200V	—	—	●	●	—	●	—	—	—	●	●	—	—	—	36666 (Depending on the type)	73

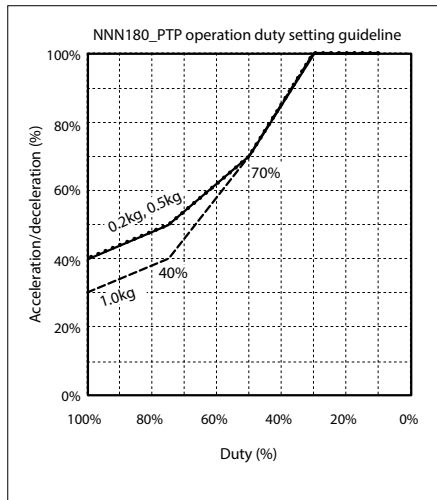
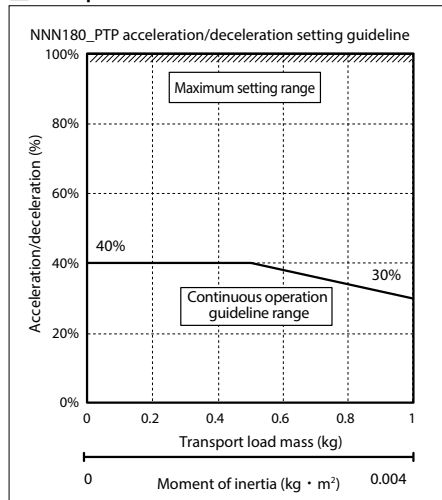
(Note) Up to one SCARA robot + one 4-axis robot can be controlled.

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

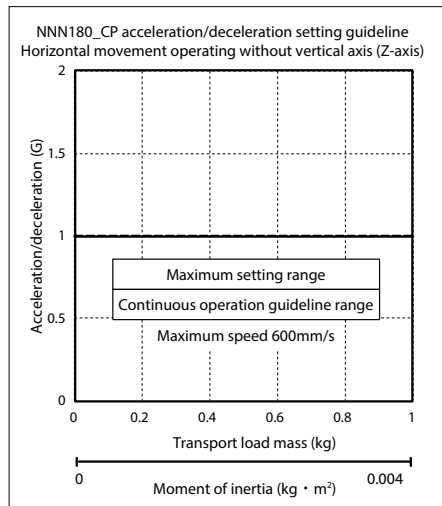
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) × 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

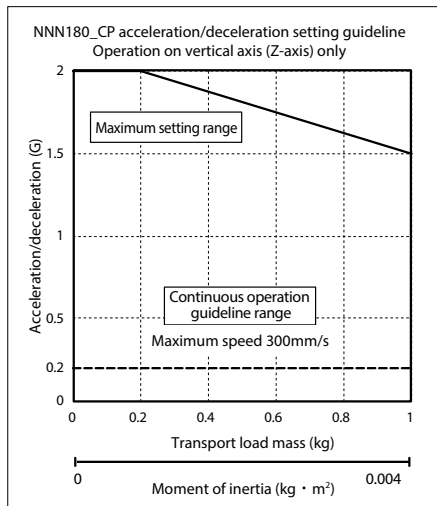


CP Operation

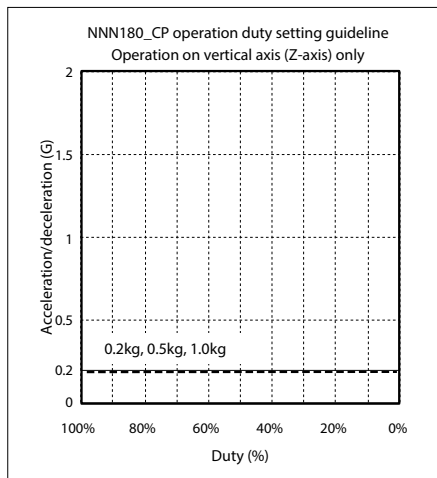
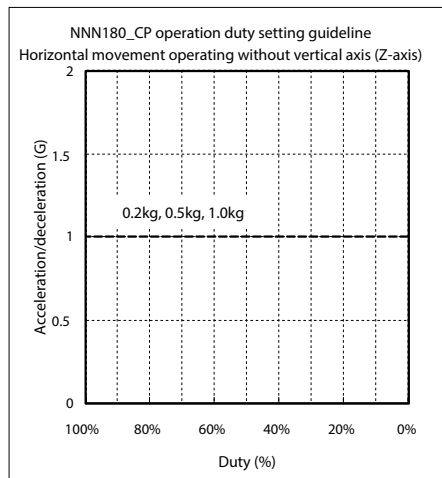
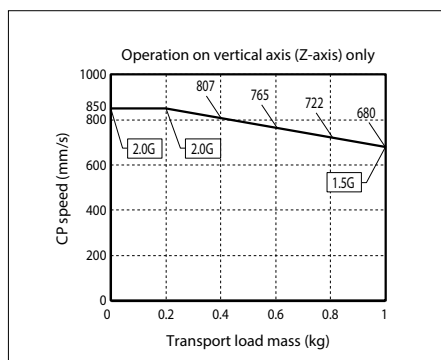
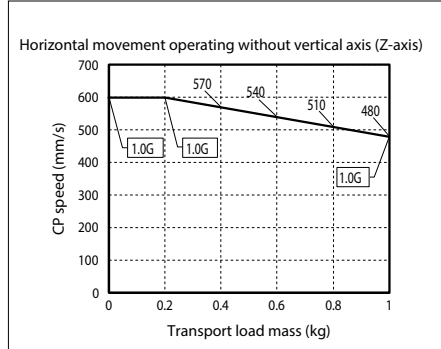
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



IXA-3NNN3015

IXA-4NNN3015

Battery-less
AbsoluteArm Length:
300
mmVertical Axis:
150
mm

Model Specification Items

IXA	—	NNN	30	15	—	T2	—
Series	Number of axes	Type	Arm length	Vertical stroke	Cable length	Applicable controller	Option
	3 3 axes	NNN Standard type	30 300mm	15 150mm	N Nil	T2 XSEL-RAX/SAX	See below
	4 4 axes				5L 5m		
					10L 10m		
					<input type="checkbox"/> L Specified length (1m increments)		



Main specifications

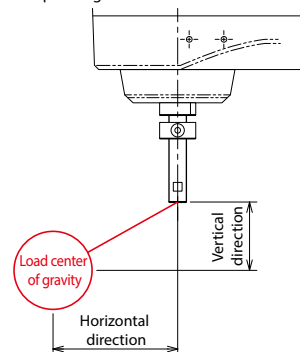
Item		Description	
		3-axis specification	4-axis specification
Max. payload (kg) (Note 1)		3	
Speed (Note 2)	Combined max. speed (mm/s)	5529	
	1st arm (deg/s)	660	
	2nd arm (deg/s)	660	
	Vertical axis (mm/s)	1400	
	Rotational axis (deg/s)	—	1600
Push force (N) (Note 3)	Upper limit	60	
	Lower limit	10	
Arm length (mm)		300	
Individual arm length (mm)	1st arm	120	
	2nd arm	180	
Operation range of individual axes	1st arm (deg)	±135	
	2nd arm (deg)	±142	
	Vertical axis (mm)	150	
	Rotational axis (deg)	—	±360

Item		Description	
		3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01 mm	
	Vertical axis	±0.01 mm	
User wiring	Rotational axis	—	±0.005 degrees
		10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping		Outer diameter Φ4, inner diameter Φ2.5, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)		Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)		Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m	3.2 N·m
	Allowable load moment	4.5 N·m	
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection		IP20	
Vibration- and impact-resistance		No impact or vibration should be applied.	
Noise (Note 7)		80 dB or lower	
International standard		CE marking, RoHS	
Motor type		AC servo motor	
Motor wattage	1st arm	400W	
	2nd arm	200W	
	Vertical axis	100W	
	Rotational axis	—	100W
Encoder type		Battery-less absolute	
Encoder pulse		16384 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.06 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
150mm or less	100mm or less

POINT Selection Notes	(1) Please refer to P67 for Notes 1 - 9.
	(2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
	(3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
	(4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
LED pilot lamp	LED	69

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR□□□-CS	71
Flange	IX-FL-1	70

(Note) Please purchase separately.

Cable length

Type	Cable code	3-axis specification	4-axis specification
Standard type	5L(5m)	<input type="radio"/>	<input type="radio"/>
	10L(10m)	<input type="radio"/>	<input type="radio"/>
	1L(1m) ~ 4L(4m)	<input type="radio"/>	<input type="radio"/>
Specified length	6L(6m) ~ 9L(9m)	<input type="radio"/>	<input type="radio"/>
	11L(11m)	<input type="radio"/>	<input type="radio"/>
	12L(12m)	<input type="radio"/>	<input type="radio"/>
	13L(13m)	<input type="radio"/>	<input type="radio"/>
	14L(14m)	<input type="radio"/>	<input type="radio"/>
	15L(15m)	<input type="radio"/>	<input type="radio"/>

(Note) Total amount of the following cables:
[3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.55 seconds

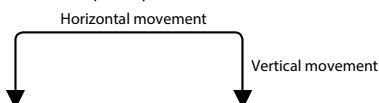
The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.
2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.

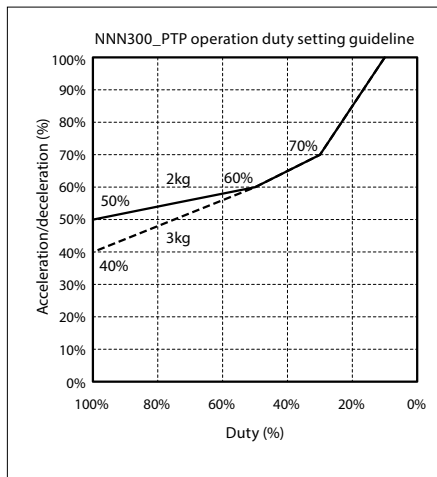
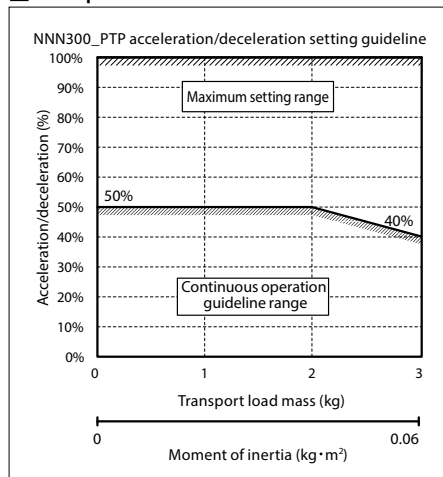


Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

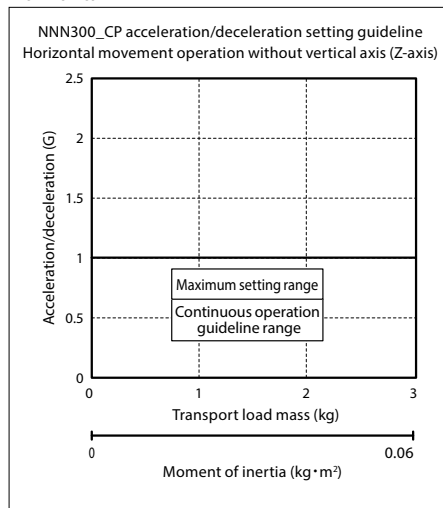
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) × 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

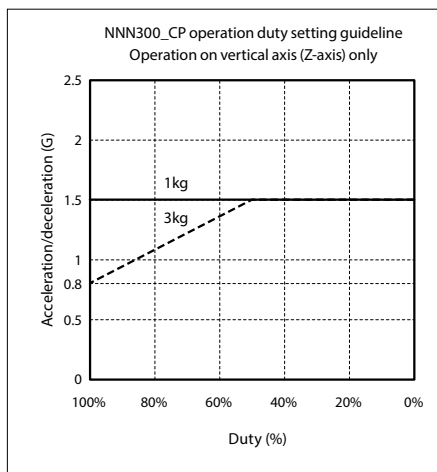
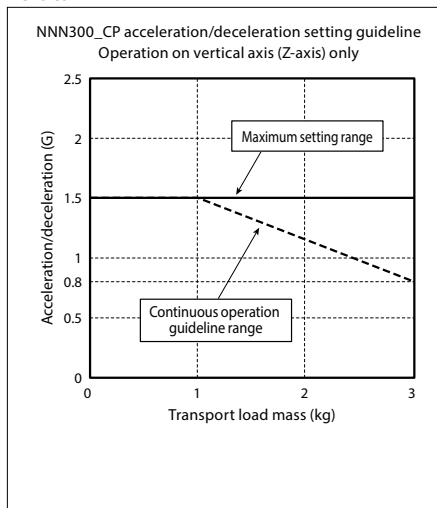


CP Operation

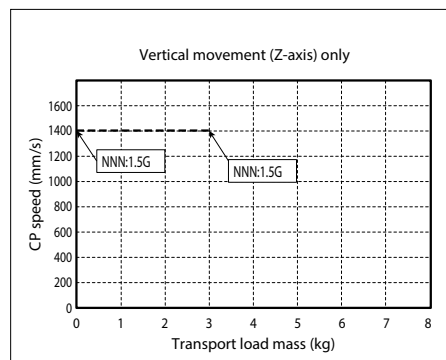
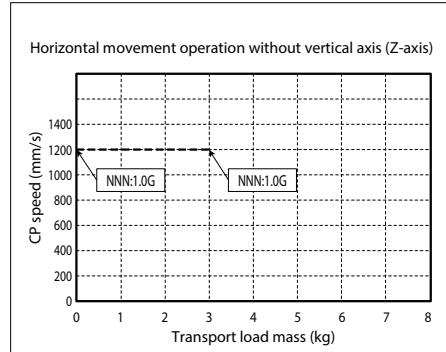
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



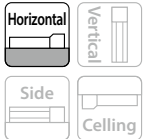
IXA-3NNN45

IXA-4NNN45

Battery-less
AbsoluteArm Length:
450
mmVertical Axis:
180/330
mm

Model Specification Items

IXA	—	NNN	45	—	—	T2	—
Series	Number of axes	Type	Arm length	Vertical stroke	Cable length	Applicable controller	Option
	3 3 axes	NNN Standard type	45 450mm	18 180mm 33 330mm	N Nil 5L 5m 10L 10m <input type="checkbox"/> L Specified length (1m increments)	T2 XSEL-RAX/SAX	See below



Main specifications

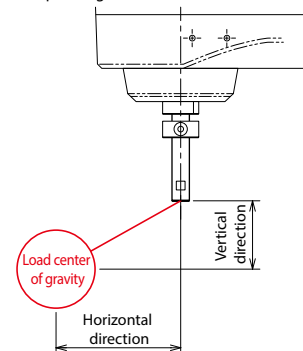
Item		Description	
		3-axis specification	4-axis specification
Max. payload (kg) (Note 1)		3	
Speed (Note 2)	Combined max. speed (mm/s)	7453	
	1st arm (deg/s)	610	
	2nd arm (deg/s)	610	
	Vertical axis (mm/s)	1200	
	Rotational axis (deg/s)	—	2000
Push force (N) (Note 3)		Upper limit	55
		Lower limit	10
Arm length (mm)		450	
Individual arm length (mm)	1st arm	200	
	2nd arm	250	
Operation range of individual axes	1st arm (deg)	±137	
	2nd arm (deg)	±137	
	Vertical axis (mm)	180/330	
	Rotational axis (deg)	—	±360

Item		Description	
		3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm	
	Vertical axis	±0.01mm	
	Rotational axis	—	±0.005 degrees
User wiring		10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping		Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)		Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)		Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N · m	3.2 N · m
	Allowable load moment	8.3 N · m	—
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection		IP20	
Vibration- and impact-resistance		No impact or vibration should be applied.	
Noise (Note 7)		80 dB or lower	
International standard		CE marking, RoHS	
Motor type		AC servo motor	
Motor wattage	1st arm	400W	
	2nd arm	200W	
	Vertical axis	100W	
	Rotational axis	—	100W
Encoder type		Battery-less absolute	
Encoder pulse		16384 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.05 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
120mm or less	100mm or less



- (1) Please refer to P67 for Notes 1 - 9.
- (2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
- (3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
- (4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
LED pilot lamp	LED	69

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR-□□-CS	71
Flange	IX-FL-1	70

(Note) Please purchase separately.

Cable length

Type	Cable code	3-axis specification	4-axis specification
Standard type	5L(5m)	<input type="radio"/>	<input type="radio"/>
	10L(10m)	<input type="radio"/>	<input type="radio"/>
	1L(1m) ~ 4L(4m)	<input type="radio"/>	<input type="radio"/>
	6L(6m) ~ 9L(9m)	<input type="radio"/>	<input type="radio"/>
Specified length	11L(11m)	<input type="radio"/>	<input type="radio"/>
	12L(12m)	<input type="radio"/>	<input type="radio"/>
	13L(13m)	<input type="radio"/>	<input type="radio"/>
	14L(14m)	<input type="radio"/>	<input type="radio"/>
	15L(15m)	<input type="radio"/>	<input type="radio"/>

(Note) Total amount of the following cables:
[3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.55 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.

2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

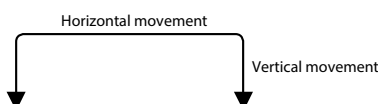
[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance.

Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.

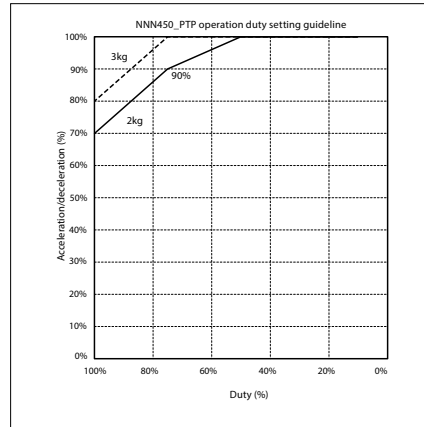
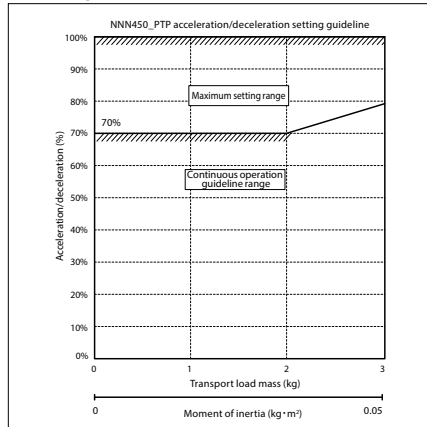


Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

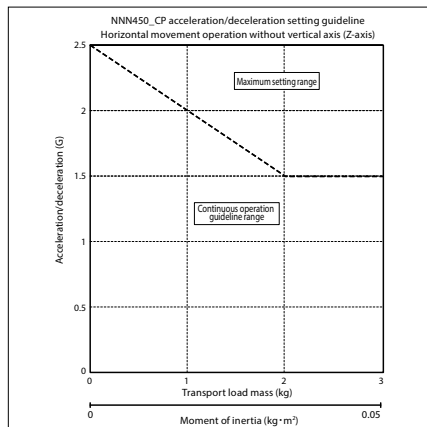
- 1) For a PTP operation, always use the WGH command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) $\text{Duty (\%)} = (\text{Operation time} / (\text{Operation time} + \text{Stop time})) \times 100$
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

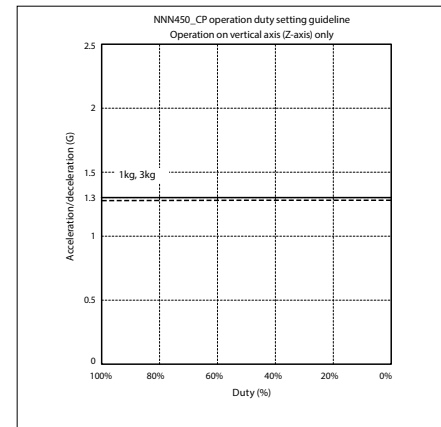
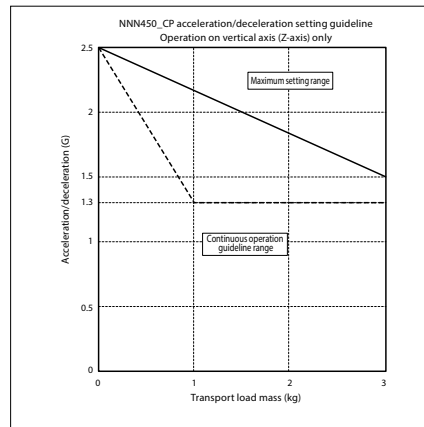


CP Operation

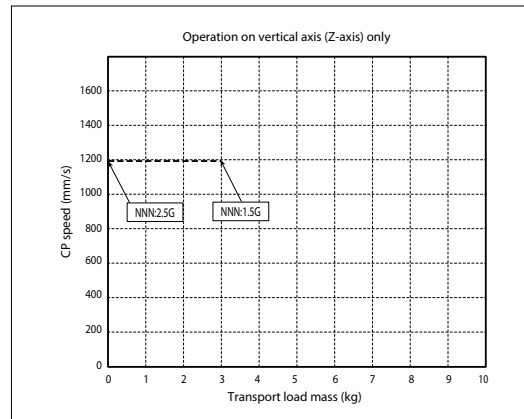
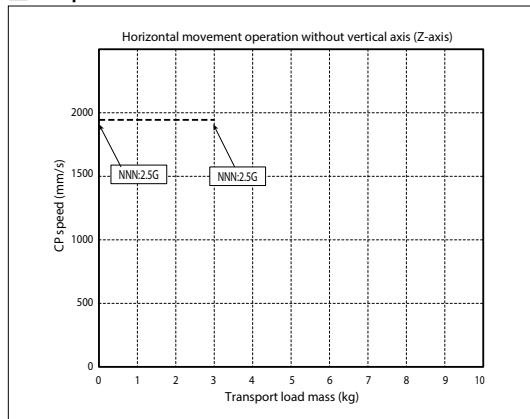
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



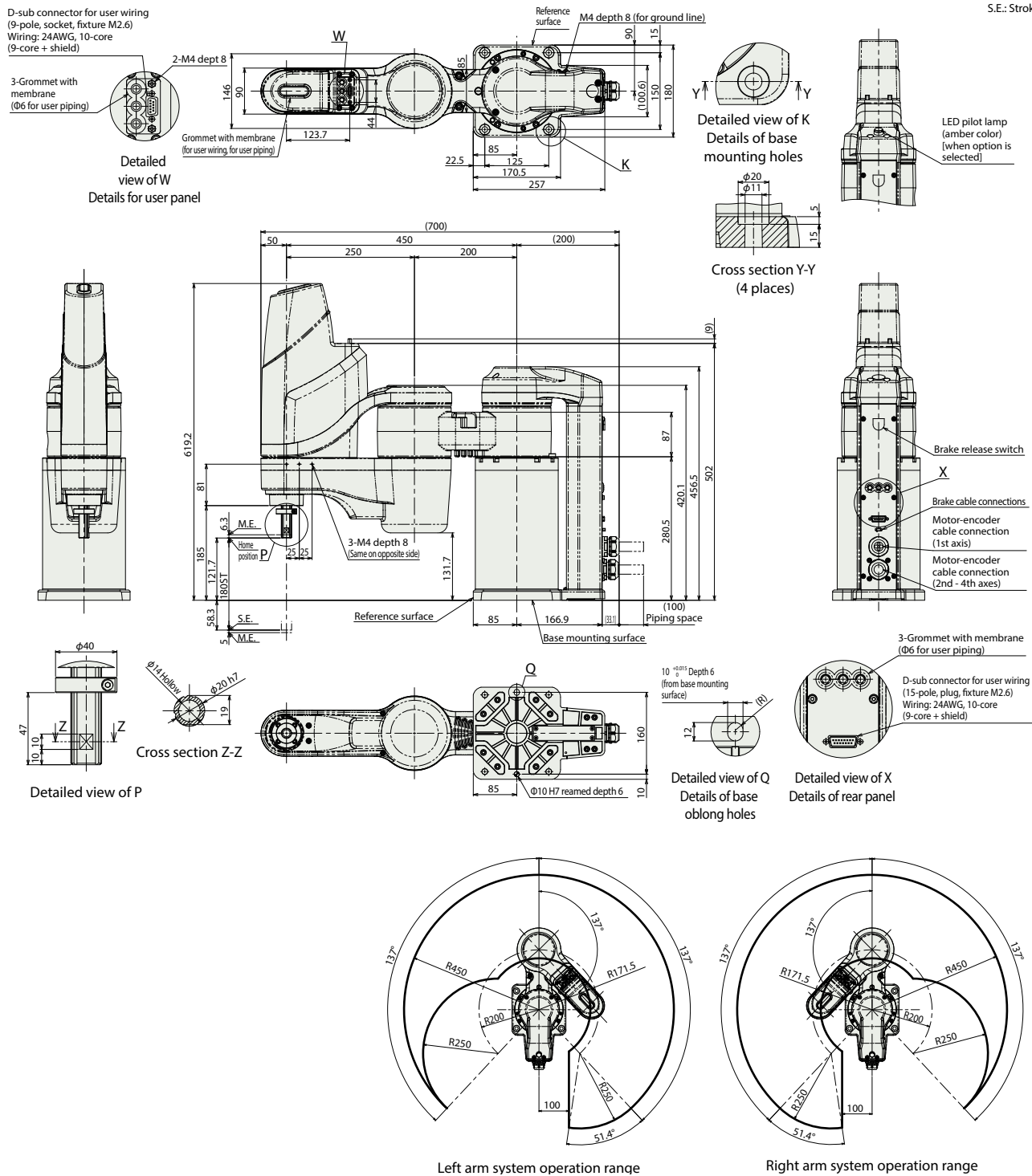
IXA-3NNN4518_4NNN4518

(Note) Refer to P68 (Note 9) for cable connections

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

2D
CAD3D
CAF

S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ **Mass**

Item		Description
Mass	3-axis specification	25.5kg
	4-axis specification	27.0kg

IXA-3NNN4533_4NNN4533

(Note) Refer to P68 (Note 9) for cable connections

D-sub connector for user wiring
(9-pole, socket, fixture M2.6)
Wiring: 24AWG, 10-core
(9-core + shield)

3-Grommet with
membrane
(Ø6 for user piping)

2-M4, depth 8

Grommet with membrane
(for user wiring, for user piping)

Detailed view of W
Details for user panel

Reference surface M4 depth 8 (for ground line)

Detailed view of K
Details of base
mounting holes

S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end

LED pilot lamp
(amber color)
[when option is
selected]

Cross section Y-Y
(4 places)

Brake release switch
X
Brake cable connection
Motor-encoder
cable connection
(1st axis)
Motor-encoder
cable connection
(2nd - 4th axes)

3-Grommet with
membrane
(Ø6 for user piping)

D-sub connector for user wiring
(15-pole, plug, fixture M2.6)
Wiring: 24AWG, 10-core
(9-core + shield)

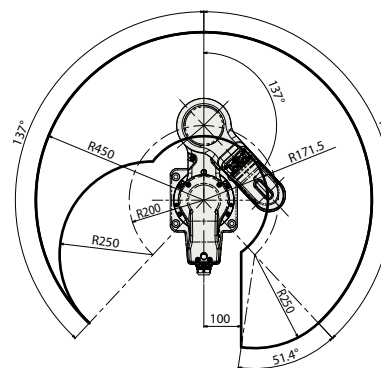
10⁻⁰⁰¹ Depth 6
(from base mounting
surface)

Detailed view of Q
Details of base
oblong holes

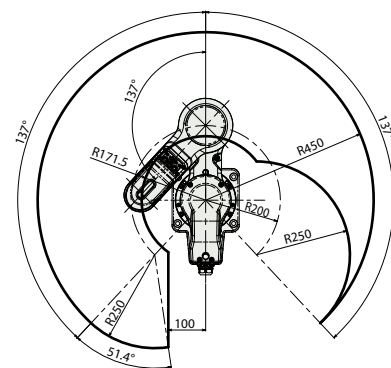
Detailed view of X
Details of rear panel

Cross section Z-Z

Detailed view of P



Left arm system operation range




Right arm system operation range

Mass

Item	Description	
Mass	3-axis specification	26.0kg
	4-axis specification	27.5kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method														Max. number of positioning points	Reference page	
				Positioner	Pulse train	Program	Network* option													
DV	CC	CIE	PR				CN	ML	ML3	EC	EP	PRT	SSN	ECM						
XSEL-RAX/SAX		8	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	●	●	—	—	—	36666 (Depending on the type)	73

(Note) Up to one SCARA robot + one 4-axis robot can be controlled.

IXA-3NNN60

IXA-4NNN60

Battery-less
AbsoluteArm Length:
600
mmVertical Axis:
180/330
mm

Model Specification Items

IXA	—	NNN	60	—	—	T2	—
Series	Number of axes	Type	Arm length	Vertical stroke	Cable length	Applicable controller	Option
	3 axes	NNN	60	18	N Nil	T2	See below
	4 axes	Standard type	600mm	180mm	5L 5m	XSEL-RAX/SAX	
				33	10L 10m		
					<input type="checkbox"/> L Specified length (1m increments)		



Main specifications

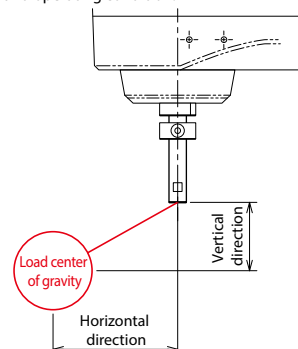
Item		Description	
		3-axis specification	4-axis specification
Max. payload (kg) (Note 1)		6	
Speed (Note 2)	Combined max. speed (mm/s)	5934	
	1st arm (deg/s)	400	
	2nd arm (deg/s)	400	
	Vertical axis (mm/s)	1600	
	Rotational axis (deg/s)	—	2000
Push force (N) (Note 3)	Upper limit	110	
	Lower limit	25	
Arm length (mm)		600	
Individual arm length (mm)	1st arm	350	
	2nd arm	250	
Operation range of individual axes	1st arm (deg)	±137	
	2nd arm (deg)	±140	
	Vertical axis (mm)	180/330	
	Rotational axis (deg)	—	±360

Item		Description	
		3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm	
	Vertical axis	±0.01mm	
	Rotational axis	—	±0.005 degrees
User wiring		10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping		Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)		Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)		Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m	3.2 N·m
	Allowable load moment	8.3 N·m	
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection		IP20	
Vibration- and impact-resistance		No impact or vibration should be applied.	
Noise (Note 7)		80 dB or lower	
International standard		CE marking, RoHS	
Motor type		AC servo motor	
Motor wattage	1st arm	600W	
	2nd arm	200W	
	Vertical axis	200W	
	Rotational axis	—	100W
Encoder type		Battery-less absolute	
Encoder pulse		16384 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.06 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
120mm or less	100mm or less

POINT Selection Notes	(1) Please refer to P67 for Notes 1 - 9.
	(2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
	(3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
	(4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
LED pilot lamp	LED	69

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR□□□-CS	71
Flange	IX-FL-1	70

(Note) Please purchase separately.

Cable length

Type	Cable code	3-axis specification	4-axis specification
Standard type	5L(5m)	<input type="radio"/>	<input type="radio"/>
	10L(10m)	<input type="radio"/>	<input type="radio"/>
	1L(1m) ~ 4L(4m)	<input type="radio"/>	<input type="radio"/>
	6L(6m) ~ 9L(9m)	<input type="radio"/>	<input type="radio"/>
Specified length	11L(11m)	<input type="radio"/>	<input type="radio"/>
	12L(12m)	<input type="radio"/>	<input type="radio"/>
	13L(13m)	<input type="radio"/>	<input type="radio"/>
	14L(14m)	<input type="radio"/>	<input type="radio"/>
	15L(15m)	<input type="radio"/>	<input type="radio"/>
		<input type="radio"/>	<input type="radio"/>

(Note) Total amount of the following cables:
 [3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
 [4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.55 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.

2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

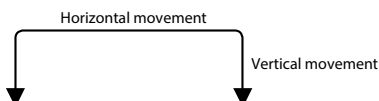
[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance.

Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.

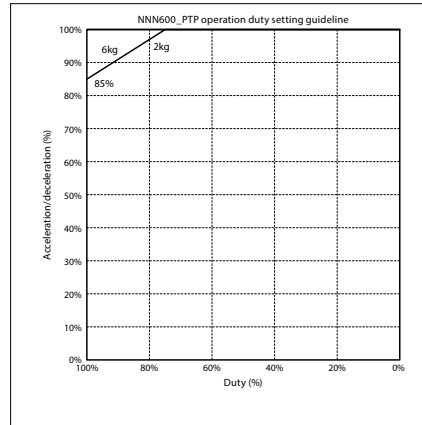
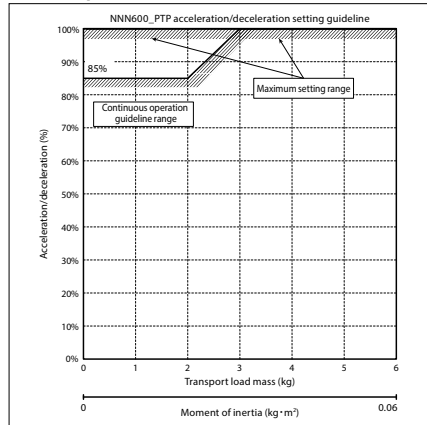


Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

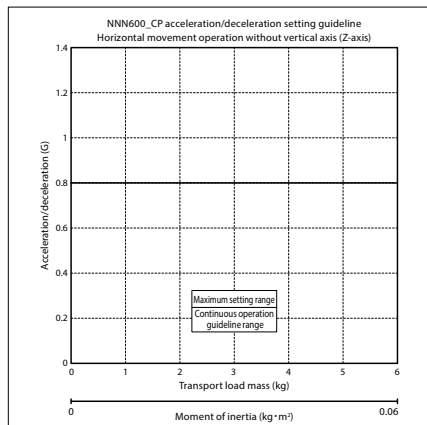
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) x 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

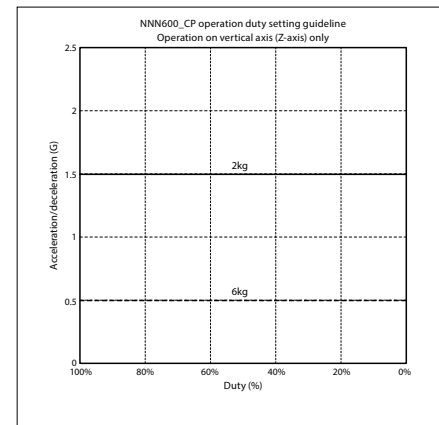
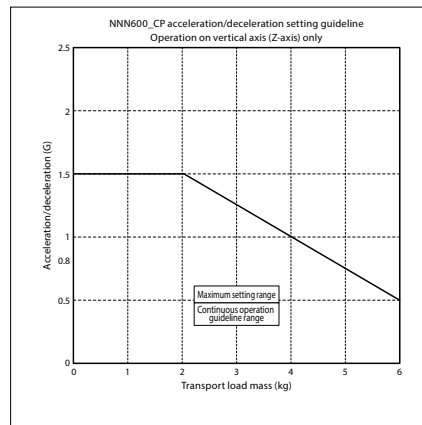


CP Operation

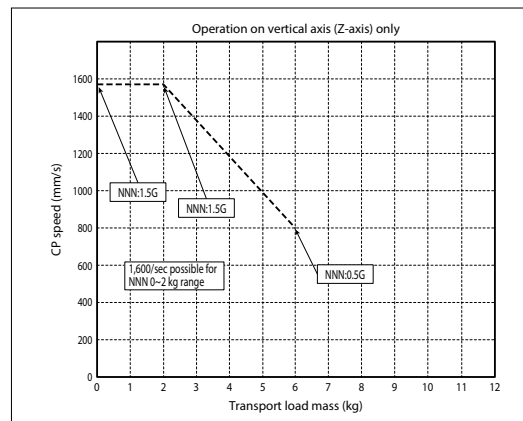
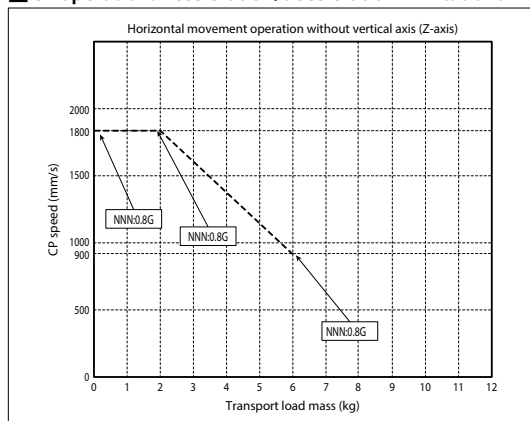
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



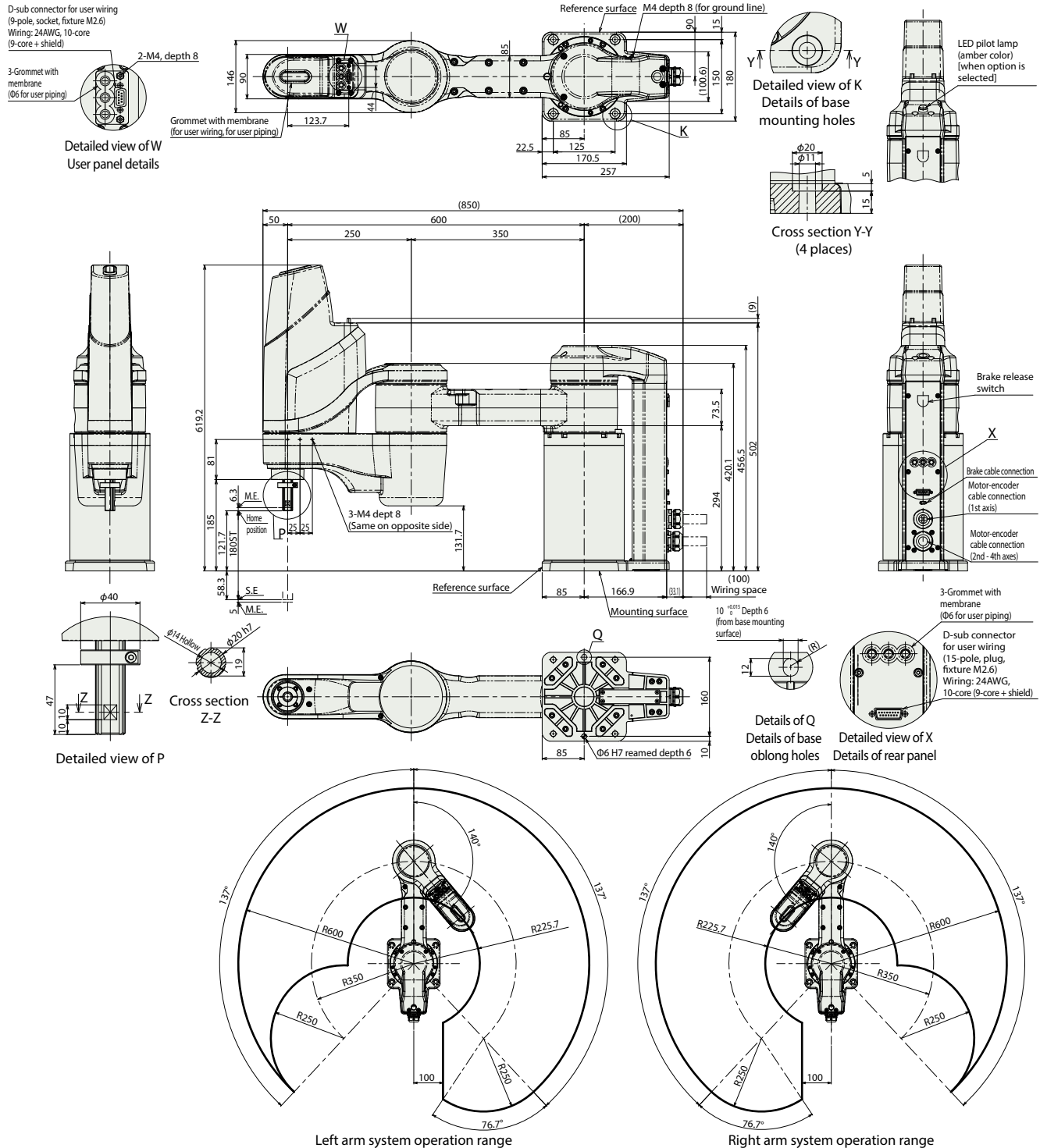
IXA-3NNN6018_4NNN6018

(Note) Refer to P68 (Note 9) for cable connections

CAD drawings can be downloaded from our website.
www.intelligentactuator.com



S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



Mass

Item	Description
Mass	3-axis specification 30.5kg
	4-axis specification 32.0kg

IXA-3NNN6033_4NNN6033

(Note) Refer to P68 (Note 9) for cable connections

D-sub connector for user wiring
(9-pole, socket, fixture M2.6)
Wiring: 24AWG, 10-core
(9-core + shield)

3-Grommet with
membrane
(Ø6 for user piping)

2-M4, depth 8

Grommet with membrane
(for user wiring, for user piping)

Detailed view of W
User panel details

Reference surface M4 depth 8 (for ground line)

Detailed view of K
Details of base
mounting holes

S.T: Stroke
M.E.: Mechanical end
S.E.: Stroke end

LED pilot lamp
(amber color)
(when option is
selected)

Cross section Y-Y
(4 places)

Brake release switch
X
Brake cable connection
Motor-encoder
cable connection
(1st axis)
Motor-encoder
cable connection
(2nd - 4th axes)

3-Grommet with
membrane
(Ø6 for user piping)

D-sub connector for
user wiring
(15-pole, plug,
fixture M2.6)
Wiring: 24AWG,
10-core (9-core + shield)

Detailed view of X
Details of rear panel

Details of Q
Details of base
oblong holes

Detailed view of P

Cross section
Z-Z

Left arm system operation range


Right arm system operation range

Mass

Item	Description	
Mass	3-axis specification	31.0kg
	4-axis specification	32.5kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

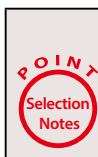
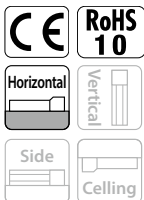
Name	External view	Max. number of connectable axes	Power supply voltage	Control method														Max. number of positioning points	Reference page	
				Positioner	Pulse train	Program	Network* option													
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN			ECM
XSEL-RAX/SAX		8	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	●	●	—	—	—	36666 (Depending on the type)	73

(Note) Refer to P7-17 of the General Catalog 2020 for network abbreviations such as DV and CC.

IXA-4NNN8040

Arm Length:
800
mm

IXA				NNN		80						T2			
Series	Number of axes		Type		Arm length		Vertical stroke		Cable length		Applicable controller		Option		
	4	4 axes	NNN	Standard type	80	800mm	20	200mm	N	None	T2	XSEL-RAX/SAX	See below		
							40	400mm	5L	5m					
									10L	10m					
									<input type="checkbox"/> L	Specified length (1m increments)					



- (1) Please refer to P67 for Notes 1 - 9.
- (2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
- (3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
- (4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operation conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
Built-in extended user cable	EXC	69
Pilot lamp	LED	69

Option * Please check the Options reference pages to confirm each option.

Name		Model number	Reference page
User cable		CB-IXA-USR-□□□-CS	71
Flange		IXA-FL-1	70
Protective flange for external wiring*1		IXA-PFL-EW-1	71
Protective flange for R-axis wiring		IXA-PFL-RW-1	71
Side stay for Z-axis wiring	Z-axis 200st	IXA-SST-ZW-1	71
	Z-axis 400st	IXA-SST-ZW-2	71
Upper stay for Z-axis wiring	Z-axis 200st	IXA-TST-ZW-1	72
	Z-axis 400st	IXA-TST-ZW-2	72
Solenoid valve set *1		IXA-SVP-1	72

*1 Protective flange for external wiring and solenoid valve set cannot be installed at the same time.
(Note) Please purchase separately.

Cable length

Type	Cable code	4-axis specification
Standard type	5L (5m)	○
	10L (10m)	○
Specified length	1L (1m) ~ 4L (4m)	○
	6L (6m) ~ 9L (9m)	○
	11L (11m)	○
	12L (12m)	○
	13L (13m)	○
	14L (14m)	○
	15L (15m)	○

(Note) Total amount of the following cables:
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.43 seconds
Continuous cycle time	0.79 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.

2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)
[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operation is not possible under maximum speed operation.

The cycle time for continuous operation.

Horizontal movement

Vertical movement

25

IXA-4NNN80□□

Main specifications

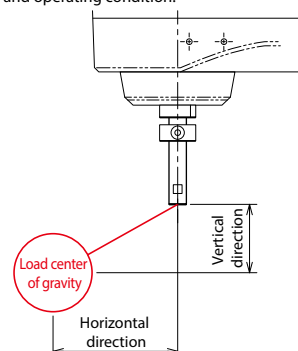
Item			Description
			4-axis specification
Max. payload (kg) (Note 1)			21
Speed (Note 2)	Combined max. speed (mm/s)		9215
	Max. speed of individual axes	1st arm (deg/s)	350
		2nd arm (deg/s)	620
		Vertical axis (mm/s)	1700
		Rotational axis (deg/s)	1200
Push force (N) (Note 3)		Upper limit	290
		Lower limit	60
Arm length (mm)			800
Individual arm length (mm)		1st arm	400
		2nd arm	400
Operation range of individual axes		1st arm (deg)	±137
		2nd arm (deg)	±142
		Vertical axis (mm)	200/400
		Rotational axis (deg)	±360

Item		Description 4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.02mm
	Vertical axis	±0.01mm
	Rotational axis	±0.01 degrees
User wiring		10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)
User piping		Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)
Alarm lamp (Note 5)		Amber color LED, small pilot lamp 1 pc. (DC24V supply required)
Brake release switch (Note 6)		Brake release switch for preventing vertical axis from dropping.
Tip axis	Allowable torque	7.6 N · m
	Allowable load moment	42 N · m
Ambient operational temperature and humidity		0-40°C , 20-85% RH or lower (non-condensing)
Degree of protection		IP20
Vibration- and impact-resistance		No impact or vibration should be applied.
Noise (Note 7)		85 dB or lower
International standard		CE marking, RoHS
Motor type		AC servo motor
Motor wattage	1st arm	750W
	2nd arm	400W
	Vertical axis	400W
	Rotational axis	150W
Encoder type		Battery-less absolute
Encoder pulse		16384 pulse/rev

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.3 kg · m ²

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SACRA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



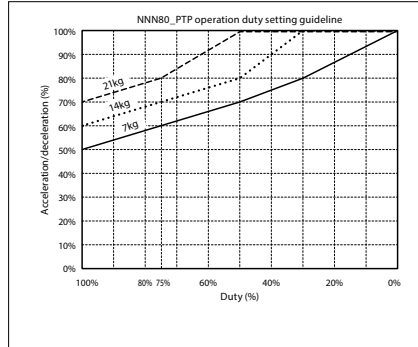
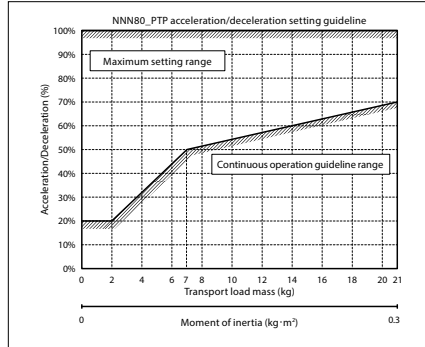
Horizontal direction	Vertical direction
200mm or less	150mm or less

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

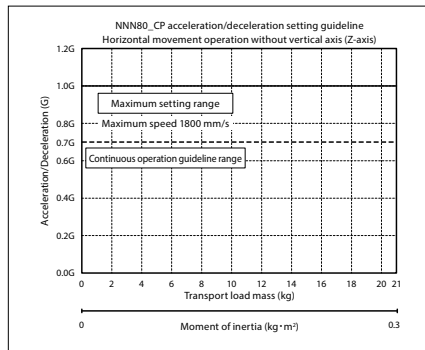
- 1) For a PTP operation, always use the WGH command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) $\text{Duty (\%)} = (\text{Operation time} / (\text{Operation time} + \text{Stop time})) \times 100$
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

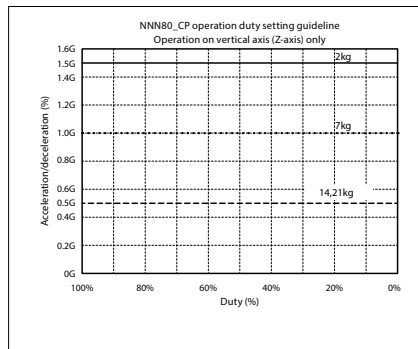
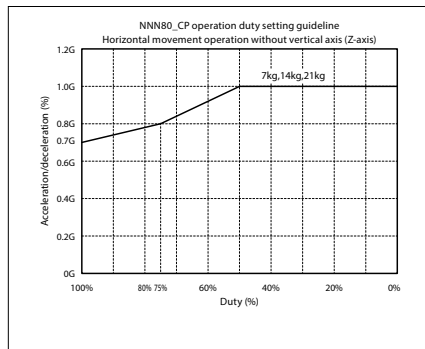
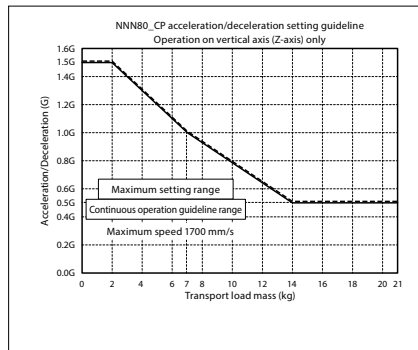


CP Operation

Horizontal

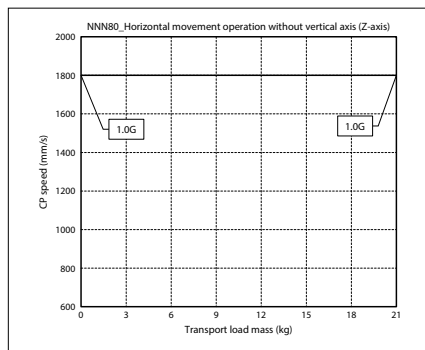


Vertical

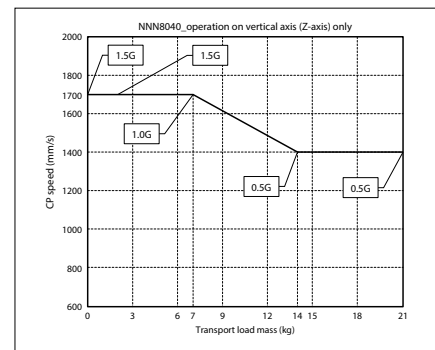
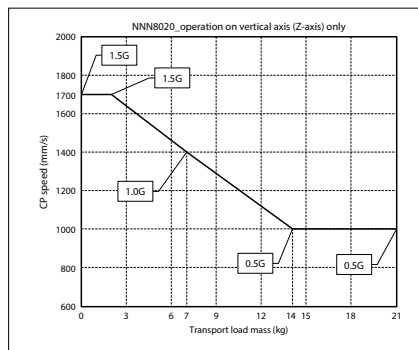


CP operation: Acceleration/deceleration Limitations

Horizontal



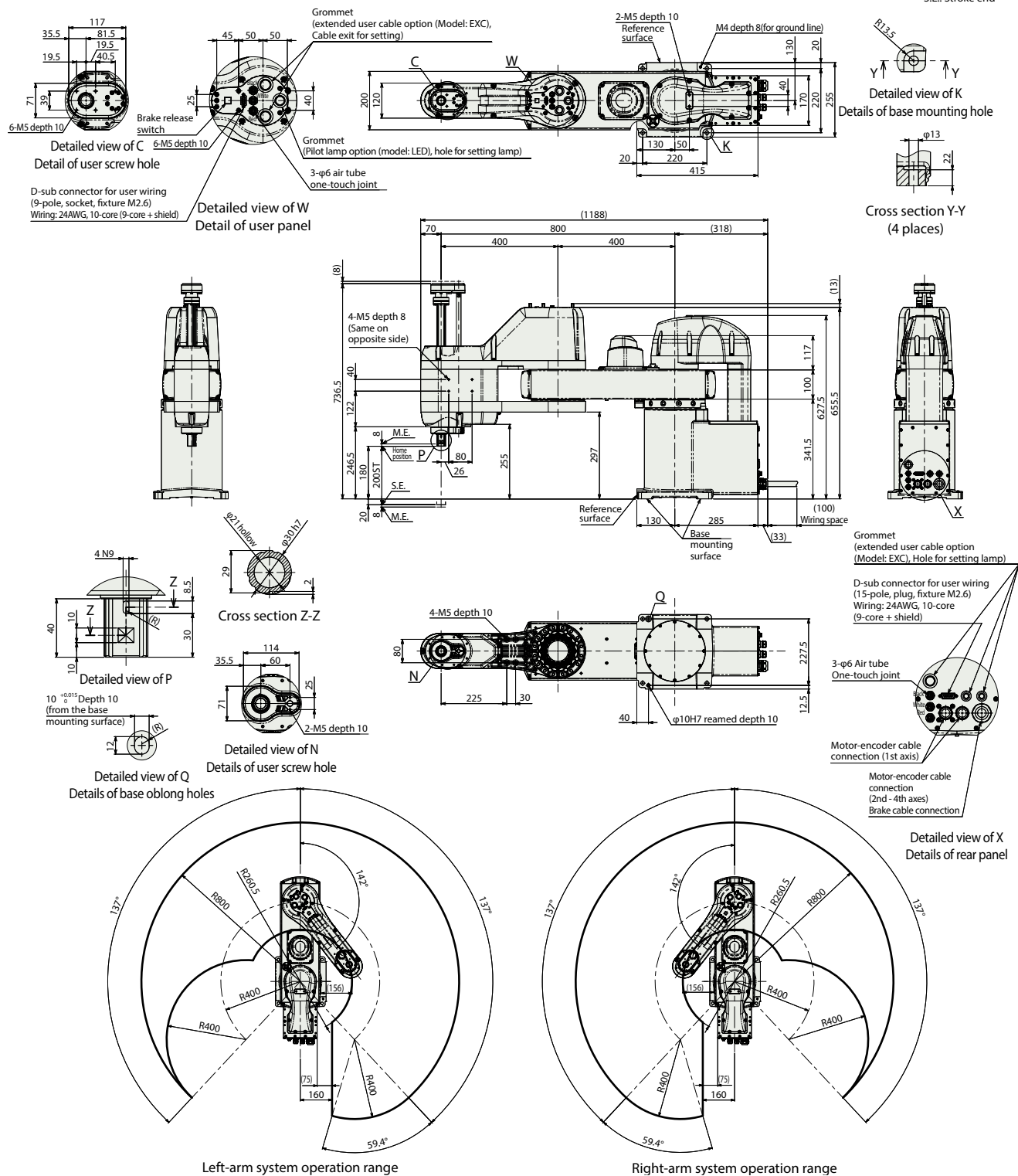
Vertical



IXA-4NNN8020

(Note) Refer to P68 (Note 9) for cable connections

S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Mass

Item	Description
Mass	73.0kg

IXA-4NNN10020

IXA-4NNN10040

Battery-
less
AbsoluteArm Length:
1000
mm

Model Specification Items

IXA	—	NNN	100	—	—	T2	—
Series	Number of axes	Type	Arm length	Vertical stroke	Cable length	Applicable controller	Option
4	4 axes	NNN	Standard type	100 1000mm	20 200mm 40 400mm	T2 XSEL-RAX/SAX	See below
					N None 5L 5m 10L 10m <input type="checkbox"/> L Specified length (1m increments)		



Main specifications

Item	Description
Max. payload (kg) (Note 1)	21
Combined max. speed (mm/s)	8936
Speed (Note 2)	1st arm (deg/s) 280 2nd arm (deg/s) 580 Vertical axis (mm/s) 1700 Rotational axis (deg/s) 1200
Push force (N) (Note 3)	Upper limit 290 Lower limit 60
Arm length (mm)	1000
Individual arm length (mm)	1st arm 600 2nd arm 400
Operation range of individual axes	1st arm (deg) ±137 2nd arm (deg) ±142 Vertical axis (mm) 200/400 Rotational axis (deg) ±360

POINT Selection Notes	(1) Please refer to P67 for Notes 1 - 9.
	(2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
	(3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
	(4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
Built-in extended user cable	EXC	69
Pilot lamp	LED	69

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR-□□-CS	71
Flange	IXA-FL-1	70
Protective flange for external wiring*1	IXA-PFL-EW-1	71
Protective flange for R-axis wiring	IXA-PFL-RW-1	71
Side stay for Z-axis wiring	Z-axis 200st IXA-SST-ZW-1	71
	Z-axis 400st IXA-SST-ZW-2	71
Upper stay for Z-axis wiring	Z-axis 200st IXA-TST-ZW-1	72
	Z-axis 400st IXA-TST-ZW-2	72
Solenoid valve set *1	IXA-SVP-1	72

*1 Protective flange for external wiring and solenoid valve set cannot be installed at the same time.
(Note) Please purchase separately.

Cable length

Type	Cable code	4-axis specification
Standard type	5L(5m)	○
	10L(10m)	○
Specified length	1L(1m) ~ 4L(4m)	○
	6L(6m) ~ 9L(9m)	○
	11L(11m)	○
	12L(12m)	○
	13L(13m)	○
	14L(14m)	○
	15L(15m)	○

(Note) Total amount of the following cables:
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

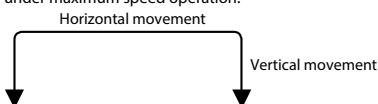
Cycle time

Item	Time
Standard cycle time	0.45 seconds
Continuous cycle time	0.79 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.
2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)
[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance.
Note that continuous operation is not possible under maximum speed operation.

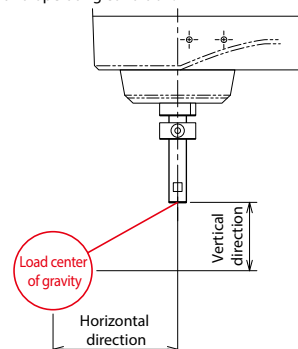
[Continuous cycle time]
The cycle time for continuous operation.



Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.3 kg · m ²

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



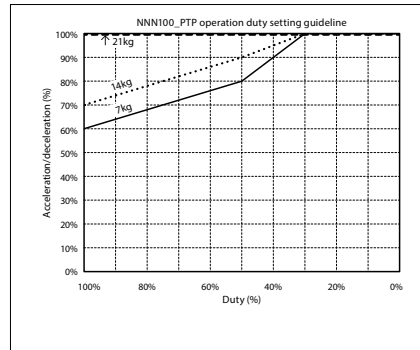
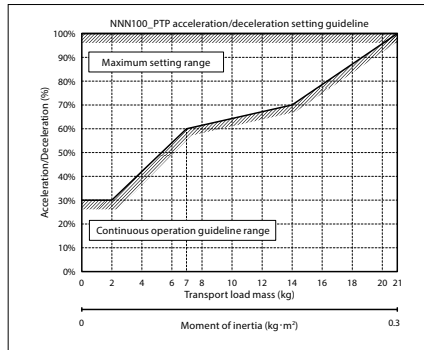
Horizontal direction	Vertical direction
200mm or less	150mm or less

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

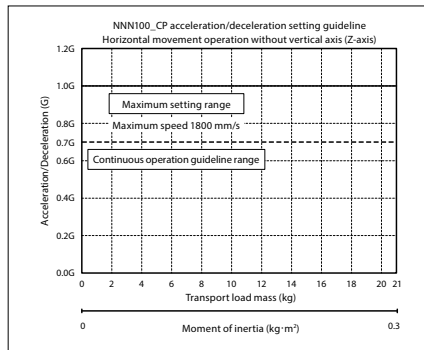
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) $\text{Duty (\%)} = (\text{Operation time} / (\text{Operation time} + \text{Stop time})) \times 100$
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

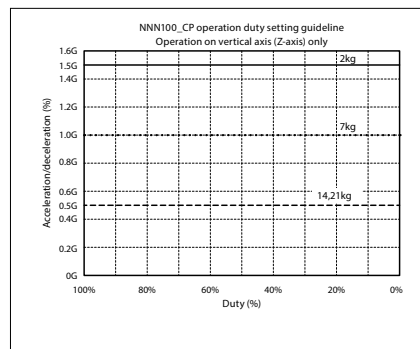
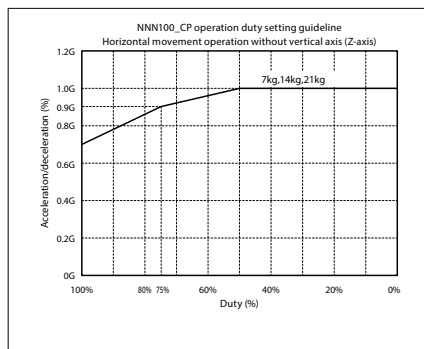
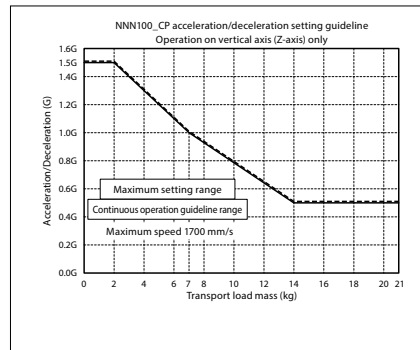


CP Operation

Horizontal

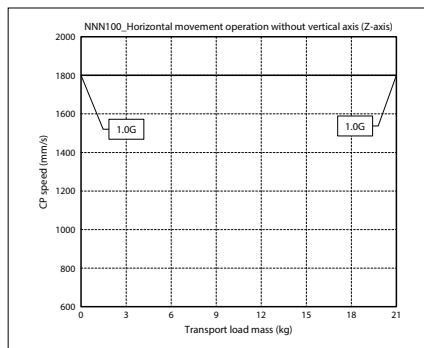


Vertical

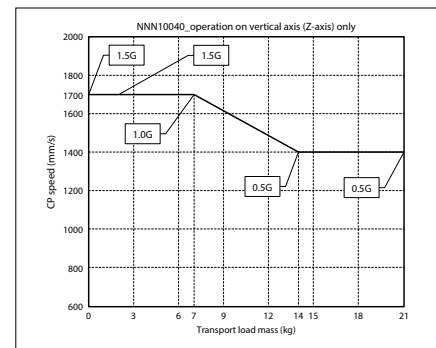
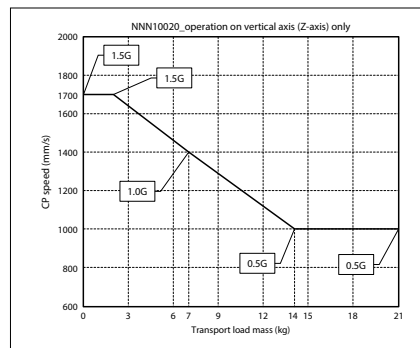


CP operation: Acceleration/deceleration Limitations

Horizontal



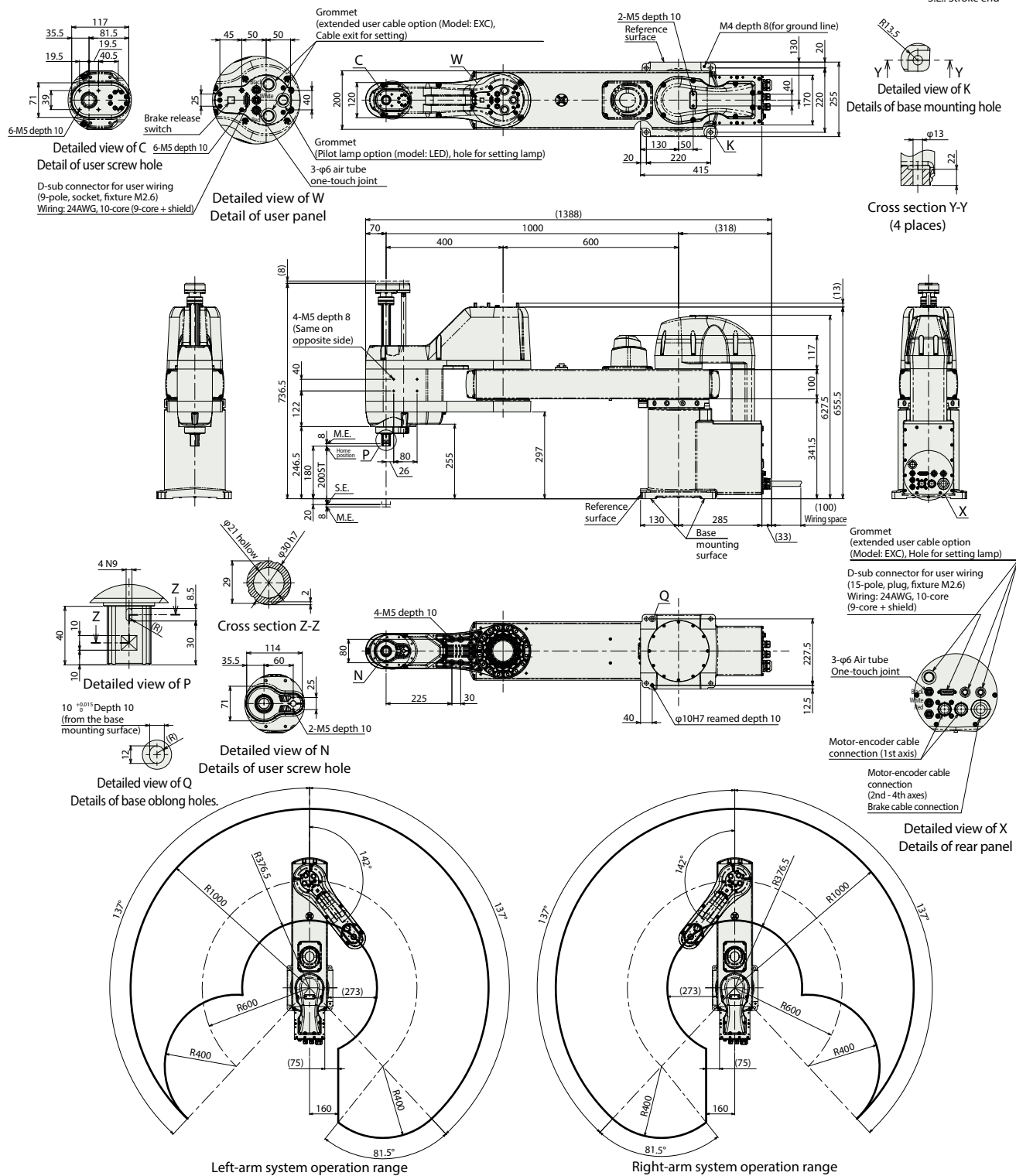
Vertical



IXA-4NNN10020

(Note) Refer to P68 (Note 9) for cable connections

S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end

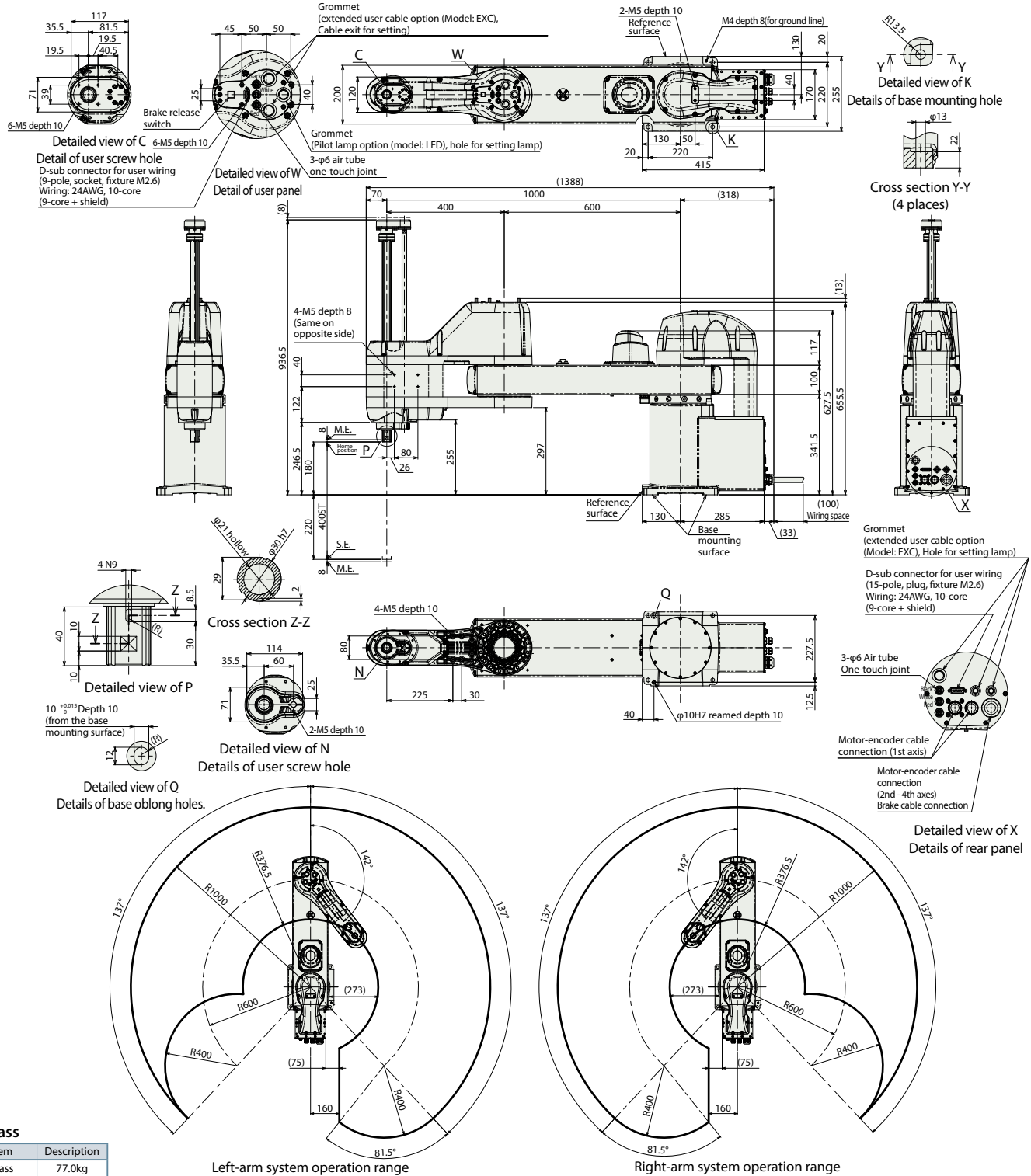


Mass

Item	Description
Mass	76.0kg

IXA-4NNN10040

(Note) Refer to P68 (Note 9) for cable connections




Mass

Item	Description
Mass	77.0kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

Name	External view	Max. number of connectable axes	Power supply voltage	Control method														Max. number of positioning points	Reference page	
				Positioner	Pulse train	Program	Network* option													
							DV	CC	CIE	PR	CN	ML	ML3	EC	EP	PRT	SSN			ECM
XSEL-RAX4/SAX4 (for IXA)		4	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	●	●	—	—	—	36666 (Depending on the type)	73

IXA-3NSN3015

IXA-4NSN3015

 High-Speed
Type

 Battery-less
Absolute

 Arm Length:
300
mm

 Vertical Axis:
150
mm

Model Specification Items

IXA	-		NSN	30	15	-		-	T2
Series	-	Number of axes	Type	Arm length	Vertical stroke	-	Cable length	-	Applicable controller
		3 3 axes	NSN	30 300mm	15 150mm		N Nil		T2 XSEL-RAX/SAX
		4 4 axes	High-speed type				5L 5m		
							10L 10m		
							<input type="checkbox"/> L Specified length (1m increments)		



Main specifications

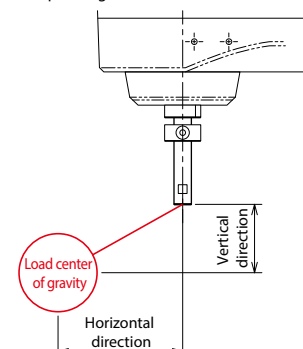
Item		Description	
		3-axis specification	4-axis specification
Max. payload (kg) (Note 1)		8	
Speed (Note 2)	Combined max. speed (mm/s)	6032	
	1st arm (deg/s)	720	
	2nd arm (deg/s)	720	
	Vertical axis (mm/s)	1600	
	Rotational axis (deg/s)	—	1600
Push force (N) (Note 3)	Upper limit	100	
	Lower limit	25	
Arm length (mm)		300	
Individual arm length (mm)	1st arm	120	
	2nd arm	180	
Operation range of individual axes	1st arm (deg)	±135	
	2nd arm (deg)	±142	
	Vertical axis (mm)	150	
	Rotational axis (deg)	—	±360

Item		Description	
		3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm	
	Vertical axis	±0.01mm	
User wiring	Rotational axis	±0.005 degrees	
		10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping		Outer diameter Ø4, inner diameter Ø2.5, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)		Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)		Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m	3.2 N·m
	Allowable load moment	12 N·m	
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection		IP20	
Vibration- and impact-resistance		No impact or vibration should be applied.	
Noise (Note 7)		80 dB or lower	
International standard		CE marking, RoHS	
Motor type		AC servo motor	
Motor wattage	1st arm	600W	
	2nd arm	400W	
	Vertical axis	150W	
	Rotational axis	—	100W
Encoder type		Battery-less absolute	
Encoder pulse		131072 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.12 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
150mm or less	100mm or less

- POINT**
Selection Notes
- (1) Please refer to P67 for Notes 1 - 9.
 - (2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - (3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
 - (4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR-□□□-CS	71
Flange	IX-FL-1	70

(Note) Please purchase separately.

Cable length

Type	Cable code	3-axis specification	4-axis specification
Standard type	5L(5m)	<input type="radio"/>	<input type="radio"/>
	10L(10m)	<input type="radio"/>	<input type="radio"/>
	1L(1m) ~ 4L(4m)	<input type="radio"/>	<input type="radio"/>
Specified length	6L(6m) ~ 9L(9m)	<input type="radio"/>	<input type="radio"/>
	11L(11m)	<input type="radio"/>	<input type="radio"/>
	12L(12m)	<input type="radio"/>	<input type="radio"/>
	13L(13m)	<input type="radio"/>	<input type="radio"/>
	14L(14m)	<input type="radio"/>	<input type="radio"/>
	15L(15m)	<input type="radio"/>	<input type="radio"/>

(Note) Total amount of the following cables:
[3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.26 seconds
Continuous cycle time	0.45 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.

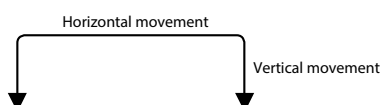
2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.

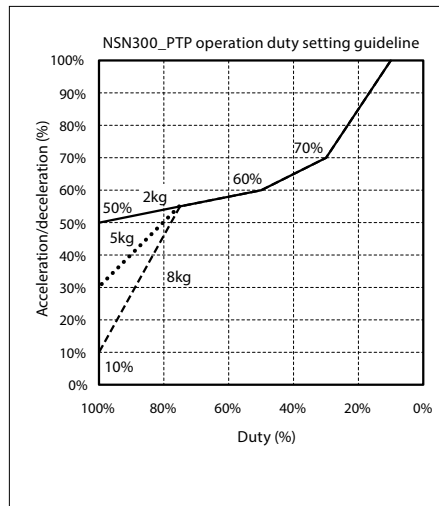
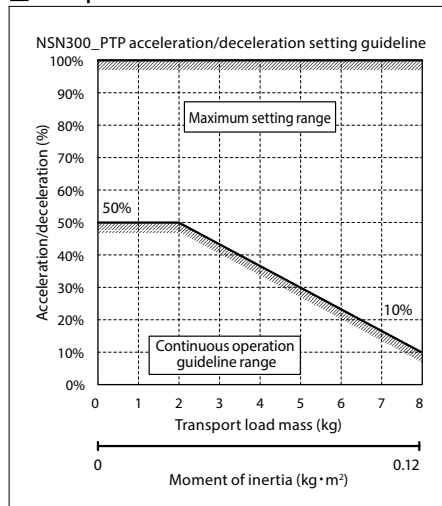


Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

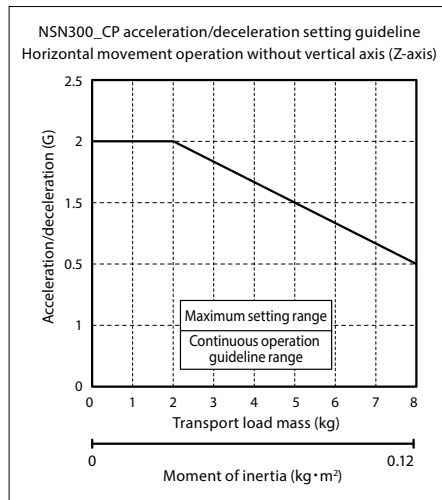
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) × 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

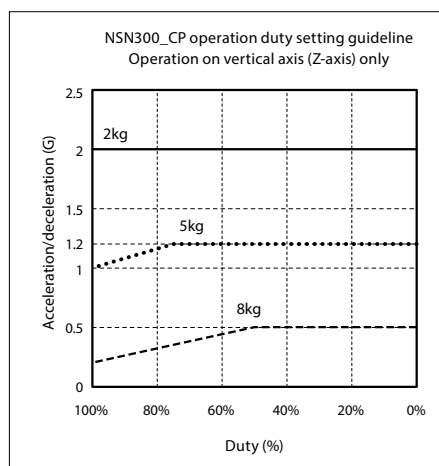
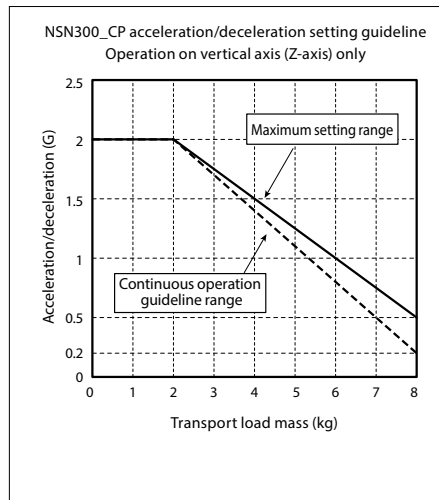


CP Operation

Horizontal

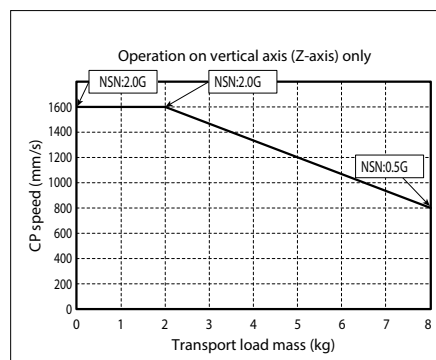
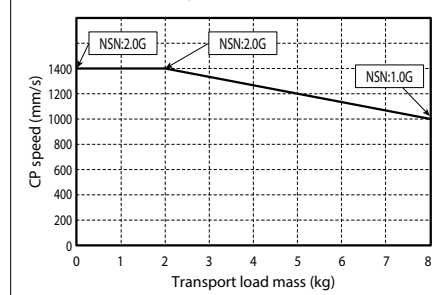


Vertical



CP operation: Acceleration/deceleration Limitations

Horizontal movement operation without vertical axis (Z-axis)



IXA-3NSN45

IXA-4NSN45

 High-Speed
Type

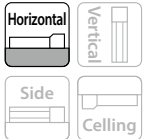
 Battery-less
Absolute

 Arm Length:
450
mm

 Vertical Axis:
180/330
mm

Model Specification Items

IXA	NSN	45	T2
Series	Number of axes	Type	Arm length
	3 3 axes	NSN High-speed type	45 450mm
	4 4 axes		
		Vertical stroke	
		18 180mm	
		33 330mm	
		Cable length	Applicable controller
		N Nil	T2 XSEL-RAX/SAX
		5L 5m	
		10L 10m	
		<input type="checkbox"/> L Specified length (1m increments)	



Main specifications

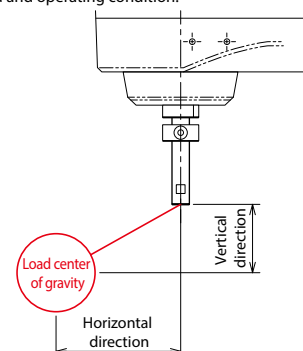
Item		Description	
		3-axis specification	4-axis specification
Max. payload (kg) (Note 1)		10	
Speed (Note 2)	Combined max. speed (mm/s)	8282	
	1st arm (deg/s)	610	
	2nd arm (deg/s)	800	
	Vertical axis (mm/s)	1600	
	Rotational axis (deg/s)	—	2000
Push force (N) (Note 3)	Upper limit	110	
	Lower limit	25	
Arm length (mm)		450	
Individual arm length (mm)	1st arm	200	
	2nd arm	250	
Operation range of individual axes	1st arm (deg)	±137	
	2nd arm (deg)	±137	
	Vertical axis (mm)	180/330	
	Rotational axis (deg)	—	±360

Item		Description	
		3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm	
	Vertical axis	±0.01mm	
User wiring	Rotational axis	—	±0.005 degrees
		10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping		Outer diameter Ø6, inner diameter Ø4, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)		Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)		Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N·m	3.2 N·m
	Allowable load moment	8.3 N·m	
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection		IP20	
Vibration- and impact-resistance		No impact or vibration should be applied.	
Noise (Note 7)		80 dB or lower	
International standard		CE marking, RoHS	
Motor type		AC servo motor	
Motor wattage	1st arm	600W	
	2nd arm	400W	
	Vertical axis	200W	
	Rotational axis	—	100W
Encoder type		Battery-less absolute	
Encoder pulse		131072 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.12 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
180mm or less	100mm or less

- POINT**
Selection Notes
- (1) Please refer to P67 for Notes 1 - 9.
 - (2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - (3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
 - (4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR-□□-CS	71
Flange	IX-FL-1	70

(Note) Please purchase separately.

Cable length

Type	Cable code	3-axis specification	4-axis specification
Standard type	5L(5m)	<input type="radio"/>	<input type="radio"/>
	10L(10m)	<input type="radio"/>	<input type="radio"/>
	1L(1m) ~ 4L(4m)	<input type="radio"/>	<input type="radio"/>
Specified length	6L(6m) ~ 9L(9m)	<input type="radio"/>	<input type="radio"/>
	11L(11m)	<input type="radio"/>	<input type="radio"/>
	12L(12m)	<input type="radio"/>	<input type="radio"/>
	13L(13m)	<input type="radio"/>	<input type="radio"/>
	14L(14m)	<input type="radio"/>	<input type="radio"/>
	15L(15m)	<input type="radio"/>	<input type="radio"/>

(Note) Total amount of the following cables:
[3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.26 seconds
Continuous cycle time	0.45 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.

2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

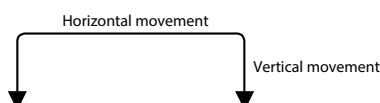
[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance.

Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.

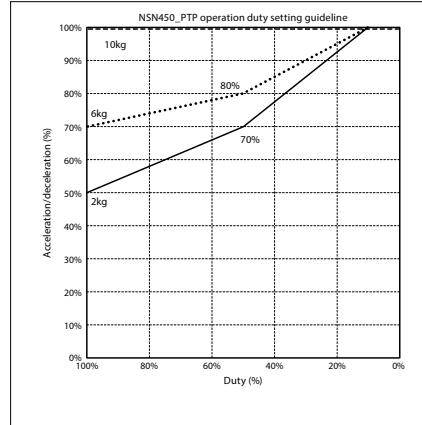
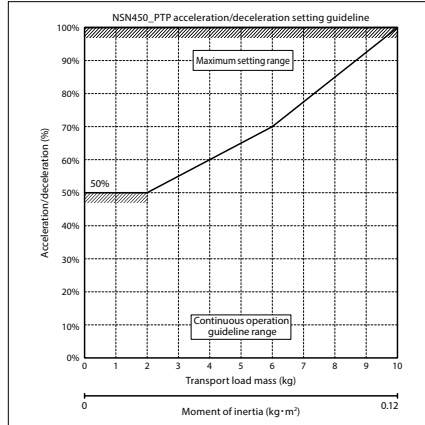


Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

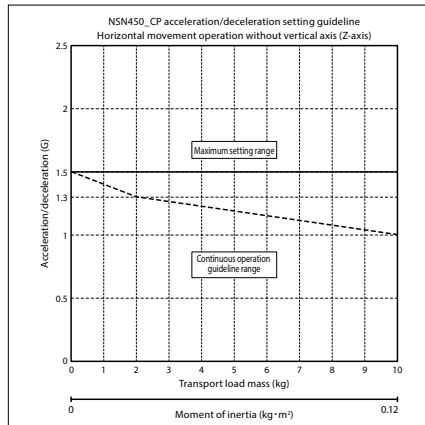
- 1) For a PTP operation, always use the WGH command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) x 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

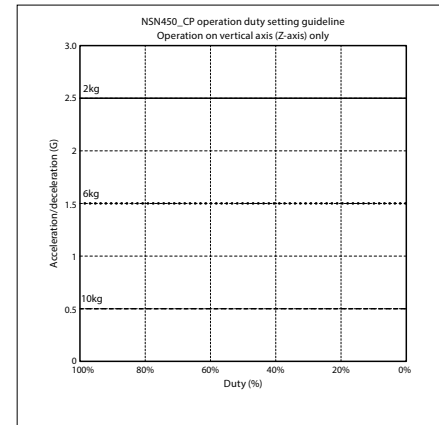
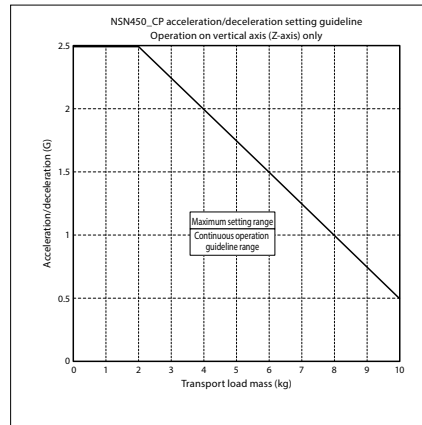


CP Operation

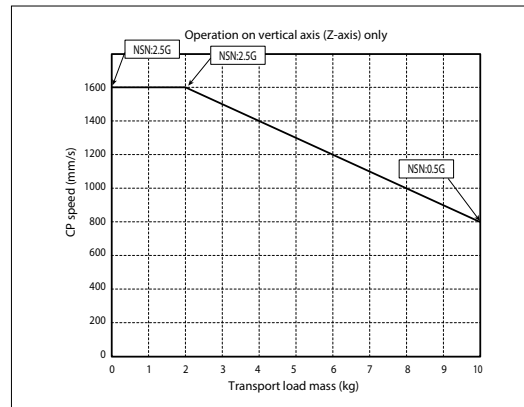
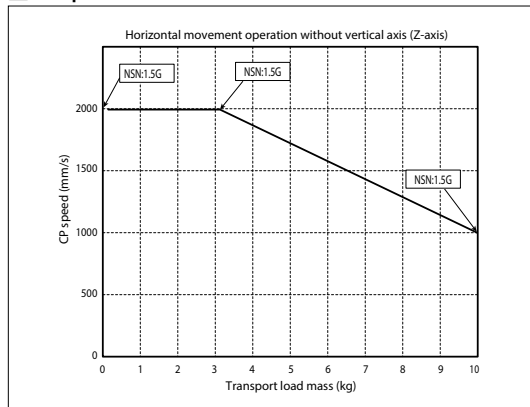
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



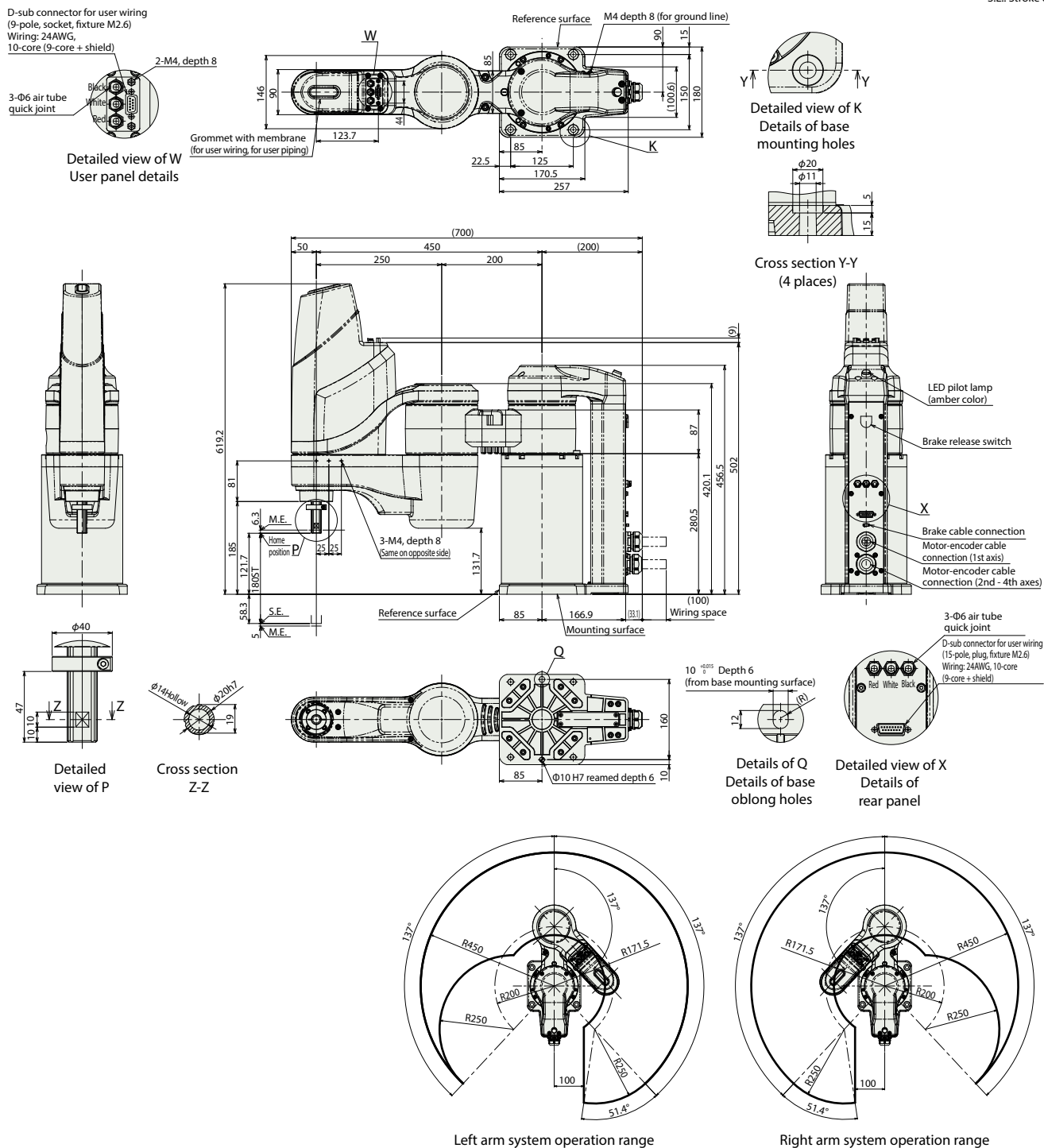
IXA-3NSN4518 4NSN4518

(Note) Refer to 68 (Note 9) for cable connections

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

2D
CAP3D
CALL

S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



Mass

Item		Description
Mass	3-axis specification	31.0kg
	4-axis specification	32.5kg

IXA-3NSN60
IXA-4NSN60

 High-Speed
Type

 Battery-less
Absolute

 Arm Length:
600
mm

 Vertical Axis:
180/330
mm

Model Specification Items

IXA	-		NSN	60	-		-	T2
Series	-	Number of axes	Type	Arm length	Vertical stroke	Cable length	-	Applicable controller
		3 3 axes	NSN	60 600mm	18 180mm	N Nil		T2 XSEL-RAX/SAX
		4 4 axes	High-speed type		33 330mm	5L 5m		
						10L 10m		
						<input type="checkbox"/> L Specified length (1m increments)		


Main specifications

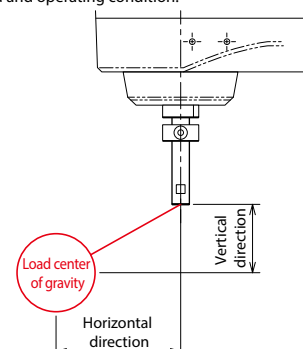
Item		Description	
		3-axis specification	4-axis specification
Max. payload (kg) (Note 1)		12	
Speed (Note 2)	Combined max. speed (mm/s)	6414	
	1st arm (deg/s)	300	
	2nd arm (deg/s)	750	
	Vertical axis (mm/s)	1600	
	Rotational axis (deg/s)	—	2000
Push force (N) (Note 3)	Upper limit	110	
	Lower limit	25	
Arm length (mm)		600	
Individual arm length (mm)	1st arm	350	
	2nd arm	250	
Operation range of individual axes	1st arm (deg)	±137	
	2nd arm (deg)	±140	
	Vertical axis (mm)	180/330	
	Rotational axis (deg)	—	±360

Item		Description	
		3-axis specification	4-axis specification
Positioning repeatability (Note 4)	Within horizontal surface	±0.01mm	
	Vertical axis	±0.01mm	
User wiring	Rotational axis	—	
		±0.005 degrees	
User wiring		10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)	
User piping		Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)	
Alarm lamp (Note 5)		Amber color LED, small pilot lamp 1 pc. (DC24V supply required)	
Brake release switch (Note 6)		Brake release switch for preventing vertical axis from dropping.	
Tip axis	Allowable torque	3.2 N · m	3.2 N · m
	Allowable load moment	8.3 N · m	
Ambient operational temperature and humidity		0-40°C, 20-85% RH or lower (non-condensing)	
Degree of protection		IP20	
Vibration- and impact-resistance		No impact or vibration should be applied.	
Noise (Note 7)		80 dB or lower	
International standard		CE marking, RoHS	
Motor type		AC servo motor	
Motor wattage	1st arm	750W	
	2nd arm	400W	
	Vertical axis	200W	
	Rotational axis	—	100W
Encoder type		Battery-less absolute	
Encoder pulse		131072 pulse/rev	

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
3-axis specification	0.12 kg · m ²
4-axis specification	

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
180mm or less	100mm or less

- POINT**
Selection Notes
- (1) Please refer to P67 for Notes 1 - 9.
 - (2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - (3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
 - (4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR-□□-CS	71
Flange	IX-FL-1	70

(Note) Please purchase separately.

Cable length

Type	Cable code	3-axis specification	4-axis specification
Standard type	5L(5m)	<input type="radio"/>	<input type="radio"/>
	10L(10m)	<input type="radio"/>	<input type="radio"/>
	1L(1m) ~ 4L(4m)	<input type="radio"/>	<input type="radio"/>
Specified length	6L(6m) ~ 9L(9m)	<input type="radio"/>	<input type="radio"/>
	11L(11m)	<input type="radio"/>	<input type="radio"/>
	12L(12m)	<input type="radio"/>	<input type="radio"/>
	13L(13m)	<input type="radio"/>	<input type="radio"/>
	14L(14m)	<input type="radio"/>	<input type="radio"/>
	15L(15m)	<input type="radio"/>	<input type="radio"/>

(Note) Total amount of the following cables:
[3-axis spec.] Motor cables:3, Encoder cables: 3, Brake cable: 1
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.26 seconds
Continuous cycle time	0.45 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.

2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

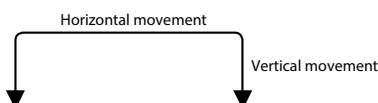
[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance.

Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.

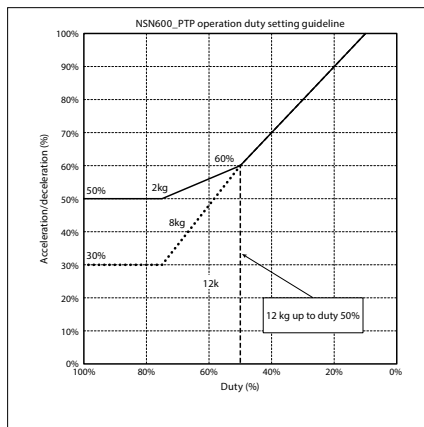
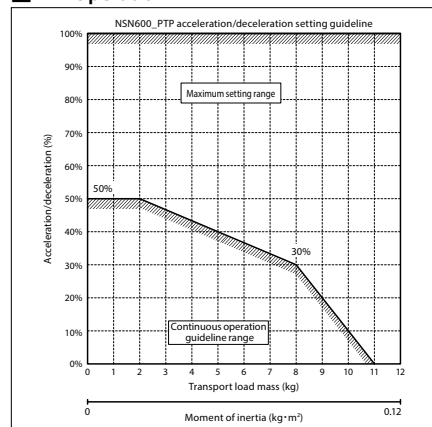


Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

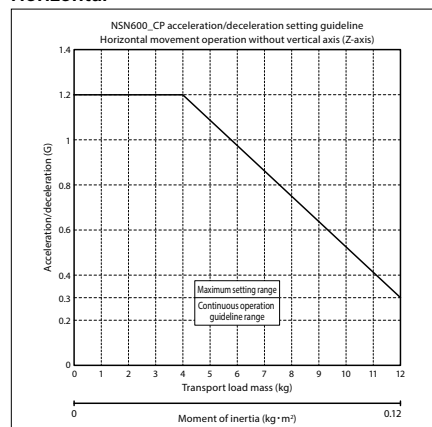
- 1) For a PTP operation, always use the WGH command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) x 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

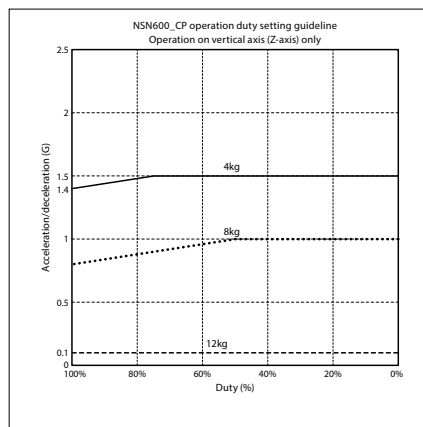
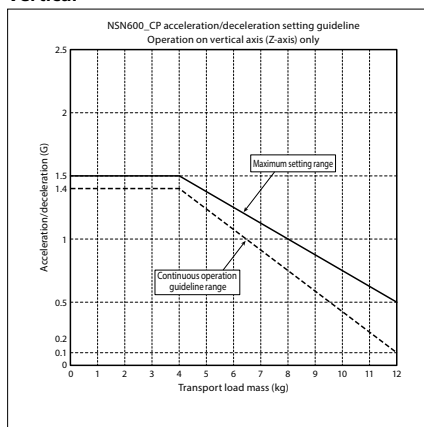


CP Operation

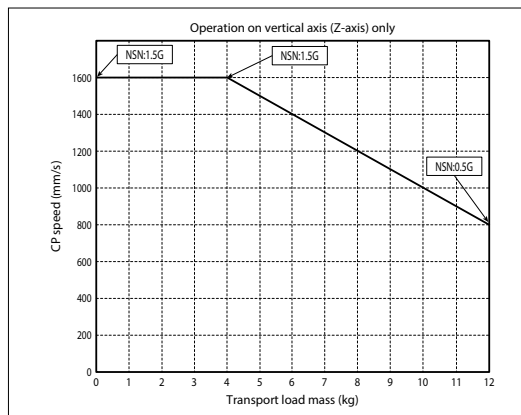
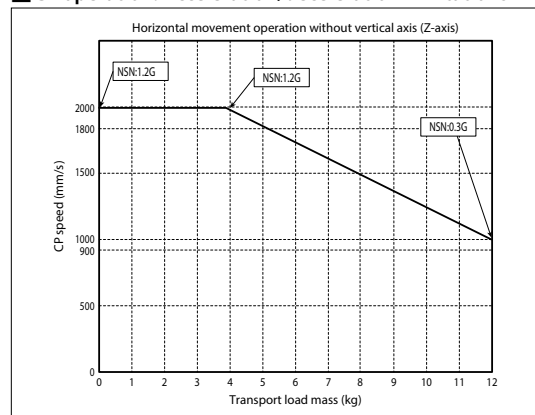
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



IXA-3NSN6018 4NSN6018

(Note) Refer to P68 (Note 9) for cable connections

D-sub connector for user wiring
(9-pole, socket, fixture M2.6)
Wiring: 24AWG,
10-core (9-core + shield)

Wiring: 24AWG,
10-core (9-core + shield)

Black

3/8" O.D. all tube
quick joint

Detailed
view of W

Details for user panel

CAD drawings can be downloaded from our website.

www.intelligentactuator.com

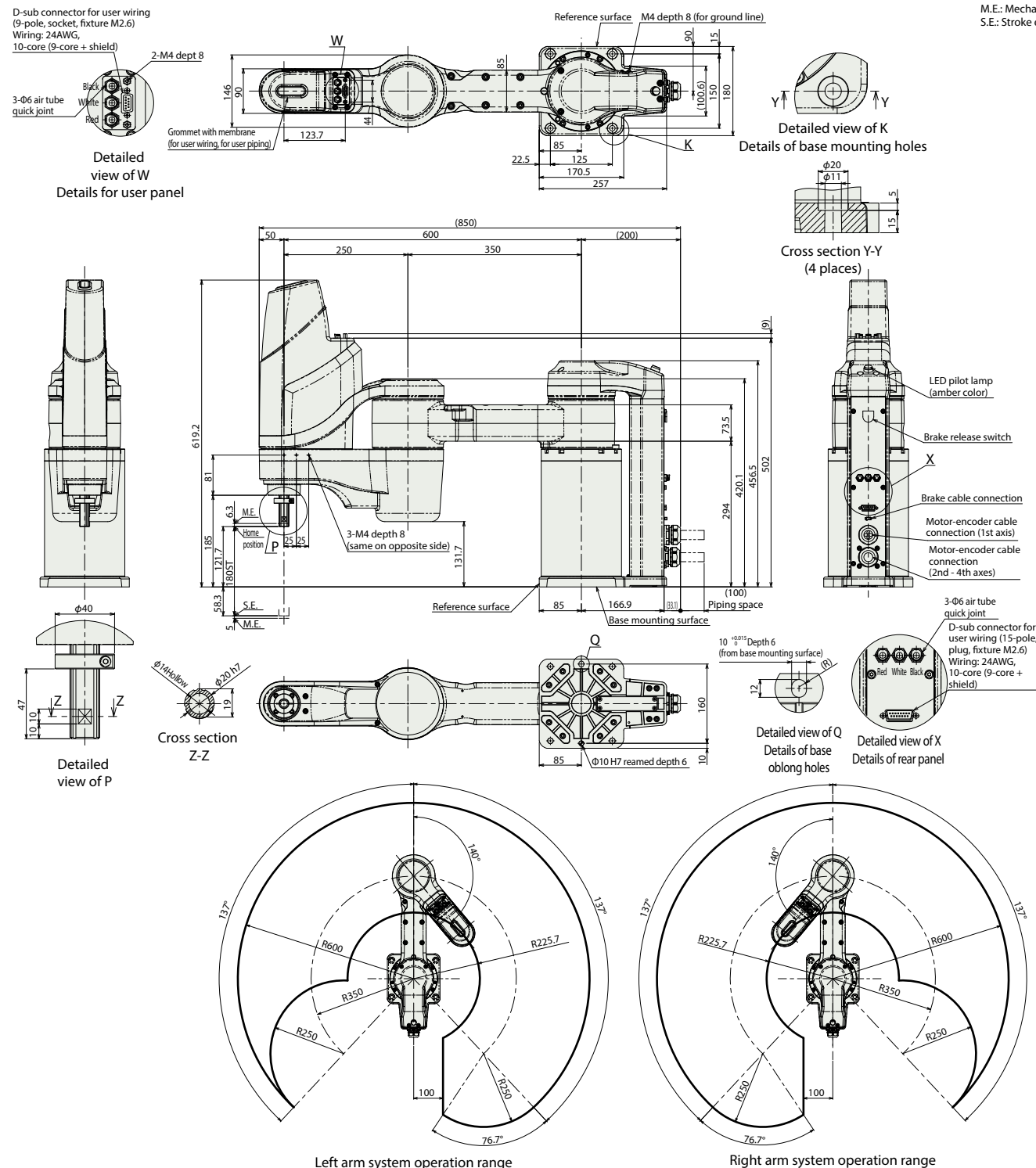
2D
CAD

3D
CAD

S.T.: Stroke

M.E.: Mechanical end

S.E.: Stroke end



■ **Mass**

Item		Description
Mass	3-axis specification	31.5kg
	4-axis specification	33.0kg

IXA-4NSN8020

IXA-4NSN8040

Battery-less
AbsoluteArm Length:
800
mm

Model Specification Items

IXA	NSN	80	T2	
Series	Number of axes	Type	Arm length	Vertical stroke
4	4 axes	NSN High-speed type	80 800mm	20 200mm 40 400mm
				Cable length
				N None 5L 5m 10L 10m <input type="checkbox"/> L Specified length (1m increments)
			Applicable controller	Option
			T2 XSEL-SAX	See below



Main specifications

Item	Description
Max. payload (kg) (Note 1)	24
Speed (Note 2)	Combined max. speed (mm/s) 5864
	1st arm (deg/s) 230
	2nd arm (deg/s) 380
	Vertical axis (mm/s) 2000/2800
	Rotational axis (deg/s) 1300
Push force (N) (Note 3)	Upper limit 350
	Lower limit 40
Arm length (mm)	800
Individual arm length (mm)	1st arm 400
	2nd arm 400
Operation range of individual axes	1st arm (deg) ±137
	2nd arm (deg) ±142
	Vertical axis (mm) 200/400
	Rotational axis (deg) ±360

- POINT Selection Notes**
- (1) Please refer to P67 for Notes 1 - 9.
 - (2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
 - (3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P72 for details.
 - (4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
Built-in extended user cable	EXC	69

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR-□□-CS	71
Flange	IXA-FL-1	70
Protective flange for external wiring*1	IXA-PFL-EW-1	71
Protective flange for R-axis wiring	IXA-PFL-RW-1	71
Side stay for Z-axis wiring	Z-axis 200st IXA-SST-ZW-1	71
	Z-axis 400st IXA-SST-ZW-2	71
Upper stay for Z-axis wiring	Z-axis 200st IXA-TST-ZW-1	72
	Z-axis 400st IXA-TST-ZW-2	72
Solenoid valve set *1	IXA-SVP-1	72

*1 Protective flange for external wiring and solenoid valve set cannot be installed at the same time.
(Note) Please purchase separately.

Cable length

Type	Cable code	4-axis specification
Standard type	5L(5m)	○
	10L(10m)	○
	1L(1m) ~ 4L(4m)	○
	6L(6m) ~ 9L(9m)	○
Specified length	11L(11m)	○
	12L(12m)	○
	13L(13m)	○
	14L(14m)	○
	15L(15m)	○

(Note) Total amount of the following cables:
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

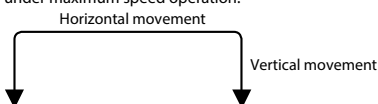
Cycle time

Item	Time
Standard cycle time	0.29 seconds
Continuous cycle time	0.56 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.
2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)
[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance.
Note that continuous operation is not possible under maximum speed operation.

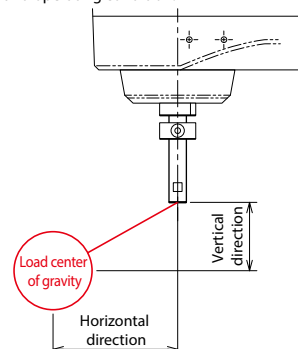
[Continuous cycle time]
The cycle time for continuous operation.



Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.45 kg · m ²

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
200mm or less	150mm or less

45

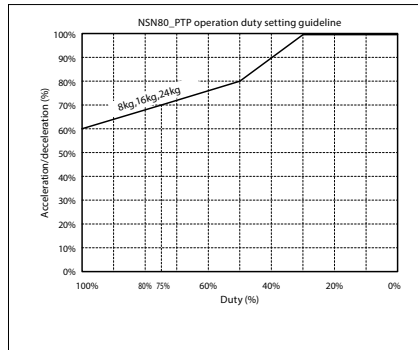
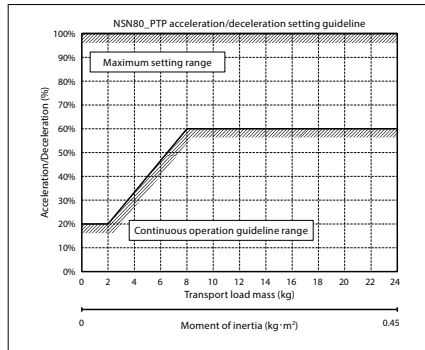
IXA-4NSN80□□

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

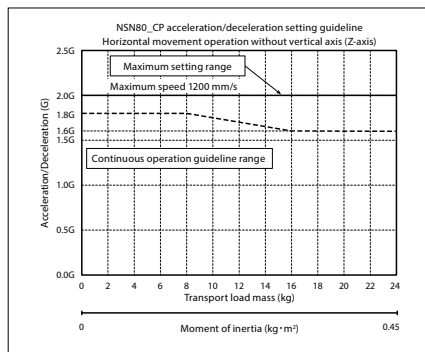
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) $\text{Duty (\%)} = (\text{Operation time} / (\text{Operation time} + \text{Stop time})) \times 100$
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

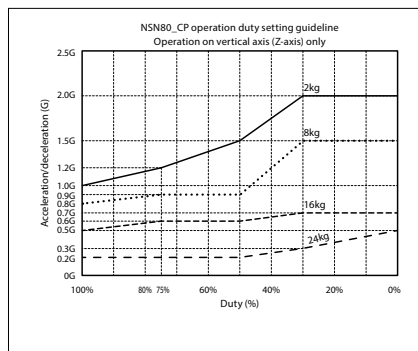
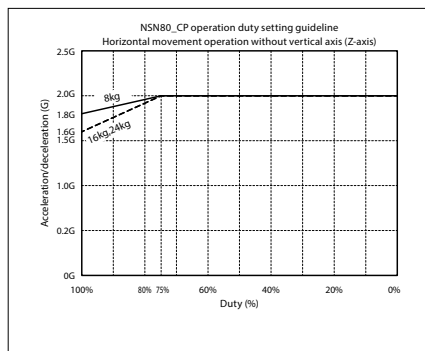
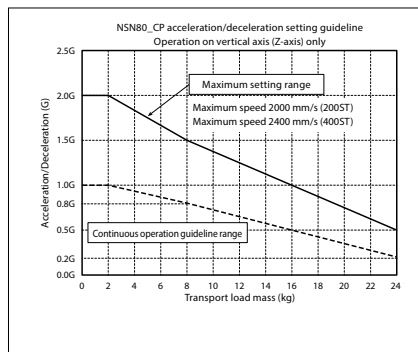


CP Operation

Horizontal

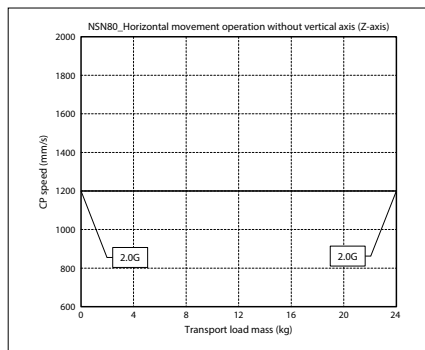


Vertical

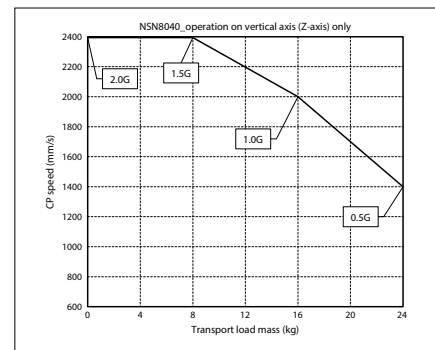
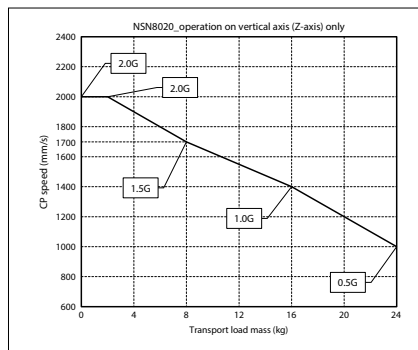


CP operation: Acceleration/deceleration Limitations

Horizontal



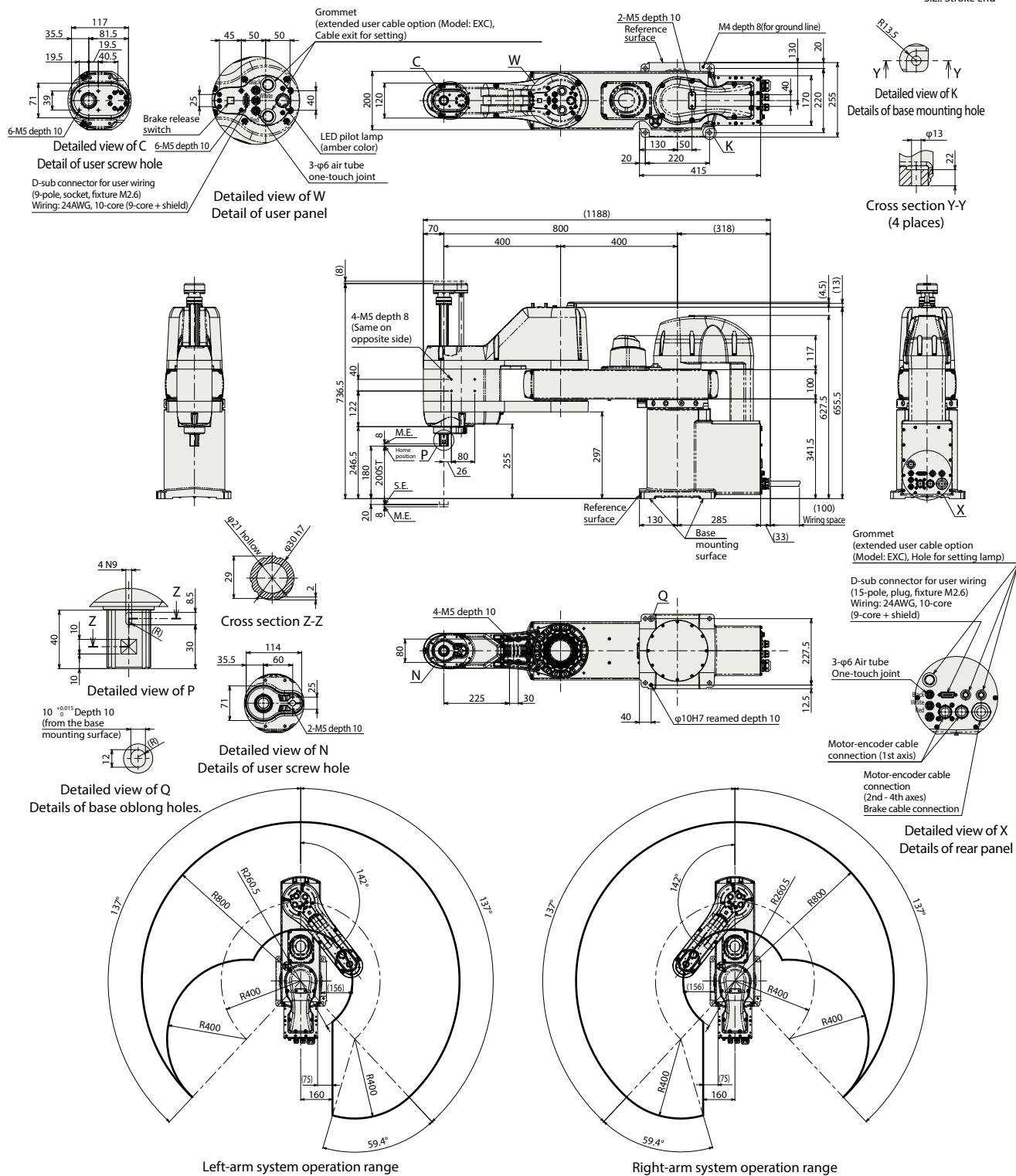
Vertical



IXA-4NSN8020

(Note) Refer to P68 (Note 9) for cable connections

S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Mass

Item	Description
Mass	75.0kg

IXA-4NSN10020

IXA-4NSN10040

Battery-less
Absolute

Arm Length:
1000
mm

Model Specification Items

IXA	NSN	100	T2	
Series	Number of axes	Type	Arm length	Vertical stroke
4	4 axes	NSN High-speed type	100 1000mm	20 200mm 40 400mm
				Cable length
				N None
				5L 5m
				10L 10m
				<input type="checkbox"/> L Specified length (1m increments)
			Applicable controller	Option
			T2 XSEL-SAX	See below



Main specifications

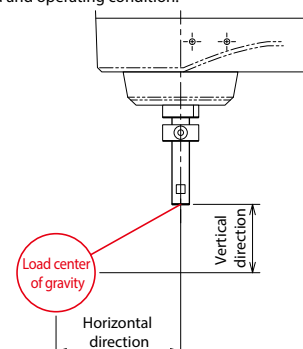
Item	Description
Max. payload (kg) (Note 1)	24
Combined max. speed (mm/s)	6667
Speed (Note 2)	1st arm (deg/s) 230 2nd arm (deg/s) 380 Vertical axis (mm/s) 2000/2800 Rotational axis (deg/s) 1300
Push force (N) (Note 3)	Upper limit 350 Lower limit 40
Arm length (mm)	1000
Individual arm length (mm)	1st arm 600 2nd arm 400
Operation range of individual axes	1st arm (deg) ±137 2nd arm (deg) ±142 Vertical axis (mm) 200/400 Rotational axis (deg) ±360

Item	Description
Positioning repeatability (Note 4)	Within horizontal surface ±0.025mm Vertical axis ±0.01mm Rotational axis ±0.005 degrees
User wiring	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A) Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)
User piping	Amber color LED, small pilot lamp 1 pc. (DC24V supply required)
Alarm lamp (Note 5)	Brake release switch for preventing vertical axis from dropping.
Brake release switch (Note 6)	7.6 N·m 42 N·m
Tip axis	Allowable torque 7.6 N·m Allowable load moment 42 N·m
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)
Degree of protection	IP20
Vibration- and impact-resistance	No impact or vibration should be applied.
Noise (Note 7)	85 dB or lower
International standard	CE marking, RoHS
Motor type	AC servo motor
Motor wattage	1st arm 1000W 2nd arm 750W Vertical axis 600W Rotational axis 200W
Encoder type	Battery-less absolute
Encoder pulse	131072 pulse/rev

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.45 kg · m ²

The 4th axis allowable inertia moment is the allowable inertial moment value for the center of rotation conversion of the 4th axis (rotational axis) of the SCARA robot. Make sure that the offset value from center of the rotation of the 4th axis to the tool center of gravity is within the guideline values listed below. If the tool center of gravity is far from the 4th axis center, it is necessary to reduced speed and acceleration/deceleration appropriately. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
200mm or less	150mm or less

(1) Please refer to P67 for Notes 1 - 9.

(2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(3) If the motor is replaced, absolute reset must be performed. An adjustment jig will be required to perform an absolute reset on the rotational axis (4th axis). Please refer to P73 for details.

(4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
Built-in extended user cable	EXC	69

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR-□□-CS	71
Flange	IXA-FL-1	70
Protective flange for external wiring*1	IXA-PFL-EW-1	71
Protective flange for R-axis wiring	IXA-PFL-RW-1	71
Side stay for Z-axis wiring	Z-axis 200st IXA-SST-ZW-1	71
	Z-axis 400st IXA-SST-ZW-2	71
Upper stay for Z-axis wiring	Z-axis 200st IXA-TST-ZW-1	72
	Z-axis 400st IXA-TST-ZW-2	72
Solenoid valve set *1	IXA-SVP-1	92

*1 Protective flange for external wiring and solenoid valve set cannot be installed at the same time. (Note) Please purchase separately.

Cable length

Type	Cable code	4-axis specification
Standard type	5L(5m)	○
	10L(10m)	○
Specified length	1L(1m) ~ 4L(4m)	○
	6L(6m) ~ 9L(9m)	○
	11L(11m)	○
	12L(12m)	○
	13L(13m)	○
	14L(14m)	○
	15L(15m)	○

(Note) Total amount of the following cables:
[4-axis spec.] Motor cables:4, Encoder cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.32 seconds
Continuous cycle time	0.56 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.
2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion) [Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]
The cycle time for continuous operation.



49

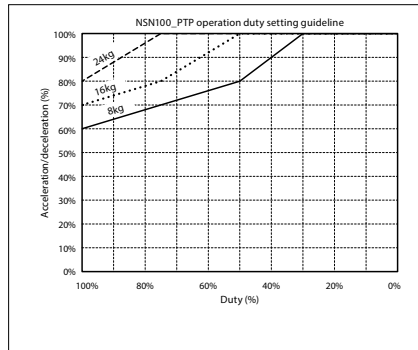
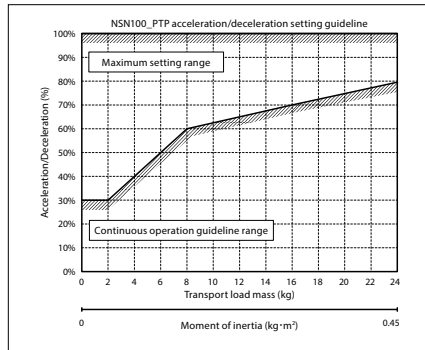
IXA-4NSN100□□

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

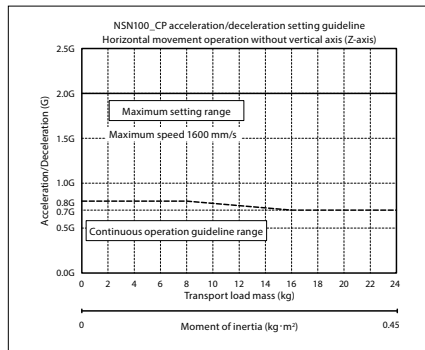
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) $\text{Duty (\%)} = (\text{Operation time} / (\text{Operation time} + \text{Stop time})) \times 100$
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

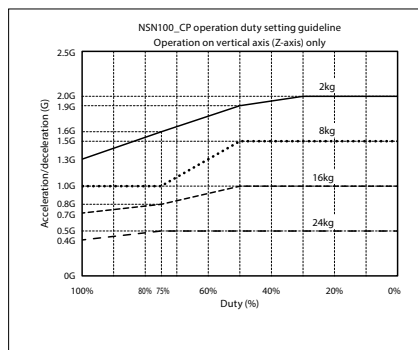
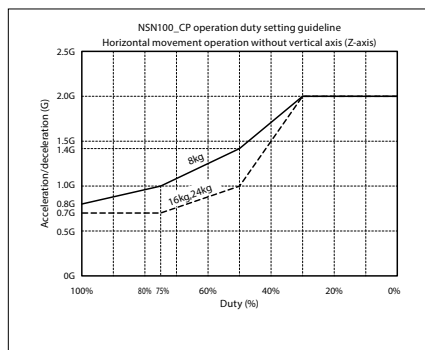
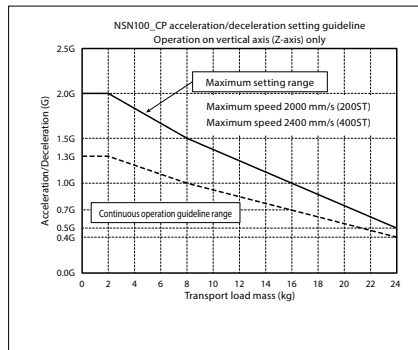


CP Operation

Horizontal

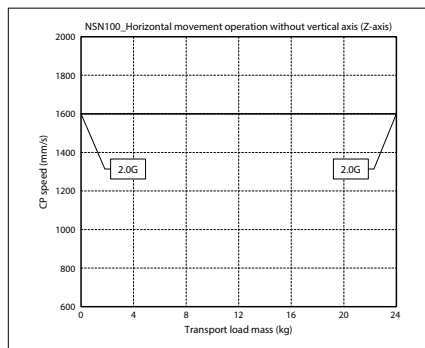


Vertical

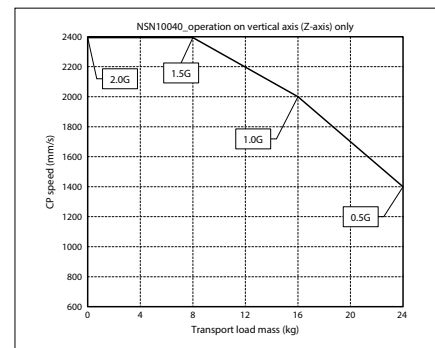
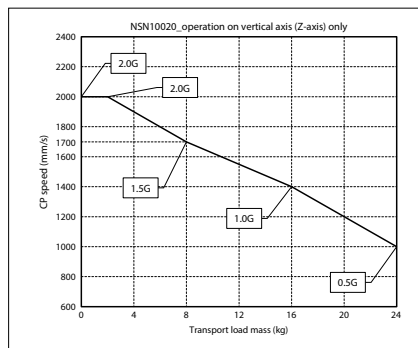


CP operation: Acceleration/Deceleration Limitations

Horizontal



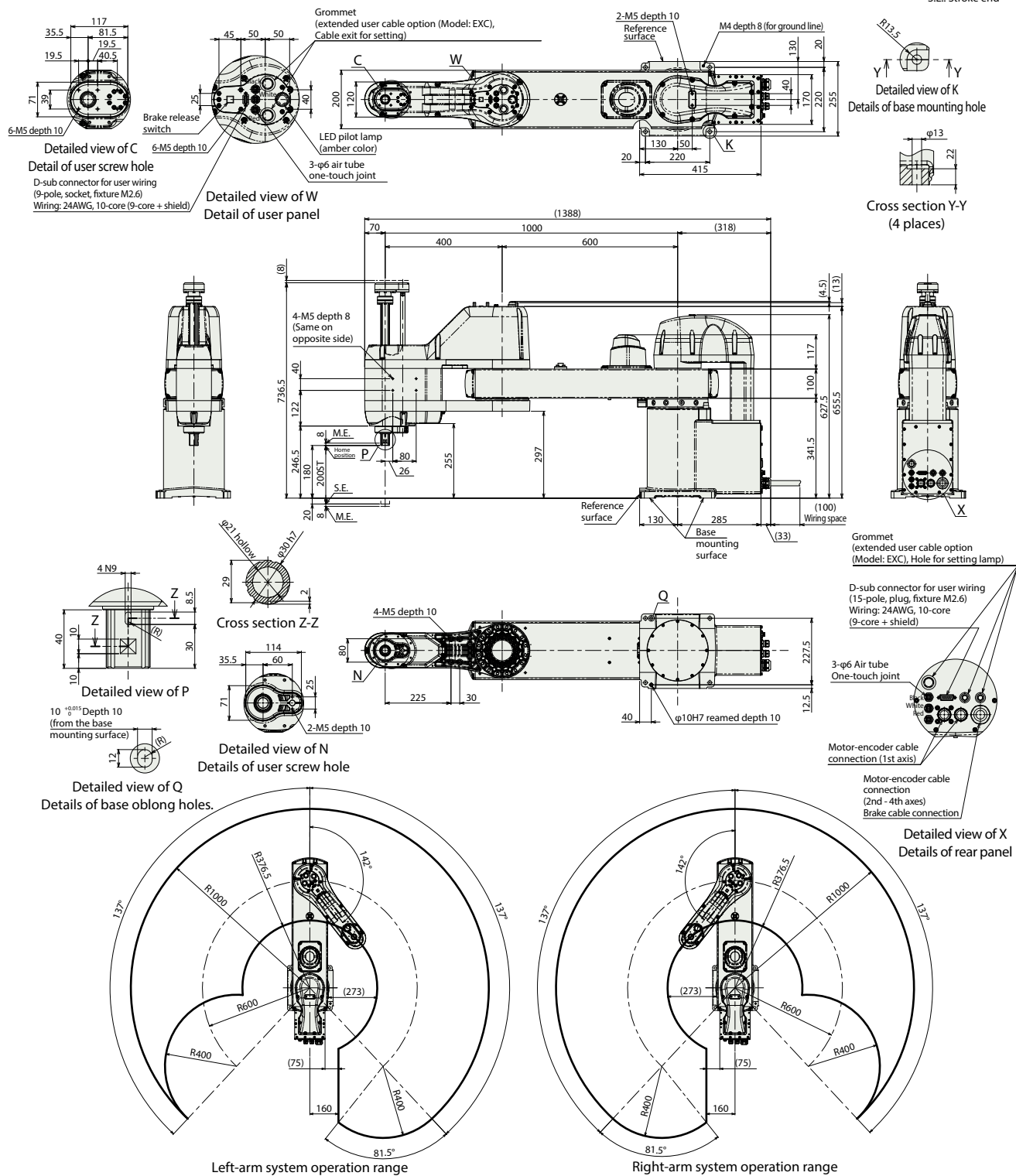
Vertical



IXA-4NSN10020

(Note) Refer to P68 (Note 9) for cable connections

S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



■ Mass

Item	Description
Mass	78.0kg

IXA-4NSW3015

Dust/
Splash-
proof

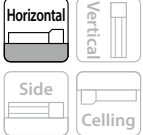
Battery-
less
Absolute

Arm Length:
300
mm

Vertical Axis:
150
mm

Model Specification Items

IXA	4	NSW	30	15		T2			
Series	Number of axes	Type		Arm length	Vertical stroke	Cable length	Applicable controller		
4	4 axes	NSW	Dust/Splash Proof Specification, high-speed type	30	300mm	15	150mm		
								N	Nil
								5L	5m
								10L	10m
								<input type="checkbox"/> L	Specified length (1m increments)
								T2	XSEL-RAX/SAX



Main specifications

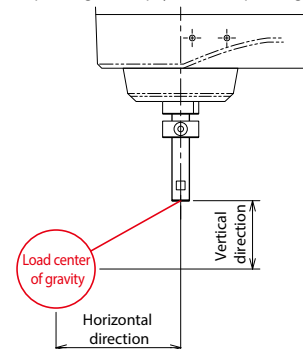
Item	Description												
Max. payload (kg) (Note 1)	4-axis specification 6												
Speed (Note 2)	<table border="1"> <tr><td>Combined max. speed (mm/s)</td><td>5126</td></tr> <tr><td>Max. speed of individual axes</td><td></td></tr> <tr><td>1st arm (deg/s)</td><td>690</td></tr> <tr><td>2nd arm (deg/s)</td><td>690</td></tr> <tr><td>Vertical axis (mm/s)</td><td>1500</td></tr> <tr><td>Rotational axis (deg/s)</td><td>1600</td></tr> </table>	Combined max. speed (mm/s)	5126	Max. speed of individual axes		1st arm (deg/s)	690	2nd arm (deg/s)	690	Vertical axis (mm/s)	1500	Rotational axis (deg/s)	1600
Combined max. speed (mm/s)	5126												
Max. speed of individual axes													
1st arm (deg/s)	690												
2nd arm (deg/s)	690												
Vertical axis (mm/s)	1500												
Rotational axis (deg/s)	1600												
Push force (N) (Note 3)	<table border="1"> <tr><td>Upper limit</td><td>98</td></tr> <tr><td>Lower limit</td><td>23</td></tr> </table>	Upper limit	98	Lower limit	23								
Upper limit	98												
Lower limit	23												
Arm length (mm)	300												
Individual arm length (mm)	<table border="1"> <tr><td>1st arm</td><td>155</td></tr> <tr><td>2nd arm</td><td>145</td></tr> </table>	1st arm	155	2nd arm	145								
1st arm	155												
2nd arm	145												
Operation range of individual axes	<table border="1"> <tr><td>1st arm (deg)</td><td>±121</td></tr> <tr><td>2nd arm (deg)</td><td>±125</td></tr> <tr><td>Vertical axis (mm)</td><td>150</td></tr> <tr><td>Rotational axis (deg)</td><td>±360</td></tr> </table>	1st arm (deg)	±121	2nd arm (deg)	±125	Vertical axis (mm)	150	Rotational axis (deg)	±360				
1st arm (deg)	±121												
2nd arm (deg)	±125												
Vertical axis (mm)	150												
Rotational axis (deg)	±360												

Item	Description								
Positioning repeatability (Note 4)	<table border="1"> <tr><td>Within horizontal surface</td><td>±0.01mm</td></tr> <tr><td>Vertical axis</td><td>±0.01mm</td></tr> <tr><td>Rotational axis</td><td>±0.005 degrees</td></tr> </table>	Within horizontal surface	±0.01mm	Vertical axis	±0.01mm	Rotational axis	±0.005 degrees		
Within horizontal surface	±0.01mm								
Vertical axis	±0.01mm								
Rotational axis	±0.005 degrees								
User wiring	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)								
User piping	Outer diameter Φ4, inner diameter Φ2.5, air tube 3 pcs. (max. usable pressure 0.6MPa)								
Alarm lamp (Note 5)	Nil								
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.								
Tip axis	<table border="1"> <tr><td>Allowable torque</td><td>4.5 N · m</td></tr> <tr><td>Allowable load moment</td><td>7.1 N · m</td></tr> </table>	Allowable torque	4.5 N · m	Allowable load moment	7.1 N · m				
Allowable torque	4.5 N · m								
Allowable load moment	7.1 N · m								
Material of main parts	Refer to P85								
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)								
Degree of protection	IP65 (except for bellows)								
Air purge pressure (Note 8)	35kPa								
Vibration- and impact-resistance	No impact or vibration should be applied.								
Noise (Note 7)	80 dB or lower								
International standard	CE marking, RoHS								
Motor type	AC servo motor								
Motor wattage	<table border="1"> <tr><td>1st arm</td><td>600</td></tr> <tr><td>2nd arm</td><td>400</td></tr> <tr><td>Vertical axis</td><td>200</td></tr> <tr><td>Rotational axis</td><td>100</td></tr> </table>	1st arm	600	2nd arm	400	Vertical axis	200	Rotational axis	100
1st arm	600								
2nd arm	400								
Vertical axis	200								
Rotational axis	100								
Encoder type	Battery-less absolute								
Encoder pulse	16384 pulse/rev								

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.12 kg · m ²

Make sure that the offset dimensions from the spline tip to the horizontal and vertical directions are within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter life time. Adjust the speed, acceleration/deceleration or center of gravity. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
120mm or less	100mm or less



- (1) Please refer to P67 for Notes 1 - 9.
- (2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration values or refer to the duty guideline and set a stop time after acceleration/deceleration.
- (3) Do not directly splash jet on the bellows. Connect a Φ16 air tube at the bellows intake/exhaust joint to release its tip into clean air.
- (4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR□□□-CS	71
Flange	IX-FL-1	70
Metal cap for user wiring	IXA-MC-1	70

(Note) Please purchase separately.

Cable length

Type	Cable code	4-axis specification
Standard type	5L(5m)	○
	10L(10m)	○
Specified length	11L(11m) ~ 4L(4m)	○
	6L(6m) ~ 9L(9m)	○
	11L(11m)	○
	12L(12m)	○
	13L(13m)	○
	14L(14m)	○
	15L(15m)	○

(Note) Total amount of the following cables:
Motor cables:4, Encoder cables: 1, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.69 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.

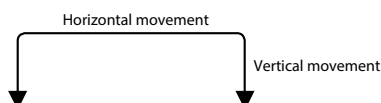
2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.



Dimensions

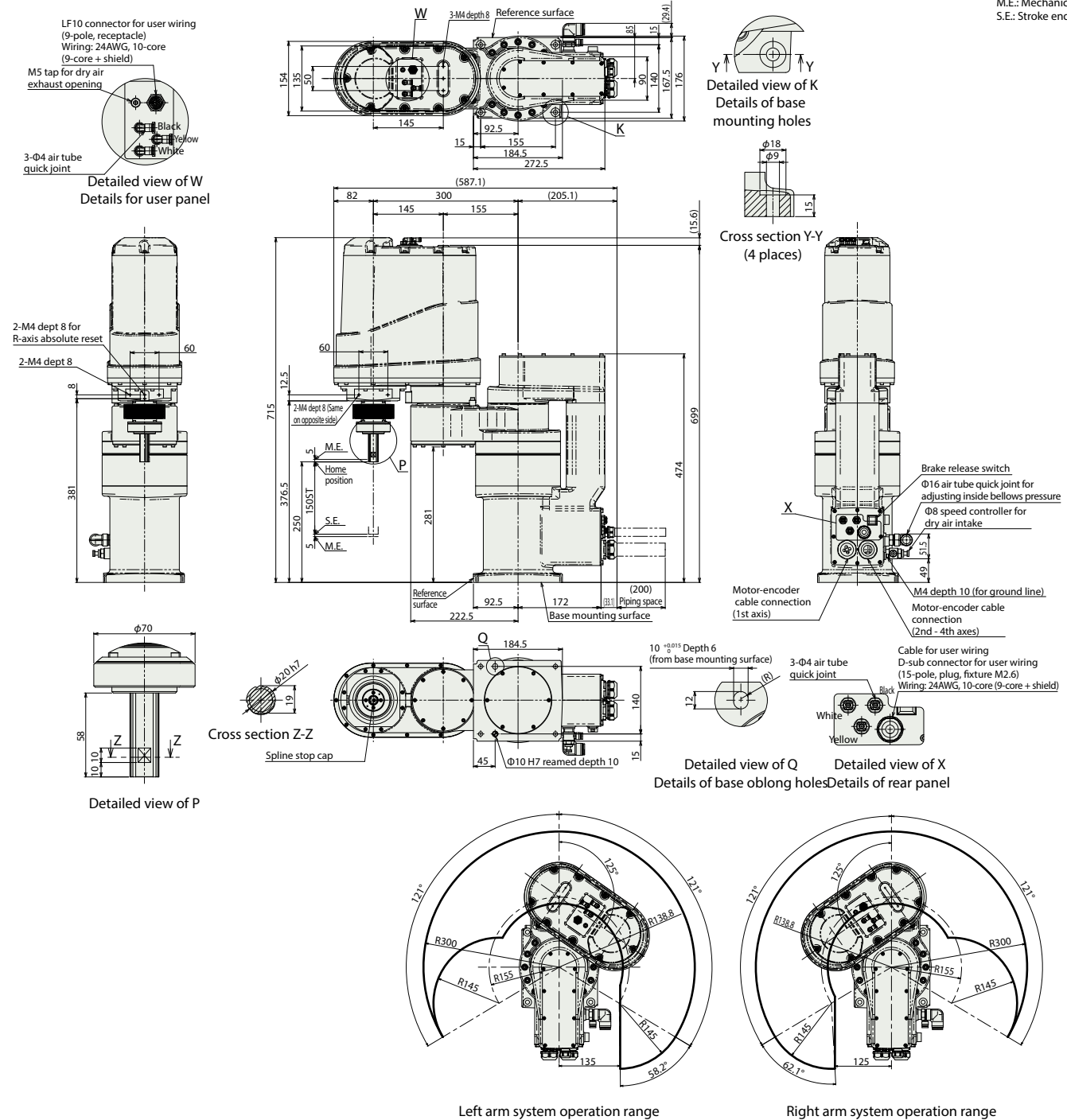
IXA-4NSW3015

(Note) Refer to P68 (Note 9) for cable connections

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www.intelligentactuator.com



S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end




Mass

Item	Description
Mass	4-axis specification 48.0kg

Applicable controller

The actuator on this page can be operated by the controller indicated below.

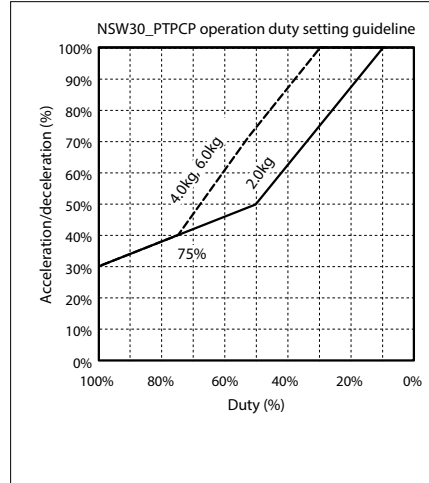
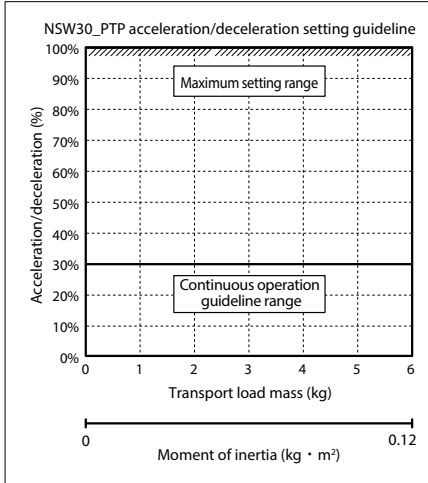
Name	External view	Max. number of connectable axes	Power supply voltage	Control method														Max. number of positioning points	Reference page	
				Positioner	Pulse train	Program	Network* option													
DV	CC	CIE	PR				CN	ML	ML3	EC	EP	PRT	SSN	ECM						
XSEL-RAX4/SAX4 (for IX and IXA)		4	3-phase AC200V	—	—	●	●	●	—	●	—	—	—	●	●	—	—	—	36666 (Depending on the type)	73

Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

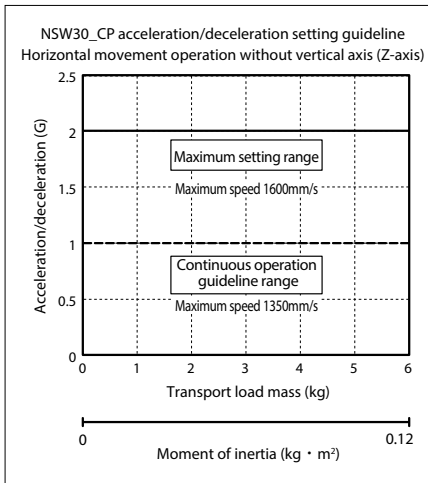
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) × 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

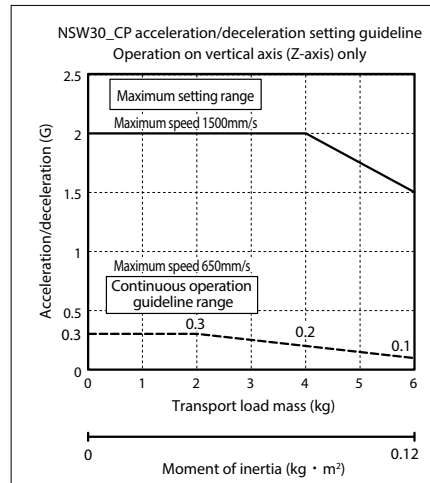


CP Operation

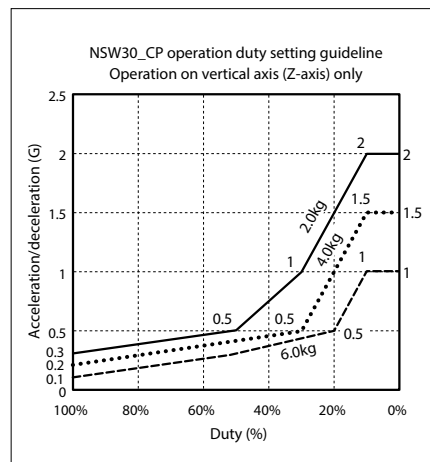
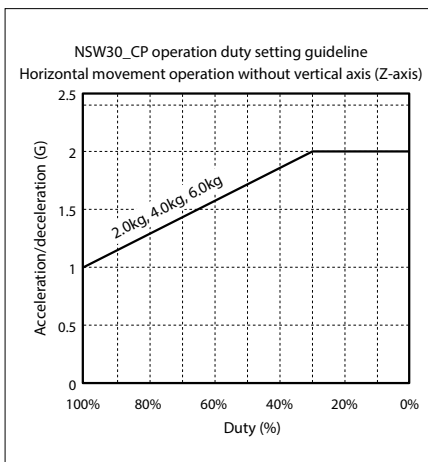
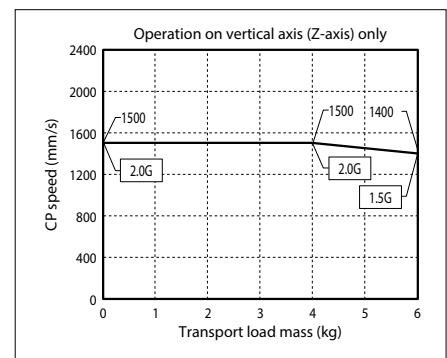
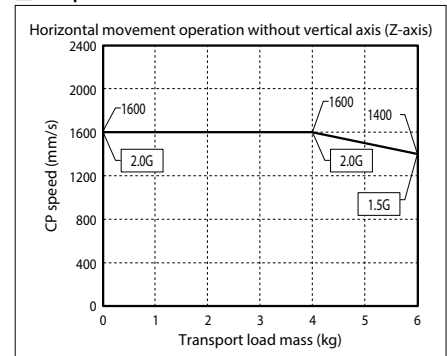
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



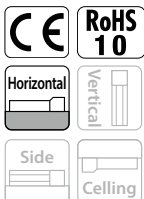
IXA-4NSW4518

IXA-4NSW4533

Dust/
Splash-
proofBattery-
less
AbsoluteArm Length:
450
mmVertical Axis:
180/330
mm

Model Specification Items

IXA		4		NSW		45				T2			
Series		Number of axes		Type		Arm length		Vertical stroke		Cable length		Applicable controller	
		4 axes		NSW Dust/Splash Proof Specification, high-speed type		45 450mm		18 180mm 33 330mm		N Nil 5L 5m 10L 10m L Specified length (1m increments)		T2 XSEL-RAX/SAX	



Main specifications

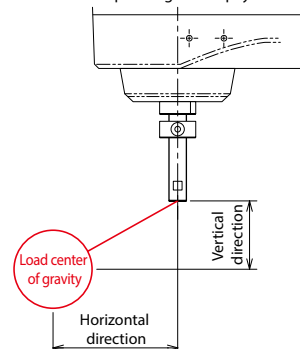
Item	Description
Max. payload (kg) (Note 1)	8
Combined max. speed (mm/s)	6981
Speed (Note 2)	1st arm (deg/s) 500 2nd arm (deg/s) 700 Vertical axis (mm/s) 1600 Rotational axis (deg/s) 2000
Push force (N) (Note 3)	Upper limit 110 Lower limit 25
Arm length (mm)	450
Individual arm length (mm)	1st arm 200 2nd arm 250
Operation range of individual axes	1st arm (deg) ±137 2nd arm (deg) ±133 Vertical axis (mm) 180/330 Rotational axis (deg) ±360

Item	Description
Positioning repeatability (Note 4)	Within horizontal surface ±0.01mm Vertical axis ±0.01mm Rotational axis ±0.005 degrees
User wiring	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)
User piping	Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. usable pressure 0.6MPa)
Alarm lamp (Note 5)	Nil
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.
Tip axis	Allowable torque 3.2 N·m Allowable load moment 9.6 N·m
Material of main parts	Refer to P85
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)
Degree of protection	IP65 (except for bellows)
Air purge pressure (Note 8)	35kPa
Vibration- and impact-resistance	No impact or vibration should be applied.
Noise (Note 7)	80 dB or lower
International standard	CE marking, RoHS
Motor type	AC servo motor
Motor wattage	1st arm 600W 2nd arm 400W Vertical axis 200W Rotational axis 100W
Encoder type	Battery-less absolute
Encoder pulse	16384 pulse/rev

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.12 kg · m ²

Make sure that the offset value from the spline tip to the horizontal and vertical direction dimensions is within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter life time. Adjust the speed, acceleration/deceleration or center of gravity. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
120mm or less	100mm or less

(1) Please refer to P67 for Notes 1 - 9.

(2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.

(3) Do not directly splash jet on the bellows. Connect a Φ16 air tube at the bellows intake/exhaust joint to release its tip into clean air.

(4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option

* Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR□□□-CS	71
Flange	IX-FL-1	70
Metal cap for user wiring	IXA-MC-1	70

(Note) Please purchase separately.

Cable length

Type	Cable code	4-axis specification
Standard type	5L(5m) 10L(10m)	○ ○
Specified length	1L(1m) ~ 4L(4m) 6L(6m) ~ 9L(9m) 11L(11m) 12L(12m) 13L(13m) 14L(14m) 15L(15m)	○ ○ ○ ○ ○ ○ ○

(Note) Total amount of the following cables:
Motor cables: 4, Encoder cable: 1

Cycle time

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.55 seconds

The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.

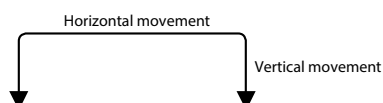
2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.

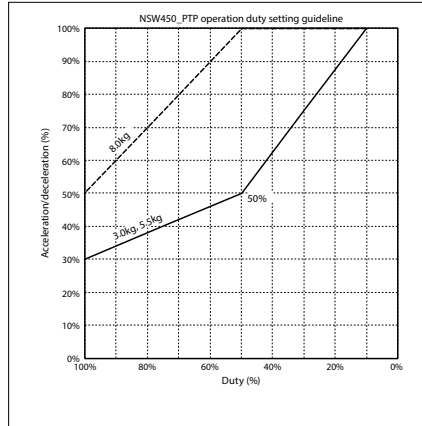
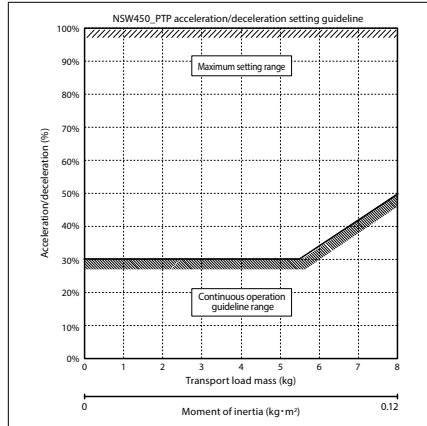


Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

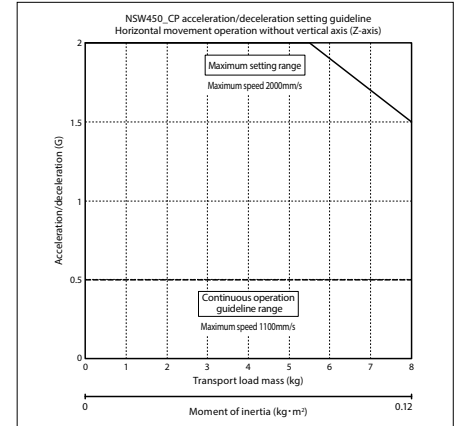
- 1) For a PTP operation, always use the WGH command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) x 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

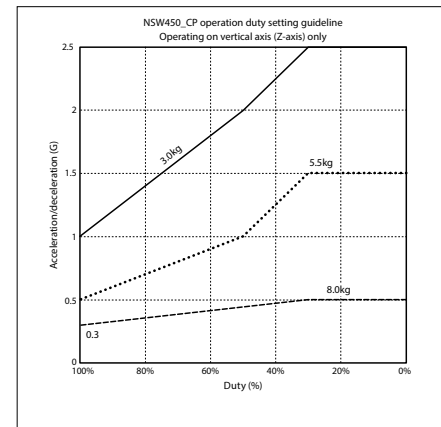
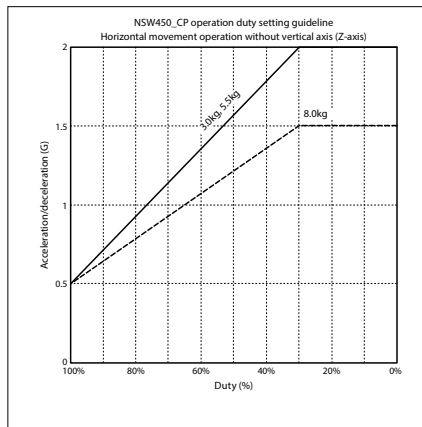
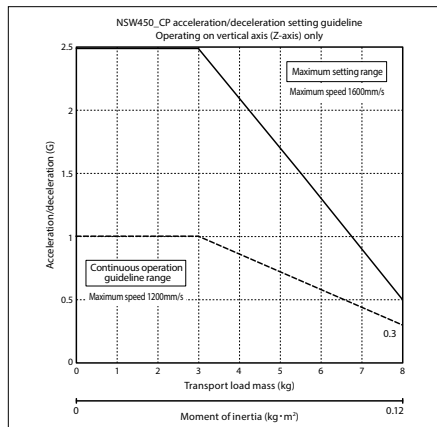


CP Operation

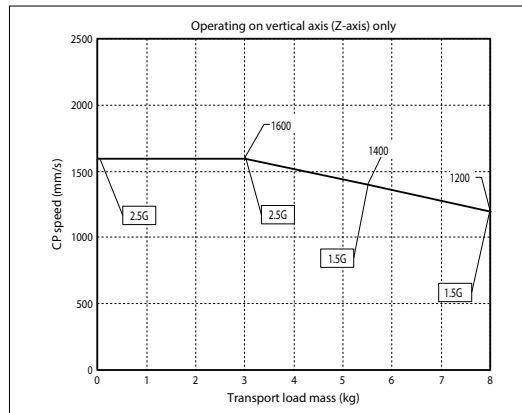
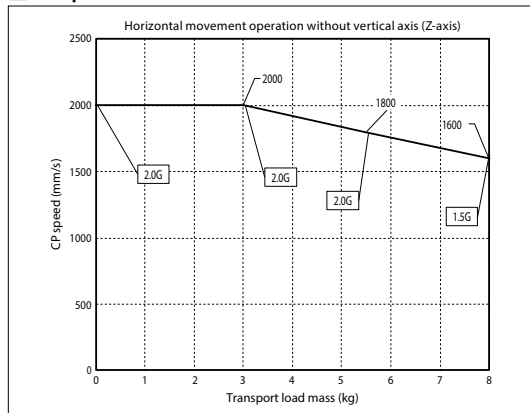
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



IXA-4NSW4518

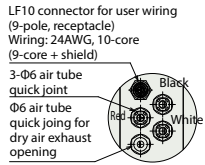
(Note) Refer to P68 (Note 9) for cable connections

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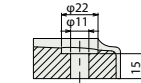
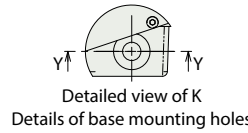
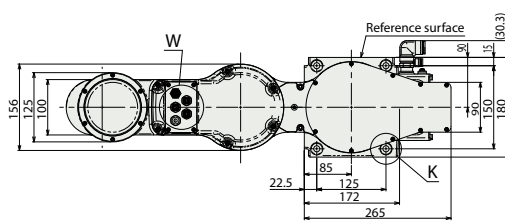
2D
CAD

3D
CAD

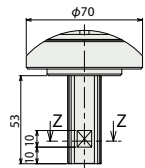
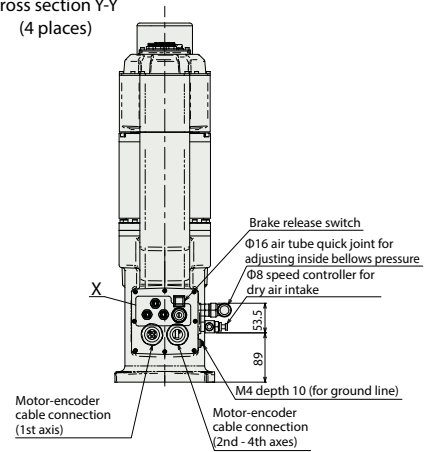
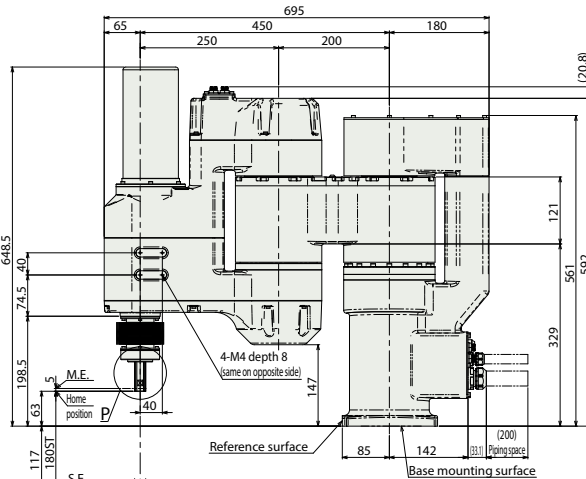
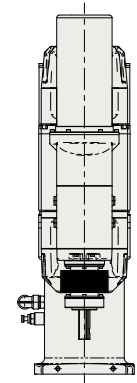
S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



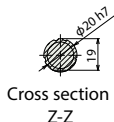
Detailed view of W
Details for user panel



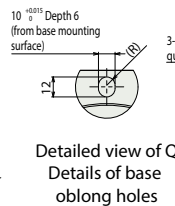
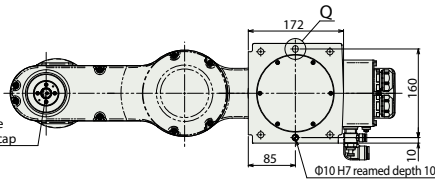
Cross section Y-Y
(4 places)



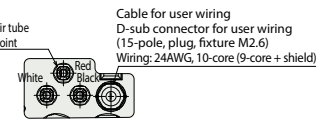
Detailed view of P



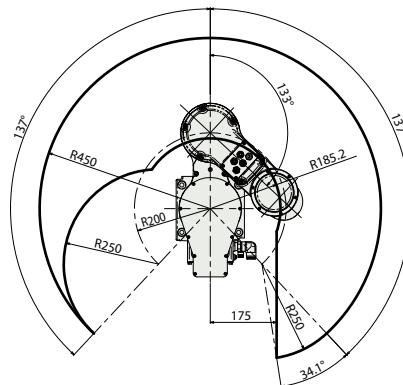
Cross section Z-Z



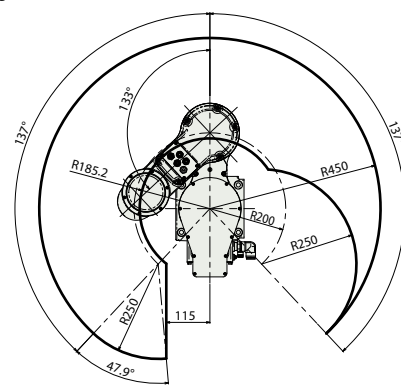
Detailed view of Q
Details of base oblong holes



Detailed view of X
Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

Item	Description
Mass	4-axis specification 52.0kg

60

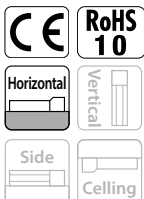
IXA-4NSW6018

IXA-4NSW6033

Dust/
Splash-
proofBattery-
less
AbsoluteArm Length:
600
mmVertical Axis:
180/330
mm

Model Specification Items

IXA	4	NSW	60			T2
Series	Number of axes	Type	Arm length	Vertical stroke	Cable length	Applicable controller
4	4 axes	NSW	Dust/Splash Proof Specification, high-speed type	60 600mm	18 180mm 33 330mm	T2 XSEL-RAX/SAX
					N Nil 5L 5m 10L 10m <input type="checkbox"/> L Specified length (1m increments)	



Main specifications

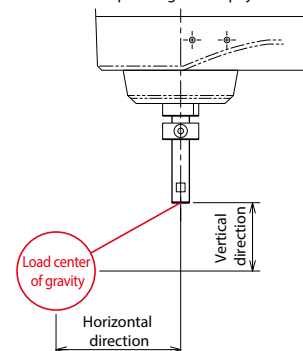
Item	Description
Max. payload (kg) (Note 1)	10
Combined max. speed (mm/s)	6039
Speed (Note 2)	1st arm (deg/s) 285 2nd arm (deg/s) 700 Vertical axis (mm/s) 1600 Rotational axis (deg/s) 2000
Push force (N) (Note 3)	Upper limit 110 Lower limit 25
Arm length (mm)	600
Individual arm length (mm)	1st arm 350 2nd arm 250
Operation range of individual axes	1st arm (deg) ±137 2nd arm (deg) ±133 Vertical axis (mm) 180/330 Rotational axis (deg) ±360

Item	Description
Positioning repeatability (Note 4)	Within horizontal surface ±0.01mm Vertical axis ±0.01mm Rotational axis ±0.005 degrees
User wiring	10-core (9-core + shield) AWG24 (rated 30V/Max. 1A)
User piping	Outer diameter Φ6, inner diameter Φ4, air tube 3 pcs. (max. release pressure 0.6MPa)
Alarm lamp (Note 5)	Nil
Brake release switch (Note 6)	Brake release switch for preventing vertical axis from dropping.
Tip axis	Allowable torque 3.2 N·m Allowable load moment 9.6 N·m
Material of main parts	Refer to P85
Ambient operational temperature and humidity	0-40°C, 20-85% RH or lower (non-condensing)
Degree of protection	IP65 (except for bellows)
Air purge pressure (Note 8)	35kPa
Vibration- and impact-resistance	No impact or vibration should be applied.
Noise (Note 7)	80 dB or lower
International standard	CE marking, RoHS
Motor type	AC servo motor
Motor wattage	1st arm 750W 2nd arm 400W Vertical axis 200W Rotational axis 100W
Encoder type	Battery-less absolute
Encoder pulse	16384 pulse/rev

Tip shaft allowable load inertia moment

Number of axes	Tip shaft allowable load inertia moment
4-axis specification	0.12 kg · m ²

Make sure that the offset value from the spline tip to the horizontal and vertical direction dimensions is within the guideline values listed below. A large load offset may cause abnormal noise, vibration, failure and shorter life time. Adjust the speed, acceleration/deceleration or center of gravity. The overhang distance is limited depending on the payload and operating condition.



Horizontal direction	Vertical direction
120mm or less	100mm or less

POINT Selection Notes	(1) Please refer to P67 for Notes 1 - 9.
	(2) The maximum set value for acceleration/deceleration varies depending on the weight of the object being transported, the travel distance, and the location. Operating continuously at the maximum set value could cause an overload error. For continuous operation, either lower the acceleration/deceleration values or refer to the duty (guideline) and set a stop time after acceleration/deceleration.
	(3) Do not directly splash jet on the bellows. Connect a Φ16 air tube at the bellows intake/exhaust joint to release its tip into clean air.
	(4) A continuous operation cannot be performed for SCARA robots at 100% of speed and acceleration. Refer to the "Acceleration/Deceleration Setting Guidelines" for executable operating conditions.

Option * Please check the Options reference pages to confirm each option.

Name	Model number	Reference page
User cable	CB-IXA-USR□□□-CS	71
Flange	IX-FL-1	70
Metal cap for user wiring	IXA-MC-1	70

(Note) Please purchase separately.

Cable length

Type	Cable code	4-axis specification
Standard type	5L(5m)	○
	10L(10m)	○
Specified length	11L(1m) ~ 4L(4m)	○
	6L(6m) ~ 9L(9m)	○
	11L(11m)	○
	12L(12m)	○
	13L(13m)	○
	14L(14m)	○
	15L(15m)	○

(Note) Total amount of the following cables:
Motor cables: 4, Brake cable: 1

Cycle time

Item	Time
Standard cycle time	0.38 seconds
Continuous cycle time	0.57 seconds

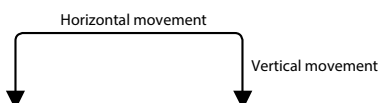
The standard/continuous cycle time represents the time required when an operation is performed with a cycle operation setting at maximum speed, under the following conditions.
2kg transport, vertical movement 25mm, horizontal movement 300mm (rough positioning arch motion)

[Standard cycle time]

The time required for maximum speed. This is a general guideline for high speed performance. Note that continuous operation is not possible under maximum speed operation.

[Continuous cycle time]

The cycle time for continuous operation.

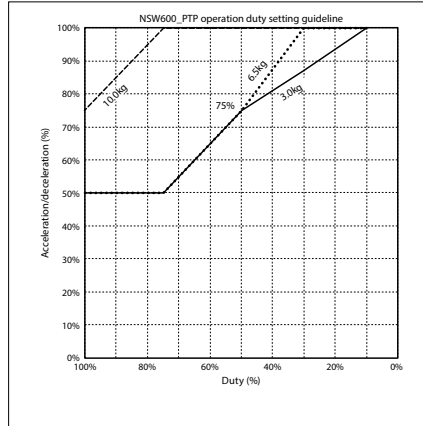
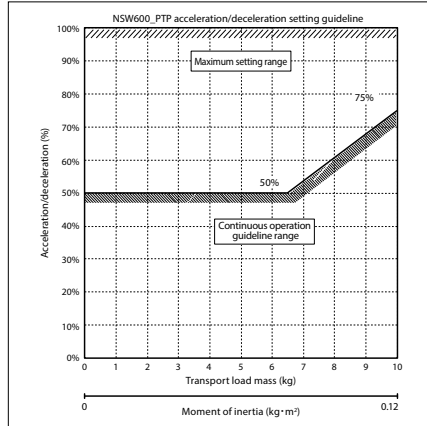


Acceleration/Deceleration Setting Guidelines

The SCARA Robot IXA cannot operate continuously at the maximum acceleration/deceleration or maximum speed specified in the catalog. To operate at the maximum acceleration/deceleration, set a stop time referring to the continuous operation duty guideline graph. If a continuous operation is required, do so within the continuous operation guideline range shown in the acceleration/deceleration setting guideline graph.

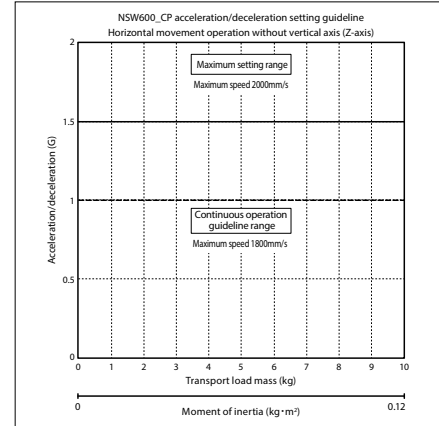
- 1) For a PTP operation, always use the WGH command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration or speed setting.
- 2) Adjust the acceleration/deceleration setting value by gradually increasing it from the continuous operation reference value.
- 3) If an overload error occurs, lower the acceleration/deceleration as required, or set a stop time by referring to the continuous operation duty guideline.
- 4) Duty (%) = (Operation time / (Operation time + Stop time)) x 100
- 5) When moving the robot horizontally at high speed, operate the vertical axis as close to the upward end as possible.
- 6) Set the moment of inertia and payload to the allowable value or lower.
- 7) The load mass represents the moment of inertia and weight at the center of rotation of the 4th axis.
- 8) Operate the robot at an appropriate acceleration/deceleration according to the weight and moment of inertia for the 4-axis specification. Otherwise, the drive section may become prematurely unusable or damaged, or vibration may occur.
- 9) If the load moment of inertia is high, vibration may occur in the vertical axis, depending on the position of the vertical axis. In such a case, decrease the acceleration/deceleration for operation as required.

PTP Operation

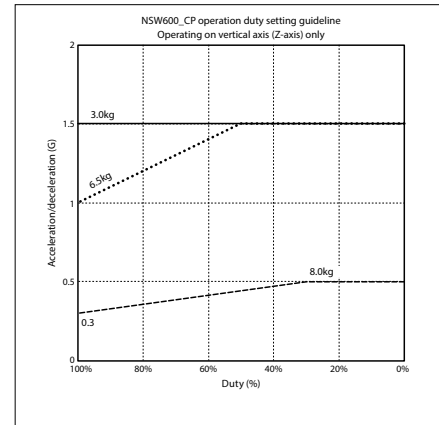
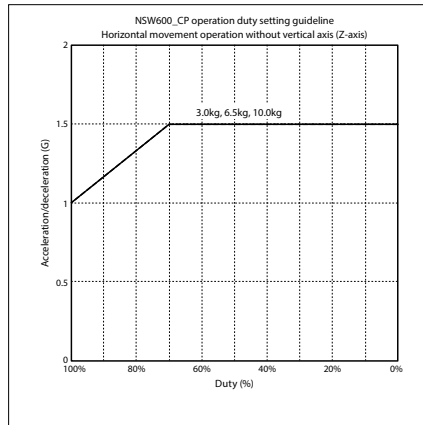
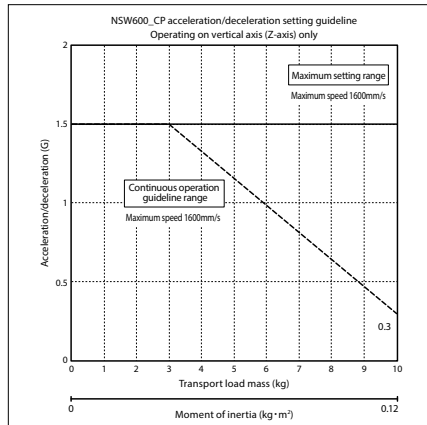


CP Operation

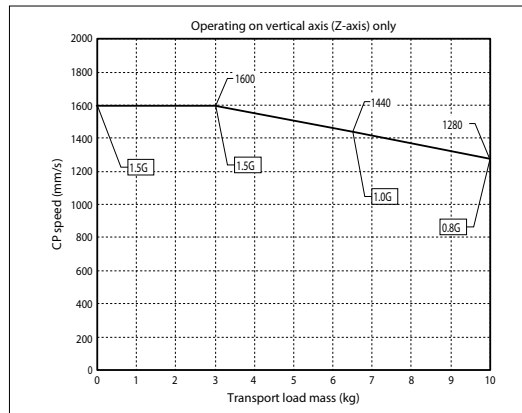
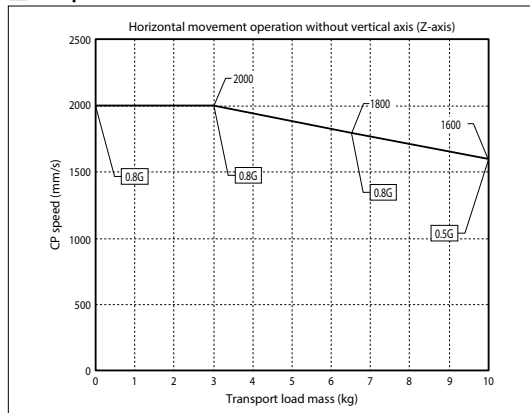
Horizontal



Vertical



CP operation: Acceleration/deceleration Limitations



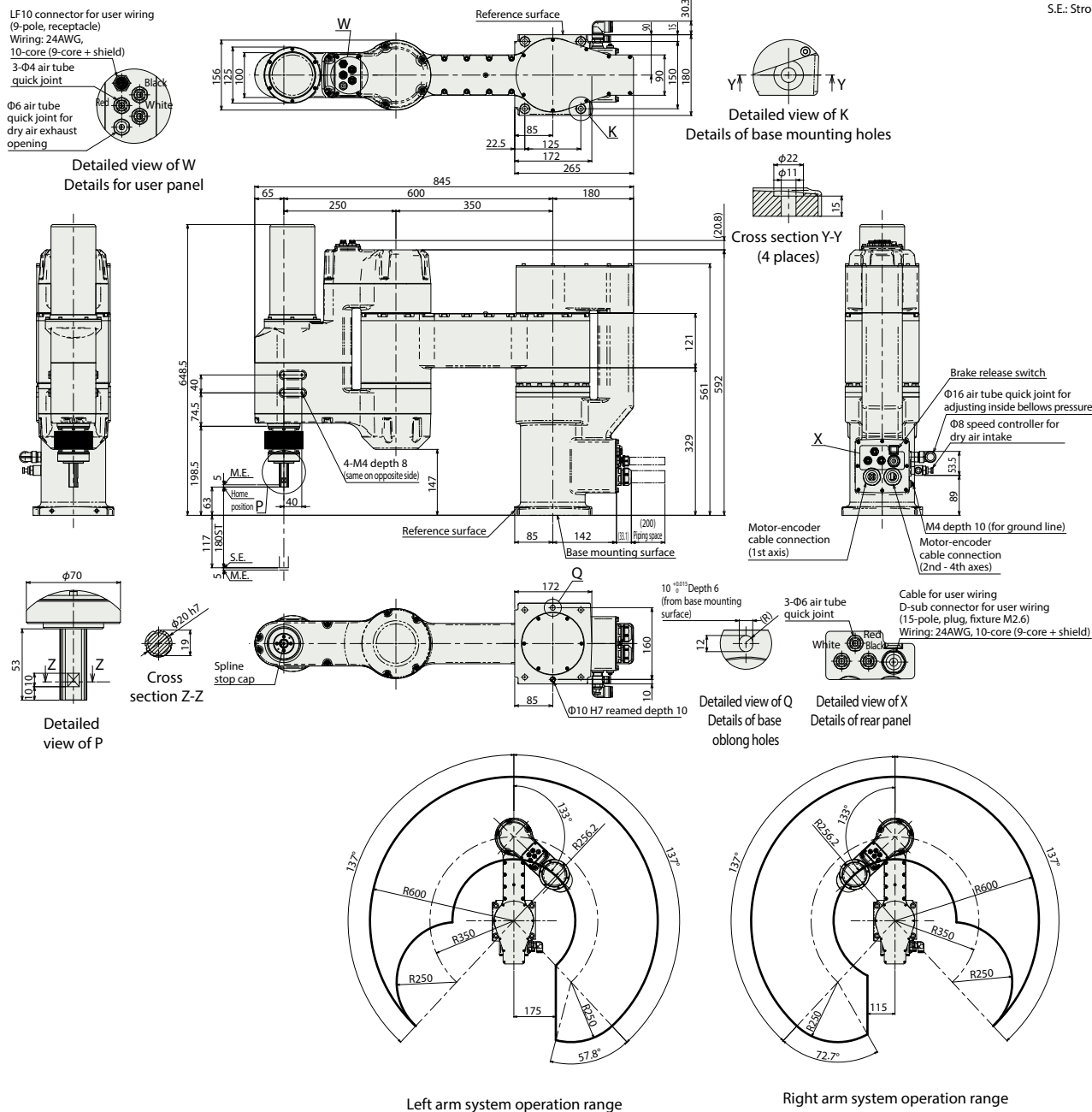
IXA-4NSW6018

(Note) Refer to P68 (Note 9) for cable connections

CAD drawings can be downloaded from our website.
www.intelligentactuator.com

2D
CAD3D
CAL

S.T.: Stroke
M.E.: Mechanical end
S.E.: Stroke end



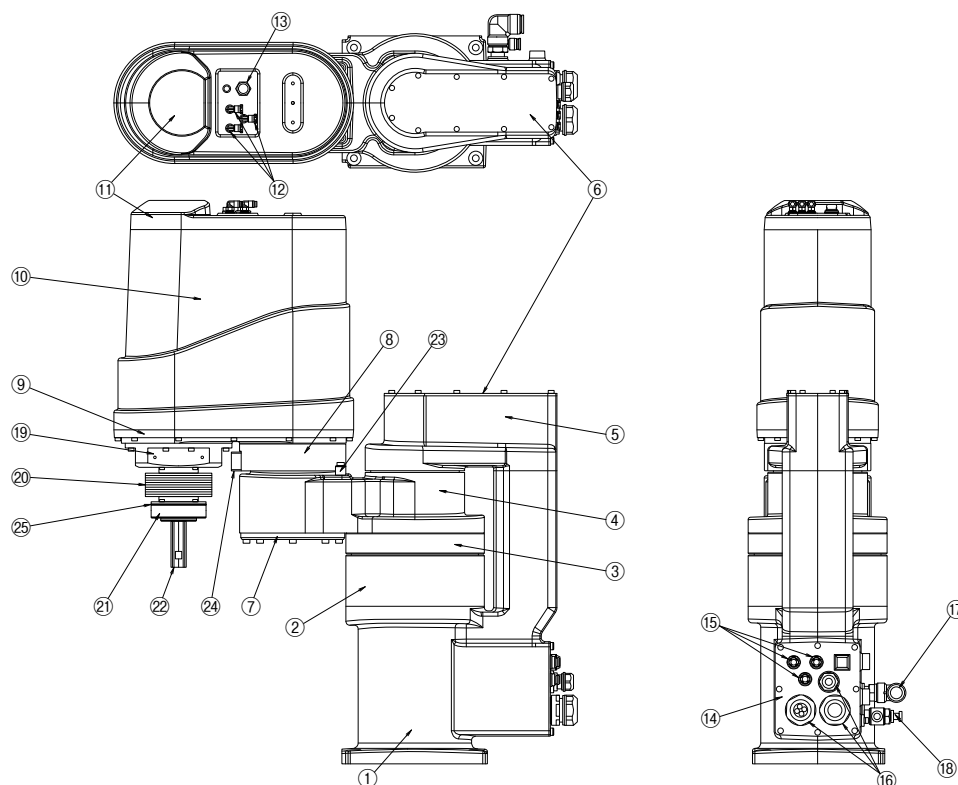
■ Mass

Item		Description
Mass	4-axis specification	53.0kg

64

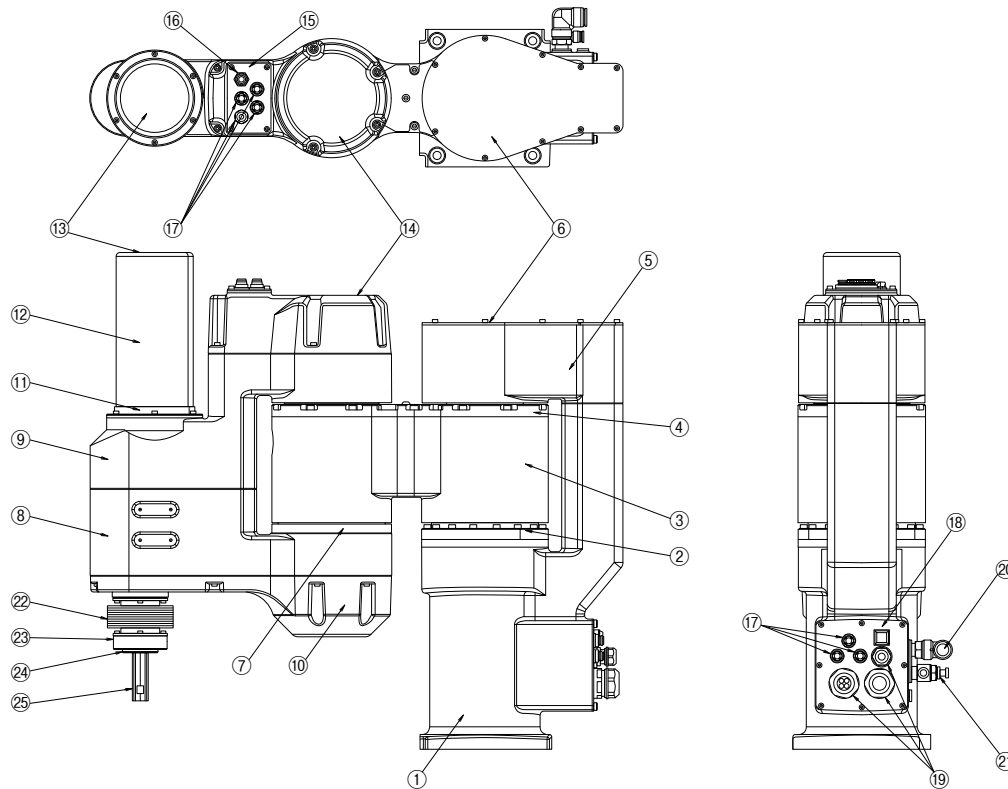
IXA Dust/Splash Proof Main Materials

IXA-4NSW3015



No.	Name	Material	Surface treatment
①	J1 Base	Aluminum casting	Design surface coating
②	J1 Base flange	Aluminum	Design surface coating
③	J1 Flange cover	Carbon steel	Low temperature black chrome plating
④	J1 Arm	Aluminum casting	Design surface coating
⑤	J1 Joint bracket	Aluminum casting	Design surface coating
⑥	J1 JB cover	Stainless steel	Design surface coating
⑦	J2 Under cover	Aluminum	White alumite
⑧	J2 OS housing	Aluminum	Black alumite
⑨	J2 Main arm	Aluminum casting	Design surface coating
⑩	J2 Arm cover	Aluminum casting	Design surface coating
⑪	J2 Spline cover	Aluminum casting	Design surface coating
⑫	Quick joint elbow	Resin (PBT, POM), Nickel plated brass	
⑬	Round metal connector	Zinc nickel plated, Rubber (CR)	
⑭	External wiring panel	Stainless steel	
⑮	Quick joint, Partition union pea	Resin (PBT, POM), Rubber (NBR), Nickel plated brass	
⑯	Cable ground	Resin (nylon 66), Rubber (NBR)	
⑰	Cable sheath	Vinyl chloride (PVC)	
⑱	Quick joint elbow	Resin (PBT, POM), Nickel plated brass	
⑲	Speed controller	Resin (PBT, POM), Nickel plated brass	
⑳	Bellows flange	Aluminum	Black alumite
㉑	Bellows	Urethan	
㉒	Bearing case B	Aluminum	White alumite
㉓	Ball screw spline	High carbon chromium bearing steel	Low temperature black chrome plating
㉔	Stopper ring	Stainless steel	
㉕	Movable stopper	Carbon steel	Low temperature black chrome plating
㉖	Plate A (bellows)	Stainless steel	
	Exterior bolt and screw	Stainless steel	
	External gasket (O-ring, packing)	Rubber (NBR)	
	Exterior oil seal	Rubber (FKM)	

IXA-4NSW45□□/4NSW60□□



Exterior components	No.	Name	Material	Surface treatment
	①	J1 Base	Aluminum casting	Design surface coating
	②	J1 Base flange	Aluminum	Black alumite
	③	J1 Arm L / L-600	Aluminum casting	Design surface coating
	④	J1 Arm U / U-600	Aluminum	Design surface coating
	⑤	J1 Joint bracket	Aluminum casting	Design surface coating
	⑥	J1 JB cover	Stainless steel	Design surface coating
	⑦	J2 Intermediate flange	Aluminum	Black alumite
	⑧	J2 Main frame	Aluminum casting	Design surface coating
	⑨	J2 Joint bracket	Aluminum casting	Design surface coating
	⑩	J2 Cover L	Aluminum casting	Design surface coating
	⑪	J2 ZR DC flange	Aluminum	Design surface coating
	⑫	ZR Dust cover	Aluminum extruded round pipe	Design surface coating
	⑬	ZR DC cap	Aluminum	Design surface coating
	⑭	J2 Cover U	Aluminum casting	Design surface coating
	⑮	J2 U ser panel	Stainless steel	Design surface coating
	⑯	Round metal connector	Zinc nickel plated, Rubber (CR)	
	⑰	Quick joint, Partition union pea	Resin (PBT, POM), Rubber (NBR), Nickel plated brass	
	⑱	External wiring panel	Stainless steel	Design surface coating
	⑲	Cable ground	Resin (nylon 66), Rubber (NBR)	
	⑲	Cable sheath	Vinyl chloride (PVC)	
	⑳	Quick joint elbow	Resin (PBT, POM), Nickel plated brass	
	㉑	Speed controller	Resin (PBT, POM), Nickel plated brass	
	㉒	Bellows	Urethan	
	㉓	Bearing case B	Aluminum	White alumite
	㉔	Set color	Aluminum	White alumite
	㉕	Ball spline	High carbon chromium bearing steel	Low temperature black chrome plating
	Exterior bolt and screw		Stainless steel	
	Gaskets (O-ring, packing)		Rubber (NBR)	
	Oil seal		Rubber (FKM)	

Precautions

(Note 1) Payload

The payload is the maximum weight that can be carried.
The optimal acceleration automatically sets the weight of the load and the moment of inertia in the program.
A heavier load will cause a lower acceleration to be configured.

(Note 2) Maximum operation speed during PTP operation

The value of the maximum operation speed in the specifications is for PTP command operation.
For CP operation commands (interpolation operation), there are limitations on operations at high speed.

(Note 3) 3rd axis push force control range

The push force is the force during a push operation. The max speed for push mode is 10 mm/s.
The 3rd axis push force control range is the push force of the vertical axis tip.
This will be the push force when there is no load (nothing mounted) on the 3rd axis.
Continuous push operation is not possible.
The upper limit is the push force when the push force setting value is 70%.
The lower limit is the push force when the parameter setting value is 30% for □NNN1805 and 4NSW3015, and 20% for other types.
Allow some tolerance on the actual push force.

(Note 4) Positioning repeatability

This represents the ability to reproduce the same positioning result when an operation is repeated at the same speed, acceleration/deceleration, and arm system, between the operation start position and the target position (The value is for JIS B 8432 Ambient temperature 20°C constant).
This is NOT the absolute positioning accuracy.
Note that when the arm system is switched while starting from multiple positions to the target position, or when the operation conditions (such as operation speed or acceleration/deceleration setting) are changed, the value may fall outside of the positioning repeatability specification value.

(Note 5) Alarm pilot lamp

The alarm lamp is installed on the following places.
* Arm length 180/300/450/600: Upper part of the 1st axis (J1) base
* Arm length 800/1000: User panel
This is optional for the standard type NNN except for arm length of 180. (Option code LED)
It does not support dust/splash proof specification.
It is used to turn on the light when a controller error occurs.
To operate it, use an I/O output signal of the controller and build a circuit to apply 24VDC to the LED terminal in the user wiring.

(Note 6) Brake release switch

The alarm lamp is installed on the following places.
* Arm length 180/300/450/600: Upper part of the 1st axis (J1) base
* Arm length 800/1000: User panel
24V DC power must be supplied to the controller to release the brake, regardless of whether the brake release switch is used or not.

(Note 7) Noise

This is the value measured when all axes are operating at maximum speed.
Noise may change depending on operating conditions and the surrounding reverberation environment. (JIS B 6195)

(Note 8) Air purge pressure

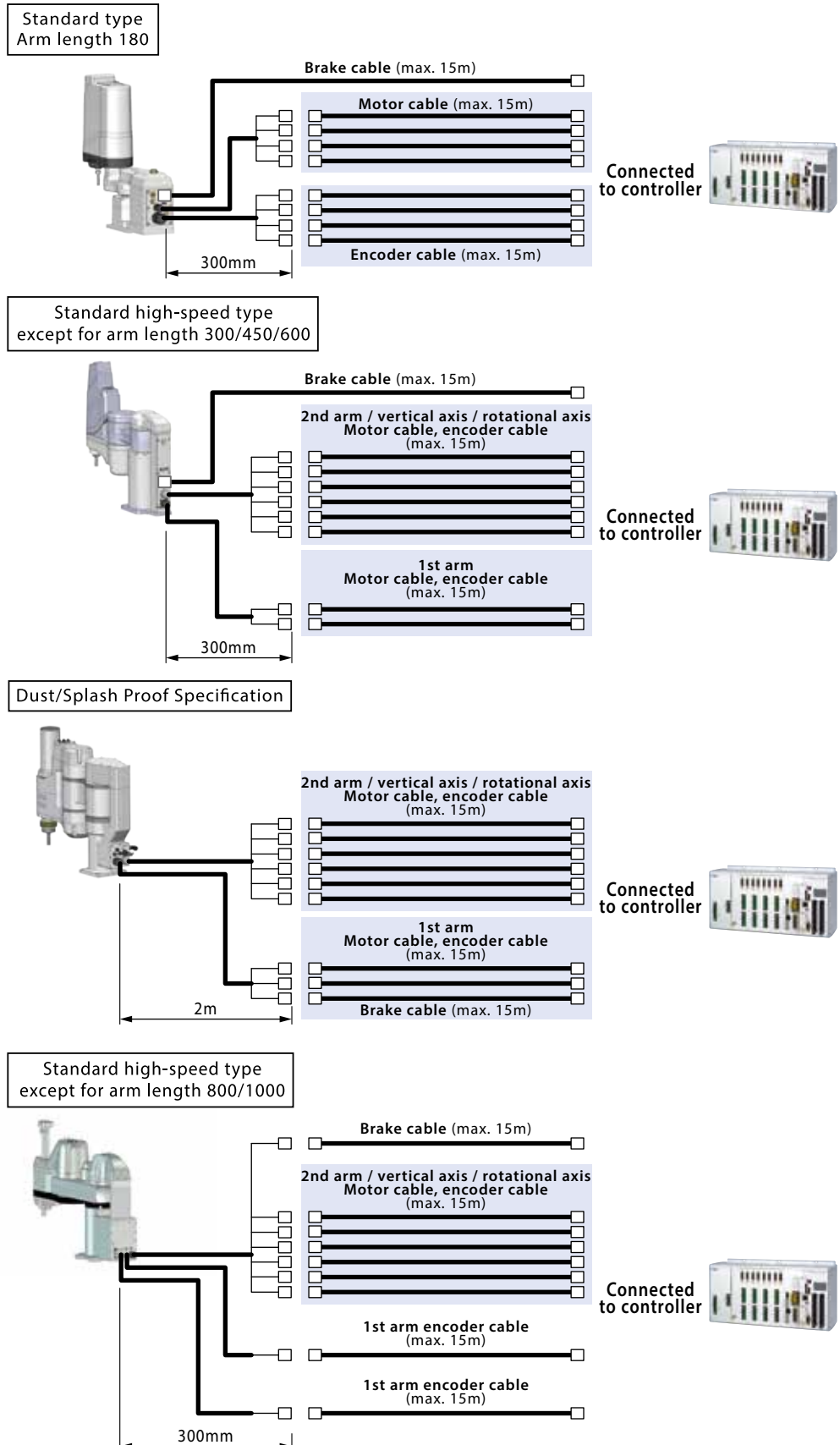
Depending on operating conditions of the Z-axis, the bellows may be damaged or twisted.
For prevention, use a speed controller and adjust its valve to supply air into the main body gradually.

Operation range

When switching the arm system, the arms extend once in a straight line. Beware of potential interference with the peripheral devices

(Note 9) Cables

Connections of the motor cables, encoder cables and brake cables are as shown below.



Options and Maintenance parts

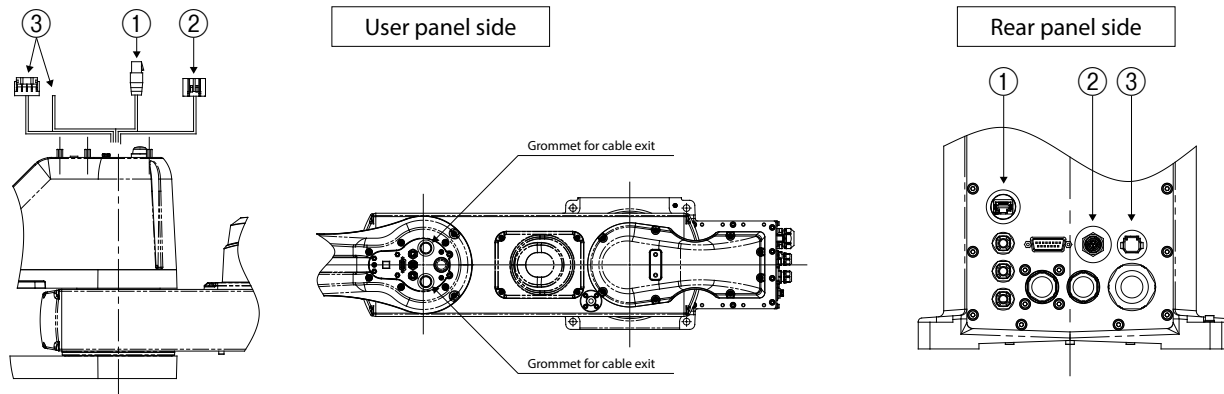
Options

Built-in extended user cable specification (arm length 800/1000 only)

Model EXC

Description The following cables (1) to (3) are built in the SCARA robot body.
The body mass increases by 0.5 kg.

	Cable type	Connector		Application example
		User panel side	Rear panel side	
①	Ethernet cable	TM21CP- 88P(03) (Hirose Electric)	09_45_1561 (HARTING)	Vision camera, etc.
②	10-core composite cable	7-core: DF11-8DS-2C (Hirose Electric)	LF10WBRB-12P (Hirose Electric)	Solenoid valve power cable (supports solenoid valve set option) Vision camera power, etc.
		5-core: No connector		
③	13-core composite cable	DF62C-24S-2.2C (Hirose Electric)	DF62P-24EP-2.2C (Hirose Electric)	Power and signal lines Electric gripper (RCP4-GR series)



① Ethernet cable

Color	Signal	Pin No.
Blue	—	4
White	—	5
Orange	—	6
White	—	3
Green	—	2
White	—	1
Brown	—	8
White	—	7
—	SHIELD	BODY

Pin No.	Signal	Color
4	—	Blue
5	—	White
6	—	Orange
3	—	White
2	—	Green
1	—	White
8	—	Brown
7	—	White
BODY	SHIELD	—

② 10-core composite cable

Color	Signal	Pin No.
Red	SV1a	1
White	SV1b	2
Black	SV2a	3
Blue	SV2b	4
Green	SV3a	5
Yellow	SV3b	6
Brown-purple	COM	7
—	—	8

Color	Signal	Pin No.
Red	24V(+)	—
Black	GND	—
Green/Yellow	FG	—

Pin No.	Signal	Color
1	SV1a	Red
2	SV1b	White
3	SV2a	Black
4	SV2b	Blue
5	SV3a	Green
6	SV3b	Yellow
7	COM	Brown-purple
8	24V(+)	Red
9	GND	Black
10	FG	Green/Yellow
11~12	—	—

③ 13-core composite cable

Color	Signal	Pin No.
Red	A	3
White	VMM	5
Black	/A	4
Brown	B	10
Yellow	VMM	9
Green	/B	15
Yellow	A	1
White	/A	6
Red	B	11
Green	/B	16
Black	Vcc	21
Brown	GND	7
Blue	VPS	18
—	SHIELD	24

Pin No.	Signal	Color
3	A	Red
5	VMM	White
4	/A	Black
10	B	Brown
9	VMM	Yellow
15	/B	Green
1	A	Yellow
6	/A	White
11	B	Red
16	/B	Green
21	Vcc	Black
7	GND	Brown
18	VPS	Blue
24	SHIELD	—

LED pilot lamp (standard type only)

Model LED

Description LED can be installed to turn on at any time needed.
(Equipped standard for with the high-speed type)

Single unit options and maintenance parts

Series	Type	Type		Single unit option				Maintenance parts
				Flange	Metal cap for user wiring	User cable	Wiring/piping options	Absolute reset adjusting jig
IXA	Standard type	NNN	1805	IX-FL-4	-	CB-IXA USR □□□ -CS	-	JG-IXA2
	Standard High-speed type	NNN NSN	3015	IX-FL-1			-	JG-IXA1
			45□□					
			60□□	IXA-FL-1			*	JG-IXA4
			80□□					
			100□□					
	Dust/Splash Proof Specification	NSW	3015	IXA-MC-1	-	-		
			45□□					
			60□□					

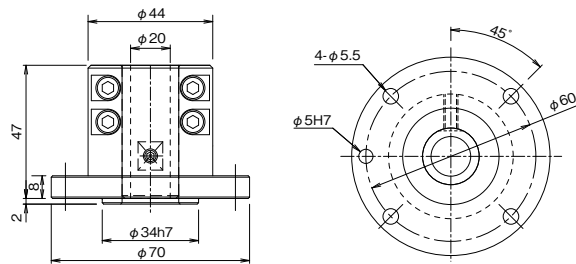
*Wiring/piping options

Name	Model
Protective flange for external wiring	IXA-PLF-EW-1
Protective flange for R-axis wiring	IXA-PLF-RW-1
Side stay for Z-axis wiring	(Z-axis) 200ST IXA-SST-ZW-1
	(Z-axis) 400ST IXA-SST-ZW-2
Upper stay for Z-axis wiring	(Z-axis) 200ST IXA-TST-ZW-1
	(Z-axis) 400ST IXA-TST-ZW-2
Solenoid valve set	IXA-SVP-1

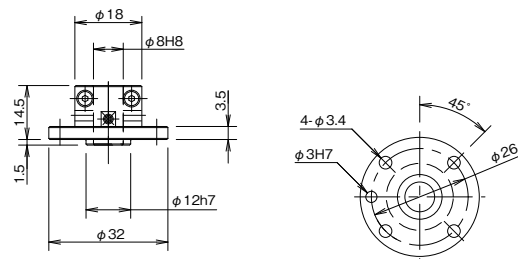
Flange

Used to attach an object at the vertical arm tip.

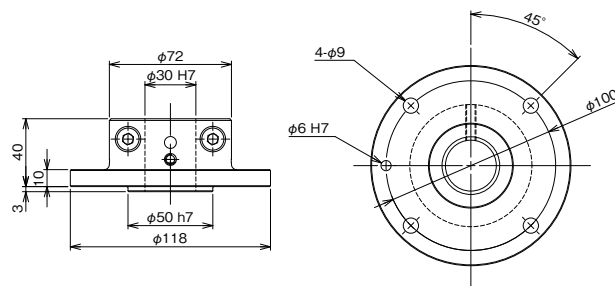
Single unit model number **IX-FL-1**
(Single unit mass 0.21kg/material aluminum)



Single unit model number **IX-FL-4**
(Single unit mass 0.02kg/material aluminum)



Single unit model number **IXA-FL-1**
(Single unit mass 2.0kg/material steel)



Metal cap for user wiring

A cap to cover the plug for user wiring that is located on the upper panel.

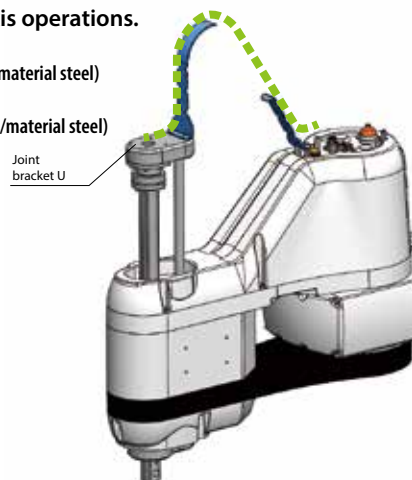
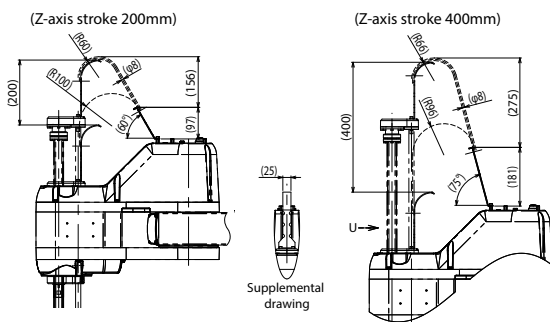
Single unit model number **IXA-MC-1**



Upper stay for Z-axis wiring

This is an auxiliary stay for wiring between the user panel and joint bracket U for Z-axis operations.

- Single unit model number **IXA-TST-ZW-1** (Z-axis stroke 200mm) (Single unit mass 0.2kg/material steel)
- IXA-TST-ZW-2** (Z-axis stroke 400mm) (Single unit mass 0.25kg/material steel)

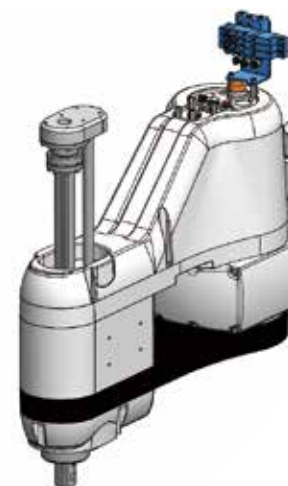
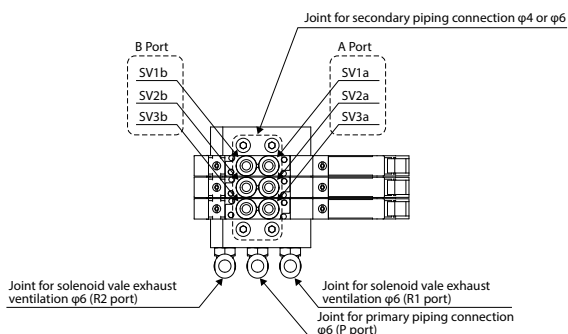
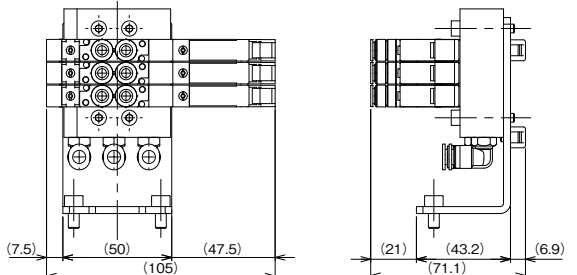


Solenoid valve set

This is an optional solenoid valve when installing an air chuck at the tip.
When the robot built-in cable is used for power supply to the solenoid valve, select the built-in extended user cable (option: EXC).

- Single unit model number **IXA-SVP-1**

(Single unit mass 0.5kg)



Mode	F10M3Fstn.1-3 F10T3-FJ-CP5 DC24V
Maker	Koganei
Number of positions	3 positions
Number of ports	5
Valve function	Closed center
Fluid to be used	Air
Operation method	Internal pilot type
Acoustic conductance	0.93 dm ³ /(s·bar)
Effective sectional area (Cv value)	4.6mm ² (0.25)
Piping connecting diameter	φ4 and φ6 dual joint
Pressure range for use	0.2~0.6MPa
Rated voltage	DC24V
Lubrication	Not necessary

Absolute reset adjusting jig

This jig is used for absolute resetting when encoder's absolute data is lost at the time of motor replacement.

- Single unit model number **JG-IXA1**
- Single unit model number **JG-IXA2**
- Single unit model number **JG-IXA4**




X-SEL

SCARA Robot Program Controller



List of Models

Multi-axis program controller enabling SCARA robot to operate.

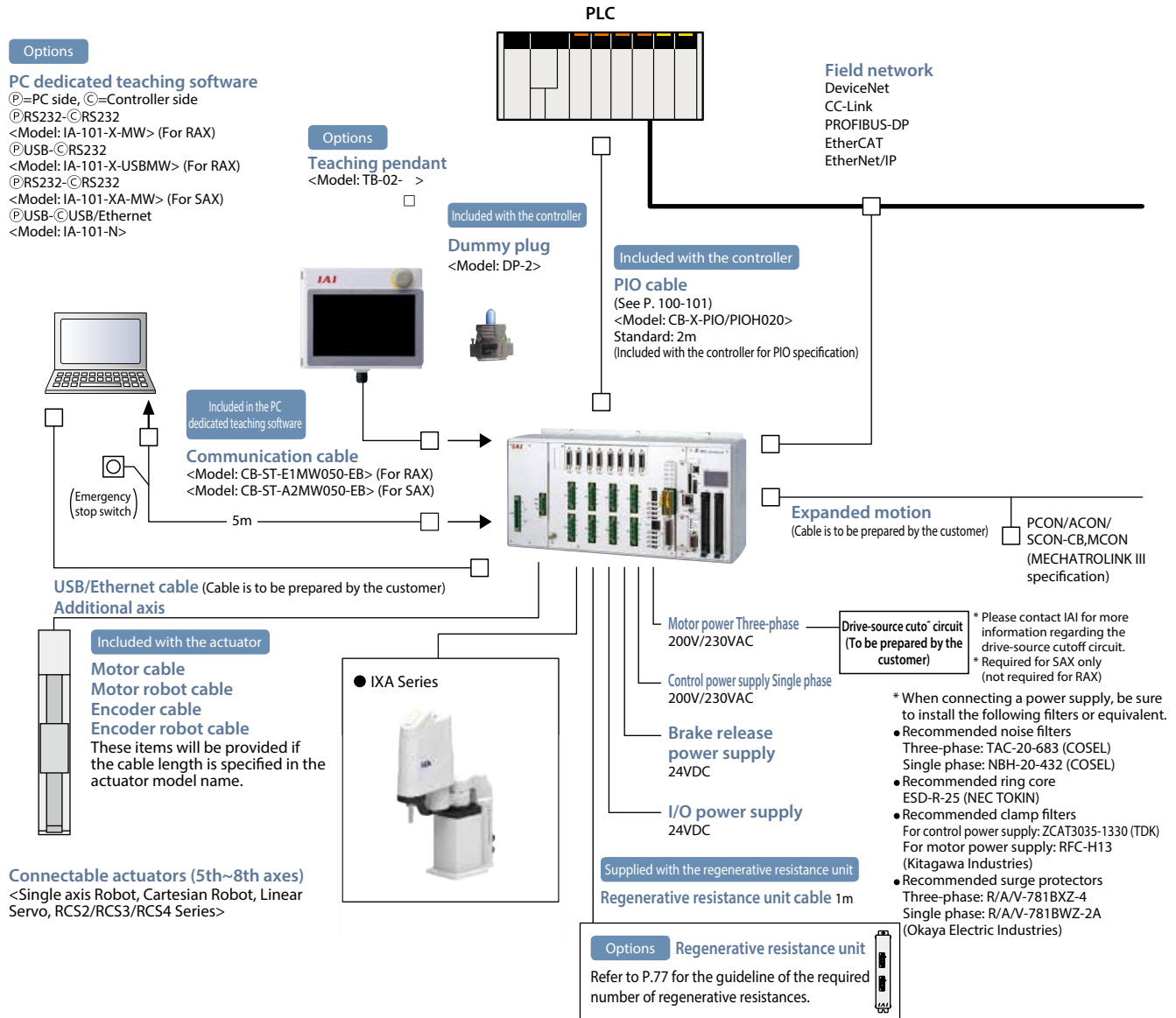
Type name		RAX	SAX
Connectable axes		SCARA 1 unit/ single-axis and cartesian	
External view			
Type		Standard specification	Safety category compliant
Max. number of controlled axes		8 axes	
No. of positions		(3-axis specification) Maximum 41,250 positions, (4-axis specification) Maximum 36,666 positions * Varies depending on the number of axes. Refer to the specification table (P.96) for more information.	
Number of programs		255	
Number of program steps		20,000	
Total number of connectable W		Three-phase 2,400W	3-phase 2400W / 3-phase 3600W (IXA-800/1000 only)
Motor input power supply voltage		Three-phase 200V/230 VAC ±10%	
Control power supply voltage		Single phase 200V/230VAC ±10%	
Safety category (*1)		B	Safety category 4 compatible
International standard		CE	
ROBO Cylinder control function (*2)		Able to control up to 32 additional axes (only IAI controllers compatible with MECHATROLINK-III)	
Communication port	Ethernet	Equipped as standard: 10/100/1000BASE-T (RJ-45)	
	USB2.0	Equipped as standard: USB2.0 (Mini-B)	
	General-purpose RS-232C communication port	1 channel (maximum 230.4kbps)	

(*1) To comply with the safety category, the customer will need to install a safety circuit external to the controller.

(*2) Synchronous control is not available.

System Configuration

XSEL-RAX/SAX Type



Specifications Table

Controller type	RAX type	SAX type
Compatible motor output	12W~750W	
Number of controlled axes	1st~4th axis: SCARA robot, 5th~8th axis: Additional axes	
Max. output of connected axes	3-phase 2400W	3-phase 2400W / 3-phase 3600W (IXA-800/1000 only)
Control power input	Single phase 200/230VAC $\pm 10\%$	
Power frequency	50/60Hz	
Insulation resistance	10M Ω or more (Between the power supply terminal and I/O terminal, and between the external terminal batch and case, at 500VDC)	
Withstand voltage	1500 VAC (1 min)	
Power capacity (max)	for 2400W: 5094VA / for 3600W: 10688VA	
Position detection method	Incremental, absolute, battery-less absolute	
Safety circuit configuration	Duplication not possible	Duplication allowed
Drive-source cut-off method	Internal relay cut-off	External safety circuit
Emergency stop input	B contact input (Internal power supply)	B contact input (External power supply, duplication possible)
Enable input	B contact input (Internal power supply)	B contact input (External power supply, duplication possible)
Speed setting	1mm/s~ Upper limit depends on the actuator specification	
Acceleration/deceleration setting	0.01G~ Upper limit depends on the actuator specification	
Programming language	Super SEL language	
Number of programs	255 programs	
Number of program steps	20,000 steps (total)	
No. of multi-tasking programs	16 programs	
Number of positions	Varies by the number of controlled axes 3-axis: 41,250, 4-axis: 36,666, 5-axis: 33,000, 6-axis: 30,000, 7-axis: 27,500, 8-axis: 25,384	
Data recording element	Flash ROM + non-volatile RAM (FRAM): system battery (button battery) not required	
Data input method	Teaching pendant or PC compatible software	
Standard I/O	I/O 48-point PIO board (NPN/PNP), I/O 96-point PIO board (NPN/PNP) 2 boards attachable	
Expansion I/O	None	
Serial communication function	Teaching port (D-sub25 pin), USB port (Mini-B) 1ch RS232C port (D-sub 9 pin), Ethernet (RJ-45)	
RC gateway function	None	
Fieldbus communication function	DeviceNet, CC-Link, PROFIBUS-DP, EtherNet/IP, EtherCAT (EtherNet/IP, EtherCAT and DeviceNet, CC-Link, and PROFIBUS-DP can be installed at the same time)	
Clock function	Retention time: about 10 days Charging time: about 100 hours	
Regenerative resistance	Built-in 1k Ω /20W regenerative resistance (Can be expanded by external regenerative resistance unit connection)	
Absolute battery	(1-4th axes_SCARA robot) Not used because of battery-less absolute (5-8th axes_additional axes) for absolute specification: AB-5	
Protection function	Motor overcurrent, overload, motor driver temperature check, overload check, encoder disconnection detection, soft limit over, system malfunction, absolute battery error, etc.	
Ambient operating temperature, humidity and ambience	0-45 , 5%-85%RH (Non-condensing, Non-freezing) , avoid corrosive gas and excessive dust	

* For the power supply capacity etc., please refer to the operation manual or contact IAI.

External Dimensions

- * Notes for order placement
- The following controllers of IXA SCARA robots are a cabinet for 8 axes.
- * High-speed type with 3-axis and 4-axis specification (NSN)
- * Standard type with 4-axis specification IXA-4NNN60□□/4NNN80□□/4NNN100□□
- * When an additional axis is added to the standard type (NNN) of 3-axis and 4-axis specifications.
- * Dust/Splash Proof Specification (NSW)

	Controller Specification	Front View		Side View
		Battery-less absolute/Incremental specification /Quasi absolute specification/Index absolute specification	Absolute specification/ Absolute multi-rotation specification	
RAX	4-axis specification			
	5~8-axis specification			
SAX	4-axis specification			
	5~8-axis specification			

* If absolute specification is included for more than 1 connected single actuator, the external dimensions will be that of the absolute specification.

Options

Regenerative resistance unit

Model RESU-1 (Standard specification)
RESUD-1 (DIN rail mounting specification)

Specification

Model	RESU-1	RESUD-1
Unit weight	About 0.4kg	
Built-in regenerative resistance value	235Ω 80W	
Unit mounting method	Screw mount	DIN rail mount
Attached cable	CB-ST-REU010	

Description

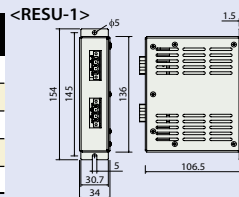
Unit that converts the regenerative current generated during motor deceleration to heat. Although the controller is equipped with a regenerative resistance inside, an additional external regenerative resistance unit may be necessary if the load in the vertical axis is large and the capacity is insufficient.

<When connecting a single axis robot>

Installation criteria Determined by the total motor wattage of connected axes.

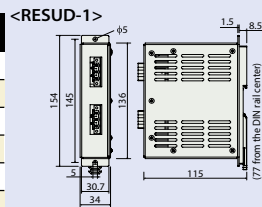
Horizontal specification

Total motor wattage	Required number of regenerative resistance
~100W	0
~600W	1
~1200W	2
~1800W	3
~2400W	4



Vertical specification

Total motor wattage	Required number of regenerative resistance
~100W	0
~600W	1
~1000W	2
~1400W	3
~2000W	4
~2400W	5



<When connecting a SCARA robot>

Estimated installation criteria

Model	Required number of regenerative resistance units
NNN	1085
	3015
	45□□
	60□□
	80□□
NSN	100□□
	7 pcs
	3015
	3 pcs
NSW	45□□
	60□□
	80□□
	100□□

* The required number is for a single SCARA robot. When connecting a single axis robot as an additional axis, be sure to add regenerative resistance for the single axis robot.

Examples: When operating IXA-3NNN3015 and ISB-MXM (200W).
 IXA-3NNN3015 2 units required
 ISB-MXM (200W): 1 unit required
 Therefore, 3 regenerative resistance units are required.

Absolute data backup battery

Model **AB-5** * Additional axes for absolute specification only

Features Absolute data storage battery for operating an actuator of the absolute specification.



Dummy plug

Model **DP-2**

Features A dummy plug to be attached to the teaching connector when a PC or teaching pendant is not connected.

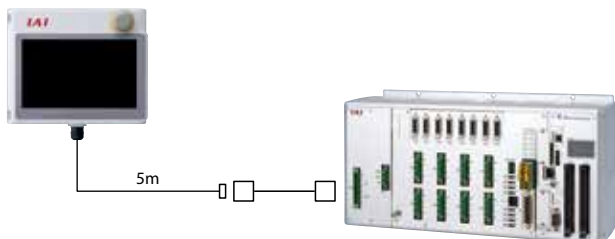


Touch Panel Teaching Pendant

Features A teaching device equipped with functions such as position teaching, trial operation and monitoring.

Model **TB-02-** □

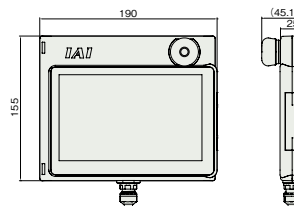
Configuration



Specifications

Rated voltage	24V DC
Power consumption	3.6W or less (150mA or less)
Ambient operating temperature	0 to 40°C
Ambient operating humidity	20~85% RH (non-condensing)
Environmental resistance	IP20
Weight	470g (TB-02 unit only)

External dimensions



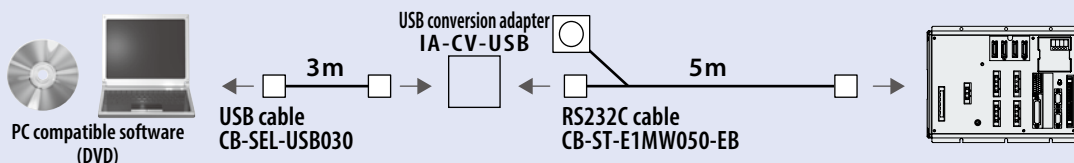
USB-compatible PC-dedicated teaching software (for XSEL-RAX)

Model **IA-101-X-USBMW**

Features This type has a USB adapter mounted on the RS232C cable to allow the use on a PC's USB port.

Description Software (DVD-ROM), compatible Windows: 7/8/8.1/10

(Accessories) PC connection cable 5m + emergency stop box + USB adapter + USB cable 3m



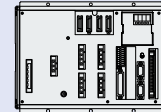
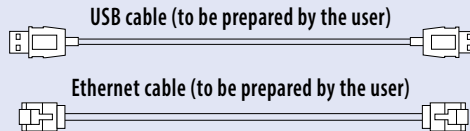
PC dedicated teaching software

Model IA-101-N

Features PC compatible teaching software only (DVD-ROM).
When connecting the controller and the PC using a USB or Ethernet cable, purchase only the software. A cable of the following specification is to be prepared by the customer.

Description Software (DVD-ROM), compatible Windows: 7/8/8.1/10

	Controller side connector	Maximum cable length
USB cable specification	USB Mini-B	5m
Ethernet cable specification	10/100/1000BASE-T (RJ-45)	5m



Notes

When operating the actuator by USB connection, be sure to install a stop switch to the system I/O connector.
If an emergency switch is not available, use the emergency stop-equipped model "IA-101-X-USBMW".

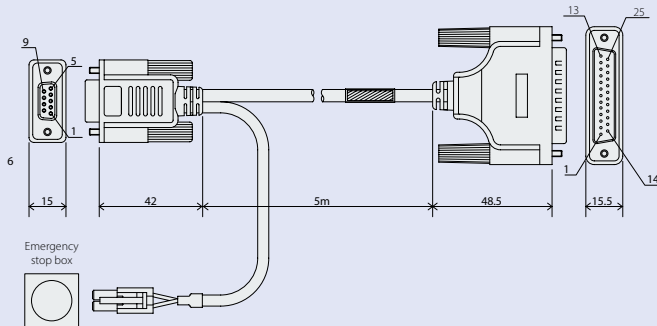
PC dedicated teaching software (for XSEL-SAX)

Model IA-101-X-MW

Features Start up supporting software that has program/position input, test operation and monitoring functions.
Debugging functions are considerably improved, reducing start up time.

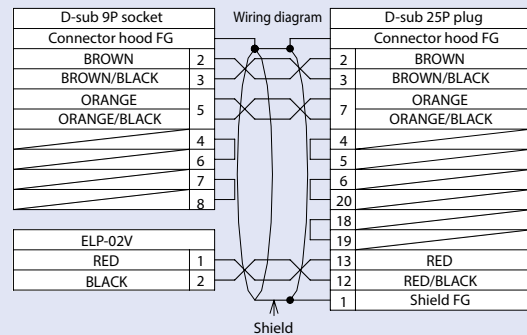
Description Software (CD-ROM), compatible Windows: 7/8/8.1/10

(Accessories) PC connection cable 5m + Emergency stop box (Model: CB-ST-E1 MW050-EB)



Notes

* When using a controller that is compliant with the Safety Category 4, use IA-101-XA-MW.
* This cannot be used for XSEL-SA/SAX/SAXD/Q/QX types.
* Note that the model number for cable only is CB-ST-E1MW050, and that comes with an emergency stop box as a set is CB-ST-E1MW050-EB.



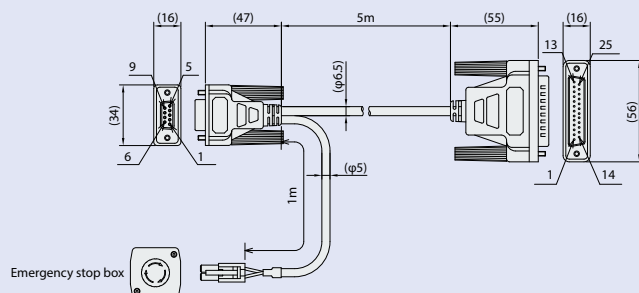
Safety category 4 compliant, PC dedicated teaching software (for XSEL-SAX only)

Model IA-101-XA-MW

Features Start up supporting software that has program/position input, test operation and monitoring functions.
Debugging functions are considerably improved, reducing start up time.
The PC connection cable has a duplex circuit for emergency stop, which is compliant with the safety category 4.

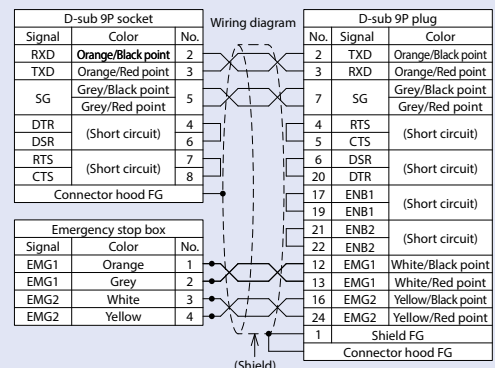
Description Software (CD-ROM), compatible Windows: 7/8/8.1/10

(Accessories) PC connection cable 5m + Emergency stop box (Model: CB-ST-A2MW050-EB)



Notes

* Note that the model number for cable only is CB-ST-A2MW050, and that comes with an emergency stop box as a set is CB-ST-A2MW050-EB.
When a teaching tool is not used, attach a dummy plug DP-2, that is supplied with the controller, on the teaching connector.



Maintenance parts

To purchase a replacement cable, use the model name listed below. (*Please contact IAI for more details.)

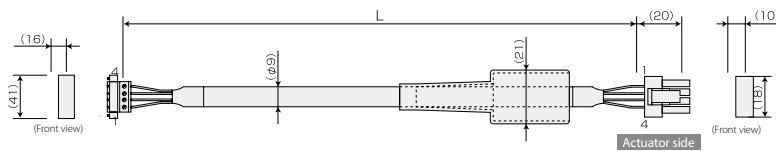
Table of applicable cables

Product model			Motor robot cable	Encoder robot cable	Brake cable
1	IXA	□NNN18	CB-X-MA□□□	CB-X1-PA□□□	CB-IXA-BK□□□-1
2		□NNN30			CB-IXA-BK□□□-2
3		□NNN45			
4		□NNN60			
5		□NNN80			
6		□NNN100			
7		□NS□30			
8		□NS□45			
9		□NS□60			
10		□NSN80			
11		□NSN100	CB-X-MA□□□ (1st Axis: CB-XMC-MA□□□)		CB-IXA-BK□□□-3

Product model		PIO fl t cable
12	XSEL-RAX/SAX	CB-X-PIO□□□
		Flat cable for multi-point PIO
		CB-X-PIOH□□□

Model: **CB-X-MA**□□□

* Please indicate the cable length (L) in □□□, (e.g. 050 = 5m), maximum 15m

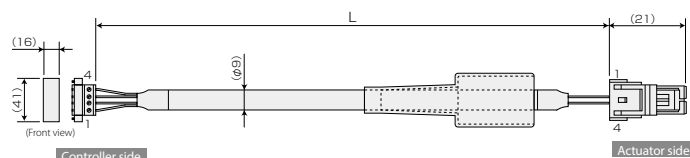


Wiring	Color	Signal	No.	No.	Signal	Color	Wiring
0.75sq	Green	PE	1	1	U	Red	0.75sq
	Red	U	2	2	V	White	(Crimped)
	White	V	3	3	W	Black	
	Black	W	4	4	PE	Green	

Minimum bending radius $r = 51\text{mm}$ or more (Dynamic bending condition)
* Only the robot cable is available for this model.

Model: **CB-XMC-MA**□□□

* Please indicate the cable length (L) in □□□, (e.g. 080 = 8m), maximum 15m

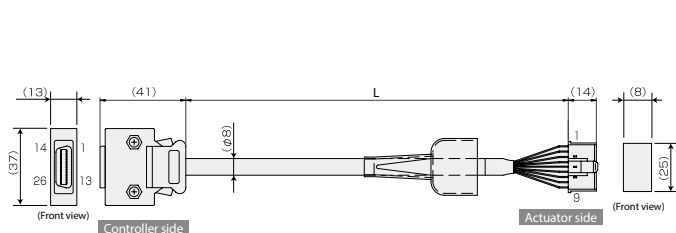


Wiring	Color	Signal	No.	No.	Signal	Color	Wiring
1.25sq	Green	PE	1	1	U	Red	1.25sq
	Red	U	2	2	V	White	(Crimped)
	White	V	3	3	W	Black	
	Black	W	4	4	PE	Green	

Minimum bending radius $r = 55\text{mm}$ or more (Dynamic bending condition)
* Only the robot cable is available for this model.

Model: **CB-X1-PA**□□□

* Please indicate the cable length (L) in □□□, (e.g. 050 = 5m), maximum 15m

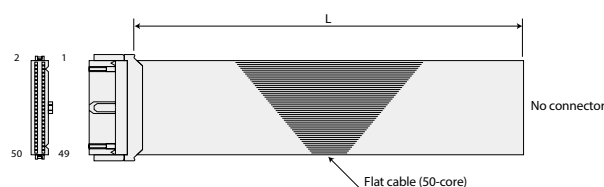


Wiring	Color	Signal	No.	No.	Signal	Color	Wiring
AWG26 Soldered	Orange	SRD+	7	1	BAT+	Purple	AWG26
	Green	SRD-	8	2	BAT-	Gray	(Crimped)
	Purple	BAT+	14	3	SD	Orange	
	Gray	BAT-	15	4	SD	Green	
	Red	VCC	16	5	VCC	Red	
	Black	GND	17	6	GND	Black	
	Blue	BKR-	20	7	FG	Drain	
	Yellow	BKR+	21	8	BK-	Blue	
			22	9	BK+	Yellow	

Minimum bending radius $r = 44\text{mm}$ or more (Dynamic bending condition)
* Only the robot cable is available for this model.

Model: **CB-X-PIO**□□□

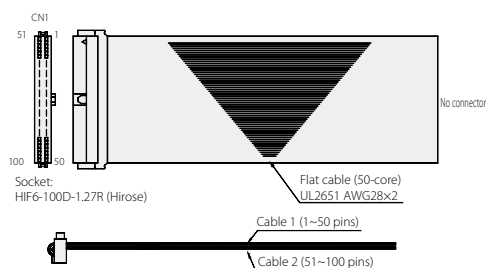
* Please indicate the cable length (L) in □□□, (e.g. 080 = 8m), maximum 10m



No.	Color	Wiring	No.	Color	Wiring	No.	Color	Wiring
1	Brown1		18	Gray2		35	Green4	
2	Red1		19	White2		36	Blue4	
3	Orange1		20	Black2		37	Purple4	
4	Yellow1		21	Brown-3		38	Gray4	
5	Green1		22	Red3		39	White4	
6	Blue1		23	Orange3		40	Black4	
7	Purple1		24	Yellow3		41	Brown-5	
8	Gray1		25	Green3		42	Red5	
9	White1		26	Blue3		43	Orange5	
10	Black1		27	Purple3		44	Yellow5	
11	Brown-2		28	Gray3		45	Green5	
12	Red2		29	White3		46	Blue5	
13	Orange2		30	Black3		47	Purple5	
14	Yellow2		31	Brown-4		48	Gray5	
15	Green2		32	Red4		49	White5	
16	Blue2		33	Orange4		50	Black5	
17	Purple2		34	Yellow4				

Model: **CB-X-PIOH**

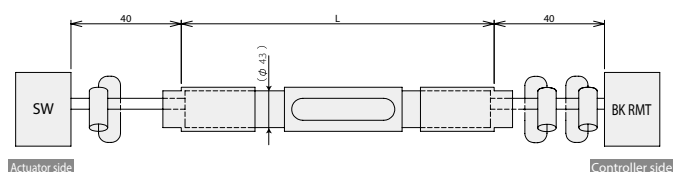
* Please indicate the cable length (L) in , (e.g. 080 = 8m), maximum 10m



Cable 1				Cable 2			
Pin No.	Color	Port No.	Function	Pin No.	Color	Port No.	Function
1	Brown-1	—	External power supply 24VDC for pin No. 2-25, 51-74	51	Brown-1	300	Alarm output
2	Red-1	000	Program start	52	Red-1	301	Ready output
3	Orange-1	001	General-purpose input	53	Orange-1	302	Emergency stop output
4	Yellow-1	002	General-purpose input	54	Yellow-1	303	General-purpose output
5	Green-1	003	General-purpose input	55	Green-1	304	General-purpose output
6	Blue-1	004	General-purpose input	56	Blue-1	305	General-purpose output
7	Purple-1	005	General-purpose input	57	Purple-1	306	General-purpose output
8	Gray-1	006	General-purpose input	58	Gray-1	307	General-purpose output
9	White-1	007	Program designation (PRG No.1)	59	White-1	308	General-purpose output
10	Black-1	008	Program designation (PRG No.2)	60	Black-1	309	General-purpose output
11	Brown-2	009	Program designation (PRG No.3)	61	Brown-2	310	General-purpose output
12	Red-2	010	Program designation (PRG No.4)	62	Red-2	311	General-purpose output
13	Orange-2	011	Program designation (PRG No.5)	63	Orange-2	312	General-purpose output
14	Yellow-2	012	Program designation (PRG No.6)	64	Yellow-2	313	General-purpose output
15	Green-2	013	Program designation (PRG No.7)	65	Green-2	314	General-purpose output
16	Blue-2	014	General-purpose input	66	Blue-2	315	General-purpose output
17	Purple-2	015	General-purpose input	67	Purple-2	316	General-purpose output
18	Gray-2	016	General-purpose input	68	Gray-2	317	General-purpose output
19	White-2	017	General-purpose input	69	White-2	318	General-purpose output
20	Black-2	018	General-purpose input	70	Black-2	319	General-purpose output
21	Brown-3	019	General-purpose input	71	Brown-3	320	General-purpose output
22	Red-3	020	General-purpose input	72	Red-3	321	General-purpose output
23	Orange-3	021	General-purpose input	73	Orange-3	322	General-purpose output
24	Yellow-3	022	General-purpose input	74	Yellow-3	323	General-purpose output
25	Green-3	023	General-purpose input	75	Green-3	—	External power supply (V for pin No. 2-25, 51-74)
26	Blue-3	—	External power supply 24VDC for pin No. 27-50, 76-99	76	Blue-3	324	General-purpose output
27	Purple-3	024	General-purpose input	77	Purple-3	325	General-purpose output
28	Gray-3	025	General-purpose input	78	Gray-3	326	General-purpose output
29	White-3	026	General-purpose input	79	White-3	327	General-purpose output
30	Black-3	027	General-purpose input	80	Black-3	328	General-purpose output
31	Brown-4	028	General-purpose input	81	Brown-4	329	General-purpose output
32	Red-4	029	General-purpose input	82	Red-4	330	General-purpose output
33	Orange-4	030	General-purpose input	83	Orange-4	331	General-purpose output
34	Yellow-4	031	General-purpose input	84	Yellow-4	332	General-purpose output
35	Green-4	032	General-purpose input	85	Green-4	333	General-purpose output
36	Blue-4	033	General-purpose input	86	Blue-4	334	General-purpose output
37	Purple-4	034	General-purpose input	87	Purple-4	335	General-purpose output
38	Gray-4	035	General-purpose input	88	Gray-4	336	General-purpose output
39	White-4	036	General-purpose input	89	White-4	337	General-purpose output
40	Black-4	037	General-purpose input	90	Black-4	338	General-purpose output
41	Brown-5	038	General-purpose input	91	Brown-5	339	General-purpose output
42	Red-5	039	General-purpose input	92	Red-5	340	General-purpose output
43	Orange-5	040	General-purpose input	93	Orange-5	341	General-purpose output
44	Yellow-5	041	General-purpose input	94	Yellow-5	342	General-purpose output
45	Green-5	042	General-purpose input	95	Green-5	343	General-purpose output
46	Blue-5	043	General-purpose input	96	Blue-5	344	General-purpose output
47	Purple-5	044	General-purpose input	97	Purple-5	345	General-purpose output
48	Gray-5	045	General-purpose input	98	Gray-5	346	General-purpose output
49	White-5	046	General-purpose input	99	White-5	347	General-purpose output
50	Black-5	047	General-purpose input	100	Black-5	—	External power supply (V for pin No. 27-50, 76-99)

Model: **CB-IXA-BK** -1

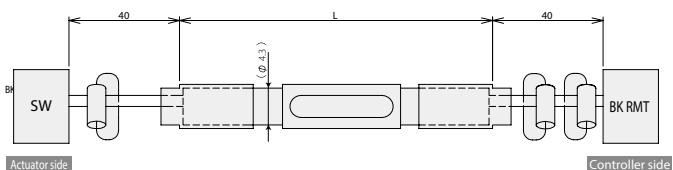
* Please indicate the cable length (L) in , (e.g. 050 = 5m), maximum 15m



Connector	Identification	Signal	Pin No.	Pin No.	Signal	Identification	Connector
SW	Red	BK3	1	A2	BK3	Red	BK RMT
	White	COM	2	A3	COM	White	
	—	—	3	Remaining	—	—	

Model: **CB-IXA-BK** -2

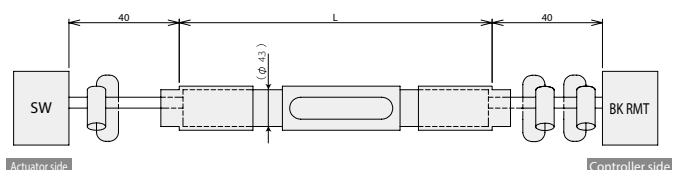
* Please indicate the cable length (L) in , (e.g. 050 = 5m), maximum 15m



Connector	Identification	Signal	Pin No.	Pin No.	Signal	Identification	Connector
SW	Red	BK4	1	B2	BK4	Red	
	White	COM	2	A3	COM	White	
	—	—	3	Remaining	—	—	

Model: **CB-IXA-BK** -3

* Please indicate the cable length (L) in , (e.g. 050 = 5m), maximum 15m



Connector	Identification	Signal	Pin No.	Pin No.	Signal	Identification	Connector
SW	Red	BK5	1	A4	BK5	Red	
	White	COM	2	A3	COM	White	
	—	—	3	Remaining	—	—	

MEMO

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