

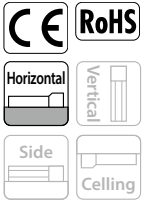
# IXA-3NNN45

# IXA-4NNN45

Battery-less Absolute Arm Length: **450 mm** Vertical Axis: **180/330 mm**

### Model Specification Items

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



- POINT Selection Notes**
- (1) Please refer to P51 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 P53 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         |              |                |
|----------------|--------------|----------------|
| Name           | Model number | Reference page |
| LED pilot lamp | <b>LED</b>   | 53             |

| Option |                |                |
|--------|----------------|----------------|
| Name   | Model number   | Reference page |
| Flange | <b>IX-FL-1</b> | 53             |

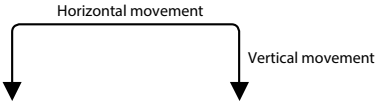
(Note) Please purchase separately.

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

(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.



### Main specifications

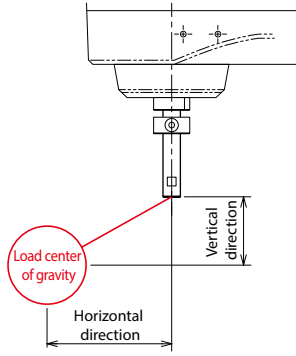
| Item                               | Description                   |                         |        |
|------------------------------------|-------------------------------|-------------------------|--------|
|                                    | 3-axis specification          | 4-axis specification    |        |
| Max. payload (kg) (Note 1)         | 3                             |                         |        |
| Speed (Note 2)                     | Combined max. speed (mm/s)    | 7453                    |        |
|                                    | Max. speed of individual axes | 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 <sup>2</sup>                |
| 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.



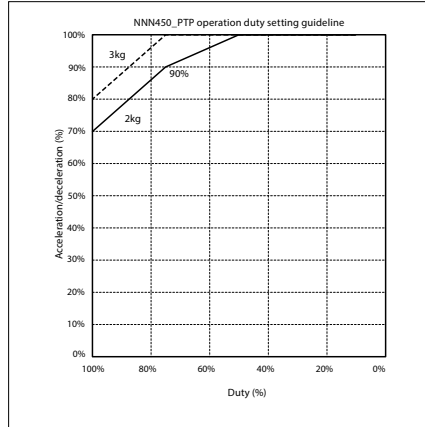
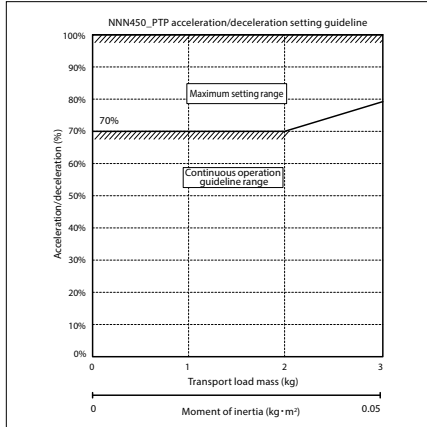
| Horizontal direction | Vertical direction |
|----------------------|--------------------|
| 120mm or less        | 100mm or less      |

**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.

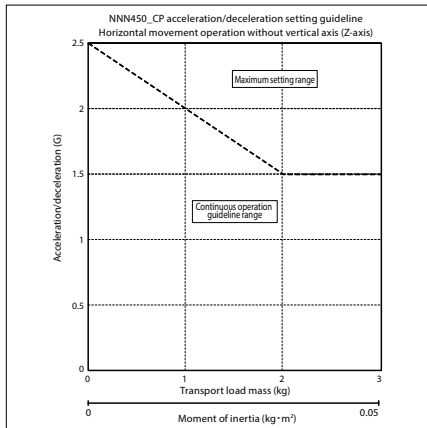
- 1) For a PTP operation, always use the WGHT command in the program to set the weight and moment of inertia. For the SCARA robot, the maximum acceleration/deceleration for each payload is set at 100%. When the payload differs, the operation time will also vary even at the same acceleration/deceleration 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**

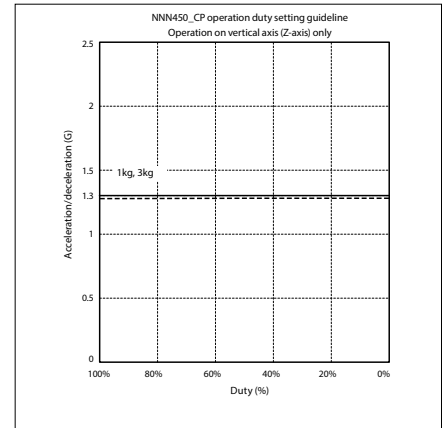
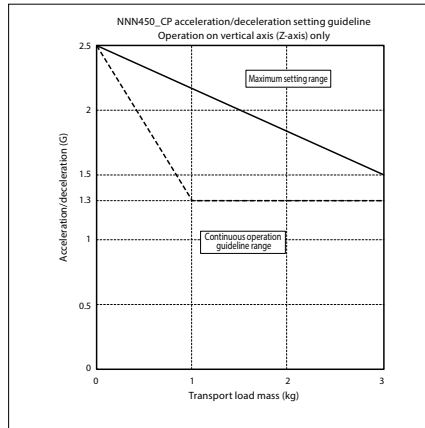


**CP Operation**

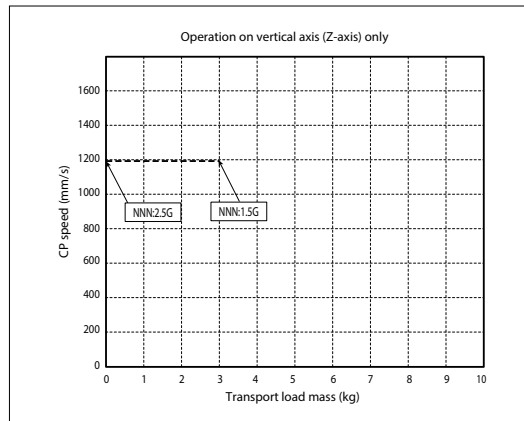
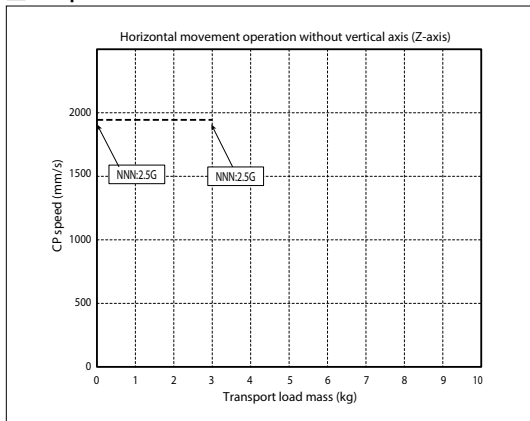
**Horizontal**



**Vertical**



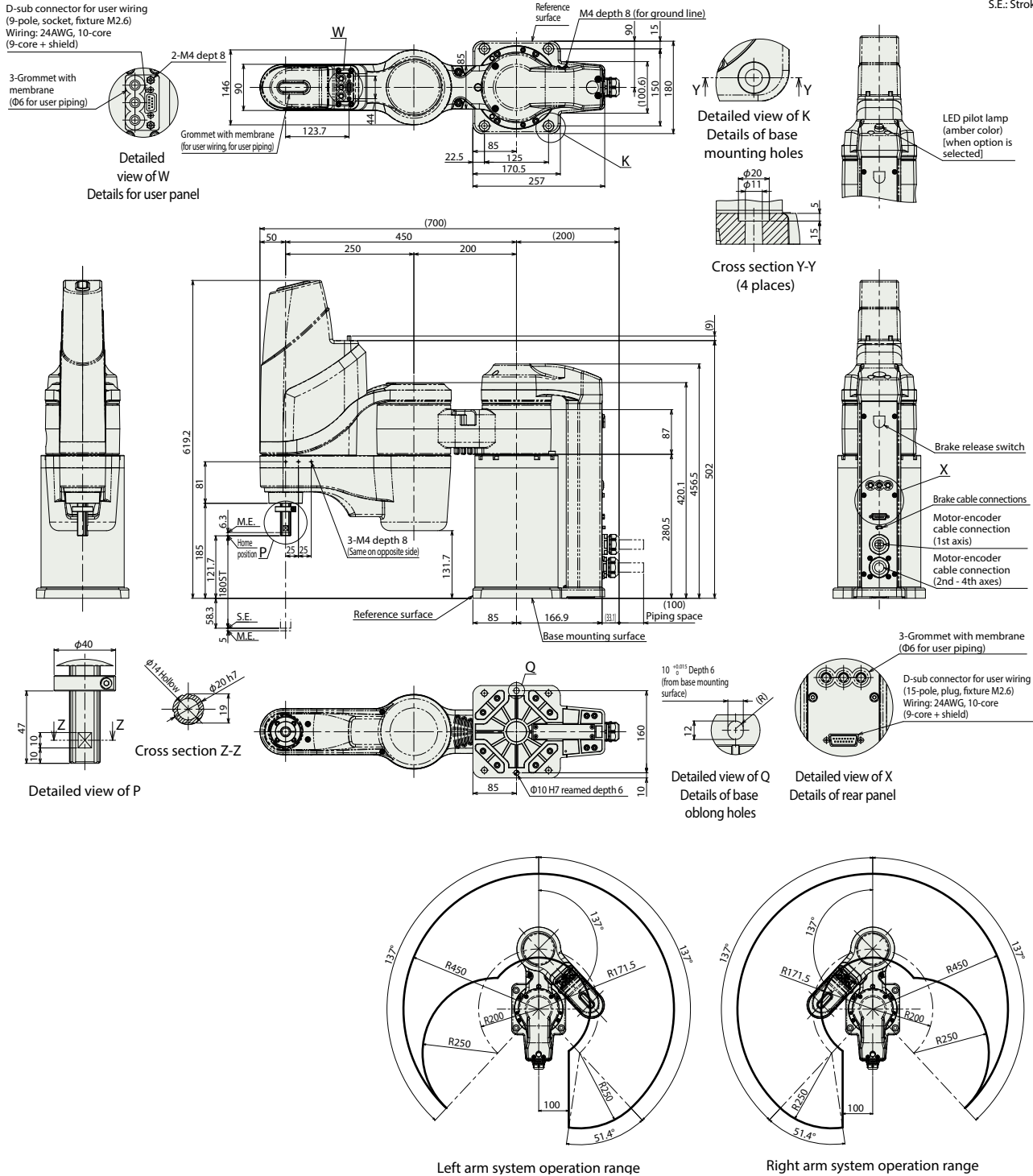
**CP operation: Acceleration/deceleration Limitations**



IXA-3NNN4518\_4NNN4518

(Note) Refer to P51 (Note 9) for cable connections

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 P51 (Note 9) for cable connections

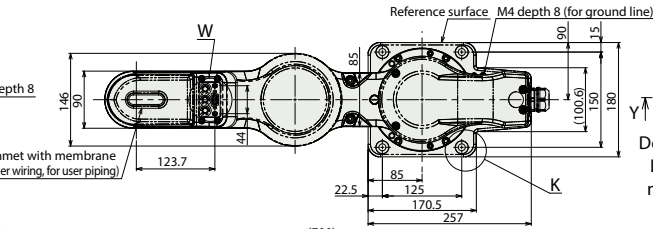
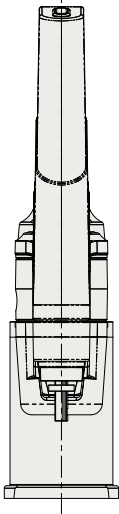
D-sub connector for user wiring  
(9-pole, socket, fixture M2.6)  
Wiring: 24AWG, 10-core  
(9-core + shield)

3-Grommet with membrane  
(Φ6 for user piping)

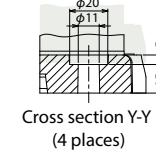
2-M4, depth 8

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

Detailed view of W  
Details for user panel

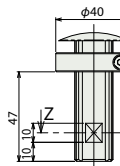
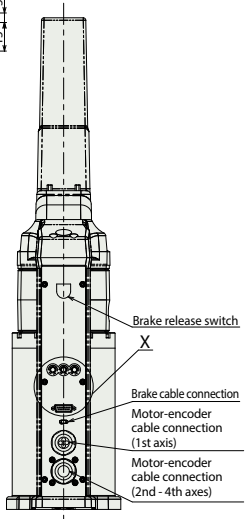
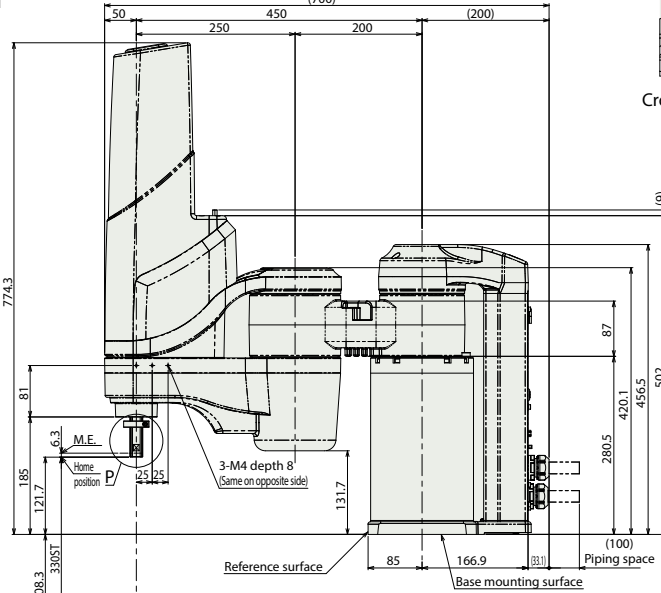
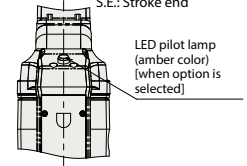


Detailed view of K  
Details of base mounting holes



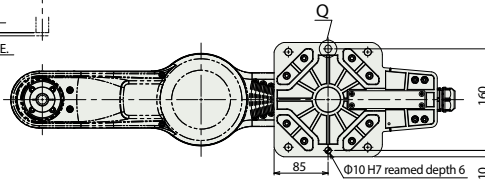
Cross section Y-Y  
(4 places)

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



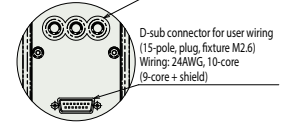
Cross section Z-Z

Detailed view of P

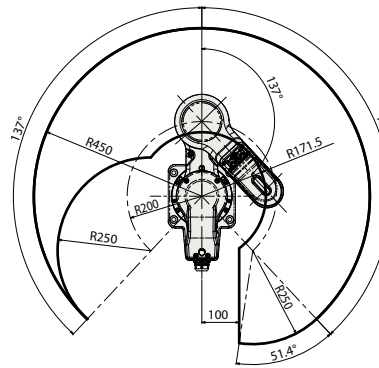


10<sup>+0.01</sup> Depth 6  
(from base mounting surface)

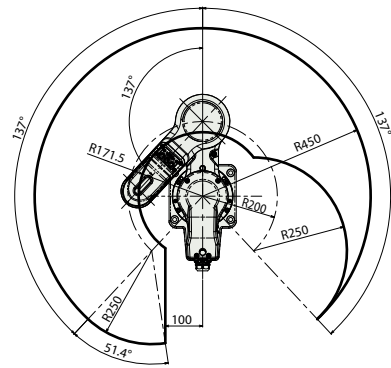
Detailed view of Q  
Details of base oblong holes



Detailed view of X  
Details of rear panel



Left arm system operation range



Right arm system operation range

Mass

| Item | Description          | Mass   |
|------|----------------------|--------|
| 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)     | 54             |

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