IKO

# Precision Positioning Table

# TS·CT

CAT-57122


ISO 14001 Certified

# *Compact, high accuracy, and high rigidity*

## ***Table width 55 to 350 mm***

TS 55/55 and CT 55/55

IKO Precision Positioning Table is a positioning table, consisting of a slide table and bed of cast iron with high rigidity and excellent vibration damping performance. IKO Crossed Roller Way, a widely used precision linear motion rolling guide, is assembled in the slide table and bed, and a precision ball screw is used in the travel mechanism.

By making the most of the features of compact, high accuracy, and high rigidity IKO Crossed Roller Way, a high accuracy positioning table with a low sectional height and high reliability has been achieved.

IKO Precision Positioning Table is available in two types, namely, single-axis type and two-axis type, and these are widely used in precision measuring instruments, precision assemblers, and other equipment that require high accuracy positioning.

# IKO Precision Positioning Table
## TS·CT

## Features of TS·CT

### 1 *Low sectional height and compact*

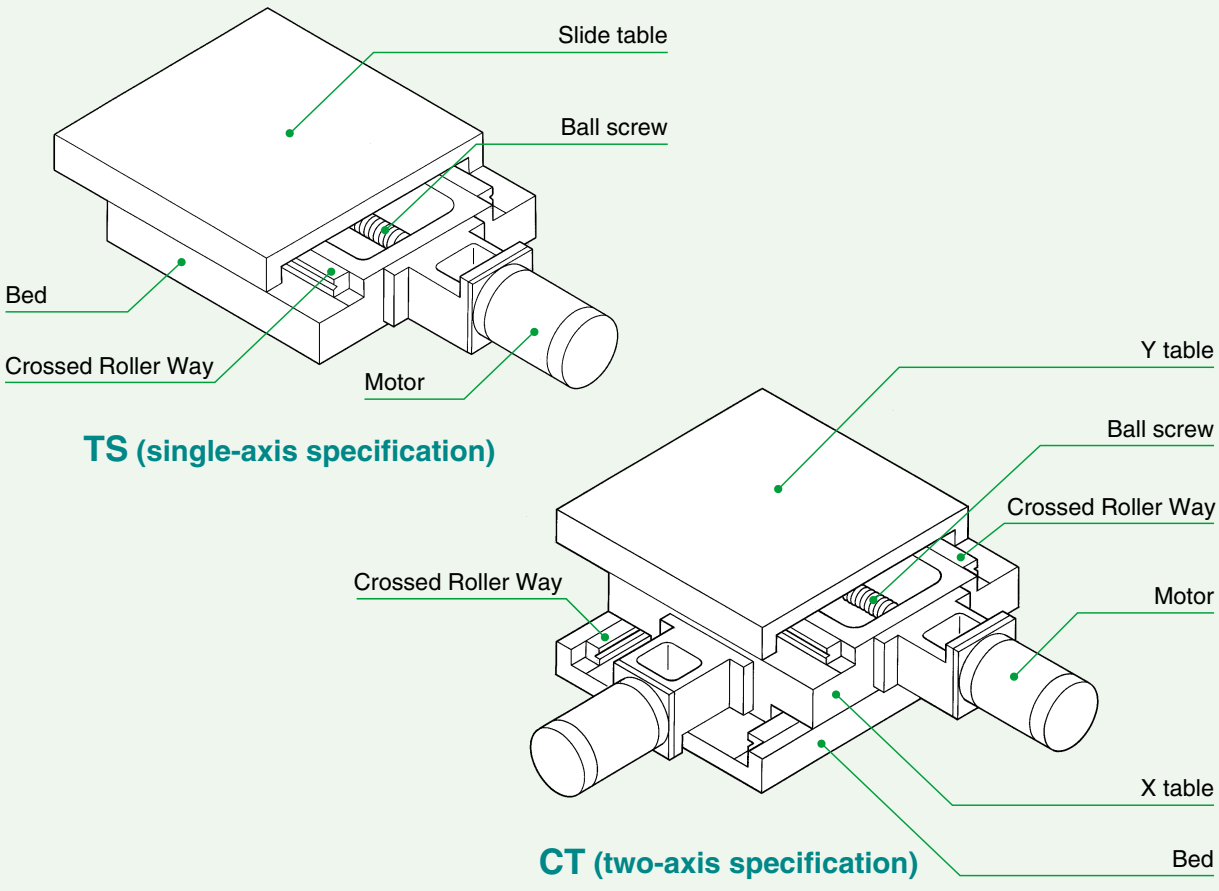
The optimal design using IKO Crossed Roller Way as a linear motion rolling guide has achieved a low sectional height even in the two-axis specification.
The center of gravity of machines and equipment can be lowered.

### 2 *High accuracy positioning*

High travel and positioning accuracy of the table is achieved by precisely grinding the cast iron slide table and bed and assembling carefully chosen high accuracy components on them.

### 3 *Compact design with the wide surface area of slide table*

The surface area of the slide table is large compared with the stroke length, so the top surface of the table can be used as work area.

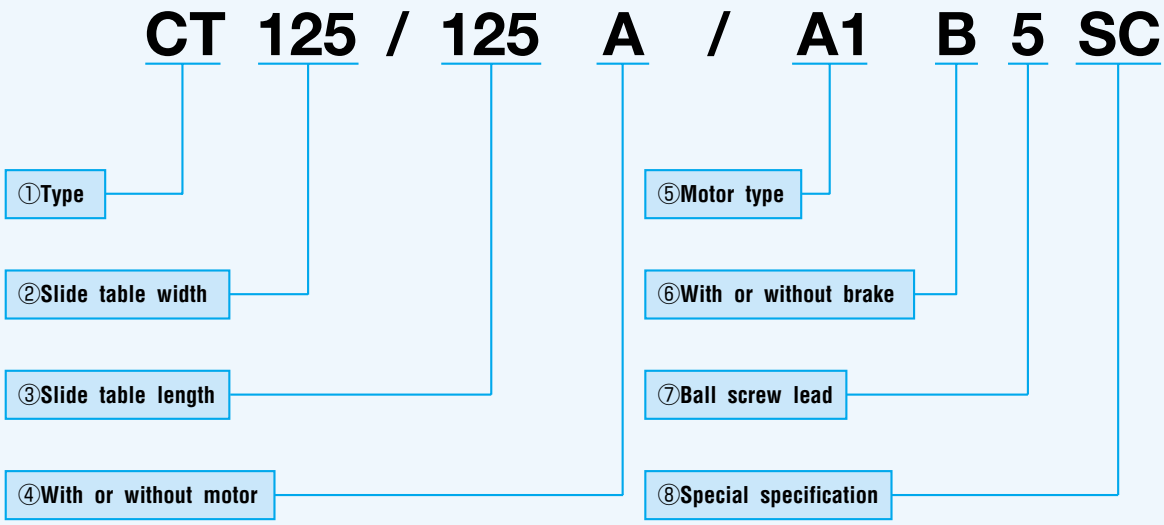



*Structure of Precision Positioning Table*

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

# Identification Number

## Example of identification number




| | |
|---|---|
| **①Type** | TS : Precision Positioning Table (single-axis specification)<br>CT : Precision Positioning Table (two-axis specification) |

| | |
|---|---|
| **②③Size of slide table** | Slide table sizes shown in Table 1 can be selected. |

Slide table width and length are indicated in mm. For CT (two-axis specification), Y table width and length are indicated.

### Table 1 Size of slide table

| Type | Width/length<br>mm |
|---|---|
| **TS** | 55/55, 75/75, 125/125, 125/220, 220/220, 220/310, 260/350 |
| **CT** | 55/55, 75/75, 125/125, 220/220, 260/350, 350/350 |

| | |
|---|---|
| **④With or without motor** | No symbol : Without motor<br>A : With motor |

If the customer provides a motor, specify "without motor" (no symbol).

| | |
|---|---|
| **⑤No symbol : Without motor** | Motor codes shown in Table 2 can be selected. |

When "without motor" is selected in item ④, the motor attachment and coupling prepared for the specified motor will be attached.

## Table 2 Motor type and motor code

| Motor type | Slide table size | | | |
|---|---|---|---|---|
| | **55/55<br>75/75** | **125/125** | **125/220<br>220/220<br>220/310** | **260/350<br>350/350** |
| AC servo motor | — | A1, M1 | A1, M1 | A2, M2 |
| Stepping motor | S2 | K4 | K5 | K7 |

| | |
|---|---|
| **⑥With or without brake** | No symbol : Without brake<br>B : With brake (not applicable to 55/55 and 75/75) |

If a motor with brake is required, specify "with brake" (code B). For CT (two-axis specification), however, a motor with brake is provided only for the Y axis.

| | |
|---|---|
| **⑦Ball screw lead** | 1 : Lead 1 mm (applicable to 55/55, 75/75, and 125/125)<br>2 : Lead 2 mm (not applicable to 55/55 and 75/75)<br>5 : Lead 5 mm (not applicable to 55/55 and 75/75) |

| | |
|---|---|
| **⑧Special specification** | No symbol : Standard specification<br>AL : Aluminum alloy made table (not applicable to 55/55 and 75/75)<br>LR : Black chrome surface treatment<br>SC : Table with sensors<br>BE : Option base (applicable to 55/55) |

Aluminum alloy made table : Specification in which the slide table, bed, and motor bracket are made of cast aluminum alloy. The accuracy is different from that of the standard specification.

Black chrome surface treatment : A black permeable film is formed on the surface to improve corrosion resistance. This treatment is performed on the slide table, bed, and motor bracket. The surface treatment film is removed from the reference surface of each part.

Table with sensors : A set of limit sensors, pre-origin sensor, and origin sensor is attached. However, when the AC servo motor is selected, the origin sensor is not attached. Use the C-phase or Z-phase signal of the encoder.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

# Maximum Speed and Resolution

## ■Maximum speed

The maximum speed of Precision Positioning Table can be obtained by the following formula.
For the ball screw drive type, the maximum speed may be limited by the allowable rotation speed of the ball screw depending on the stroke length. Refer to the item pertaining to "Characteristics" of each type.

**Ball screw drive**

$$\text{Maximum speed (mm/s)} = \text{Ball screw lead (mm)} \times \frac{\text{Maximum motor rotation speed (r/min)}}{60}$$

The actual positioning time must be determined by selecting an operation pattern considering the acceleration/deceleration time, stroke length, etc. Refer to the item pertaining to "Selecting an operation pattern".

## ■Resolution

Resolution means the minimum feed amount of Precision Positioning Table, and can be obtained by the following formula.

**Ball screw drive**

$$\text{Resolution (mm/pulse)} = \frac{\text{Ball screw lead (mm)}}{\text{Number of divisions per motor rotation (pulse)}}$$

# Selecting an operation pattern

The maximum speed of the table can be determined from the maximum speed of the motor and the lead of the ball screw. For calculating the actual positioning time, the acceleration/deceleration time must also be taken into consideration. Furthermore, the effective torque in the operation pattern must be examined to check whether it is equal to or less than the rated torque of the motor.

## Calculating the limit acceleration time

The torque acting on the motor is the sum of the torque due to load and that due to acceleration. It reaches its peak during acceleration. Considering that the torque required for acceleration can not exceed the output torque of the motor, the limit acceleration time is calculated as follows:

**●Load torque** $T_L$

$$T_L = T_0 + \mu W g \cdot \frac{\ell}{2\pi\eta} \quad [\text{N-m}]$$

**●Acceleration torque** $T_a$

$$T_a = (J_M + J_T + J_L) \cdot \frac{2\pi N}{60 t_a} \quad [\text{N-m}]$$

$$J_L = W \cdot \left(\frac{\ell}{2\pi}\right)^2 \quad [\text{kg-m}^2]$$

**●Torque required for acceleration** $T_P$

$$T_P = T_L + T_a \quad [\text{N-m}]$$

$$T_P < T_M$$

**●Limit acceleration time** $t_a$

$$t_a = (J_M + J_T + J_L) \cdot \frac{2\pi N}{60} \cdot \frac{k}{T_M - T_L} \quad [\text{s}]$$

$T_0$ : Start-up torque N-m
$\mu$ : Friction coefficient of the rolling guide 0.01
$W$ : Weight of the load (Mass put on the table) kg
$\ell$ : Lead of the ball screw m
$\eta$ : Efficiency 0.9
$J_M$ : Motor inertia kg-m$^2$
$J_T$ : Table inertia kg-m$^2$
$J_L$ : Inertia of the load kg-m$^2$
$N$ : Motor speed rpm
$t_a$ : Acceleration time s
$g$ : Gravitational acceleration 9.8m/s$^2$
$T_M$ : Output torque of the motor N-m
- $T_M$ of the stepping motor can be obtained from the torque characteristic diagram by picking up the output torque at a motor speed of $N$.
- $T_M$ of the AC/DC servo motor must be set to 2 or 3 times the rated torque.

$k$ : Constant
- Stepping motor : 1.5～2
- AC/DC servo motor : 1.3

## Calculating an effective torque

An AC/DC servo motor requires a large torque during the table acceleration/deceleration.
If, in an operation pattern, the ratio of running time of motor is high, the effective torque may exceed the rated torque of the motor, and the motor may overheat or seize. Therefore, make sure that the effective torque does not exceed the rated torque of the motor.
The effective torque is obtained as follows, when the table is driven in the operation pattern shown in Fig. 7:

**●Effective torque** $T_{rms}$

$$T_{rms} = \sqrt{\frac{T_P^2 \times t_a \times 2 + T_L^2 \times t_c}{t}} \quad [\text{N-m}]$$

For simplification, it is assumed: torque in acceleration=torque in deceleration
If the rated torque of the motor is higher than the effective torque, the motor can run continuously in that operation pattern.

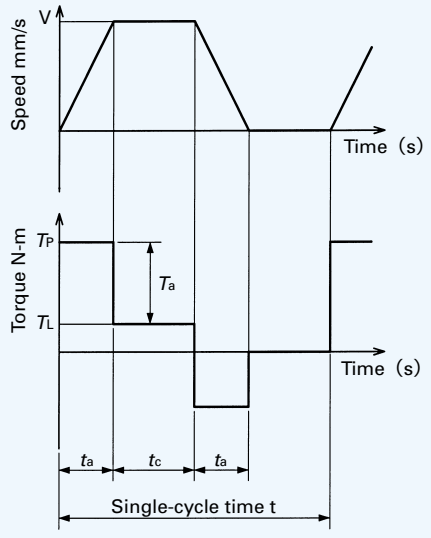



**Fig. 1 Operation pattern and required torque**

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

# Table Characteristics and Motor Specification

## Table 3 Accuracy

unit : mm

| Table size | | Positioning accuracy | Repeatability | Parallelism in table operation A | Parallelism in table operation B | Perpendicularity between X and Y motions(1) |
|---|---|---|---|---|---|---|
| Single-axis specification | Two-axis specification | | | | | |
| **TS 55/ 55** | — | 0.005 | ±0.002 (±0.003) | 0.005 (0.008) | 0.015 (0.022) | 0.005 |
| — | **CT 55/ 55** | 0.010 | | | | |
| **TS 75/ 75** | **CT 75/ 75** | 0.005 (0.008) | | | | |
| **TS125/125** | **CT125/125** | | | | | |
| **TS125/220** | — | 0.008 (0.012) | | | | |
| **TS220/220** | **CT220/220** | | | | | |
| **TS220/310** | — | 0.015 (0.025) | | 0.008 (0.012) | 0.020 (0.030) | 0.008 |
| **TS260/350** | **CT260/350** | | | | | |
| — | **CT350/350** | | | | | |

Note (1) : Applicable to two-axis specification tables.

Remark : The values in ( ) are those for aluminum alloy made tables (special specification AL) that are different from those of the standard specification tables.

## Table 4 Maximum speed

| Motor type | Maximum speed r/min | Motor rotation speed mm/s | | |
|---|---|---|---|---|
| | | Lead 1mm | Lead 2mm | Lead 5mm |
| AC servo motor | 3000 | 50 | 100 | 250 |
| Stepping motor | 1800 | 30 | 60 | 150 |

Remark : The above table shows values when the standard motor is used. The actual maximum speed must be determined by selecting an operation pattern considering the motor used, load conditions, etc.

## Table 5 Allowable load

| Table size | | Single-axis specification N |
|---|---|---|
| Single-axis specification | Two-axis specification | |
| **TS 55/ 55** | **CT 55/ 55** | 20 |
| **TS 75/ 75** | **CT 75/ 75** | 50 |
| **TS125/125** | **CT125/125** | 250 |
| **TS125/220** | — | 280 |
| **TS220/220** | **CT220/220** | 300 |
| **TS220/310** | — | 400 |
| **TS260/350** | — | 500 |
| — | **CT260/350** | 350 |
| — | **CT350/350** | 500 |

Remark : Allowable load means the maximum load that can be applied on the table without causing any trouble in function and performance. However, the load at which accuracy can be guaranteed is 1/2 of the values in the table.

## Table 6 Table inertia $J_T$ and start-up torque $T_0$

| | Table size | | Table inertia $J_T$ $\times 10^{-5}$kg-m$^2$ | | | Start-up torque $T_0$ N-m |
|---|---|---|---|---|---|---|
| | | | Lead 1mm | Lead 2mm | Lead 5mm | |
| Single-axis specification | **TS 55/ 55** | | 0.01 | — | — | 0.03 |
| | **TS 75/ 75** | | 0.01 | — | — | 0.03 |
| | **TS125/125** | | 0.20 | 0.23 | 0.55 | 0.07 |
| | **TS125/220** | | — | 0.40 | 0.95 | 0.07 |
| | **TS220/220** | | — | 0.73 | 1.1 | 0.07 |
| | **TS220/310** | | — | 1.3 | 2.1 | 0.07 |
| | **TS260/350** | | — | 3.8 | 5.6 | 0.07 |
| Two-axis specification | **CT 55/ 55** | X axis | 0.01 | — | — | 0.03 |
| | | Y axis | 0.01 | — | — | |
| | **CT 75/ 75** | X axis | 0.01 | — | — | 0.07 |
| | | Y axis | 0.01 | — | — | |
| | **CT125/125** | X axis | 0.20 | 0.28 | 0.85 | 0.07 |
| | | Y axis | 0.20 | 0.23 | 0.55 | |
| | **CT220/220** | X axis | — | 0.85 | 1.9 | 0.07 |
| | | Y axis | — | 0.73 | 1.1 | |
| | **CT260/350** | X axis | — | 4.6 | 6.8 | 0.07 |
| | | Y axis | — | 3.8 | 5.6 | |
| | **CT350/350** | X axis | — | 4.9 | 8.0 | 0.07 |
| | | Y axis | — | 4.6 | 5.9 | |

## Table 7 Types of standard motors

| Table size | Motor type | With or without brake | Motor code | Model number | Remark |
|---|---|---|---|---|---|
| **TS 55/ 55**<br>**TS 75/ 75**<br>**CT 55/ 55**(1)<br>**CT 75/ 75**(1) | Stepping motor | Without brake | S2 | PX535MH-A | Oriental Motor Co., Ltd. |
| **TS125/125**<br>**CT125/125**(1) | AC servo motor | Without brake | A1 | SGM-01B512 | Yaskawa Electric Corporation |
| | | | M1 | MSM011A1A | Matsushita Electric Industrial Co., Ltd. |
| | | With brake | A1B | SGM-01B512B | Yaskawa Electric Corporation |
| | | | M1B | MSM011A1B | Matsushita Electric Industrial Co., Ltd. |
| | Stepping motor | Without brake | K4 | PK564-A | Oriental Motor Co., Ltd. |
| | | With brake | K4B | PK564-A-A25 | |
| **TS125/220**<br>**TS220/220**<br>**TS220/310**<br>**CT220/220**(1) | AC servo motor | Without brake | A1 | SGM-01B512 | Yaskawa Electric Corporation |
| | | | M1 | MSM011A1A | Matsushita Electric Industrial Co., Ltd. |
| | | With brake | A1B | SGM-01B512B | Yaskawa Electric Corporation |
| | | | M1B | MSM011A1B | Matsushita Electric Industrial Co., Ltd. |
| | Stepping motor | Without brake | K5 | PK566-A | Oriental Motor Co., Ltd. |
| | | With brake | K5B | PK566-A-A25 | |
| **TS260/350**<br>**CT260/350**(1)<br>**CT350/350**(1) | AC servo motor | Without brake | A2 | SGM-02B512 | Yaskawa Electric Corporation |
| | | | M2 | MSM021A1A | Matsushita Electric Industrial Co., Ltd. |
| | | With brake | A2B | SGM-02B512B | Yaskawa Electric Corporation |
| | | | M2B | MSM021A1B | Matsushita Electric Industrial Co., Ltd. |
| | Stepping motor | Without brake | K7 | PK596-A | Oriental Motor Co., Ltd. |
| | | With brake | K7B | PK596-A-A25 | |

Note(1) : In tables with brake, a motor with brake is provided only for the Y axis.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

## Table 8 Specifications of standard motors (AC servo motors)

| Motor code | A5 | M5 | A1 | M1 | A2 | M2 | AA4 | MA4 | AA8 | MA8 |
|---|---|---|---|---|---|---|---|---|---|---|
| Model number | SGM-A5B512 | MSM 5AZA1A | SGM-01B512 | MSM 011A1A | SGM-02B512 | MSM 021A1A | SGM-04A512 | MSM 042A1A | SGM-08A512 | MSM 082A1A |
| Voltage specification V | 100 | | 100 | | 100 | | 200 | | 200 | |
| Rated output W | 50 | | 100 | | 200 | | 400 | | 750 | |
| Rated toque N-m | 0.159 | 0.16 | 0.318 | 0.32 | 0.637 | 0.64 | 1.27 | 1.3 | 2.39 | 2.4 |
| Instantaneous maximum torque N-m | 0.48 | 0.48 | 0.96 | 0.95 | 1.91 | 1.91 | 3.82 | 3.8 | 7.1 | 7.15 |
| Rated motor speed r/min | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 |
| Instantaneous maximum motor speed r/min | 4500 | 5000 | 4500 | 5000 | 4500 | 5000 | 4500 | 5000 | 4500 | 5000 |
| Motor inertia $J_M$ kg-m$^2$ | 0.26 $\times10^{-5}$ | 0.27 $\times10^{-5}$ | 0.40 $\times10^{-5}$ | 0.63 $\times10^{-5}$ | 1.23 $\times10^{-5}$ | 1.7 $\times10^{-5}$ | 1.91 $\times10^{-5}$ | 3.7 $\times10^{-5}$ | 6.71 $\times10^{-5}$ | 13.3 $\times10^{-5}$ |
| Number of divisions of encoder pulse/rev. | 2000 | 2500 | 2000 | 2500 | 2000 | 2500 | 2000 | 2500 | 2000 | 2500 |
| Mass (Ref.) kg | 0.4 | 0.31 | 0.5 | 0.53 | 1.1 | 0.96 | 1.7 | 1.6 | 3.4 | 3.1 |
| Applicable driver | TDA1-1004 | — | TDA1-1004 | — | TDA1-2004 | — | — | | — | |
| Applicable contro unit | NCD160G-A0500 | | NCD160G-A2006 | | | | — | | — | |

Remark : SGM (motor code : A···) : manufactured by Yaskawa Electric Corporation, MSM (motor code : M···) : manufactured by Matsushita Electric Industrial Co., Ltd.

## Table 9 Specifications of standard motors (stepping motors)

| Motor code | S1 | S2 | K3 | K4 | K5 | K6 | K7 | K8 |
|---|---|---|---|---|---|---|---|---|
| Model number | PH533-A | PX535MH-A | PK545-A | PK564-A | PK566-A | PK569-A | PK596-A | PK599-A |
| Basic step angle | 0.72° | 0.36° | 0.72° | 0.72° | 0.72° | 0.72° | 0.72° | 0.72° |
| Excitation maximum static torque N-m | 0.027 | 0.135 | 0.24 | 0.42 | 0.83 | 1.66 | 2.1 | 4.1 |
| Current A/phase | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 1.4 | 1.4 | 1.4 |
| Winding resistance Ω/phase | 1.8 | 1.5 | 2.2 | 2.3 | 3.4 | 1.7 | 1.5 | 2.3 |
| Motor inertia $J_M$ kg-m$^2$ | 0.09$\times10^{-5}$ | 0.35$\times10^{-5}$ | 0.68$\times10^{-5}$ | 1.75$\times10^{-5}$ | 2.8$\times10^{-5}$ | 5.6$\times10^{-5}$ | 14$\times10^{-5}$ | 27$\times10^{-5}$ |
| Mass (Ref.) kg | 0.11 | 0.17 | 0.35 | 0.6 | 0.8 | 1.3 | 1.7 | 2.8 |
| Applicable driver | TDS1-5071 TDS1-5145 | TDS1-5071 TDS1-5145 | TDS1-5071 TDS1-5145 | TDS1-5071 TDS1-5145 | TDS1-5071 TDS1-5145 | TDS1-5145 | TDS1-5145 | TDS1-5145 |

Remark : These motors are manufactured by Oriental Motor Co., Ltd.

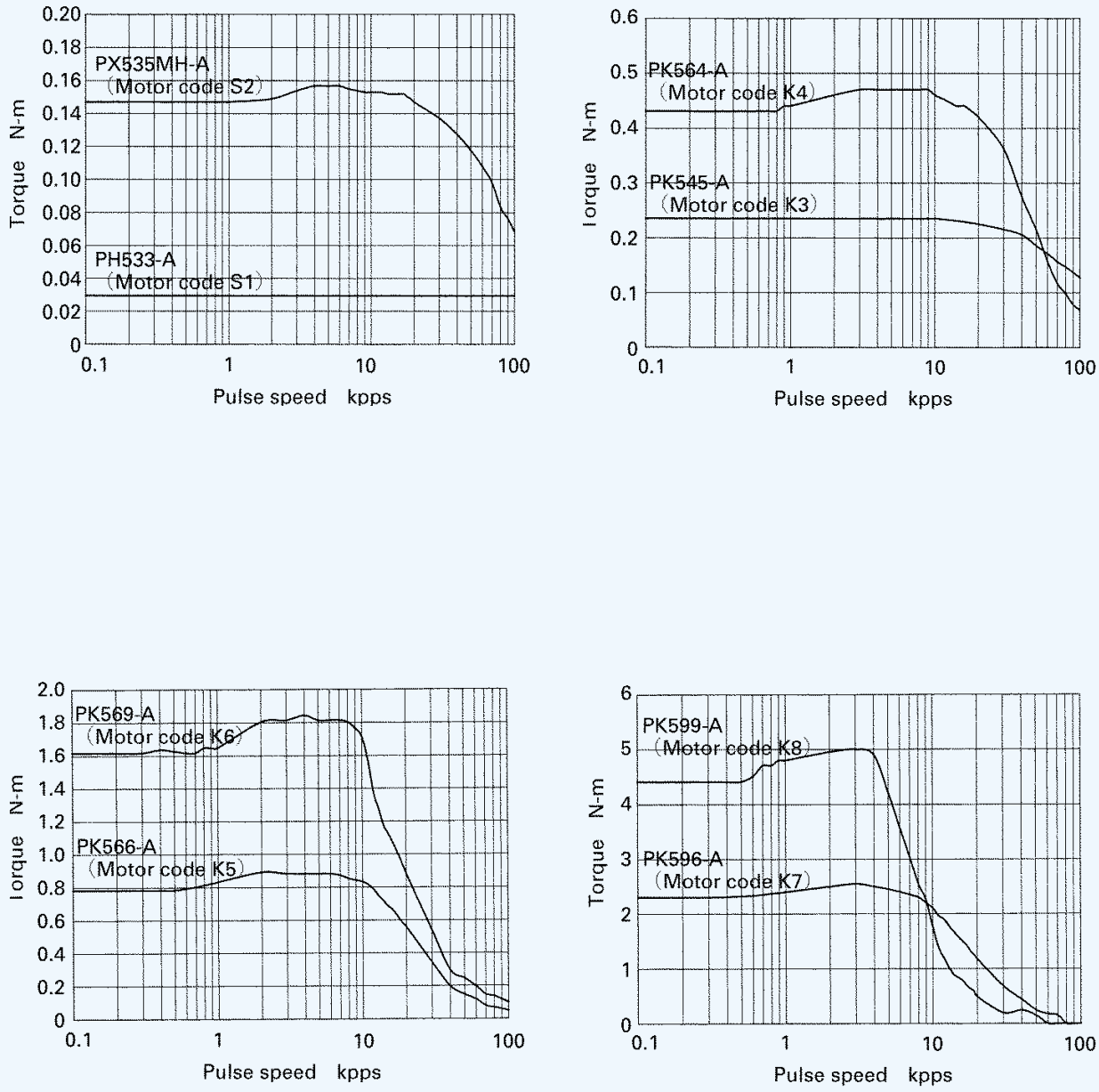



**Fig. 2 Torque characteristic diagrams of standard stepping motors**

Remark : The above figures are torque characteristic diagrams when the motor is combined with TDS1-5145 and is driven at a half step.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

## Table 10 Specifications of connectors (AC servo motor : motor code A…)

| Connector | | Pin No. | Signal name | Cover color of lead wire | Connector used (Manufactured by AMP) | |
|---|---|---|---|---|---|---|
| | | | | | Motor side | Mating side |
| Motor connector | Without brake | 1 | U-phase | Red | Plug housing 172167-1 | Cap housing 172159-1 |
| | | 2 | V-phase | White | | |
| | | 3 | W-phase | Blue | Contactor 170364-1 | Contactor 170366-1 |
| | | 4 | FG (frame ground) | Green | | |
| | With brake | 1 | U-phase | Red | Plug housing 172168-1 | Cap housing 172160-1 |
| | | 2 | V-phase | White | | |
| | | 3 | W-phase | Blue | | |
| | | 4 | FG (frame ground) | Green | Contactor 170364-1 | Contactor 170366-1 |
| | | 5 | Brake input | Red | | |
| | | 6 | Brake input | Black | | |
| Encoder connector | | 1 | Channel A output+ | Blue | Plug housing 172169-1 | Cap housing 172161-1 |
| | | 2 | Channel A output− | Blue/black | | |
| | | 3 | Channel B output+ | Yellow | | |
| | | 4 | Channel B output− | Yellow/black | | |
| | | 5 | Channel C output+ | Green | | |
| | | 6 | Channel C output− | Green/black | Contactor 170359-1 | Contactor 170361-1 |
| | | 7 | GND (power input) | Gray | | |
| | | 8 | +5V (power input) | Red | | |
| | | 9 | FG (frame ground) | Orange | | |

Remark : Prepare mating-side connectors at the customer side.

## Table 11 Specifications of connectors (AC servo motor : motor code M…)

| Connector | Pin No. | Signal name | Cover color of lead wire | Connector used (Manufactured by AMP) | |
|---|---|---|---|---|---|
| | | | | Motor side | Mating side |
| Motor connector | 1 | U-phase | Red | Plug housing 172167-1 | Cap housing 172159-1 |
| | 2 | V-phase | Yellow | | |
| | 3 | W-phase | Black | Contactor 170360-1 | Contactor 170362-1 |
| | 4 | FG (frame ground) | Green/yellow | | |
| Brake connector | 1 | Brake input | Yellow | Plug housing 172165-1 | Cap housing 172157-1 |
| | 2 | Brake input | Yellow | Contactor 170360-1 | Contactor 170362-1 |
| Encoder connector | 1 | A-phase output+ | Red | Plug housing 172171-1 | Cap housing 172163-1 |
| | 2 | A-phase output− | Pink | | |
| | 3 | B-phase output+ | Green | | |
| | 4 | B-phase output− | Blue | | |
| | 5 | Z-phase output+ | Yellow | | |
| | 6 | Z-phase output− | Orange | | |
| | 11 | RX+ | Light blue | Contactor 170359-1 | Contactor 170361-1 |
| | 12 | RX− | Purple | | |
| | 13 | +5V (power input) | White | | |
| | 14 | GND (power input) | Black | | |
| | 15 | FG (frame ground) | Black | | |

Remark : Prepare mating-side connectors at the customer side.

## Table 12 Specifications of connectors (Stepping motor : motor code S…, K…)

| | Pin No. | Cover color of lead wire | Connector used (Manufactured by AMP) | |
|---|---|---|---|---|
| | | | Motor side | Mating side |
| Without brake | 1 | Gray | Plug housing 172170-1<br>Contactor 170363-1 | Cap housing 172162-1<br>Contactor 170365-1 |
| | 2 | Purple | | |
| | 3 | Orange | | |
| | 4 | Black | | |
| | 5 | Brown | | |
| | 6 | White | | |
| | 7 | Yellow | | |
| | 8 | Red | | |
| | 9 | Blue | | |
| | 10 | Green | | |
| | 11 | Not used | | |
| | 12 | Not used | | |
| With brake | 1 | Gray | Plug housing 172170-1<br>Contactor 170363-1 | Cap housing 172162-1<br>Contactor 170365-1 |
| | 2 | Purple | | |
| | 3 | Orange | | |
| | 4 | Black | | |
| | 5 | Brown | | |
| | 6 | White | | |
| | 7 | Yellow | | |
| | 8 | Red | | |
| | 9 | Blue | | |
| | 10 | Green | | |
| | 11 | (Brake input −) | | |
| | 12 | (Brake input +) | | |

Remark : Prepare mating-side connectors at the customer side.

# Sensor specification

CW and CCW limit sensors for preventing overrun and pre-origin and origin sensors for detecting the mechanical origin are prepared for installation on Precision Positioning Table. If required, specify the installation of these sensors by the identification number.

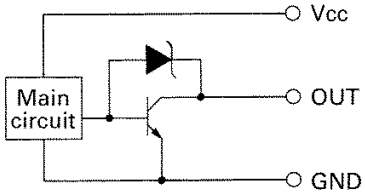
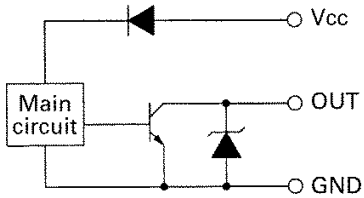
Table 12 shows the types of sensors used in Precision Positioning Table and Table 13 shows the specifications of these sensors. Tables 14 and 15 show the specifications of connectors.

**Table 13 Types of sensors**

| Table type \ Sensor | | CW limit | CCW limit | Pre-origin | Origin |
|---|---|---|---|---|---|
| TS・CT(1) | 55/55 | Mechanical switch | Mechanical switch | Proximity sensor | Photo sensor |
| | Other types | Photo sensor | Photo sensor | Photo sensor | Photo sensor(2) |

Note(1) : Specify sensor installation by the identification number.
(2) : When an AC servo motor is used, the origin sensor is not attached. Use the C-phase or Z-phase signal of the encoder.

## Table 14 Specifications of sensors

| Item \ Sensor | Photo sensor | Proximity sensor | |
|---|---|---|---|
| | | Limit and pre-origin | Origin |
| Power supply voltage | DC5～24V ±10% | DC12～24V ±10% | |
| Current consumption | 30mA or less | 10mA or less | |
| Output | Open collector<br>・Maximum current : 100 mA<br>・Applied voltage : 30 V DC or less<br>・Residual voltage : 1.0 V or less at 100 mA in-flow current<br>0.4 V or less at 16 mA in-flow current | | |
| Actuation | When lighting : ON | When approaching : OFF | When approaching : ON |
| Indicator | Red LED | Red LED | |
| Circuit diagram |  |  | |

## Table 15 Specifications of connectors for TS

| Pin No. | Signal name | Connector used (manufactured by AMP) | |
|---|---|---|---|
| | | Sensor side | Mating side |
| 1 | Origin | Cap housing 172160-1<br>Contactor 170365-1 | Plug housing 172168-1<br>Contactor 170363-1 |
| 2 | Pre-origin | | |
| 3 | CW limit | | |
| 4 | CCW limit | | |
| 5 | Power supply | | |
| 6 | GND | | |

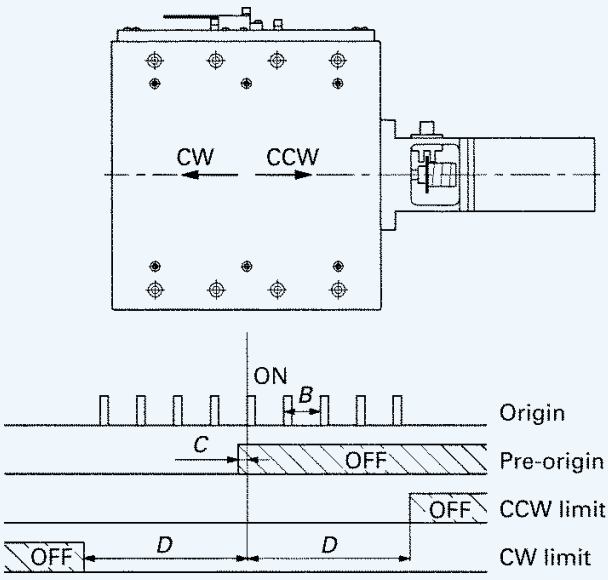
## Table 16 Specifications of connectors for CT

| Pin No. | Signal name | Connector used (manufactured by AMP) | |
|---|---|---|---|
| | | Sensor side | Mating side |
| 1 | X axis Origin | Cap housing 172160-1<br>Contactor 170363-1 | Plug housing 172170-1<br>Contactor 170365-1 |
| 2 | X axis Pre-origin | | |
| 3 | X axis CW limit | | |
| 4 | X axis CCW limit | | |
| 5 | Y axis Origin | | |
| 6 | Y axis Pre-origin | | |
| 7 | Y axis CW limit | | |
| 8 | Y axis CCW limit | | |
| 9 | NC | | |
| 10 | NC | | |
| 11 | Power supply | | |
| 12 | GND | | |

Remark : Prepare mating-side connectors at the customer side.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

## Table 17 Sensor timing chart for TS (single-axis specification)

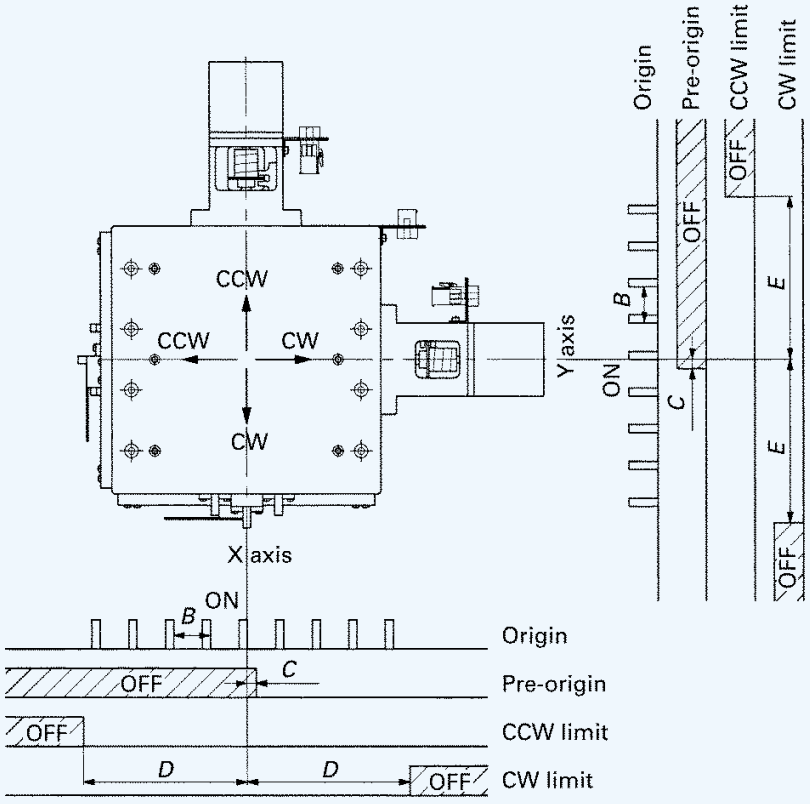



unit : mm

| Table size | Ball screw lead | *B* | *C* | *D* |
|---|---|---|---|---|
| **TS 55/ 55** | 1 | 1 | 0.7 | 7.5 |
| **TS 75/ 75** | 1 | 1 | 0.7 | 12.5 |
| **TS125/125** | 1 | 1 | 0.7 | 25 |
| | 2 | 2 | 1.5 | |
| | 5 | 5 | 3 | |
| **TS125/220** | 2 | 2 | 1.5 | 60 |
| | 5 | 5 | 3 | |
| **TS220/220** | 2 | 2 | 1.5 | 60 |
| | 5 | 5 | 3 | |
| **TS220/310** | 2 | 2 | 1.5 | 90 |
| | 5 | 5 | 3 | |
| **TS260/350** | 2 | 2 | 1.5 | 125 |
| | 5 | 5 | 3 | |

Remark 1 : Specify sensor installation by the identification number.
2 : When an AC servo motor is selected, the origin sensor is not attached. Use the C-phase or Z-phase signal of the encoder.

## Table 18 Sensor timing chart for CT (two-axis specification)




unit : mm

| Table size | Ball screw lead | *B* | *C* | *D* | *E* |
|---|---|---|---|---|---|
| **CT 55/ 55** | 1 | 1 | 0.7 | 7.5 | 7.5 |
| **CT 75/ 75** | 1 | 1 | 0.7 | 12.5 | 12.5 |
| **CT125/125** | 1 | 1 | 0.7 | 25 | 25 |
| | 2 | 2 | 1.5 | | |
| | 5 | 5 | 3 | | |
| **CT220/220** | 2 | 2 | 1.5 | 60 | 60 |
| | 5 | 5 | 3 | | |
| **CT260/350** | 2 | 2 | 1.5 | 75 | 125 |
| | 5 | 5 | 3 | | |
| **CT350/350** | 2 | 2 | 1.5 | 125 | 125 |
| | 5 | 5 | 3 | | |

Remark 1 : Specify sensor installation by the identification number.
2 : When an AC servo motor is selected, the origin sensor is not attached. Use the C-phase or Z-phase signal of the encoder.

# System Configuration

**Table 19 System configuration using TS (single-axis specification) with AC servo motor [when using a control unit]**

| Table size | With or without brake | Motor code | Control unit | | | |
|---|---|---|---|---|---|---|
| | | | Main body | Teaching box | Motor cord | Limit/encoder cord |
| **TS125/125**<br>**TS125/220**<br>**TS220/220**<br>**TS220/310**<br>**TS260/350** | Without brake | A1, A2 | NCD160G-A2006 | TAE1050-TB | TAE2065-AM03 (TAE2072-AM03) | TAE2066-AEL03 (TAE2073-AEL03) |
| | | M1, M2 | | | | TAE2067-AEL03 (TAE2074-AEL03) |
| | With brake | A1B, A2B | NCD160G-A2006 TAE1049-BK (1) | TAE1050-TB | TAE2070-AMB03 (TAE2077-AMB03) | TAE2066-AEL03 (TAE2073-AEL03) |
| | | M1B, M2B | | | TAE2071-AMB03 (TAE2078-AMB03) | TAE2067-AEL03 (TAE2074-AEL03) |

Note(1) : Brake regenerative unit type. It is connected to the driver main unit.
Remark 1 : The cords in ( ) have high bending resistance.
2 : The standard cord length is 3 m.

**Table 20 System configuration using TS (single-axis specification) with AC servo motor [when using a driver plus a programmable controller]**

| Table size | With or without brake | Motor code | Model numbers of applicable electric devices | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Driver | | | Programmable controller | | | |
| | | | Main body | Motor cord | Encoder cord | Main body | Teaching box | Pulse cord | Limit cord |
| **TS125/125**<br>**TS125/220**<br>**TS220/220**<br>**TS220/310** | Without brake | A1 | TDA 1-1004 | TAE2052-AM03 (TAE2036-AM03) | TAE2054 -AE03 (TAE2038 -AE03) | CTN120G | TAE1005-TB | TAE1022-LD03 | |
| | | | | | | CTN130G | TAE1016-TB | TAE1012-PC | TAE1042-LC03 |
| | | | | | | CTN140G | TAE1025-TB | TAE1030-PC | TAE1027-LCA03 |
| | | | | | | CTN150S | TAE1048-TB | TAE1022-LD03 | |
| | With brake | A1B | TDA 1-1004BK | TAE2053-AMB03 (TAE2037-AMB03) | | CTN120G | TAE1005-TB | TAE1022-LD03 | |
| | | | | | | CTN130G | TAE1016-TB | TAE1012-PC | TAE1042-LC03 |
| | | | | | | CTN140G | TAE1025-TB | TAE1030-PC | TAE1027-LCA03 |
| | | | | | | CTN150S | TAE1048-TB | TAE1022-LD03 | |
| **TS260/350** | Without brake | A2 | TDA 1-2004 | TAE2052-AM03 (TAE2036-AM03) | TAE2054 -AE03 (TAE2038 -AE03) | CTN120G | TAE1005-TB | TAE1022-LD03 | |
| | | | | | | CTN130G | TAE1016-TB | TAE1012-PC | TAE1042-LC03 |
| | | | | | | CTN140G | TAE1025-TB | TAE1030-PC | TAE1027-LCA03 |
| | | | | | | CTN150S | TAE1048-TB | TAE1022-LD03 | |
| | With brake | A2B | TDA 1-2004BK | TAE2053-AMB03 (TAE2037-AMB03) | | CTN120G | TAE1005-TB | TAE1022-LD03 | |
| | | | | | | CTN130G | TAE1016-TB | TAE1012-PC | TAE1042-LC03 |
| | | | | | | CTN140G | TAE1025-TB | TAE1030-PC | TAE1027-LCA03 |
| | | | | | | CTN150S | TAE1048-TB | TAE1022-LD03 | |

Remark 1 : The cord in ( ) have high bending resistance.
2 : The standard length of the motor cord, encoder cord, and limit cord are all 3 m. The pulse cord is 1.5 m long.

## Table 21 System configuration using TS (single-axis specification) with stepping motor

| Table size | With or without brake | Motor code | Model numbers of applicable electric devices | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Driver | | Programmable controller | | | |
| | | | Main body | Motor cord | Main body | Teaching box | Pulse cord | Limit cord |
| **TS 55/ 55<br>TS 75/ 75** | Without brake | S2 | TDS1-5071 | TAE2055-SMC03<br>(TAE2057-SNC03) | CTN120G | TAE1005-TB | TAE1056-LD03 | |
| | | | | | CTN130G | TAE1016-TB | TAE1023-PC | TAE1042-LC03 |
| | | | | | CTN140G | TAE1025-TB | TAE1026-PCA | TAE1027-LCA03 |
| | | | | | CTN150S | TAE1048-TB | TAE1056-LD03 | |
| | | | TDS1-5145 | TAE2045-SML3<br>(TAE2059-SNL03) | CTN120G | TAE1005-TB | TAE1022-LD03 | |
| | | | | | CTN130G | TAE1016-TB | TAE1012-PC | TAE1042-LC03 |
| | | | | | CTN140G | TAE1025-TB | TAE1030-PC | TAE1027-LCA03 |
| | | | | | CTN150S | TAE1048-TB | TAE1022-LD03 | |
| **TS125/125<br>TS125/220<br>TS220/220<br>TS220/310** | Without brake | K4<br>K5 | TDS1-5071 | TAE2055-SMC03<br>(TAE2057-SNC03) | CTN120G | TAE1005-TB | TAE1056-LD03 | |
| | | | | | CTN130G | TAE1016-TB | TAE1023-PC | TAE1042-LC03 |
| | | | | | CTN140G | TAE1025-TB | TAE1026-PCA | TAE1027-LCA03 |
| | | | | | CTN150S | TAE1048-TB | TAE1056-LD03 | |
| | | | TDS1-5145 | TAE2045-SML03<br>(TAE2059-SNL03) | CTN120G | TAE1005-TB | TAE1022-LD03 | |
| | | | | | CTN130G | TAE1016-TB | TAE1012-PC | TAE1042-LC03 |
| | | | | | CTN140G | TAE1025-TB | TAE1030-PC | TAE1027-LCA03 |
| | | | | | CTN150S | TAE1048-TB | TAE1022-LD03 | |
| | With brake | K4B<br>K5B | TDS1-5145BK | TAE2061-SMBL03<br>(TAE2062-SNBL03) | CTN120G | TAE1005-TB | TAE1022-LD03 | |
| | | | | | CTN130G | TAE1016-TB | TAE1012-PC | TAE1042-LC03 |
| | | | | | CTN140G | TAE1025-TB | TAE1030-PC | TAE1027-LCA03 |
| | | | | | CTN150S | TAE1048-TB | TAE1022-LD03 | |
| **TS260/350** | Without brake | K7 | TDS1-5145 | TAE2045-SML03<br>(TAE2059-SNL03) | CTN120G | TAE1005-TB | TAE1022-LD03 | |
| | | | | | CTN130G | TAE1016-TB | TAE1012-PC | TAE1042-LC03 |
| | | | | | CTN140G | TAE1025-TB | TAE1030-PC | TAE1027-LCA03 |
| | | | | | CTN150S | TAE1048-TB | TAE1022-LD03 | |
| | With brake | K7B | TDS1-5145BK | TAE2061-SMBL03<br>(TAE2062-SNBL03) | CTN120G | TAE1005-TB | TAE1022-LD03 | |
| | | | | | CTN130G | TAE1016-TB | TAE1012-PC | TAE1042-LC03 |
| | | | | | CTN140G | TAE1025-TB | TAE1030-PC | TAE1027-LCA03 |
| | | | | | CTN150S | TAE1048-TB | TAE1022-LD03 | |

Remark 1 : The cord in ( ) have high bending resistance.
2 : The standard length of the motor cord and limit cord are all 3 m. The pulse cord is 1.5 m long.

**Table 22 System configuration using CT (two-axis specification) with AC servo motor [when using a driver plus a programmable controller]**

| Table size | With or without brake | Motor code | Model numbers of applicable electric devices | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Driver | | | Programmable controller | | | |
| | | | Main body | Motor cord | Encoder cord | Main body | Teaching box | Pulse cord | Limit cord |
| CT125/125<br>CT220/220 | Without brake | A1 | TDA 1-1004 2 units | TAE2052-AM03 (TAE2036-AM03) 2 cords | TAE2054 -AE03 (TAE2038 -AE03) 2 cords | CTN220G | TAE1005-TB | TAE1062-LDY03 | |
| | | | | | | CTN230G | TAE1016-TB | TAE1013-PCY | TAE1063-LC03 |
| | | | | | | CTN240G | TAE1025-TB | TAE1031-PCY | TAE1064-LCA03 |
| | With brake | A1B | TDA 1-1004 + TDA 1-1004BK | TAE2052-AM03 (TAE2036-AM03) + TAE2053-AMB03 (TAE2037-AMB03) | | CTN220G | TAE1005-TB | TAE1062-LDY03 | |
| | | | | | | CTN230G | TAE1016-TB | TAE1013-PCY | TAE1063-LC03 |
| | | | | | | CTN240G | TAE1025-TB | TAE1031-PCY | TAE1064-LCA03 |
| CT260/350<br>CT350/350 | Without brake | A2 | TDA 1-2004 2 units | TAE2052-AM03 (TAE2036-AM03) 2 cords | TAE2054 -AE03 (TAE2038 -AE03) 2 cords | CTN220G | TAE1005-TB | TAE1062-LDY03 | |
| | | | | | | CTN230G | TAE1016-TB | TAE1013-PCY | TAE1063-LC03 |
| | | | | | | CTN240G | TAE1025-TB | TAE1031-PCY | TAE1064-LCA03 |
| | With brake | A2B | TDA 1-2004 + TDA 1-2004BK | TAE2052-AM03 (TAE2036-AM03) + TAE2053-AMB03 (TAE2037-AMB03) | | CTN220G | TAE1005-TB | TAE1062-LDY03 | |
| | | | | | | CTN230G | TAE1016-TB | TAE1013-PCY | TAE1063-LC03 |
| | | | | | | CTN240G | TAE1025-TB | TAE1031-PCY | TAE1064-LCA03 |

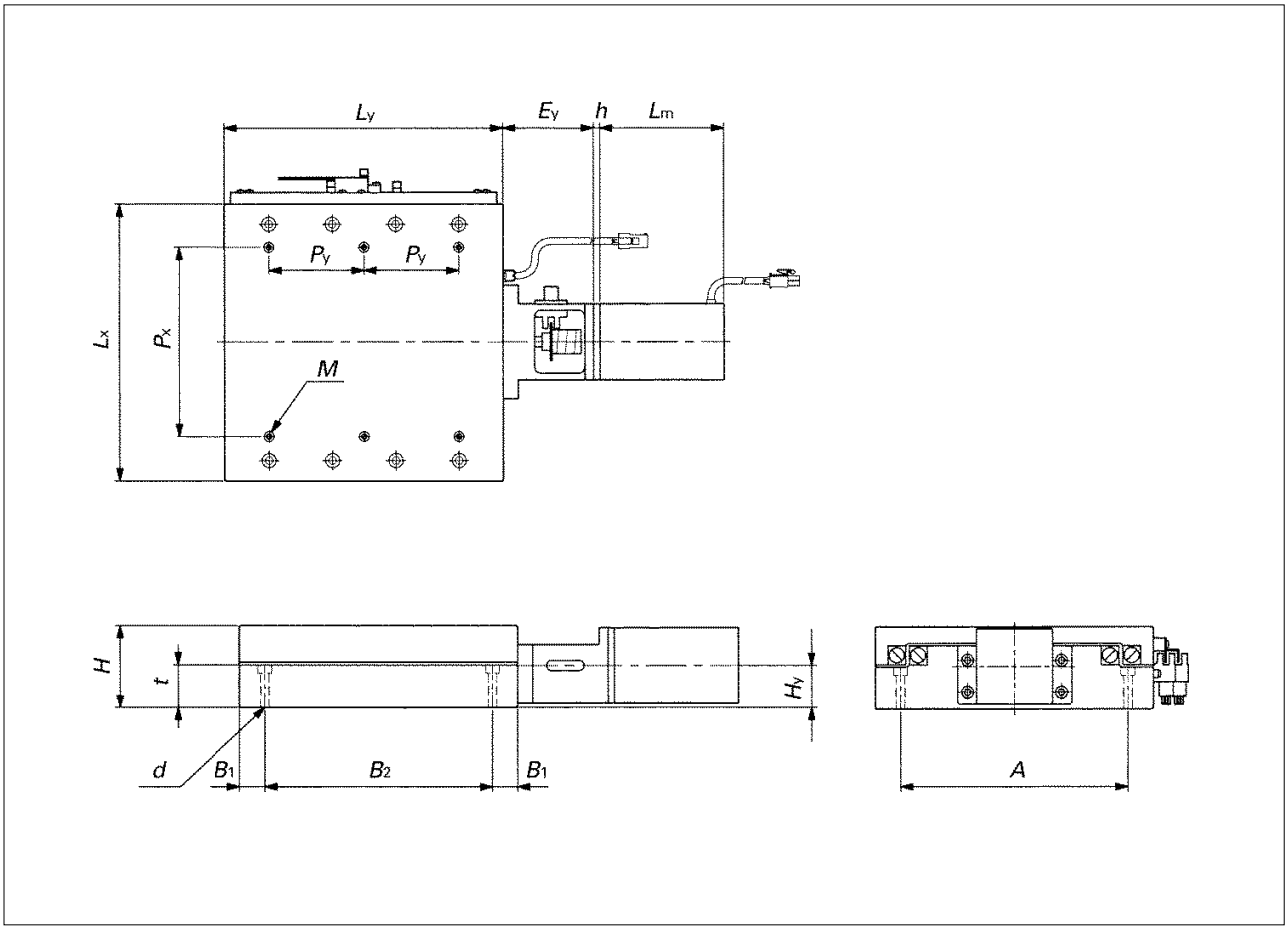
Remark 1 : The cords in ( ) have high bending resistance.
2 : The standard length of the motor cord, encoder cord, and limit cord are all 3 m. The pulse cord is 1.5 m long.
3 : In tables with brake, a motor with brake is provided only for the Y axis.

**Table 23 System configuration using CT (two-axis specification) with stepping motor**

| Table size | With or without brake | Motor code | Model numbers of applicable electric devices | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Driver | | Programmable controller | | | |
| | | | Main body | Motor cord | Main body | Teaching box | Pulse cord | Limit cord |
| **CT 55/ 55 CT 75/ 75** | Without brake | S2 | TDS1-5071 2 units | TAE2055-SMC03 (TAE2057-SNC03) 2 cords | CTN220G | TAE1005-TB | TAE1065-LDY03 | |
| | | | | | CTN230G | TAE1016-TB | TAE1057-PCY | TAE1063-LC03 |
| | | | | | CTN240G | TAE1025-TB | TAE1028-PCAY | TAE1064-LCA03 |
| | | | TDS2-5145 | TAE2045-SML03 (TAE2059-SNL03) 2 cords | CTN220G | TAE1005-TB | TAE1061-LD03 | |
| | | | | | CTN230G | TAE1016-TB | TAE1012-PC | TAE1063-LC03 |
| | | | | | CTN240G | TAE1025-TB | TAE1030-PC | TAE1064-LCA03 |
| **CT125/125 CT220/220** | Without brake | K4 K5 | TDS1-5071 2 units | TAE2055-SMC03 (TAE2057-SNC03) 2 cords | CTN220G | TAE1005-TB | TAE1065-LDY03 | |
| | | | | | CTN230G | TAE1016-TB | TAE1057-PCY | TAE1063-LC03 |
| | | | | | CTN240G | TAE1025-TB | TAE1028-PCAY | TAE1064-LCA03 |
| | | | TDS2-5145 | TAE2045-SML03 (TAE2059-SNL03) 2 cords | CTN220G | TAE1005-TB | TAE1061-LD03 | |
| | | | | | CTN230G | TAE1016-TB | TAE1012-PC | TAE1063-LC03 |
| | | | | | CTN240G | TAE1025-TB | TAE1030-PC | TAE1064-LCA03 |
| | With brake | K4B K5B | TDS2-5145BK | TAE2045-SML03 (TAE2059-SNL03) + TAE2061-SMBL03 (TAE2062-SNBL03) | CTN220G | TAE1005-TB | TAE1061-LD03 | |
| | | | | | CTN230G | TAE1016-TB | TAE1012-PC | TAE1063-LC03 |
| | | | | | CTN240G | TAE1025-TB | TAE1030-PC | TAE1064-LCA03 |
| **CT260/350 CT350/350** | Without brake | K7 | TDS2-5145 | TAE2045-SML03 (TAE2059-SNL03) 2 cords | CTN220G | TAE1005-TB | TAE1061-LD03 | |
| | | | | | CTN230G | TAE1016-TB | TAE1012-PC | TAE1063-LC03 |
| | | | | | CTN240G | TAE1025-TB | TAE1030-PC | TAE1064-LCA03 |
| | With brake | K7B | TDS2-5145BK | TAE2045-SML03 (TAE2059-SNL03) + TAE2061-SMBL03 (TAE2062-SNBL03) | CTN220G | TAE1005-TB | TAE1061-LD03 | |
| | | | | | CTN230G | TAE1016-TB | TAE1012-PC | TAE1063-LC03 |
| | | | | | CTN240G | TAE1025-TB | TAE1030-PC | TAE1064-LCA03 |

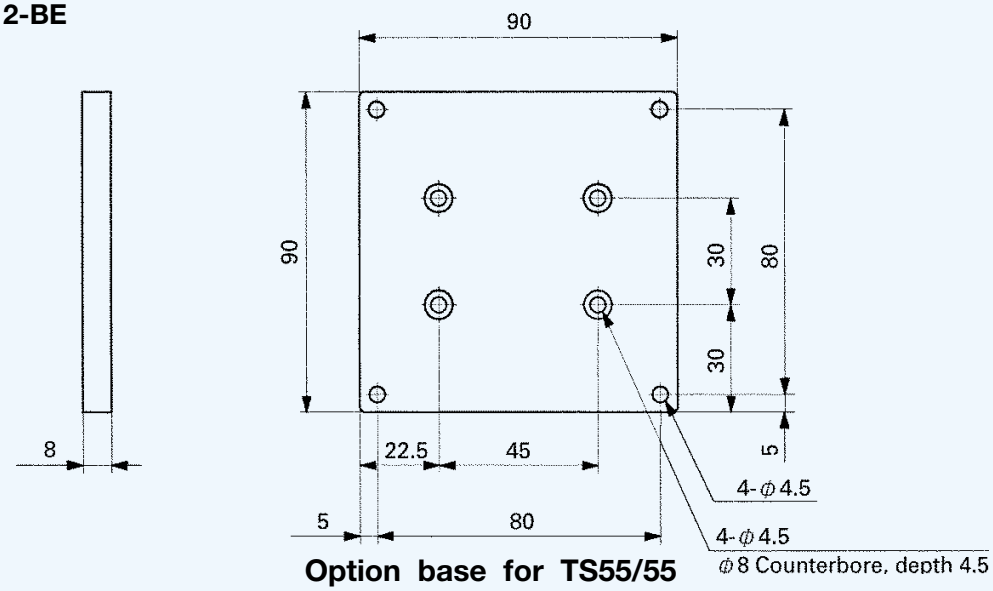
Remark 1 : The cords in ( ) have high bending resistance.
2 : The standard length of the motor cord and limit cord are all 3 m. The pulse cord is 1.5 m long.
3 : In tables with brake, a motor with brake is provided only for the Y axis.

# TS




Remark : The figure shows a table with sensors.

●TAE9012-BE




Option base for TS55/55

## Dimensions of table

unit : mm

| Model number | Dimensions of table | | | Stroke length | Bracket length | Shaft center height |
|---|---|---|---|---|---|---|
| | $L_x$ | $L_y$ | $H$ | | $E_y$ | $H_y$ |
| **TS 55/ 55** | 55 | 55 | 35.5 | 15 | 40 | 20 |
| **TS 75/ 75** | 75 | 75 | 40 | 25 | 40 | 20 |
| **TS125/125**(2) | 125 | 125 | 60 | 50 | 52 | 31.5 |
| **TS125/220**(2) | 125 | 220 | 60 | 120 | 72 | 31.5 |
| **TS220/220** | 220 | 220 | 65 | 120 | 72 | 33.5 |
| **TS220/310** | 220 | 310 | 70 | 180 | 110 | 33.5 |
| **TS260/350** | 260 | 350 | 100 | 250 | 120 | 47.5 |

| Model number | Mounting bolt | | | Mounting dimensions of bed | | | | | Mass(1) (Ref.) |
|---|---|---|---|---|---|---|---|---|---|
| | $M$ | $P_x$ | $P_y$ | $d$ | $t$ | $A$ | $B_1$ | $B_2$ | kg |
| **TS 55/ 55** | 6-M3 depth 4.5 | 30 | 17.5 | 4-M4 depth 8 | 26 | 30 | 5 | 45 | 0.72 |
| **TS 75/ 75** | 6-M4 depth 5.5 | 40 | 30 | For 4-M4 | 24 | 62 | 7.5 | 60 | 1.6 |
| **TS125/125**(2) | 6-M5 depth10 | 70 | 50 | For 4-M5 | 35 | 100 | 15 | 95 | 7.3 |
| **TS125/220**(2) | 6-M5 depth10 | 70 | 75 | For 4-M5 | 35 | 100 | 20 | 180 | 11.0 |
| **TS220/220** | 6-M6 depth12 | 150 | 75 | For 4-M6 | 34 | 180 | 20 | 180 | 15.7 |
| **TS220/310** | 6-M6 depth12 | 150 | 100 | For 4-M6 | 35 | 180 | 50 | 210 | 26.5 |
| **TS260/350** | 6-M6 depth12 | 150 | 125 | For 4-M8 | 54 | 215 | 50 | 250 | 47.5 |

Note(1) : The mass of the motor is not included.
(2) : The motor bracket is 1.5 mm higher than the top surface of the table.

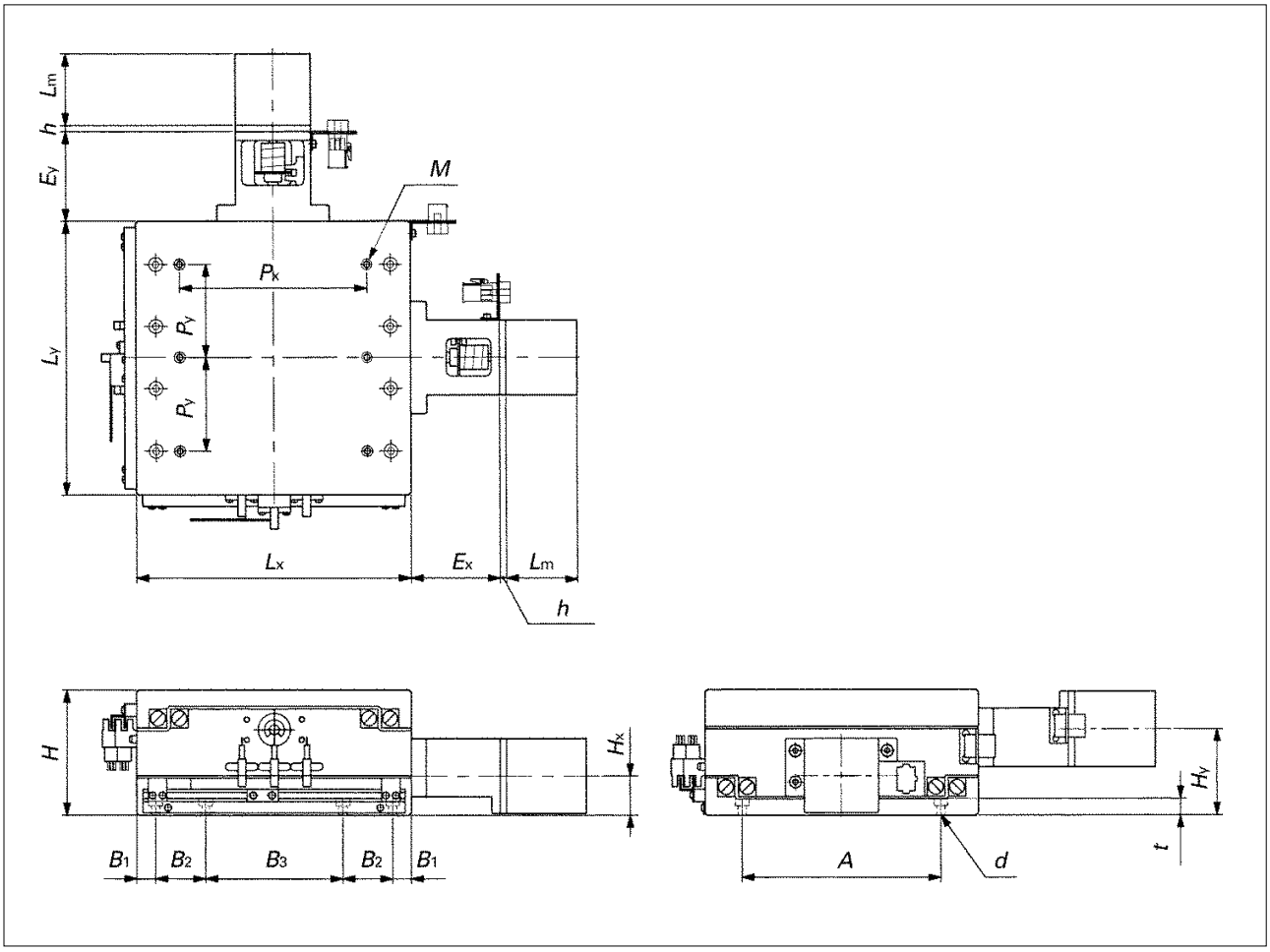
## Dimensions of motor

unit : mm

| Table size | Motor type | With or without brake | Motor code | $h$ | $L_m$ |
|---|---|---|---|---|---|
| **TS 55/ 55** | Stepping motor | Without brake | S2 | — | 45 |
| **TS 75/ 75** | Stepping motor | Without brake | S2 | — | 45 |
| **TS125/125** | AC servo motor | Without brake | A1 | 5 | 94.5 |
| | | | M1 | 5 | 103 |
| | | With brake | A1B | 5 | 135 |
| | | | M1B | 5 | 135 |
| | Stepping motor | Without brake | K4 | 5 | 46.5 |
| | | With brake | K4B | 5 | 88.5 |
| **TS125/220**<br>**TS220/220**<br>**TS220/310** | AC servo motor | Without brake | A1 | 5 | 94.5 |
| | | | M1 | 5 | 103 |
| | | With brake | A1B | 5 | 135 |
| | | | M1B | 5 | 135 |
| | Stepping motor | Without brake | K5 | 5 | 57.5 |
| | | With brake | K5B | 5 | 99.5 |
| **TS260/350** | AC servo motor | Without brake | A2 | — | 96.5 |
| | | | M2 | — | 95 |
| | | With brake | A2B | — | 136 |
| | | | M2B | — | 128 |
| | Stepping motor | Without brake | K7 | 10 | 66 |
| | | With brake | K7B | 10 | 119 |

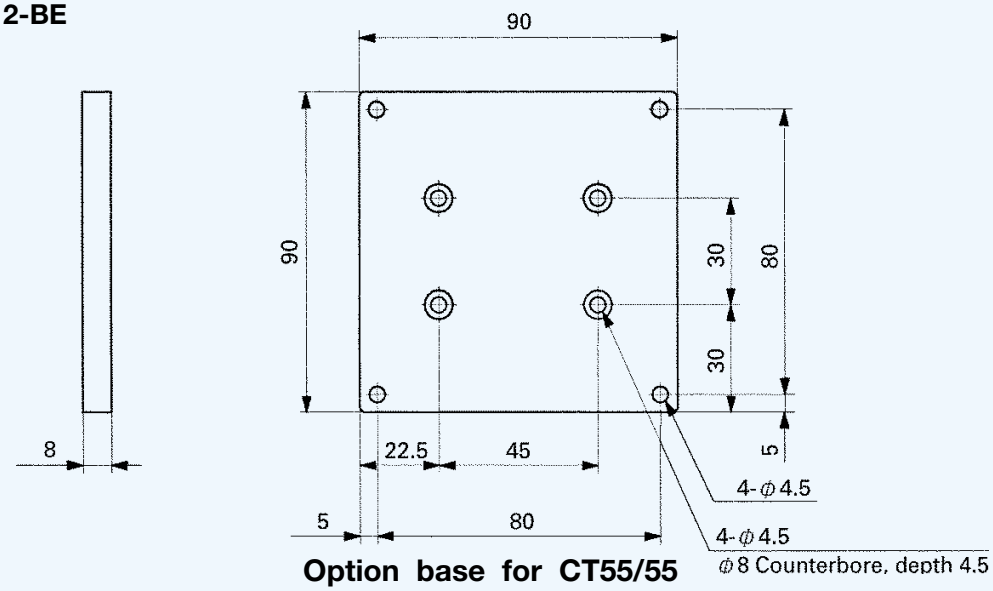
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

# CT




Remark : The figure shows a table with sensors.

●TAE9012-BE




Option base for CT55/55

## Dimensions of table

unit : mm

| Model number | Dimensions of table | | | Stroke length | | Bracket length | | Shaft center height | |
|---|---|---|---|---|---|---|---|---|---|
| | $L_x$ | $L_y$ | $H$ | X axis | Y axis | $E_x$ | $E_y$ | $H_x$ | $H_y$ |
| **CT 55/ 55**(2) | 55 | 55 | 45 | 15 | 15 | 40 | 40 | 15.5 | 29.5 |
| **CT 75/ 75** | 75 | 75 | 55 | 25 | 25 | 40 | 40 | 20 | 35 |
| **CT125/125**(3) | 125 | 125 | 85 | 50 | 50 | 52 | 52 | 30.5 | 56.5 |
| **CT220/220** | 220 | 220 | 100 | 120 | 120 | 72 | 72 | 31.5 | 68.5 |
| **CT260/350** | 260 | 350 | 150 | 150 | 250 | 100 | 120 | 52.5 | 97.5 |
| **CT350/350** | 350 | 350 | 150 | 250 | 250 | 120 | 120 | 52.5 | 97.5 |

| Model number | Mounting bolt | | | Mounting dimensions of bed | | | | | | Mass(1) (Ref.) kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | $M$ | $P_x$ | $P_y$ | $d$ | $t$ | $A$ | $B_1$ | $B_2$ | $B_3$ | |
| **CT 55/ 55**(2) | 6-M3 depth 4.5 | 30 | 17.5 | 4-M4 depth 4.5 | 4.5 | 30 | 5 | — | 45 | 1.7 |
| **CT 75/ 75** | 6-M4 depth 5.5 | 40 | 30 | 4-M4 depth 5.5 | 9 | 40 | 7.5 | — | 60 | 2.0 |
| **CT125/125**(3) | 6-M5 depth10 | 70 | 50 | For 4-M5 | 14 | 80 | 15 | — | 95 | 7.5 |
| **CT220/220** | 6-M6 depth12 | 150 | 75 | For 8-M6 | 14 | 160 | 15 | 40 | 110 | 19.4 |
| **CT260/350** | 6-M6 depth12 | 150 | 125 | For 8-M8 | 29 | 270 | 15 | 55 | 120 | 66.0 |
| **CT350/350** | 6-M6 depth12 | 250 | 125 | For 8-M8 | 29 | 270 | 15 | 100 | 120 | 76.7 |

Note(1) : The mass of the motor is not included.
(2) : The X-axis motor bracket is 3.5 mm lower than the bottom surface of the table and the Y-axis motor bracket is 3.5 mm higher than the top surface of the table.
(3) : The Y-axis motor bracket is 1.5 mm higher than the top surface of the table.

## Dimensions of motor

unit : mm

| Table size | Motor type | With or without brake | Motor code | $h$ | $L_m$ |
|---|---|---|---|---|---|
| **CT 55/ 55**<br>**CT 75/ 75** | Stepping motor | Without brake | S2 | — | 45 |
| **CT125/125** | AC servo motor | Without brake | A1 | 5 | 94.5 |
| | | | M1 | 5 | 103 |
| | | With brake | A1B | 5 | 135 |
| | | | M1B | 5 | 135 |
| | Stepping motor | Without brake | K4 | 5 | 46.5 |
| | | With brake | K4B | 5 | 88.5 |
| **CT220/220** | AC servo motor | Without brake | A1 | 5 | 94.5 |
| | | | M1 | 5 | 103 |
| | | With brake | A1B | 5 | 135 |
| | | | M1B | 5 | 135 |
| | Stepping motor | Without brake | K5 | 5 | 57.5 |
| | | With brake | K5B | 5 | 99.5 |
| **CT260/350**<br>**CT350/350** | AC servo motor | Without brake | A2 | — | 96.5 |
| | | | M2 | — | 95 |
| | | With brake | A2B | — | 136 |
| | | | M2B | — | 128 |
| | Stepping motor | Without brake | K7 | 10 | 66 |
| | | With brake | K7B | 10 | 119 |

Remark : In the table with brake, a motor with brake is provided only for the Y axis.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

# Mounting

## ■Mounting surface accuracy

The accuracy and performance of Precision Positioning Table are affected by the accuracy of the mating mounting surface. Accordingly, mounting surface finish accuracy must be examined, considering the operating conditions such as required motion performance and positioning accuracy.

**Table 24 Mounting surface accuracy** unit : μm

| Type | Flatness of mounting surface |
|---|---|
| TS・CT | 10 |

## ■Tightening torque of mounting bolts

The standard torque values for fixing Precision Positioning Table are shown in Table 23. When machines or equipment are subjected to frequent rapid acceleration or deceleration, or moment load, the bolts should be tightened with a torque 1.3 times higher than the standard torque values shown in the table. When high accuracy is required and vibration or shock is not present, it is recommended to tighten the bolts with a lower torque than the values shown in the table and use a bonding agent to prevent loosening of the bolts.

**Table 25 Tightening torque of bolts** unit : N-m

| Nominal bolt size | Female thread material | | |
|---|---|---|---|
| | Iron | Aluminum alloy | |
| | | | With Helicert |
| M 3×0.5 | 1.7 | Approx. 60% of the value for iron | Approx. 80% of the value for iron |
| M 4×0.7 | 4.0 | | |
| M 5×0.8 | 7.9 | | |
| M 6×1 | 13.3 | | |
| M 8×1.25 | 32.0 | | |
| M10×1.5 | 62.7 | | |

# Precautions for Use

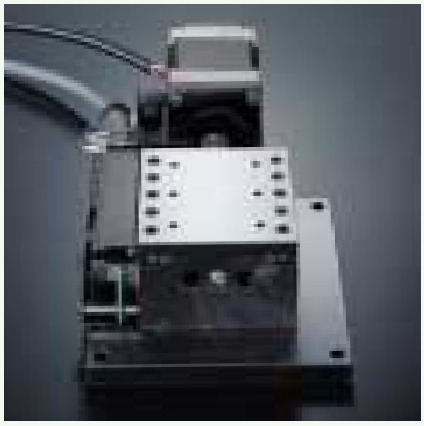
## ■Cautions on safety

- Be sure to connect the ground terminal (class 3 grounding). An electric shock or fire will be caused.
- Do not operate the product at any power supply voltage other than that shown on the product. A fire or failure will be caused.
- Do not touch electric devices with wet hands. An electric shock will be caused.
- Do not bend by force, twist, pull, or heat the cord, or put a heavy material on it. An electric shock or fire will be caused.
- Do not put fingers, etc. in the opening during table operation. An injury will be caused.
- Do not touch the moving portion during table operation. An injury will be caused.
- When removing the cover of the electric device section, be sure to turn off the power supply and pull out the power plug beforehand. An electric shock will be caused.
- Do not touch the terminal for 5 minutes after turning off the power supply. The residual voltage may cause an electric shock.
- When connecting or disconnecting the connection terminal, be sure to turn off the power supply and pull out the power plug beforehand. An electric shock or fire will be caused.

## ■Cautions on safety

- Precision Positioning Table is a precision machine. Therefore, handle it with great care and do not apply an excessive load or strong impact on it to avoid accuracy loss or part damage.
- Make sure that the mounting base surface is free from dirt and harmful protuberances.
- The linear motion rolling guide and ball screw assembled in Precision Positioning Table is coated with grease. So make sure to keep dirt or any foreign matter from entering into the table. If dirt or any foreign matter had entered inside, remove the dirty grease completely and then apply clean grease again.
- The re-lubrication interval for Precision Positioning Table differs depending on the operating conditions. Generally, it is recommended to remove old grease and apply clean grease at an interval of 6 months, or for machines that are put into frequent reciprocating motions of long strokes, at an interval of 3 months.
- Precision Positioning Table is machined, assembled, and adjusted with high precision. Therefore, never disassemble or remodel the table.

# TS·CT



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