Discontinue

CKD

SM-396067-A

INSTRUCTION MANUAL

ELECTRIC SLIDER

KBB Series

KBB-30

（Belt-Driven Slider）

SLIDER INSTRUCTION MANUAL

- Read this manual carefully and thoroughly before using this product.
- Pay extra attention to the instructions concerning safety.
- After reading this manual, keep it in a safe and convenient place.

CKD Corporation

Discontinue

Introduction

Before using the Electric Slider KBB series, read through and completely understand this instruction manual to assure correct use.
For general details on the Electric Slider KBB series, see the instruction manual (basic) provided separately.

Cautions

1. The contents of this manual are subject to change without prior notice.
2. The contents of this manual are subject to change without prior notice to effect improvements.
3. All efforts have been made to assure the contents of this manual. If you have any questions, or find any mistakes, however, please contact CKD.
4. CKD will not be held responsible for any effects caused by using this equipment, regardless of Item 3 above.
5. This equipment does not have an explosion-proof structure. Take utmost care of the operating environment.

Discontinue

Table of Contents

Page

General Descriptions

- This manual describes the axis type expression method, specifications and motor replacement procedures, etc., according to the type of axis.
- For the installation, see the instruction manual (installation of actuator) provided separately.

Section 1 Safety

1.1 Safety Instructions

- Before the installation, programming, operation, maintenance and inspection of the equipment, be sure to read through this manual so that you can use the Electric Actuator KBB series with safety.
- After you have read this manual, keep it nearby for future reference.

Be sure to strictly observe the following safety instructions to assure correct use of the Electric Slider KBB series.

This manual contain the important information to prevent injury to the operators and persons nearby, to prevent damage to assets and to assure correct use of the equipment.
Make sure that you have well understood the following details (indications and symbols) before reading this manual. Always observe the information that is noted.

! **WARNING**	This means that "incorrect handling will lead to fatalities or serious injuries."
! **CAUTION**	This means that "incorrect handling" may lead to personal injuries or physical damage (i.e., damages to building, household goods, domestic animals and pets).
Note	Briefly describes the points and notices for the operating procedures, and the points for using the equipment efficiently.

⚠ WARNING
• **Install the safety fences to prevent anyone from entering the working envelope of the robot.** When the door is attached to the safety fence, the robot should be stopped at emergency at the same time that the door has opened.
• **Connect the EMERGENCY STOP pushbutton switch to the emergency stop input terminal of the controller and mount the same switch at an easy-to-operate place in an emergency.** The EMEGENCY STOP switch must not be reset automatically and cannot be reset negligently by any person.
• **Wiring should be done safely and completely according to the Electrical Installations Technical Requirements and Interior Wiring Requirements of Japan.** Incorrect wiring will result in an electric shock or a fire.
• **The equipment MUST NOT be repaired or modified without prior written permission from the manufacturer.** Otherwise, an accident or damage will be caused.
• **Before the maintenance and inspection, be sure to turn off the controller main power switch. Take all necessary measures to prevent anyone other than the worker engaged in adjustment of the robot from negligently turning the power on. (Lock the switch and put a tag showing "DO NOT turn the power on.")** **Also, DO NOT touch the controller interior three (3) minutes after the power is turned off.** Otherwise, you may get an electric shock due to residual voltage of the capacitor.
• **DO NOT touch the motor, heat sink and cement resistor in the controller.** They are too hot and you may get burnt. Before performing inspection, take enough time to cool them off.
• **DO NOT pour water on the equipment interior or exterior, or drain water from it. Otherwise, you may get an electric shock, or the equipment will be damaged.** When the equipment has contaminated, wipe it off with a hard squeezed cloth. DO NOT use a thinner, benzine or other organic solvent.
• **DO NOT throw away metals, combustibles or other contaminant into the opening of this equipment.** A fire or an electric shock will be caused.

 **WARNING**
• **DO NOT put your finger or hand on the movable part or opening of the equipment.** Otherwise, you may get injured.
• **When using the actuator in other than the horizontal state, select the vertical actuator.** This actuator (belt-driven) cannot be used for the vertical application.
• **As the equipment is heavy, make sure of its weight and gravity center position and disconnect the cables when carrying the equipment.** Also, DO NOT carry the equipment with the slider. Otherwise, the slider will move and you will get injured.
• **DO NOT use this equipment for the living body as a massaging machine.** Otherwise, you will be injured due to incorrect teaching or mis-operation.
• **This equipment has not a sealed structure. During use, grease or wear of the belt may scatter from the opening of the equipment.** When using this equipment for food and chemical applications, take appropriate measures against entry of them.
• **Enter the robot type and initialize the memory correctly.** Otherwise, the robot may move unexpectedly and you will be injured.
• **DO NOT use this equipment in an atmosphere of inflammable gas or an atmosphere inducing an explosion.** As this equipment is not explosion-proof, it may explode in the worst occasion.
• **DO NOT damage, break, process, forcibly bend, stretch, place a heavy object on or pinch the cables (power cable, controller cable).** Otherwise, an electric shock or a fire will be caused.
• **Should an abnormality such as smoke or nasty smell occur, turn the power off immediately and stop using the equipment.** If the equipment is used continuously, an electric shock or a fire will be caused.

 **CAUTION**
• **DO NOT place the equipment at a place where the ambient temperature exceeds 40°C, or where the temperature changes sharply, causing condensing, or where it is exposed to direct sunlight.** Additionally, if the equipment is installed at a narrow place, the ambient temperature rises due to heat generation in the controller itself or external device, which will result in malfunction or mis-operation of the equipment.
• **DO NOT use the equipment at a place where an impact or vibration is involved. Also, DO NOT use the equipment in an atmosphere where conductive dust, corrosive gas or oil mist generates.** Otherwise, a fire, electric shock, malfunction or mis-operation will be caused.
• **DO NOT use the equipment at a place where too much dust or dirt exists.** If the equipment is used at such a place, it may malfunction because this equipment is not dust-proof.
• **DO NOT use repair parts other than those designated by the manufacturer.** Otherwise, the equipment cannot be operated to its full capacity and will cause malfunction.
• **Mount the robot on a highly rigid frame.** If rigidity of the frame is not enough, vibration (or resonance) may be caused during the robot operation, adversely affecting the operation.

Attention:
For the safety instructions which seem especially important, relevant warning label is attached to the equipment.
When the label attached to the equipment has peeled off or the characters are defaced and unreadable, please procure it from our sales agent in your territory by specifying the part number, and attach it to the original place.

Warning label for actuator

Part number: KBB-55620157

! **WARNING**	• Before the installation, programming, operation, maintenance and inspection of the equipment, be sure to read through this manual so that you can use the Roibot with safety. • Install the safety fences to prevent anyone from entering the working envelope of the robot. • DO NOT put your finger or hand on the movable part or opening of the equipment. Otherwise, you may get injured. • When using the actuator in other than the horizontal state, be sure to select the actuator with brake. Otherwise, the slider will drop at power OFF, and you will be injured.

1.2 To Use the Equipment Safely

The details of this paragraph are the same as those in Para. 1.2 of the KBB series instruction manual (basic) provided separately. Read through this paragraph before using the equipment.

Section 2 List of Shipment

2.1 List of Shipment

The actuator to be shipped normally consists of the following parts.

(1) Actuator

(2) Oval head bolts (M6 × 30)

- The following bolts are attached per each axis (i.e., actuator).

Axis stroke (mm)	Attached quantity
100 ~ 200	12
250 ~ 600	16
650 ~ 1,000	20
1,050 ~ 1,300	26
1,350 ~ 2,000	32
2,050 ~ 2,500	40

Section 3 Axis Specifications

3.1 Type of Axis and Name of Each Part

- Type of axis
  The type of axis is as shown below.

KBB-30F–BT–M21N–40

Series name

Frame number

30	M size

Type of axis

BT	Top side mounted motor axis
BR	Right side mounted motor axis
BL	Left side mounted motor axis
BU	Bottom side mounted motor axis

Nominal lead (Note)

21	21 mm
42	42 mm

Axis stroke

00	100 mm
15	150 mm
20	200 mm
:	:
A0	1,000 mm
A5	1,050 mm
:	:
F0	1,500 mm
:	:
Q5	2,450 mm
R0	2,500 mm

Type of motor (Note)

E	100 W absolute
F	200 W absolute

Type of slider

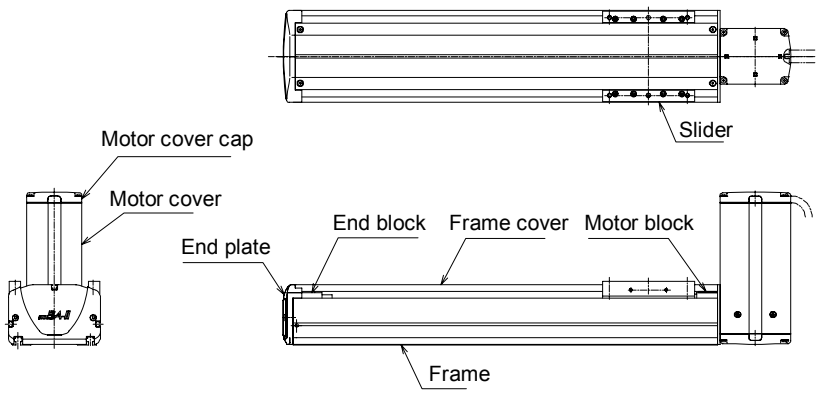
M	Medium slider
L	Long slider

Brake

N	None

Note: When the 100 W motor is used, the nominal lead is 21 mm alone.

- Name of each part



3.2 Single Axis Specifications

- Specifications
  Type of axis: KBB–30□–B□–□□□N–□□

Values in parentheses are applied when 200 W AC servo motor is used.

Motor		100 W absolute AC servo motor (200 W absolute AC servo motor)
Drive system		Timing belt Lead: 21 mm, 42 mm
Guide system		Use of linear guide (double rail) No. of bearing blocks: Four (4) pcs.
Maximum payload mass (Note 1)	Lead	Horizontal
	21 mm	15 (40) kg
	42 mm (Note 2)	(20) kg
Maximum speed	Lead 21 mm	1,000 mm/s
	Lead 42 mm	2,000 mm/s
Permissible static moment (Note 3)	Medium slider	MR: 510 N·m, MP: 430 N·m, MY: 370 N·m
	Long slider	MR: 510 N·m, MP: 750 N·m, MY: 650 N·m
Repeatability		±0.05 mm
Resolution		0.01 mm
Rated thrust	Lead 21 mm	76 (152) N
	Lead 42 mm	(76) N

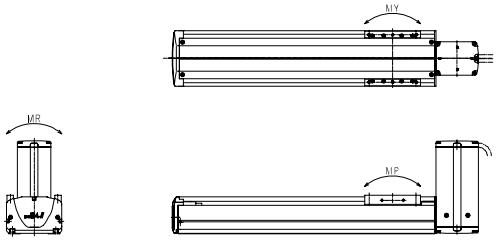
Note 1: When the lead is 21 mm, the acceleration/deceleration time is 0.3 s or over.
When the lead is 42 mm, the acceleration/deceleration time is 0.5 s or over.

Note 2: When the 200 W motor is used, the nominal lead is 42 mm alone.

! CAUTION

DO NOT set the acceleration/deceleration time of under 0.3 s and under 0.5 s for the 21 mm lead axis (actuator) or 42 mm lead axis (actuator), respectively.
Otherwise, the timing belt may disengage from the pulley.

Note 3:



MR: Rolling moment
MP: Pitching moment
MY: Yawing moment

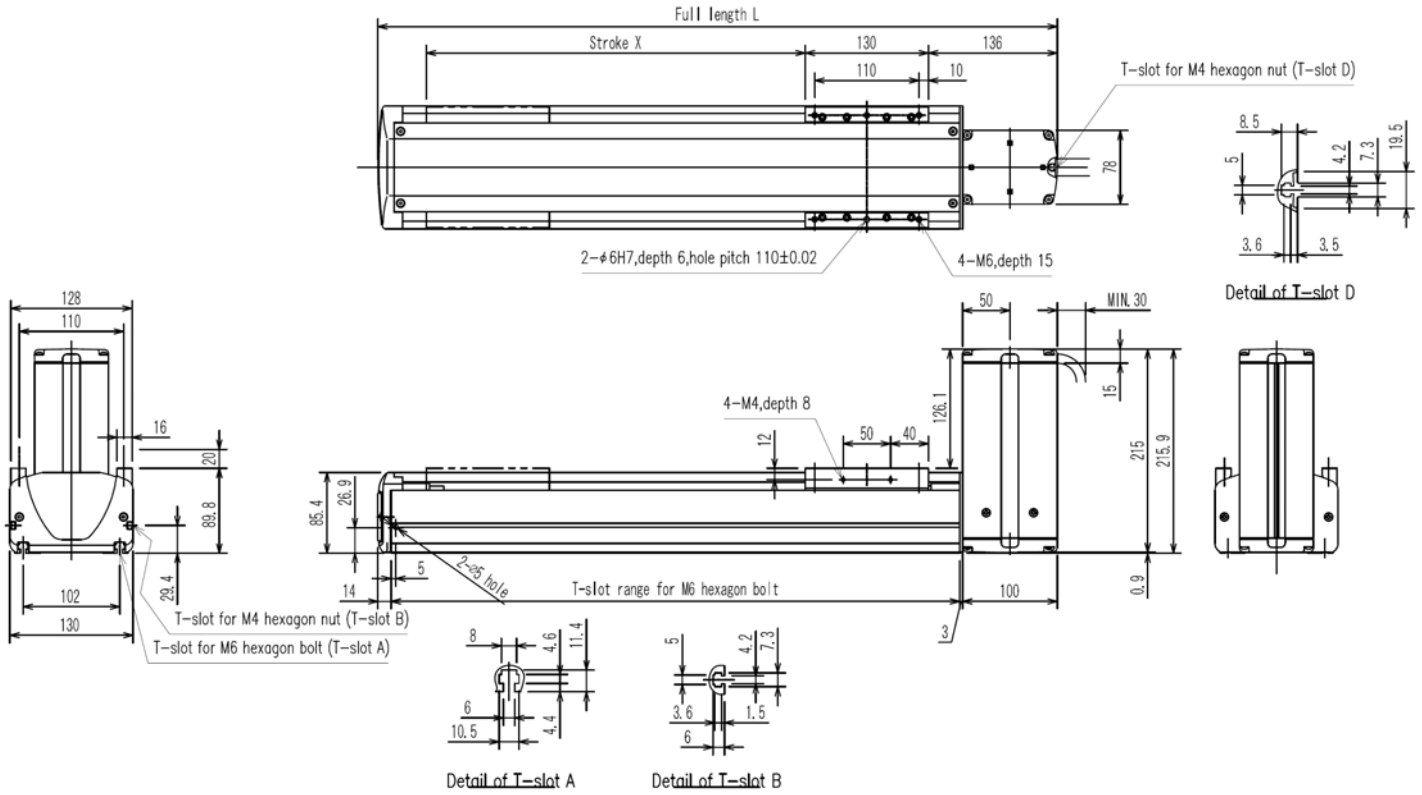
Discontinue

- Axis dimensions

(1) Top side mounted motor axis

[KBB–30*–BT–M**N] (Stroke: 1,800 mm or less)

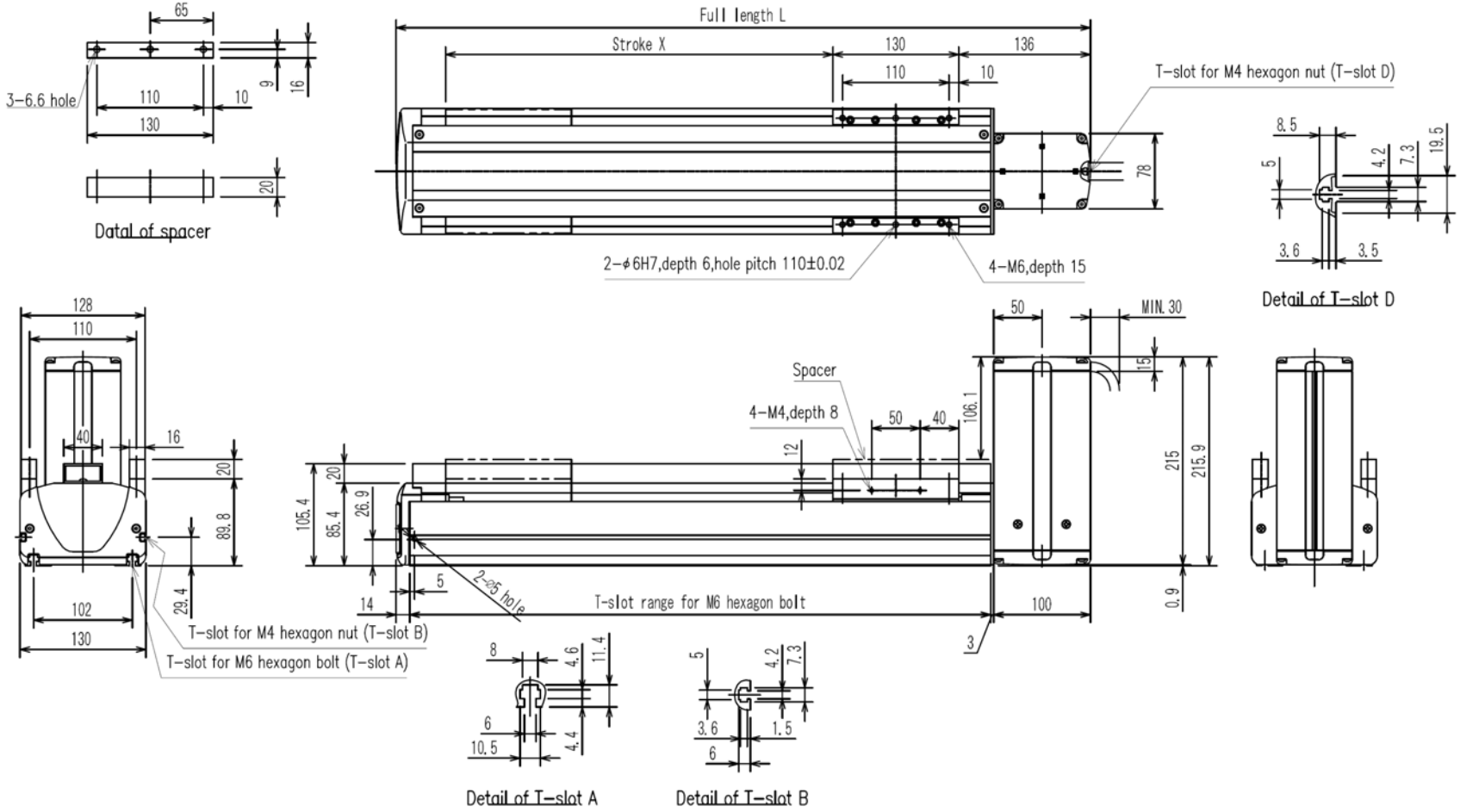
Type		KBB-30E-BT-M21N-10	KBB-30E-BT-M21N-20	KBB-30E-BT-M21N-30	KBB-30E-BT-M21N-40	KBB-30E-BT-M21N-50	KBB-30E-BT-M21N-60	KBB-30E-BT-M21N-70	KBB-30E-BT-M21N-80	KBB-30E-BT-M21N-90	KBB-30E-BT-M21N-A0	KBB-30E-BT-M21N-B0	KBB-30E-BT-M21N-C0	KBB-30E-BT-M21N-D0	KBB-30E-BT-M21N-E0	KBB-30E-BT-M21N-F0	KBB-30E-BT-M21N-G0	KBB-30E-BT-M21N-H0	KBB-30E-BT-M21N-J0
		KBB-30F-BT-M□N-10	KBB-30F-BT-M□N-20	KBB-30F-BT-M□N-30	KBB-30F-BT-M□N-40	KBB-30F-BT-M□N-50	KBB-30F-BT-M□N-60	KBB-30F-BT-M□N-70	KBB-30F-BT-M□N-80	KBB-30F-BT-M□N-90	KBB-30F-BT-MVN-A0	KBB-30F-BT-M□N-B0	KBB-30F-BT-M□N-C0	KBB-30F-BT-M□N-D0	KBB-30F-BT-M□N-E0	KBB-30F-BT-M□N-F0	KBB-30F-BT-M□N-G0	KBB-30F-BT-M□N-H0	KBB-30F-BT-M□N-J0
Stroke X (mm)		100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800
Full length (mm)		417	517	617	717	817	917	1017	1117	1217	1317	1417	1517	1617	1717	1817	1917	2017	2117
Mass (kg)	KBB-30E	7.9	9.0	10.1	11.2	12.3	13.4	14.5	15.6	16.7	17.8	18.9	20.0	21.1	22.2	23.3	24.4	25.5	26.6
	KBB-30F	8.7	9.8	10.9	12.0	13.1	14.2	15.3	16.4	17.5	18.6	19.7	20.8	21.9	23.0	24.1	25.2	26.3	27.4



Discontinue

[KBB–30*–BT–M**N] (Stroke: 1,900 mm or over)

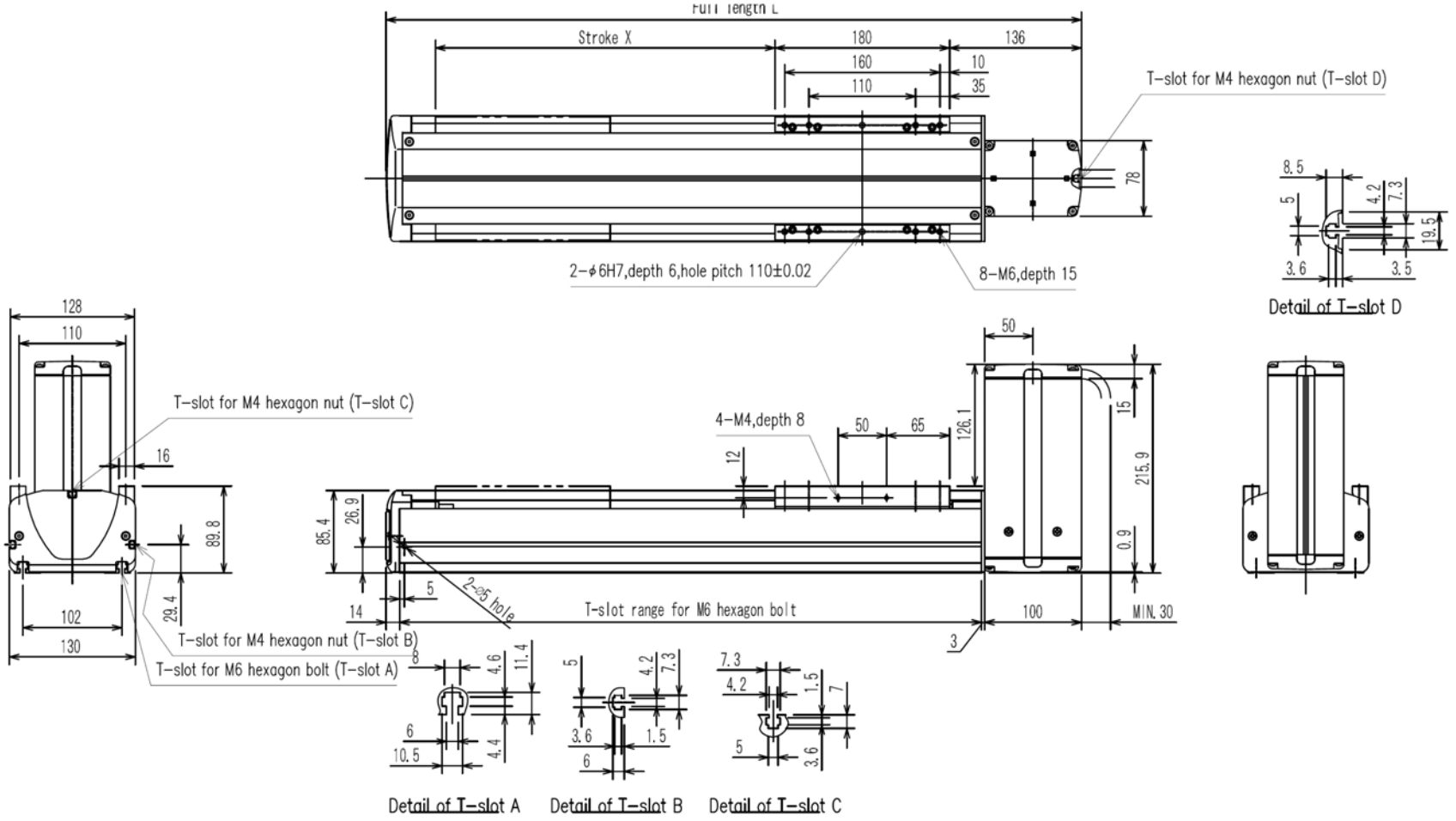
Type		KBB-30E-BT-M21N-K0	KBB-30E-BT-M21N-L0	KBB-30E-BT-M21N-M0	KBB-30E-BT-M21N-N0	KBB-30E-BT-M21N-P0	KBB-30E-BT-M21N-Q0	KBB-30E-BT-M21N-R0
		KBB-30F-BT-M□N-K0	KBB-30F-BT-M□N-L0	KBB-30F-BT-M□N-M0	KBB-30F-BT-M□N-N0	KBB-30F-BT-M□N-P0	KBB-30F-BT-M□N-Q0	KBB-30F-BT-M□N-R0
Stroke X (mm)		1900	2000	2100	2200	2300	2400	2500
Full length (mm)		2217	2317	2417	2517	2617	2717	2817
Mass (kg)	KBB-30E	27.7	28.8	29.9	31.0	32.1	33.2	34.3
	KBB-30F	28.5	29.6	30.7	31.8	32.9	34.0	35.1



Discontinue

[KBB–30*–BT–L**N] (Stroke 1,750 mm or less)

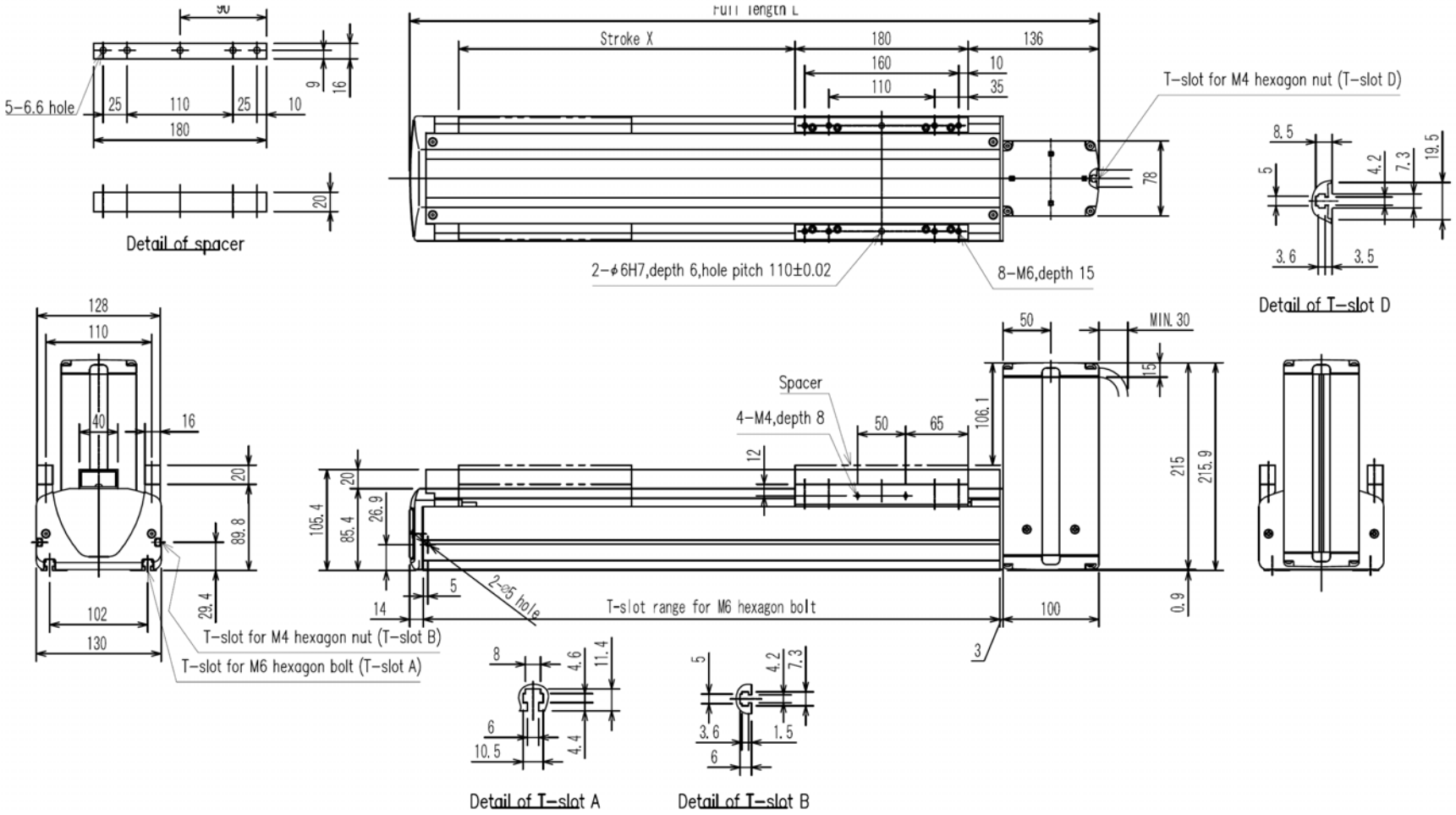
Type		KBB-30E-BT-L21N-15 KBB-30F-BT-L□N-15	KBB-30E-BT-L21N-25 KBB-30F-BT-L□N-25	KBB-30E-BT-L21N-35 KBB-30F-BT-L□N-35	KBB-30E-BT-L21N-45 KBB-30F-BT-L□N-45	KBB-30E-BT-L21N-55 KBB-30F-BT-L□N-55	KBB-30E-BT-L21N-65 KBB-30F-BT-L□N-65	KBB-30E-BT-L21N-75 KBB-30F-BT-L□N-75	KBB-30E-BT-L21N-85 KBB-30F-BT-L□N-85	KBB-30E-BT-L21N-95 KBB-30F-BT-L□N-95	KBB-30E-BT-L21N-A5 KBB-30F-BT-L□N-A5	KBB-30E-BT-L21N-B5 KBB-30F-BT-L□N-B5	KBB-30E-BT-L21N-C5 KBB-30F-BT-L□N-C5	KBB-30E-BT-L21N-D5 KBB-30F-BT-L□N-D5	KBB-30E-BT-L21N-E5 KBB-30F-BT-L□N-E5	KBB-30E-BT-L21N-F5 KBB-30F-BT-L□N-F5	KBB-30E-BT-L21N-G5 KBB-30F-BT-L□N-G5	KBB-30E-BT-L21N-H5 KBB-30F-BT-L□N-H5
Stroke X (mm)		150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750
Full length (mm)		517	617	717	817	917	1017	1117	1217	1317	1417	1517	1617	1717	1817	1917	2017	2117
Mass (kg)	KBB-30E	9.3	10.4	11.5	12.6	13.7	14.8	15.9	17.0	18.1	19.2	20.3	21.4	22.5	23.6	24.7	25.8	26.9
	KBB-30F	10.1	11.2	12.3	13.4	14.5	15.6	16.7	17.8	18.9	20.0	21.1	22.2	23.3	24.4	25.5	26.6	27.7



Discontinue

[KBB–30∗−BT−L∗∗N] (Stroke: 1,850 mm or over)

Type		KBB-30E-BT-L21N-15	KBB-30E-BT-L21N-25	KBB-30E-BT-L21N-35	KBB-30E-BT-L21N-45	KBB-30E-BT-L21N-55	KBB-30E-BT-L21N-65	KBB-30E-BT-L21N-75
		KBB-30F-BT-L□N-15	KBB-30F-BT-L□N-25	KBB-30F-BT-L□N-35	KBB-30F-BT-L□N-45	KBB-30F-BT-L□N-55	KBB-30F-BT-L□N-65	KBB-30F-BT-L□N-75
Stroke X (mm)		1850	1950	2050	2150	2250	2350	2450
Full length (mm)		2217	2317	2417	2517	2617	2717	2817
Mass (kg)	KBB-30E	28.0	29.1	30.2	31.3	32.4	33.5	34.6
	KBB-30F	28.8	29.9	31.0	32.1	33.2	34.3	35.4

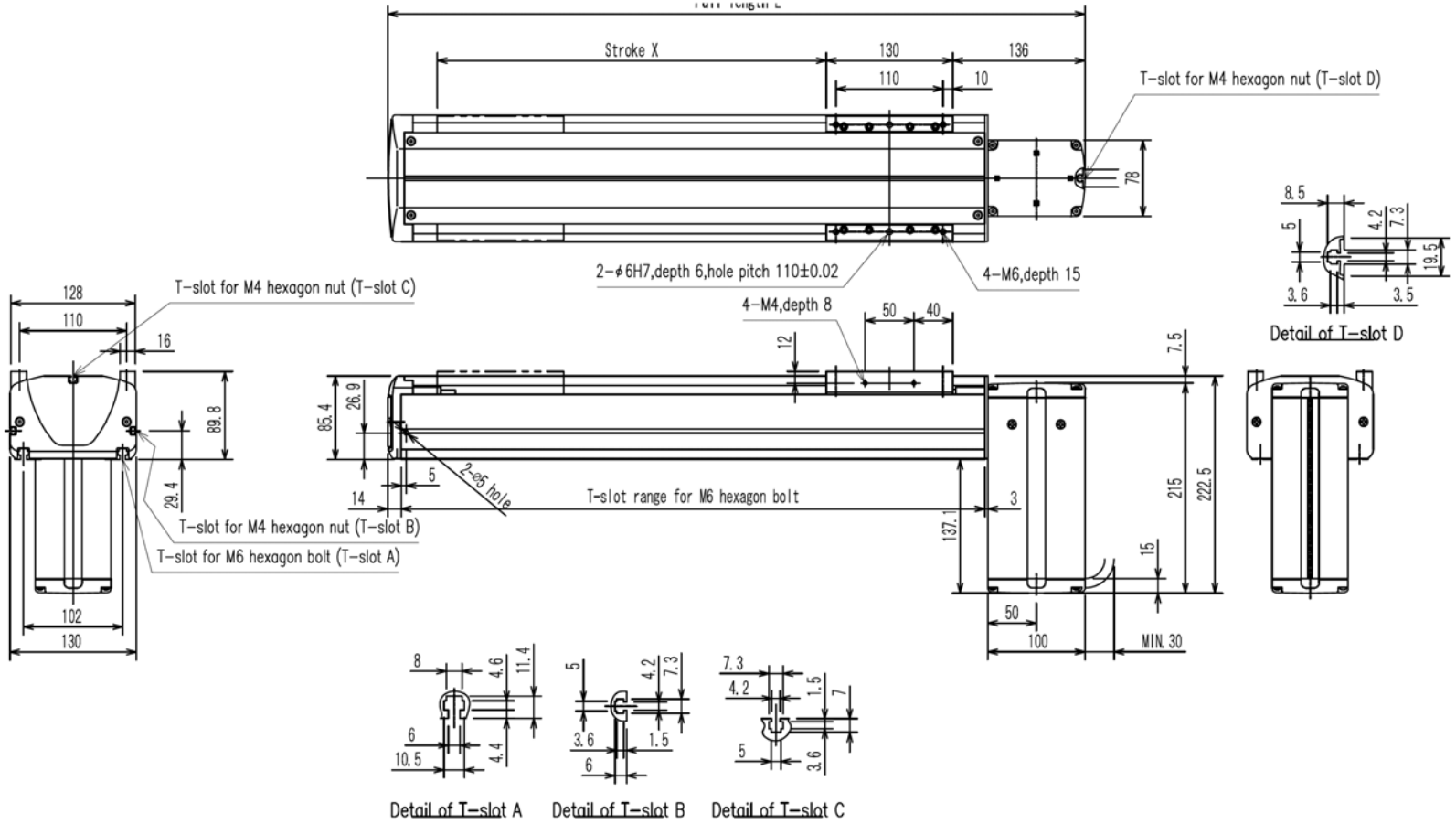


Discontinue

(2) Bottom side mounted motor axis

[KBB–30∗–BU–M∗∗N] (Stroke: 1,800 mm or less)

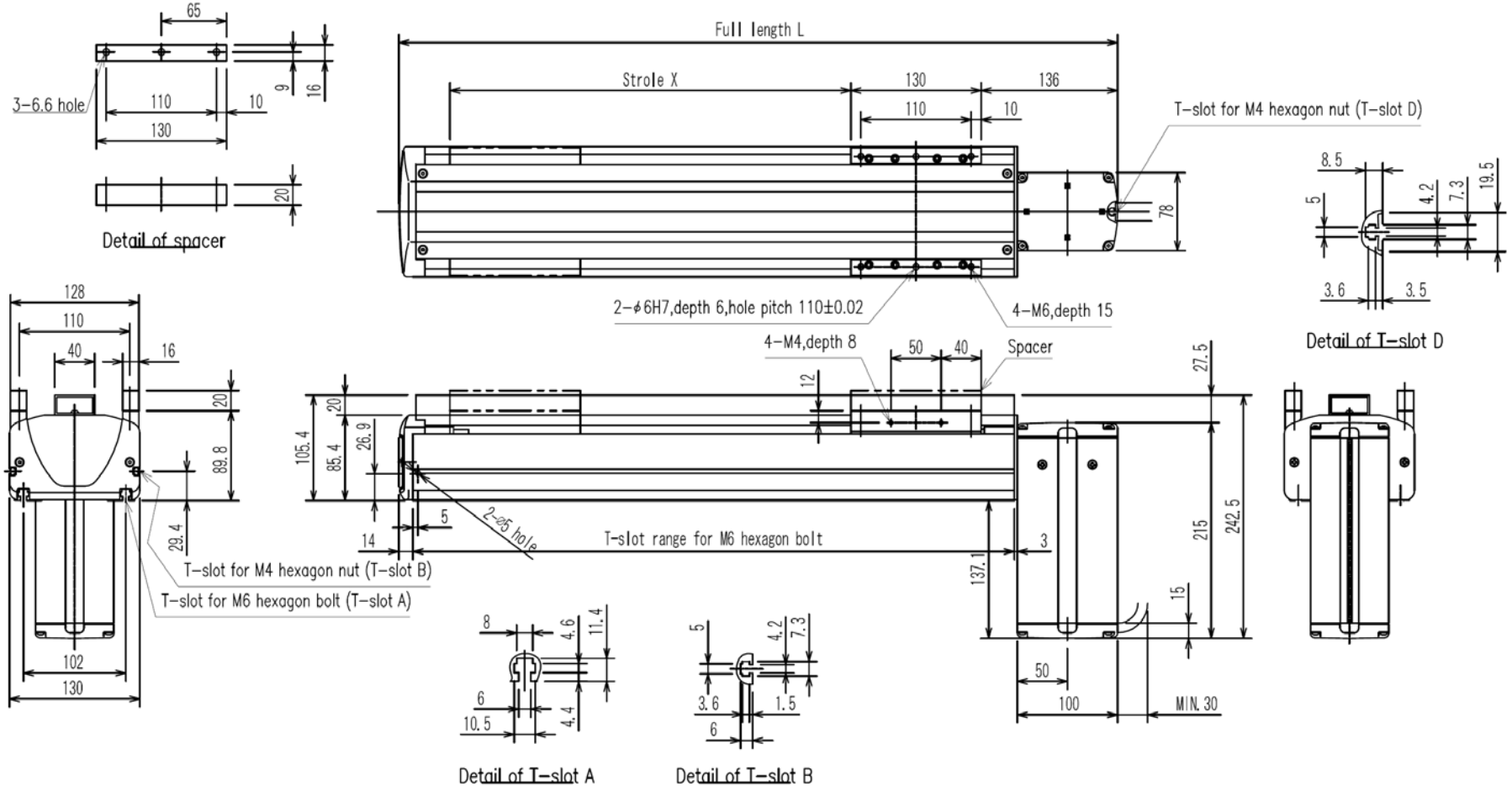
Type	KBB-30E-BU-M21N-10	KBB-30E-BU-M21N-20	KBB-30E-BU-M21N-30	KBB-30E-BU-M21N-40	KBB-30E-BU-M21N-50	KBB-30E-BU-M21N-60	KBB-30E-BU-M21N-70	KBB-30E-BU-M21N-80	KBB-30E-BU-M21N-90	KBB-30E-BU-M21N-A0	KBB-30E-BU-M21N-B0	KBB-30E-BU-M21N-C0	KBB-30E-BU-M21N-D0	KBB-30E-BU-M21N-E0	KBB-30E-BU-M21N-F0	KBB-30E-BU-M21N-G0	KBB-30E-BU-M21N-H0	KB-30E-BU-121N-J0
	KBB-30F-BU-M□N-10	KBB-30F-BU-M□N-20	KBB-30F-BU-M□N-30	KBB-30F-BU-M□N-40	KBB-30F-BU-M□N-50	KBB-30F-BU-M□N-60	KBB-30F-BU-M□N-70	KBB-30F-BU-MVN-80	KBB-30F-BU-M□N-90	KBB-30F-BU-M□N-A0	KBB-30F-BU-M□N-B0	KBB-30F-BU-M□N-C0	KBB-30F-BU-M□N-D0	KBB-30F-BU-M□N-E0	KBB-30F-BU-M□N-F0	KBB-30F-BU-M□N-G0	KBB-30F-BU-M□N-H0	KB-30F-BU-121N-J0
Stroke X (mm)	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800
Full length (mm)	417	517	617	717	817	917	1017	1117	1217	1317	1417	1517	1617	1717	1817	1917	2017	2117
Mass (kg) KBB-30E	7.9	9.0	10.1	11.2	12.3	13.4	14.5	15.6	16.7	17.8	18.9	20.0	21.1	22.2	23.3	24.4	25.5	26.6
Mass (kg) KBB-30F	8.7	9.8	10.9	12.0	13.1	14.2	15.3	16.4	17.5	18.6	19.7	20.8	21.9	23.0	24.1	25.2	26.3	27.4



Discontinue

[KBB–30∗–BU–M∗∗N] (Stroke: 1,900 mm or over)

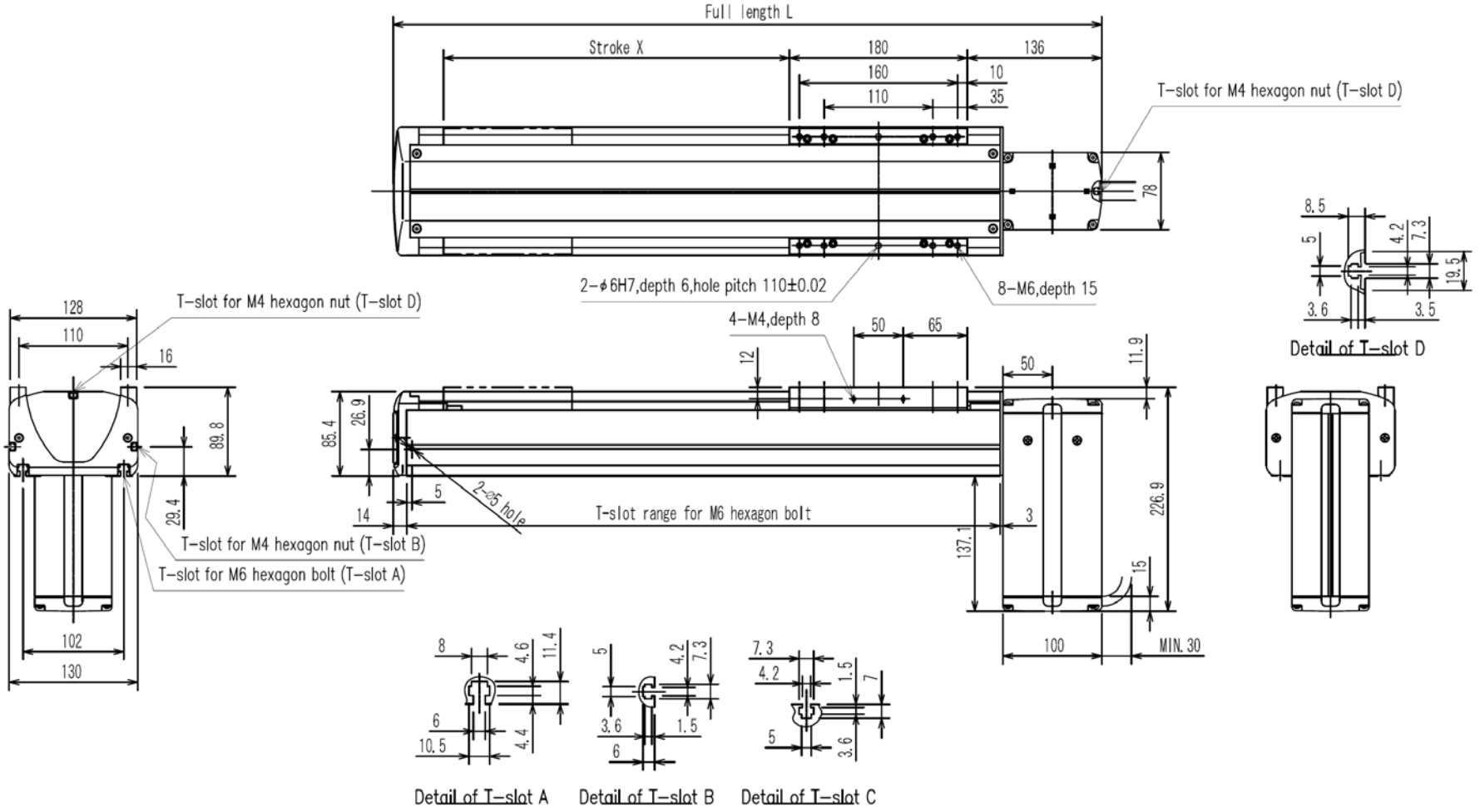
Type		KBB-30E-BU-M21N-K0	KBB-30E-BU-M21N-L0	KBB-30E-BU-M21N-M0	KBB-30E-BU-M21N-N0	KBB-30E-BU-M21N-P0	KBB-30E-BU-M21N-Q0	KBB-30E-BU-M21N-R0
		KBB-30F-BU-M□N-K0	KBB-30F-BU-M□N-L0	KBB-30F-BU-M□N-M0	KBB-30F-BU-M□N-N0	KBB-30F-BU-M□N-P0	KBB-30F-BU-M□N-Q0	KBB-30F-BU-M□N-R0
Stroke X (mm)		1900	2000	2100	2200	2300	2400	2500
Full length (mm)		2217	2317	2417	2517	2617	2717	2817
Mass (kg)	KBB-30E	27.7	28.8	29.9	31.0	32.1	33.2	34.3
	KBB-30F	28.5	29.6	30.7	31.8	32.9	34.0	35.1



Discontinue

[KBB–30∗–BU–L**N] (Stroke 1,750 mm or less)

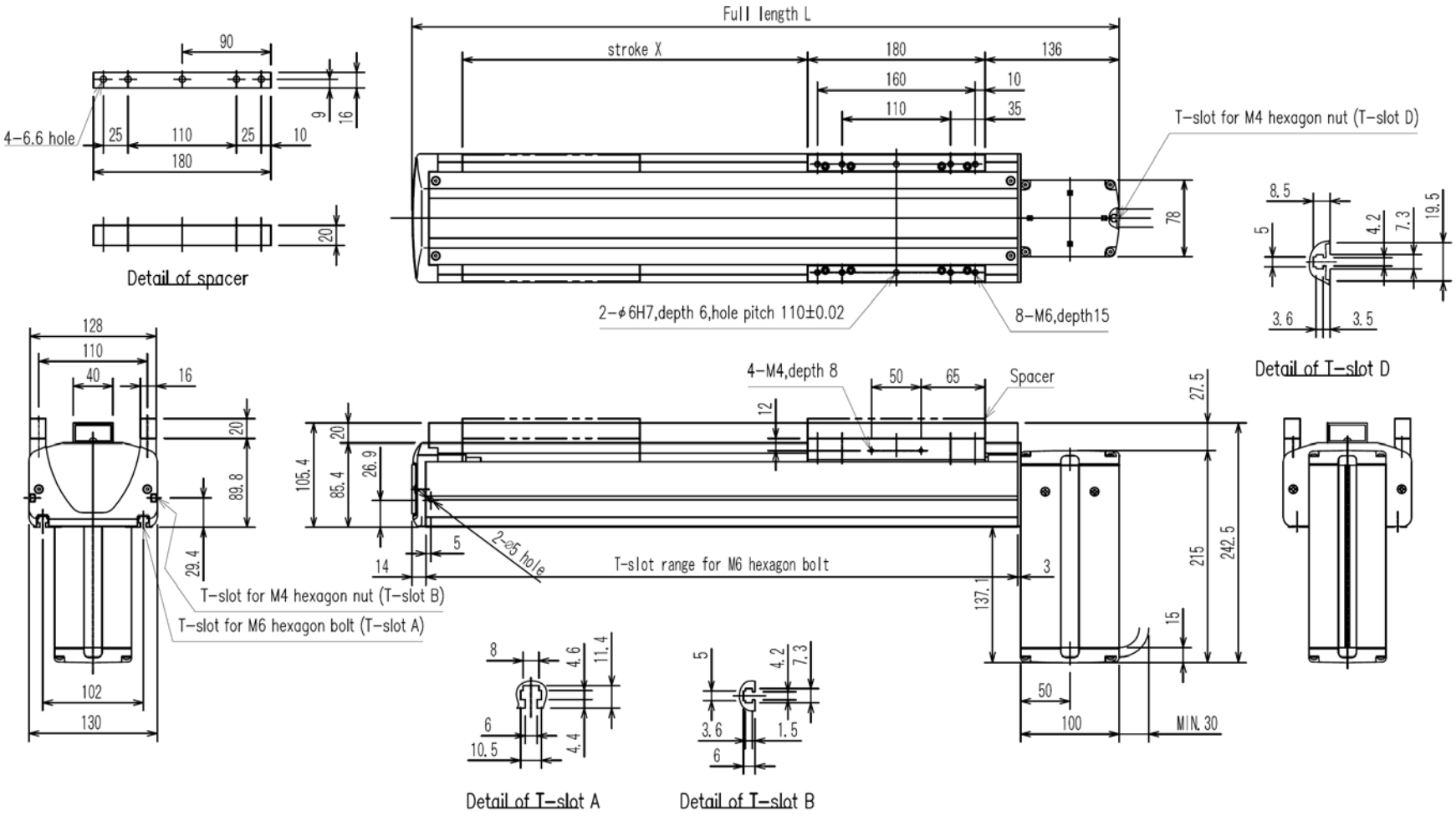
Type		KBB-30E-BU-L21N-15	KBB-30E-BU-L21N-25	KBB-30E-BU-L21N-35	KBB-30E-BU-L21N-45	KBB-30E-BU-L21N-55	KBB-30E-BU-L21N-65	KBB-30E-BU-L21N-75	KBB-30E-BU-L21N-85	KBB-30E-BU-L21N-95	KBB-30E-BU-L21N-A5	KBB-30E-BU-L21N-B5	KBB-30E-BU-L21N-C5	KBB-30E-BU-L21N-D5	KBB-30E-BU-L21N-E5	KBB-30E-BU-L21N-F5	KBB-30E-BU-L21N-G5	KBB-30E-BU-L21N-H5
		KBB-30F-BU-L□N-15	KBB-30F-BU-L□N-25	KBB-30F-BU-L□N-35	KBB-30F-BU-L□N-45	KBB-30F-BU-L□N-55	KBB-30F-BU-L□N-65	KBB-30F-BU-L□N-75	KBB-30F-BU-L□N-85	KBB-30F-BU-L□N-95	KBB-30F-BU-L□N-A5	KBB-30F-BU-L□N-B5	KBB-30F-BU-L□N-C5	KBB-30F-BU-L□N-D5	KBB-30F-BU-L□N-E5	KBB-30F-BU-L□N-F5	KBB-30F-BU-L□N-G5	KBB-30F-BU-L□N-H5
Stroke X (mm)		150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750
Full length (mm)		517	617	717	817	917	1017	1117	1217	1317	1417	1517	1617	1717	1817	1917	2017	2117
Mass (kg)	KBB-30E	9.3	10.4	11.5	12.6	13.7	14.8	15.9	17.0	18.1	19.2	20.3	21.4	22.5	23.6	24.7	25.8	26.9
	KBB-30F	10.1	11.2	12.3	13.4	14.5	15.6	16.7	17.8	18.9	20.0	21.1	22.2	23.3	24.4	25.5	26.6	27.7



Discontinue

[KBB–30*–BU–L**N] (Stroke: 1,850 mm or over)

Type		KBB-30E-BU-L21N-15	KBB-30E-BU-L21N-25	KBB-30E-BU-L21N-35	KBB-30E-BU-L21N-45	KBB-30E-BU-L21N-55	KBB-30E-BU-L21N-65	KBB-30E-BU-L21N-75
		KBB-30F-BU-L□N-15	KBB-30F-BU-L□N-25	KBB-30F-BU-L□N-35	KBB-30F-BU-L□N-45	KBB-30F-BU-L□N-55	KBB-30F-BU-L□N-65	KBB-30F-BU-L□N-75
Stroke X (mm)		1850	1950	2050	2150	2250	2350	2450
Full length (mm)		2217	2317	2417	2517	2617	2717	2817
Mass (kg)	KBB-30E	28.0	29.1	30.2	31.3	32.4	33.5	34.6
	KBB-30F	28.8	29.9	31.0	32.1	33.2	34.3	35.4

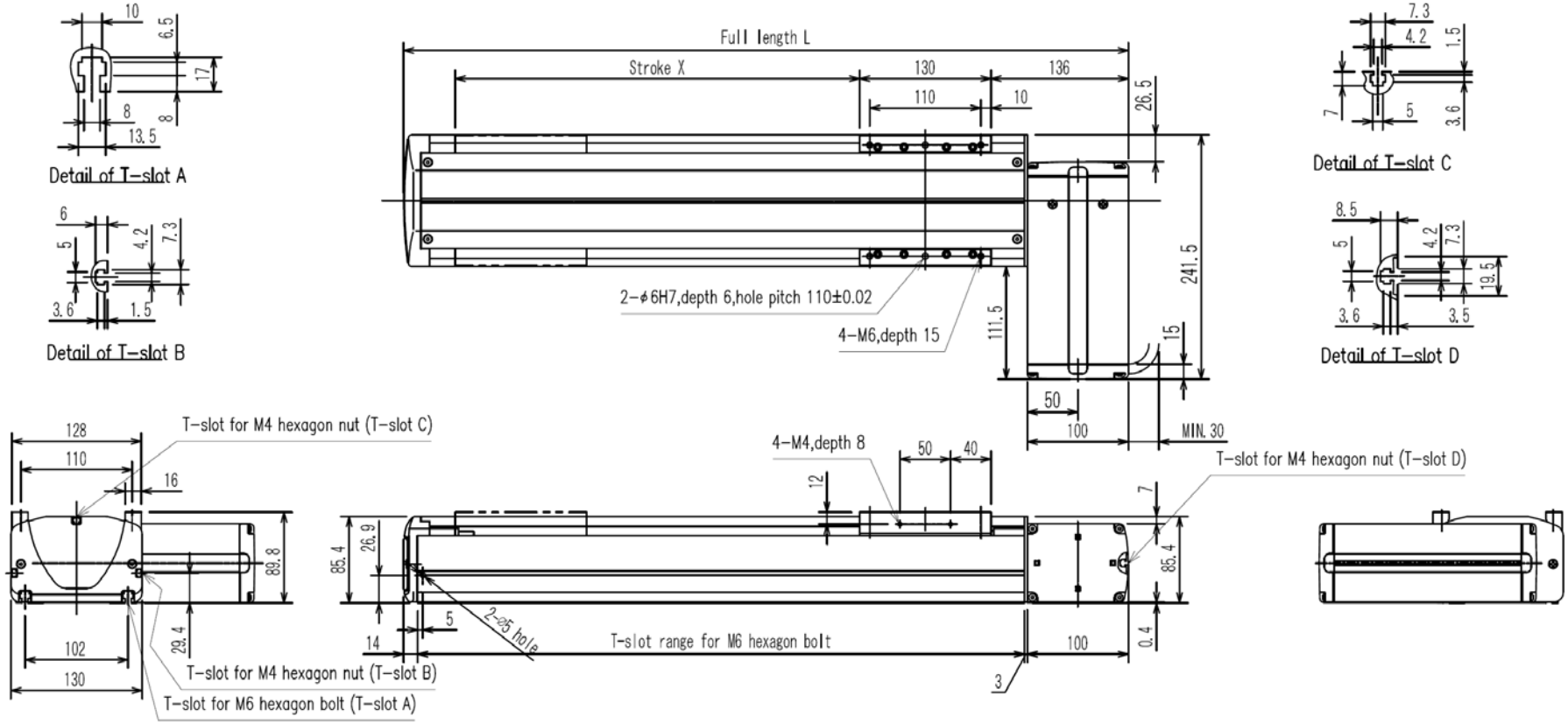


Discontinue

(3) Right side mounted motor axis

[KBB–30∗–BR–M**N] (Stroke: 1,800 mm or less)

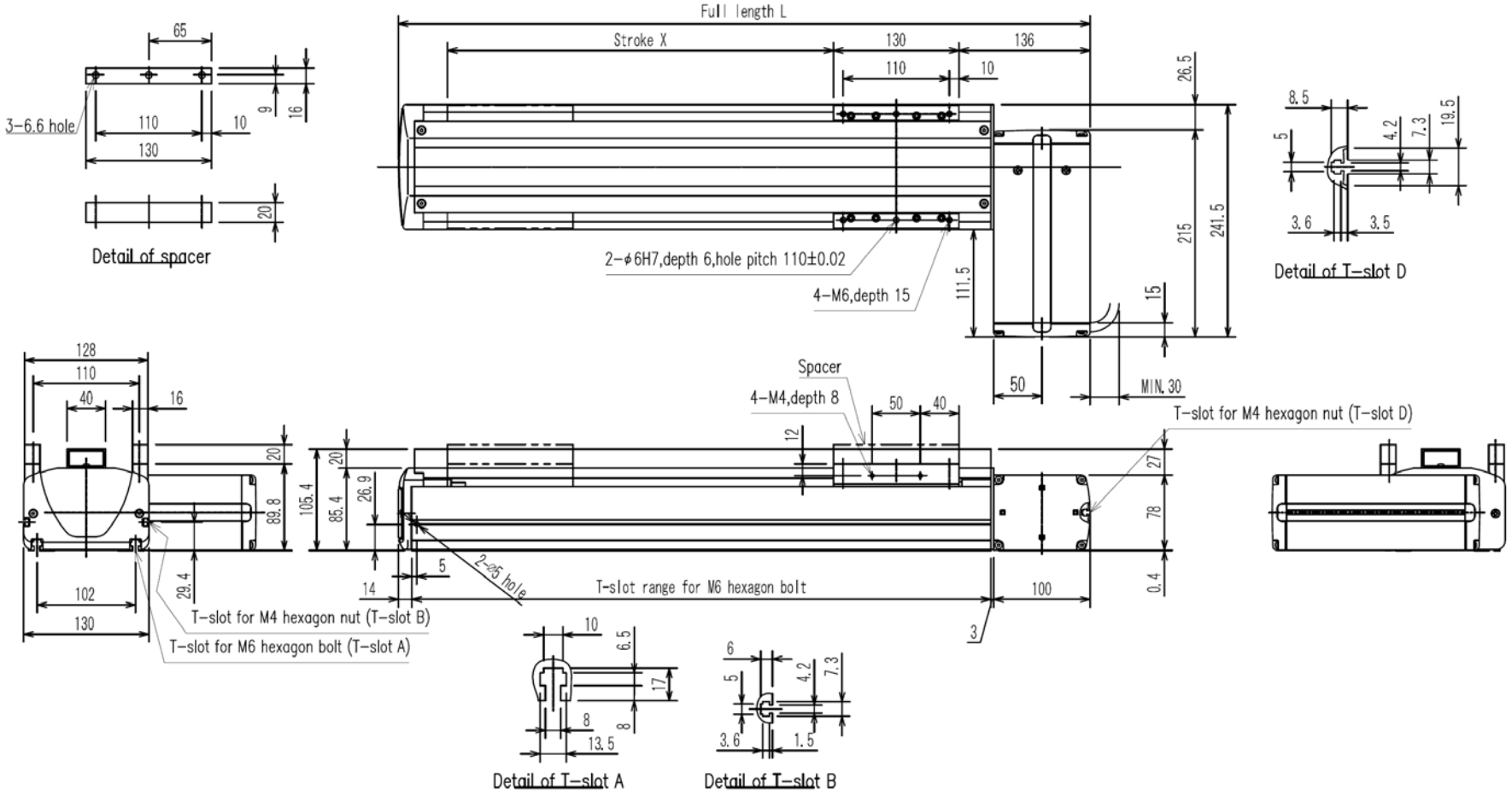
Type		KBB-30E-BR-M21N-10	KBB-30E-BR-M21N-20	KBB-30E-BR-M21N-30	KBB-30E-BR-M21N-40	KBB-30E-BR-M21N-50	KBB-30E-BR-M21N-60	KBB-30E-BR-M21N-70	KBB-30E-BR-M21N-80	KBB-30E-BR-M21N-90	KBB-30E-BR-M21N-A0	KBB-30E-BR-M21N-B0	KBB-30E-BR-M21N-C0	KBB-30E-BR-M21N-D0	KBB-30E-BR-M21N-E0	KBB-30E-BR-M21N-F0	KBB-30E-BR-M21N-G0	KBB-30E-BR-M21N-H0
		KBB-30F-BR-M□N-10	KBB-30F-BR-M□N-20	KBB-30F-BR-M□N-30	KBB-30F-BR-M□N-40	KBB-30F-BR-M□N-50	KBB-30F-BR-M□N-60	KBB-30F-BR-M□N-70	KBB-30F-BR-M□N-80	KBB-30F-BR-M□N-90	KBB-30F-BR-M□N-A0	KBB-30F-BR-M□N-B0	KBB-30F-BR-M□N-C0	KBB-30F-BR-M□N-D0	KBB-30F-BR-M□N-E0	KBB-30F-BR-M□N-F0	KBB-30F-BR-M□N-G0	KBB-30F-BR-M□N-H0
Stroke X (mm)		100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700
Full length (mm)		417	517	617	717	817	917	1017	1117	1217	1317	1417	1517	1617	1717	1817	1917	2017
Mass (kg)	KBB-30E	7.9	9.0	10.1	11.2	12.3	13.4	14.5	15.6	16.7	17.8	18.9	20.0	21.1	22.2	23.3	24.4	25.5
	KBB-30F	8.7	9.8	10.9	12.0	13.1	14.2	15.3	16.4	17.5	18.6	19.7	20.8	21.9	23.0	24.1	25.2	26.3



Discontinue

[KBB–30∗–BR–M∗∗N] (Stroke: 1,900 mm or over)

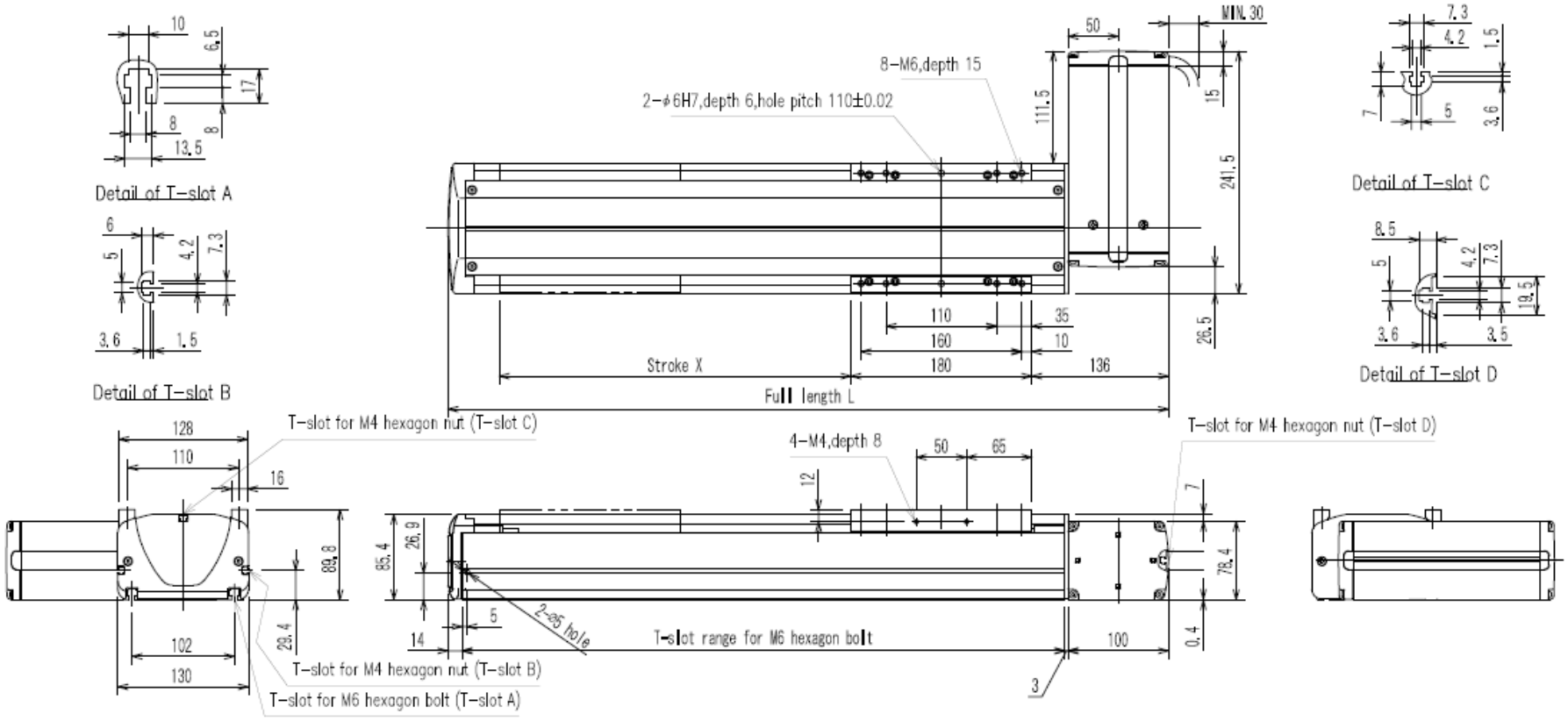
Type		KBB-30E-BR-M21N-K0	KBB-30E-BR-M21N-L0	KBB-30E-BR-M21N-M0	KBB-30E-BR-M21N-N0	KBB-30E-BR-M21N-P0	KBB-30E-BR-M21N-Q0	KBB-30E-BR-M21N-R0
		KBB-30F-BR-M□N-K0	KBB-30F-BR-M□N-L0	KBB-30F-BR-M□N-M0	KBB-30F-BR-M□N-N0	KBB-30F-BR-MVN-P0	KBB-30F-BR-M□N-Q0	KBB-30F-BR-M□N-R0
Stroke X (mm)		1900	2000	2100	2200	2300	2400	2500
Full length (mm)		2217	2317	2417	2517	2617	2717	2817
Mass (kg)	KBB-30E	27.7	28.8	29.9	31.0	32.1	33.2	34.3
	KBB-30F	28.5	29.6	30.7	31.8	32.9	34.0	35.1



Discontinue

[KBB–30*–BR–L**N] (Stroke 1,750 mm or less)

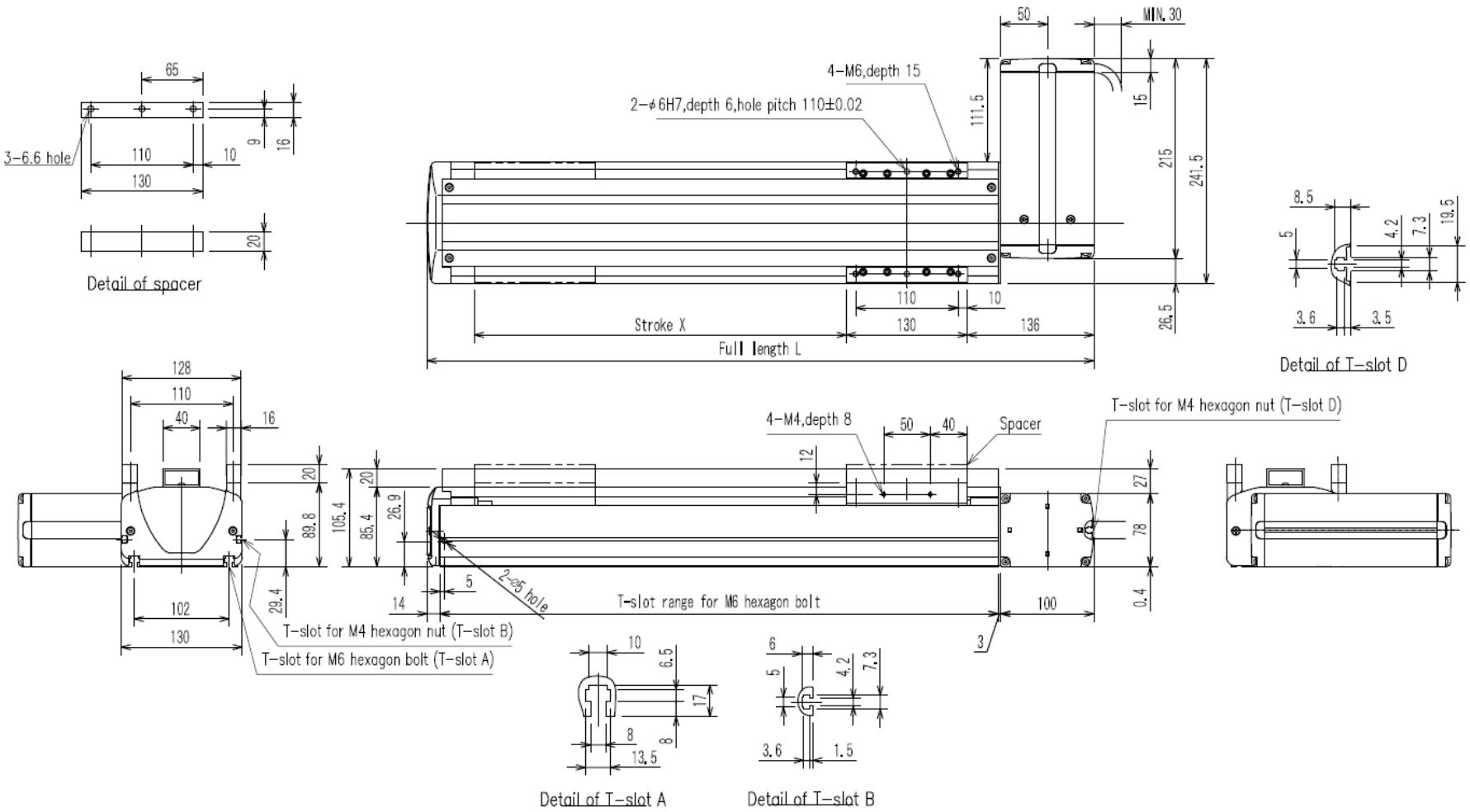
Type		KBB-30E-BR-L21N-15 KBB-30F-BR-L□N-15	KBB-30E-BR-L21N-25 KBB-30F-BR-L□N-25	KBB-30E-BR-L21N-35 KBB-30F-BR-L□N-35	KBB-30E-BR-L21N-45 KBB-30F-BR-L□N-45	KBB-30E-BR-L21N-55 KBB-30F-BR-L□N-55	KBB-30E-BR-L21N-65 KBB-30F-BR-L□N-65	KBB-30E-BR-L21N-75 KBB-30F-BR-L□N-75	KBB-30E-BR-L21N-85 KBB-30F-BR-L□N-85	KBB-30E-BR-L21N-95 KBB-30F-BR-L□N-95	KBB-30E-BR-L21N-A5 KBB-30F-BR-L□N-A5	KBB-30E-BR-L21N-B5 KBB-30F-BR-L□N-B5	KBB-30E-BR-L21N-C5 KBB-30F-BR-L□N-C5	KBB-30E-BR-L21N-D5 KBB-30F-BR-L□N-D5	KBB-30E-BR-L21N-E5 KBB-30F-BR-L□N-E5	KBB-30E-BR-L21N-F5 KBB-30F-BR-L□N-F5	KBB-30E-BR-L21N-G5 KBB-30F-BR-L□N-G5	KBB-30E-BR-L21N-H5 KBB-30F-BR-M□N-H5
Stroke X (mm)		150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750
Full length (mm)		517	617	717	817	917	1017	1117	1217	1317	1417	1517	1617	1717	1817	1917	2017	2117
Mass (kg)	KBB-30E	9.3	10.4	11.5	12.6	13.7	14.8	15.9	17.0	18.1	19.2	20.3	21.4	22.5	23.6	24.7	25.8	26.9
	KBB-30F	10.1	11.2	12.3	13.4	14.5	15.6	16.7	17.8	18.9	20.0	21.1	22.2	23.3	24.4	25.5	26.6	27.7



Discontinue

[KBB–30*–BR–L**N] (Stroke: 1,850 mm or over)

Type		KBB-30E-BR-L21N-15 KBB-30F-BR-L□N-15	KBB-30E-BR-L21N-25 KBB-30F-BR-L□N-25	KBB-30E-BR-L21N-35 KBB-30F-BR-L□N-35	KBB-30E-BR-L21N-45 KBB-30F-BR-L□N-45	KBB-30E-BR-L21N-55 KBB-30F-BR-L□N-55	KBB-30E-BR-L21N-65 KBB-30F-BR-L□N-65	KBB-30E-BR-L21N-75 KBB-30F-BR-L□N-75
Stroke X (mm)		1850	1950	2050	2150	2250	2350	2450
Full length (mm)		2217	2317	2417	2517	2617	2717	2817
Mass (kg)	KBB-30E	28.0	29.1	30.2	31.3	32.4	33.5	34.6
	KBB-30F	28.8	29.9	31.0	32.1	33.2	34.3	35.4

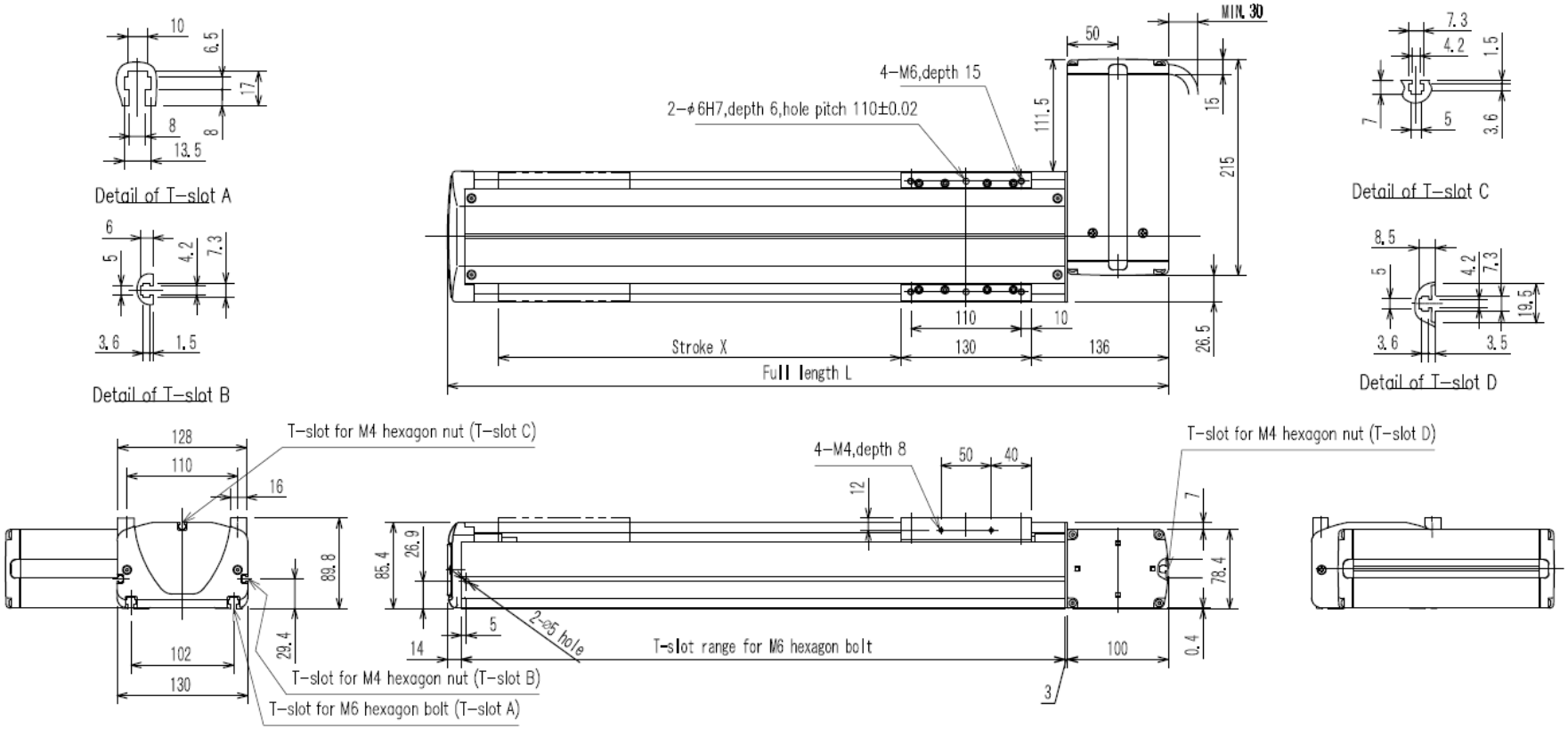


Discontinue

(4) Left side mounted motor axis

[KBB–30∗–BL–M∗∗N] (Stroke: 1,800 mm or less)

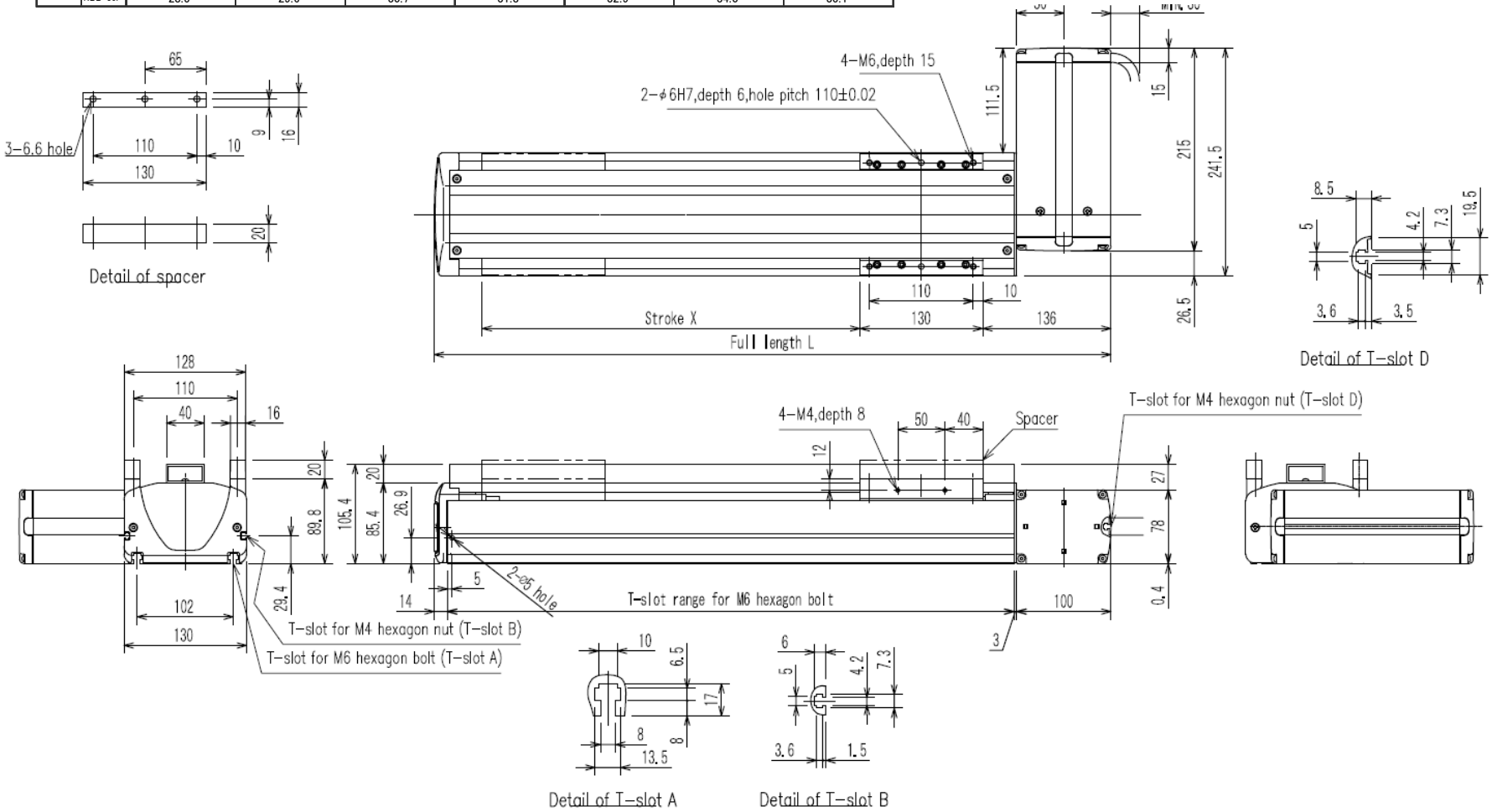
Type	KBB-30E-BL-M21N-10 / KBB-30F-BL-M□N-10	KBB-30E-BL-M21N-20 / KBB-30F-BL-M□N-20	KBB-30E-BL-M21N-30 / KBB-30F-BL-M□N-30	KBB-30E-BL-M21N-40 / KBB-30F-BL-M□N-40	KBB-30E-BL-M21N-50 / KBB-30F-BL-M□N-50	KBB-30E-BL-M21N-60 / KBB-30F-BL-M□N-60	KBB-30E-BL-M21N-70 / KBB-30F-BL-M□N-70	KBB-30E-BL-M21N-80 / KBB-30F-BL-M□N-80	KBB-30E-BL-M21N-90 / KBB-30F-BL-M□N-90	KBB-30E-BL-M21N-A0 / KBB-30F-BL-M□N-A0	KBB-30E-BL-M21N-B0 / KBB-30F-BL-M□N-B0	KBB-30E-BL-M21N-C0 / KBB-30F-BL-M□N-C0	KBB-30E-BL-M21N-D0 / KBB-30F-BL-M□N-D0	KBB-30E-BL-M21N-E0 / KBB-30F-BL-M□N-E0	KBB-30E-BL-M21N-F0 / KBB-30F-BL-M□N-F0	KBB-30E-BL-M21N-G0 / KBB-30F-BL-M□N-G0	KBB-30E-BL-M21N-H0 / KBB-30F-BL-M□N-H0	KBB-30E-BL-M21N-J0 / KBB-30F-BL-M□N-J0
Stroke X (mm)	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	
Full length (mm)	417	517	617	717	817	917	1017	1117	1217	1317	1417	1517	1617	1717	1817	1917	2017	2117	
Mass (kg) KBB-30E	7.9	9.0	10.1	11.2	12.3	13.4	14.5	15.6	16.7	17.8	18.9	20.0	21.1	22.2	23.3	24.4	25.5	26.6	
Mass (kg) KBB-30F	8.7	9.8	10.9	12.0	13.1	14.2	15.3	16.4	17.5	18.6	19.7	20.8	21.9	23.0	24.1	25.2	26.3	27.4	



Discontinue

[KBB–30∗–BL–M∗∗N] (Stroke: 1,900 mm or over)

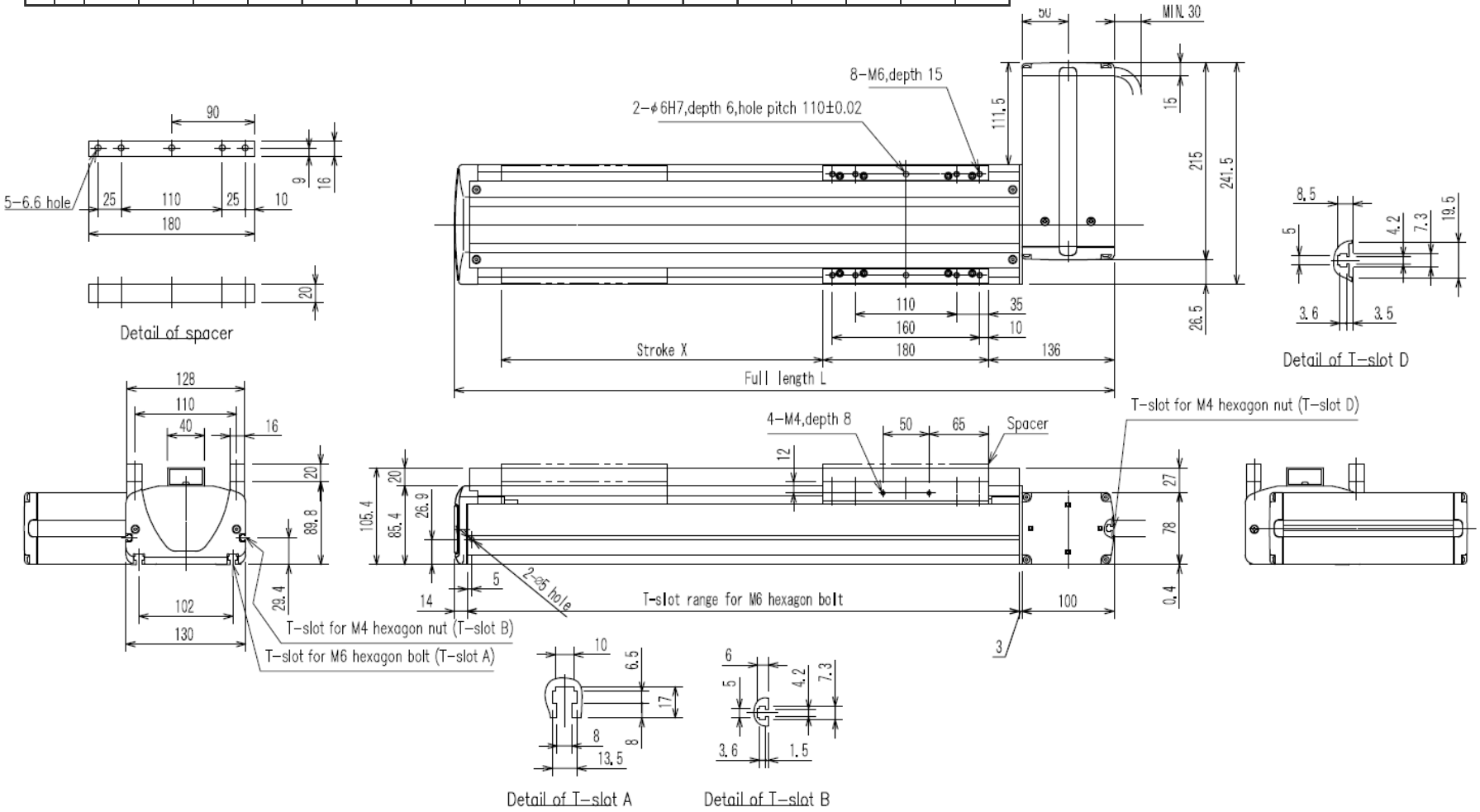
Type		KBB-30E-BL-M21N-K0	KBB-30E-BL-M21N-L0	KBB-30E-BL-M21N-M0	KBB-30E-BL-M21N-N0	KBB-30E-BL-M21N-P0	KBB-30E-BL-M21N-Q0	KBB-30E-BL-M21N-R0
		KBB-30F-BL-M□N-K0	KBB-30F-BL-M□N-L0	KBB-30F-BL-M□N-M0	KBB-30F-BL-M□N-N0	KBB-30F-BL-M□N-P0	KBB-30F-BL-M□N-Q0	KBB-30F-BL-M□N-R0
Stroke X (mm)		1900	2000	2100	2200	2300	2400	2500
Full length (mm)		2217	2317	2417	2517	2617	2717	2817
Mass (kg)	KBB-30E	27.7	28.8	29.9	31.0	32.1	33.2	34.3
	KBB-30F	28.5	29.6	30.7	31.8	32.9	34.0	35.1



Discontinue

[KBB–30*–BL–L**N] (Stroke 1,850 mm or less)

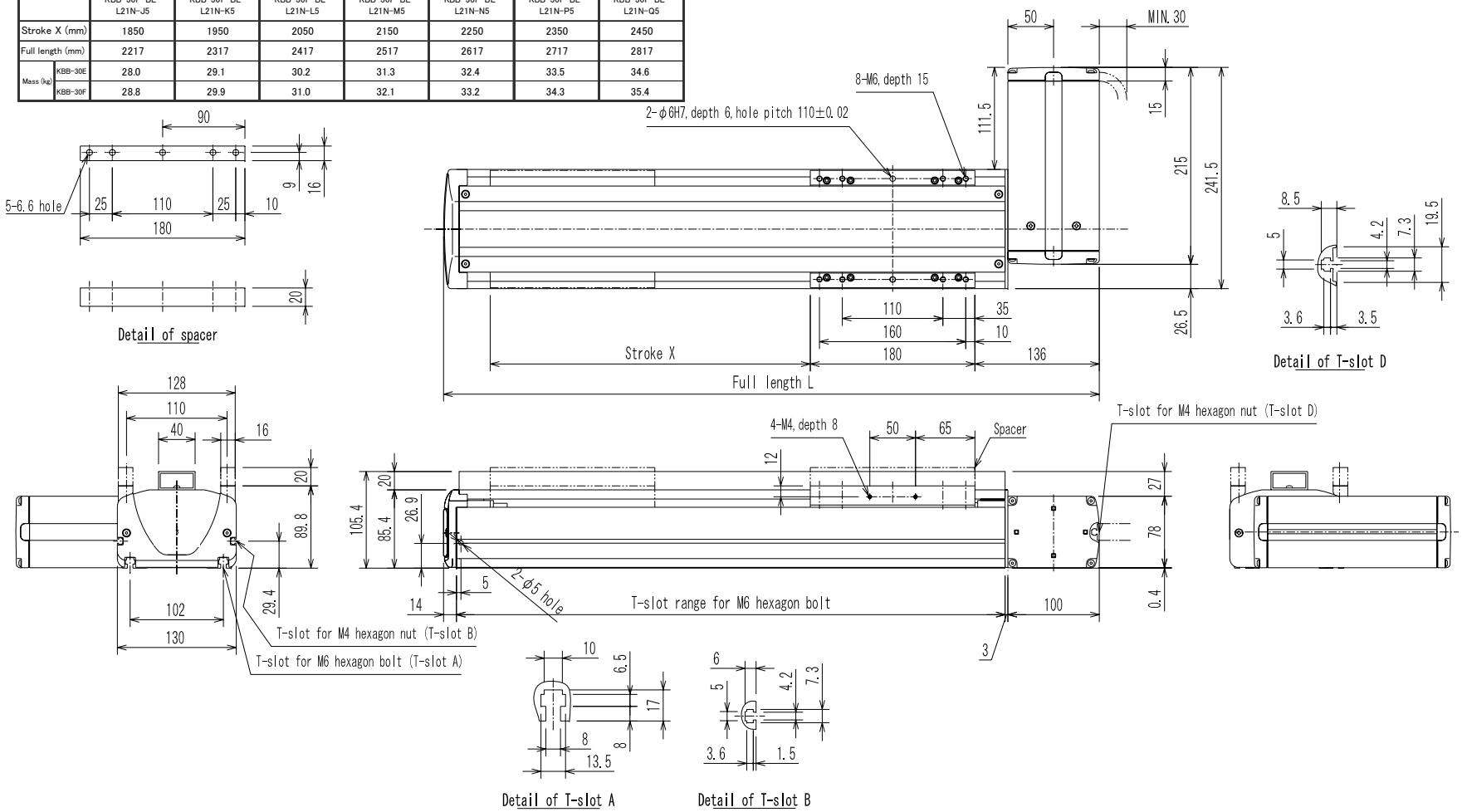
Type		KBB-30E-BL-L21N-15	KBB-30E-BL-L21N-25	KBB-30E-BL-L21N-35	KBB-30E-BL-L21N-45	KBB-30E-BL-L21N-55	KBB-30E-BL-L21N-65	KBB-30E-BL-L21N-75	KBB-30E-BL-L21N-85	KBB-30E-BL-L21N-95	KBB-30E-BL-L21N-A5	KBB-30E-BL-L21N-B5	KBB-30E-BL-L21N-C5	KBB-30E-BL-L21N-D5	KBB-30E-BL-L21N-E5	KBB-30E-BL-L21N-F5	KBB-30E-BL-L21N-G5	KBB-30E-BL-L21N-H5
		KBB-30F-BL-L□N-15	KBB-30F-BL-L□N-25	KBB-30F-BL-L□N-35	KBB-30F-BL-L□N-45	KBB-30F-BL-L□N-55	KBB-30F-BL-L□N-65	KBB-30F-BL-L□N-75	KBB-30F-BL-L□N-85	KBB-30F-BL-L□N-95	KBB-30F-BL-L□N-A5	KBB-30F-BL-L□N-B5	KBB-30F-BL-L□N-C5	KBB-30F-BL-L□N-D5	KBB-30F-BL-L□N-E5	KBB-30F-BL-L□N-F5	KBB-30F-BL-L□N-G5	KBB-30F-BL-L□N-H5
Stroke X (mm)		150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750
Full length (mm)		517	617	717	817	917	1017	1117	1217	1317	1417	1517	1617	1717	1817	1917	2017	2117
Mass (kg)	KBB-30E	9.3	10.4	11.5	12.6	13.7	14.8	15.9	17.0	18.1	19.2	20.3	21.4	22.5	23.6	24.7	25.8	26.9
	KBB-30F	10.1	11.2	12.3	13.4	14.5	15.6	16.7	17.8	18.9	20.0	21.1	22.2	23.3	24.4	25.5	26.6	27.7



Discontinue

[KBB–30*–BL–L**N] (Stroke: 1,950 mm or over)

Type		KBB-30E-BL-L21N-J5	KBB-30E-BL-L21N-K5	KBB-30E-BL-L21N-L5	KBB-30E-BL-L21N-M5	KBB-30E-BL-L21N-N5	KBB-30E-BL-L21N-P5	KBB-30E-BL-L21N-Q5
		KBB-30F-BL-L21N-J5	KBB-30F-BL-L21N-K5	KBB-30F-BL-L21N-L5	KBB-30F-BL-L21N-M5	KBB-30F-BL-L21N-N5	KBB-30F-BL-L21N-P5	KBB-30F-BL-L21N-Q5
Stroke X (mm)		1850	1950	2050	2150	2250	2350	2450
Full length (mm)		2217	2317	2417	2517	2617	2717	2817
Mass (kg)	KBB-30E	28.0	29.1	30.2	31.3	32.4	33.5	34.6
	KBB-30F	28.8	29.9	31.0	32.1	33.2	34.3	35.4



Section 4 Installing Actuator (Axis)

- This section describes the basic installation of the actuator (axis) and basic mounting of the peripheral parts.
- Install the actuator, referring to this section. If the actuator is installed incorrectly, the robot cannot be operated to its full capacity and its service life will shorten drastically.

! CAUTION Cautions on installation

- Environment of installation place

  (1) The actuator should be installed under the following environment.
  - Temperature: 0°C ~ 40°C
  - Humidity: 30 % ~ 90 %RH, non-condensing
  - Place where dust or oil mist does not exist.
  - Place where inflammable or corrosive gas does not exist.
  - Place where electric noise is not involved.

  (2) This actuator is not designed to be explosion-proof. Avoid using it at a heavily contaminated place. Take careful precautions on the operating environment.

- Cautions on installation

  (1) DO NOT drop the actuator or hit it against any object during transport.

  (2) Provide an ample space for the maintenance and inspection beforehand.

  (3) Install the controller at a place where the standard cable can reach from the actuator.

  (4) At the time of installation:
  - Install the actuator on a leveled set base.
  - The set base shall have such a length that allows mounting of the frame only.
  - The set base should be made of steel plate which is machined to 9 mm or over in thickness for KBB-10 and KBB-30, and 20 mm or over in thickness for KBB-50, and 0.2 or less in flatness. Mount the actuator on this base, then correct a bend or twist of the actuator frame and reinforce the same frame.
  - The oval head bolts (i.e., set bolts) of the actuator should be mounted at pitches of about 150 mm.

4.1 Installing Actuator (Axis)

When installing the actuator, observe the following steps.

(1) Setting of oval head bolts
Remove the end plate from the opposite end surface to the motor, and insert the over head bolts into the T-slots on the actuator (axis) frame set surface.

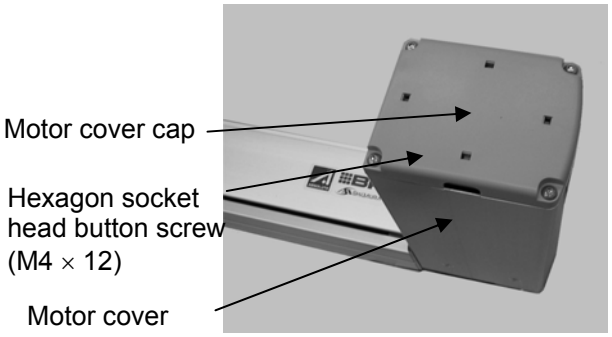
(2) Mounting actuator on the set base
Machine the set holes on the frame set base at pitches of about 150 mm, then mount the actuator on the set base, using the oval head bolts.

! CAUTION

- T-slots (for M4 nuts) on the lateral side and top of the frame are reserved for mounting a CN box and options. NEVER use these T-slots for mounting the actuator.
- The clamping torque for the nuts should be 5.3 N·m.
- Be sure to keep a maintenance space where the motor cover can be removed, on the motor cover lower side of the set base.

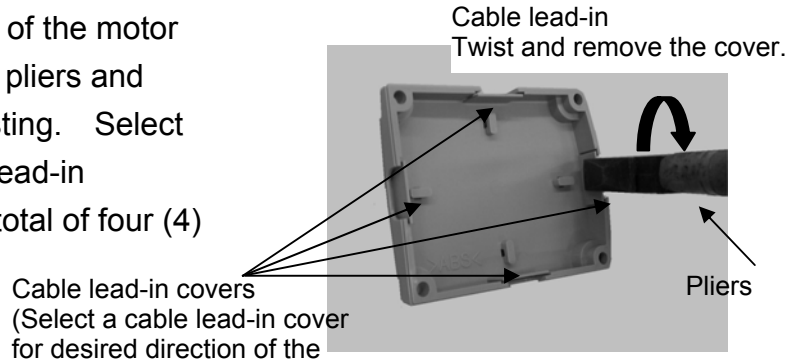
4.2 Connecting Cable

(1) Loosen the four (4) hexagon socket head button screws securing the motor cover cap, then remove the motor cover cap from the motor cover.

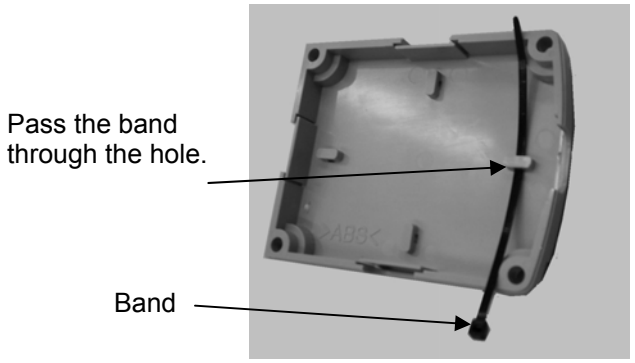


* The photo above shows the KBB-10 belt-driven axis (actuator).

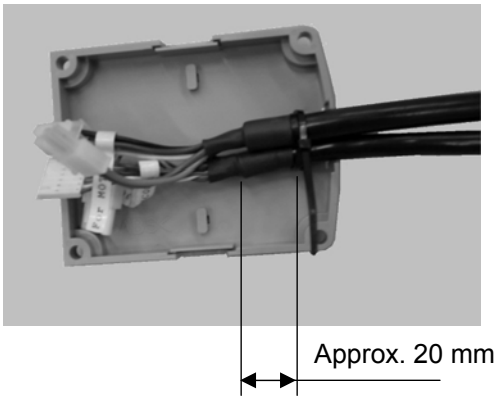
(2) Pinch a cable lead-in cover for desired direction of the motor cover cap, using pliers and remove it by twisting. Select a desired cable lead-in direction from a total of four (4) directions.



(3) Pass the band through the hole which is located beside the removed cable lead-in cover.



(4) Secure the end of the controller cable which is connected to the actuator, using the band.
Take careful precautions not to overtighten the band.
DO NOT insert the cable excessively into the motor cover.



(5) Connect the controller cable connector with the connector on the actuator side, then attach the mover cover cap to the motor cover again.
Take careful precautions not to exert excessive force on the cable when connecting the connectors and securing the motor cover cap.

* The photo above shows the KBB-10 belt-driven axis (actuator).

CAUTION

DO NOT secure the motor cover cap with the cable pinched between the motor cover cap and motor cover.

4.3 Setting Type of Robot

The type of the robot refers to a six (6)-digit numerical number specified according to the type of the axis (actuator).
Once the type of the robot has been specified, various parameter values for the axis (actuator) to be used are set automatically. For how to specify the type of the robot, see Para. 2.4.7 of the instruction manual (basic) provided separately.

- Type of robot for belt-driven axis (actuator)
  [For KBB-30E belt-driven axis]

  (1) When the actuator serves as the slider type axis (normal use):

	Lead (mm)	Axis code designation	Type of robot
Belt-driven axis	21	KBB–30E–B*–*21*–**	596121

[For KBB-30F belt-driven axis]

(1) When the actuator serves as the slider type axis (normal use):

	Lead (mm)	Axis code designation	Type of robot
Belt-driven axis	21	KBB–30F–B*–*21*-**	596121
Belt-driven axis	42	KBB–30F–B*–*42*-**	586141

4.4 Setting Parameters

This equipment is provided with Parameter 1 and Parameter 2 according to the counts of use. The contents of each group of parameters and relationship between the type of robot and each group of parameters are shown below.
When the type of the robot is specified, parameter values marked "○" under the column of auto setting are set automatically.

4.4.1 Parameter 1 Assigned by Type of Robot

These are the parameters used very frequently.

- Belt-driven axis (slider type axis)

Auto setting	Parameter \ Type of robot		596121	586141
			(Lead 21)	(200 W, Lead 42)
	Soft limit value (plus)		0000.00	0000.00
	Soft limit value (minus)		0000.00	0000.00
○	Servo gain (position/speed)	P (Position)	6	4
		V (Speed)	7	4
	Path area		Not applicable	Not applicable
	Home point offset value		0000.00	0000.00
	Order of home return		1 (Note)	1 (Note)
	Jog speed	L (low speed)	10	10
		H (High speed)	50	50
	Jog travel distance		0.01	0.01

Note: The order of home return varies with the configuration, conditions for installation, etc. Specify it by the customer as per the operating conditions.
The default is "1" for all types of the robot. Unless changed, all axes return to respective home points at the same time.

4.4.2 Parameter 2 Assigned by Type of Robot

- Belt-driven axis (slider type axis)

Auto setting	Parameter \ Type of robot		596121 (Lead 21)	586141 (200 W, Lead 42)
	Axis display		X	X
	In-position data		0.05	0.05
	Overflow data		20000	20000
○	Feed forward data		2000	2000
○	Motor revolving direction		1	1
○	Maximum speed data		1000	2000
○	Home return speed data	L (low speed)	10	10
		M (Mid speed)	50	50
		H (High speed)	200	200
○	Home return method		1	1
○	Logic of home point sensor		0	0
	High-speed home return position		20	20
○	Lead		21.015	42.020
○	Encoder resolutions		2000	2000
○	Multiple of encoder pulse		4	4
	Setting of type of encoder (Note)		a	a
	Combination of task and axis		[1] [0] [0] [0]	
	Task priority		[1] [1] [1] [1]	
	Task point table		999 999 999 999	
	No. of task steps	For KCA-10–M10 controller	1000 0000 0000 0000	
		For KCA-10–M00 controller	2000 0000 0000 0000	

Note: As the type of encoder cannot be set for each axis, it is not possible to designate it by the type of the robot.
For details on the KCA-20–M10 controller, see Para. 11.4.14 of the instruction manual (basic) provided separately.
For details on the KCA-20–M00 controller, see Para. 10.4.17 of the instruction manual (basic) provided separately.

Section 5 Maintenance

For the basic maintenance and inspection, see Section 5 of the instruction manual (installation of actuator) provided separately.

5.1 Maintenance of Motor and Belt

When replacing the motor and belt, observe the following procedures.

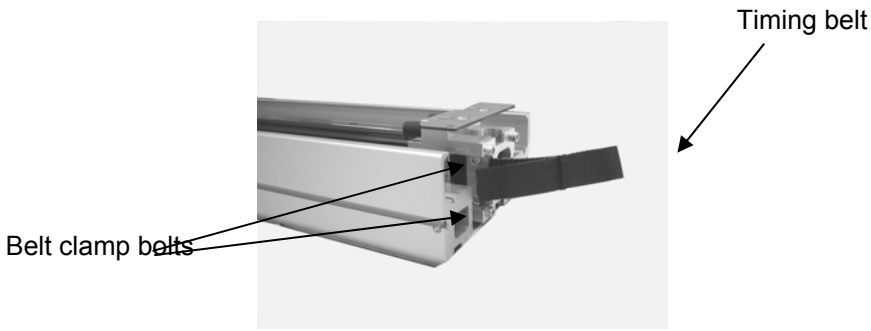
5.1.1 Replacing Motor

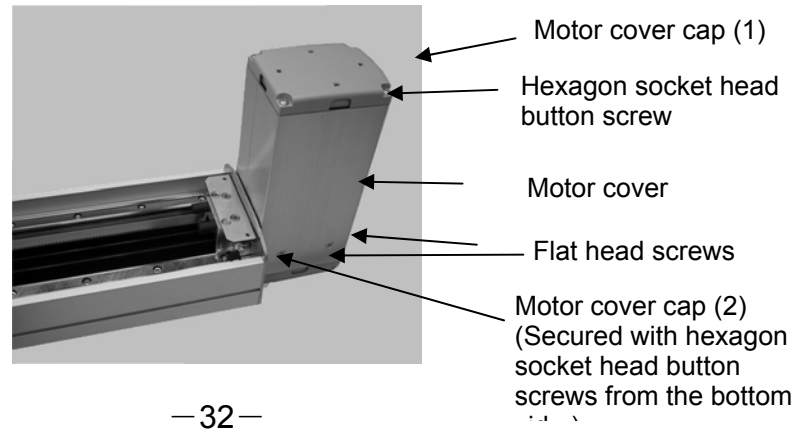
! CAUTION

- Be sure to turn the power off before starting the work.
- The programmed (teaching) position may shift due to restretching of the belt. When this happens, modify the program (teaching).

(1) Remove the frame cover, end plate and motor cover.

(2) Loosen the two (2) belt clamp bolts to reduce the tension of the timing belt.
(The positions of the belt clamp bolts shown below vary with the motor set direction.)

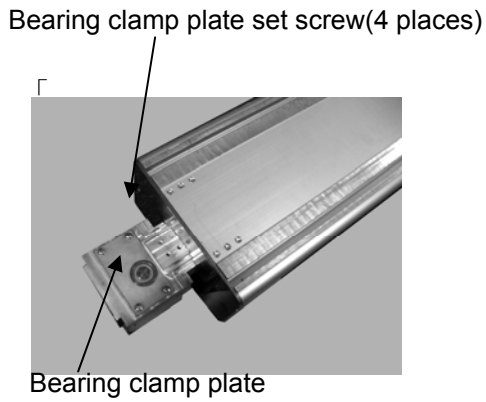




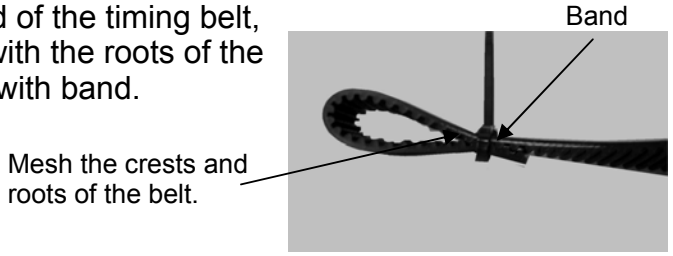
(3) Disengage the motor (with pulley and bearing) from the actuator.

(4) Mount a new motor (with pulley and bearing) at the same position.

(5) After the motor has been mounted on the motor block, loosen the four (4) screws securing the bearing clamp plate on the bottom side of the motor block. (The screws need not be removed.)
After making sure that the bearing clamp plate can rotate a little, centering around the bearing, evenly tighten the loosened screws securing the bearing clamp plate.
(This work is done to eliminate misalignment of the motor set position from the bearing clamp plate.)



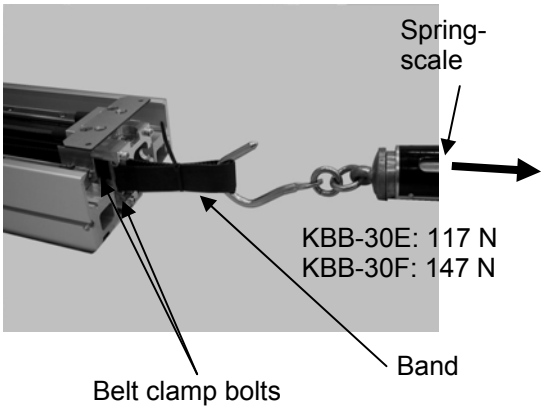
(6) Turn back the end of the timing belt, mesh the crests with the roots of the belt, then bundle with band.



(7) Pass the hook of the spring-scale through the folded loop of the timing belt and pull the timing belt with the following force.

KBB-30E (100 W) axis: 117 N (12 kgf)
KBB-30F (200 W) axis: 147 N (15 kgf)

(The belt clamp bolt positions in the figure right vary with the motor set direction.)



(8) Tighten the belt clamp bolts while pulling the timing belt.

(9) Mount the frame cover, end cover and end plate on the actuator.

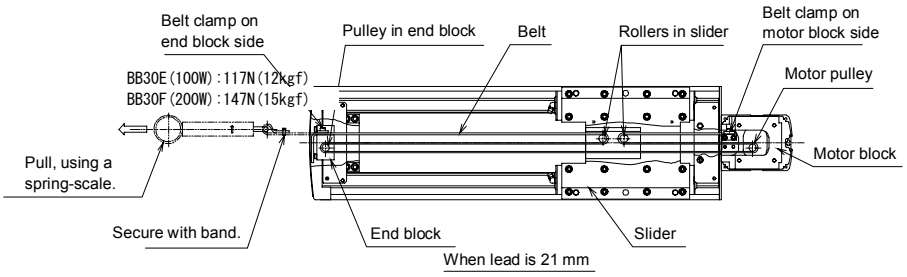
5.1.2 Replacing Timing Belt

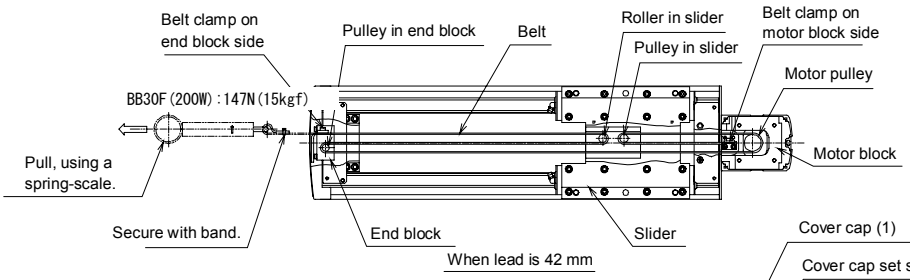
CAUTION Be sure to turn the power off before starting the work.

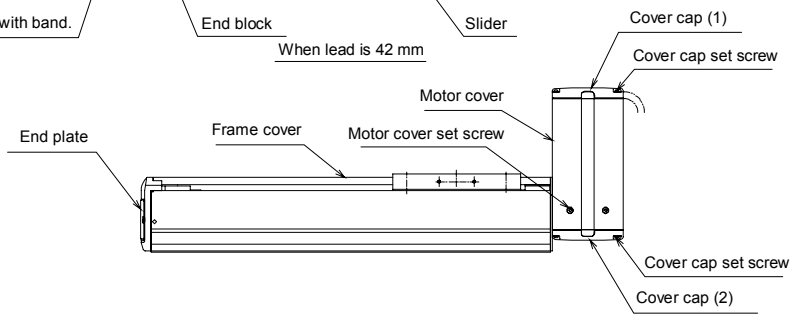
5.1.2.1 Top Side Mounted Motor

(1) Provide a new timing belt.

(2) The timing belt should be stretched as shown below.



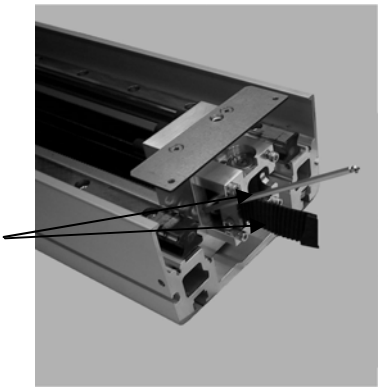




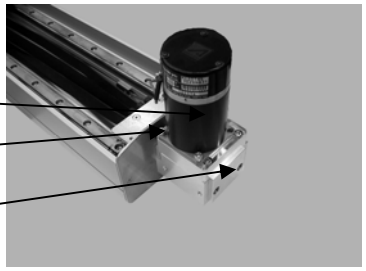
(3) Remove the frame cover, motor cover, cover caps and end plate by loosening respective set screws.

(4) Loosen the belt clamp screws on the end block side to loosen the belt.

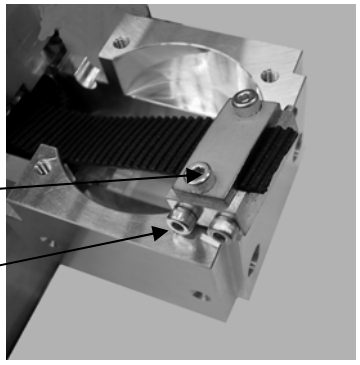
Loosen the belt clamp screws.



(5) Remove the motor and motor spacer by loosening respective set screws.
(No motor spacer is attached to the 42 mm-lead axis (actuator).)



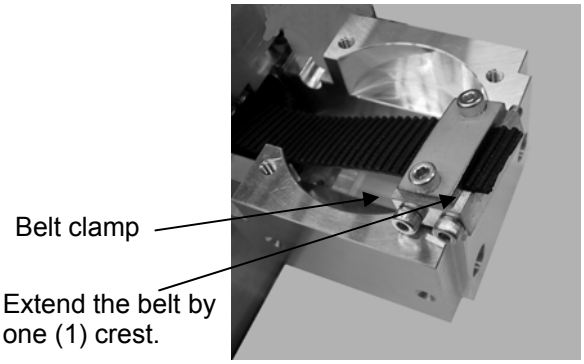
(6) Loosen the belt clamp set screws (M4 × 40) on the motor block side to remove the belt clamp from the motor block.



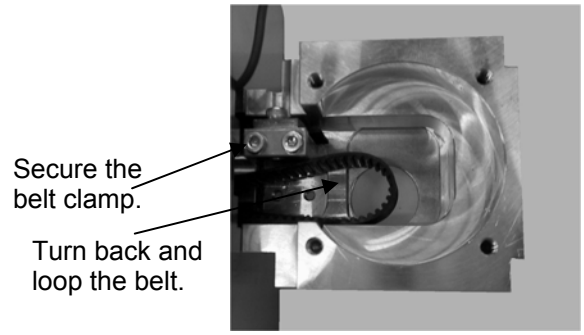
(7) Loosen the steel plate screws of the belt clamp securing the belt on the motor block side and remove the belt.

(8) Pull the end of the belt to remove it from the actuator.

(9) Pass the new belt through the hole on the motor block and attach it to the belt clamp again.
The belt should be secured by extending it by one (1) crest from the belt clamp.



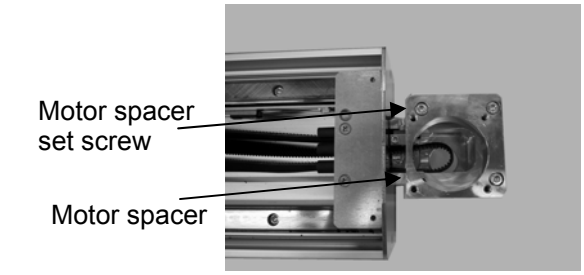
(10) Mount the belt clamp on the motor block with the set screws.
Then, engage the belt with the motor pulley as shown in the figure in Step (2) above.
In the motor block, turn back the belt so that the motor can be mounted.



! CAUTION

DO NOT mount the belt by twisting.
For the 21 mm-lead axis (actuator) and 42 mm-lead axis (actuator), the belt clamp set positions differ.
(The above figure refers to the 21 mm-lead axis (actuator).)

(11) Mount the motor spacer on the motor block by using the originally set screws.
(No motor spacer is attached to the 42 mm-lead axis (actuator).)

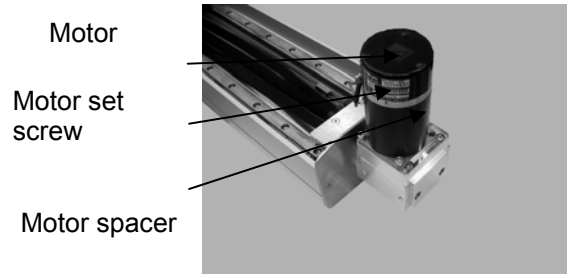


(12) Temporarily connect the motor with the controller, using the controller cable.

(13) Connect the teach pendant with the controller and perform home return.

(14) The motor will start rotating. Move the slider by hand to the vicinity of the home point.

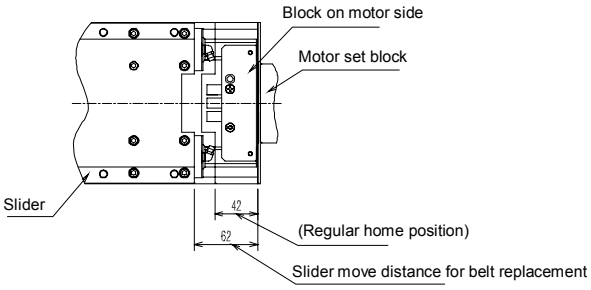
(15) After the motor has stopped (i.e., after the motor has returned to the home point), move the slider manually so that the clearance between the slider and steel plate can be 62 mm.
Turn off the controller power, then mount the motor on the motor spacer, using the originally set screws.



CAUTION

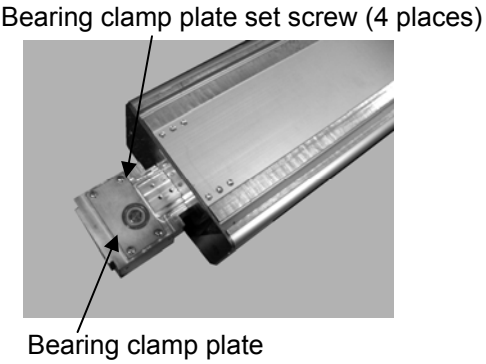
Tighten the four (4) screws gradually and evenly to prevent the motor from being inclined.

(No motor spacer is attached to the 42 mm-lead axis (actuator).)

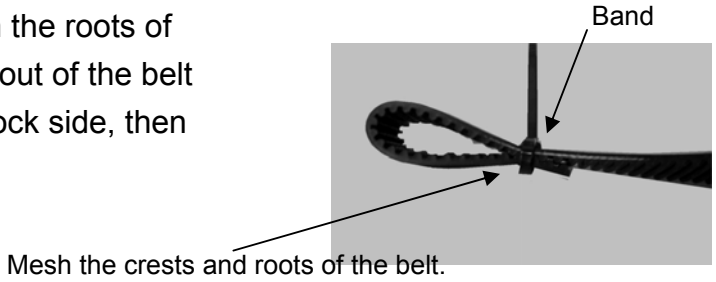


(16) After the motor has been mounted on the motor block, loosen the four (4) screws securing the bearing clamp plate on the bottom side of the motor block. (The screws need not be removed.)
After making sure that the bearing clamp plate can rotate a little, centering around the bearing, evenly tighten the loosened screws securing the bearing clamp plate.

(This work is done to eliminate misalignment of the motor set position from the bearing clamp plate.)

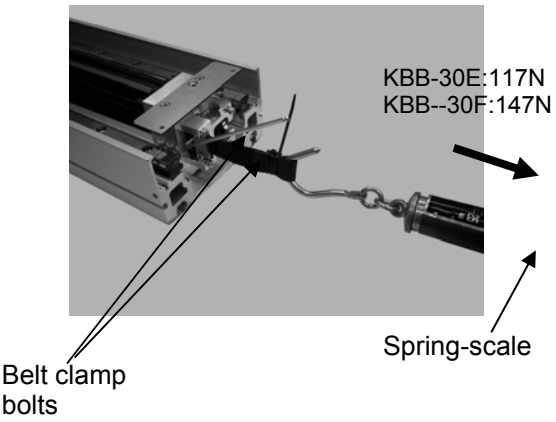


(17) Mesh the crests with the roots of the belt end coming out of the belt clamp on the end block side, then bundle with band.



(18) Pass the hook of the spring-scale through the folded loop of the timing belt and pull the timing belt with the following force.
KBB-30E (100 W) axis: 117 N (12 kgf)
KBB-30F (200 W) axis: 147 N (15 kgf)

While the belt is pulled, tighten the belt clamp bolts.



(19) Mount the frame cover, motor cover, cover caps and end plate, using the originally set screws.

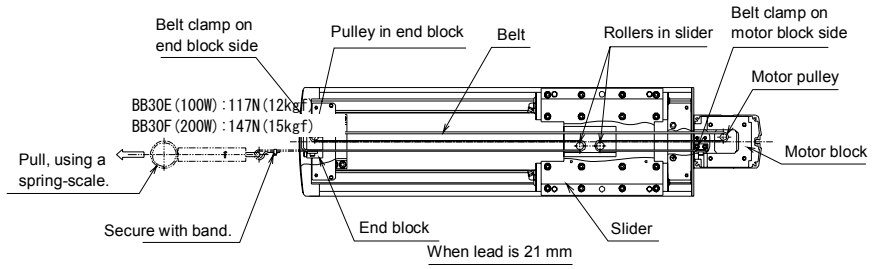
! CAUTION

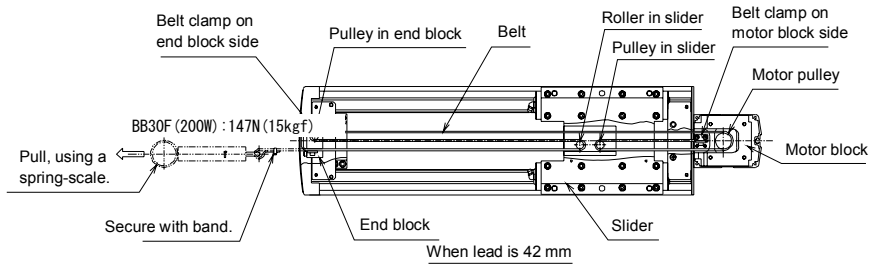
- The new timing belt may elongate initially. If the initial elongation has occurred and the belt tension has reduced, restretch the belt to the specified value.
- The programmed (teaching) position may shift due to restretching of the belt. When this happens, modify the program (teaching).

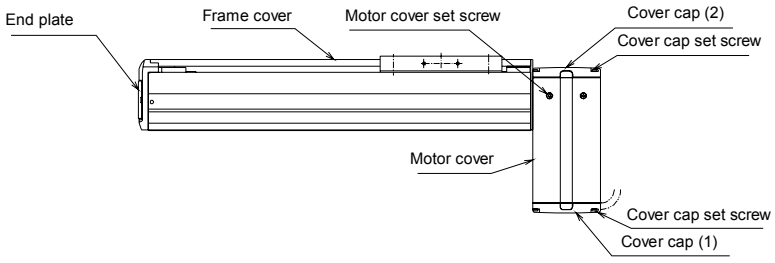
5.1.2.2 Bottom Side Mounted Motor

(1) Provide a new timing belt.

(2) The timing belt should be stretched as shown below.

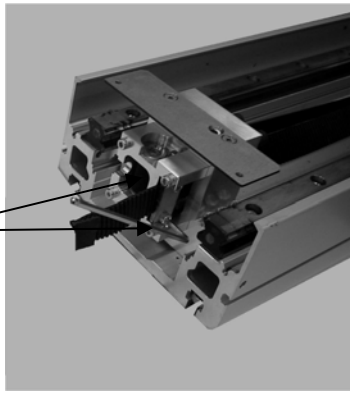




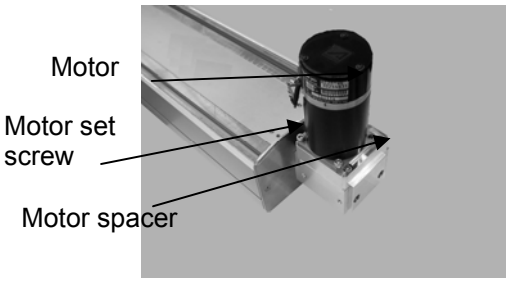


(3) Remove the frame cover, motor cover, cover caps and end plate by loosening respective set screws.

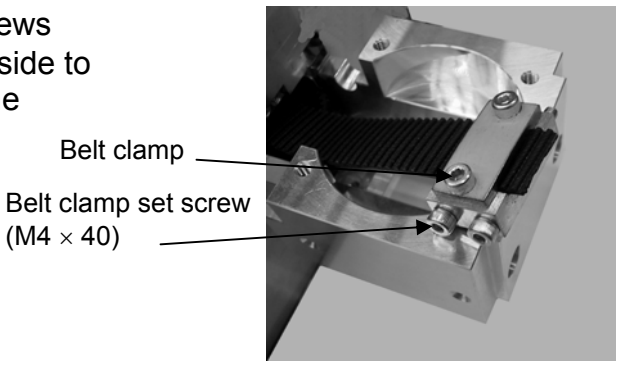
(4) Loosen the belt clamp screws on the end block side to loosen the belt.



(5) Remove the motor and motor spacer by loosening respective set screws.
(No motor spacer is attached to the 42 mm-lead axis (actuator).)



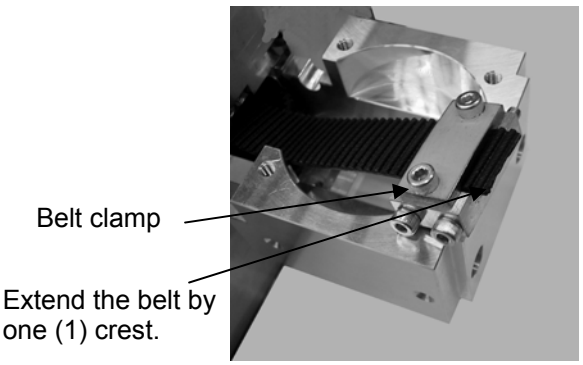
(6) Loosen the belt clamp set screws (M4 × 40) on the motor block side to remove the belt clamp from the motor block.



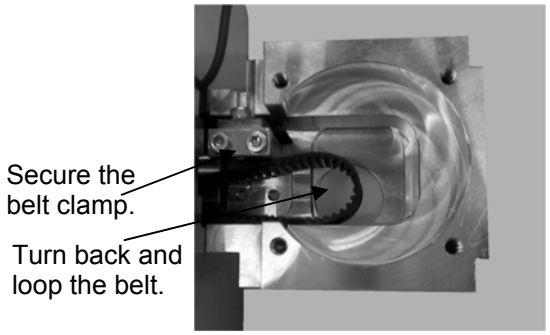
(7) Loosen the steel plate screws of the belt clamp securing the belt on the motor block side and remove the belt.

(8) Pull the end of the belt to remove it from the actuator.

(9) Pass the new belt through the hole on the motor block and attach it to the belt clamp again.
The belt should be secured by extending it by one (1) crest from the belt clamp.



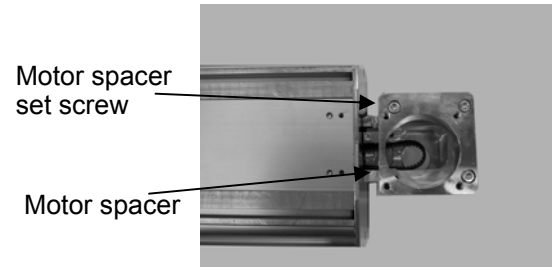
(10) Mount the belt clamp on the motor block with the set screws.
Then, engage the belt with the motor pulley as shown in the figure in Step (2) above.
In the motor block, turn back the belt so that the motor can be mounted.



CAUTION

DO NOT mount the belt by twisting.
For the 21 mm-lead axis (actuator) and 42 mm-lead axis (actuator), the belt clamp set positions differ.
(The above figure refers to the 21 mm-lead axis (actuator).)

(11) Mount the motor spacer on the motor block by using the originally set screws.
(No motor spacer is attached to the 42 mm-lead axis (actuator).)

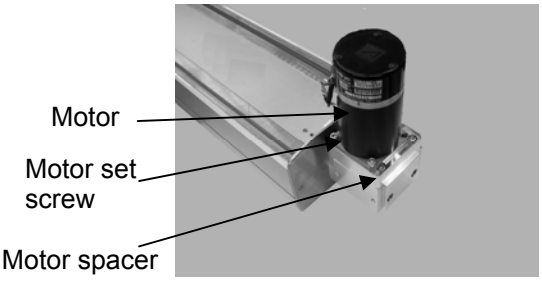


(12) Temporarily connect the motor with the controller, using the controller cable.

(13) Connect the teach pendant with the controller and perform home return.

(14) The motor will start rotating. Move the slider by hand to the vicinity of the home point.

(15) After the motor has stopped (i.e., after the motor has returned to the home point), move the slider manually so that the clearance between the slider and steel plate can be 62 mm.
Turn off the controller power, then mount the motor on the motor spacer, using the originally set screws.

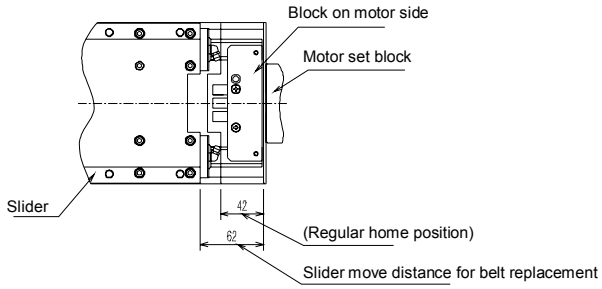


CAUTION

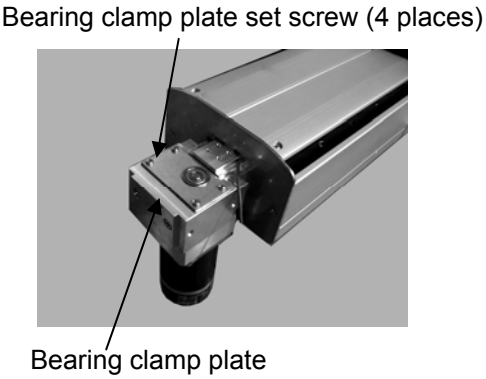
Tighten the four (4) screws gradually and evenly to prevent the motor from being inclined.

(No motor spacer is attached to the 42 mm-lead axis (actuator).)

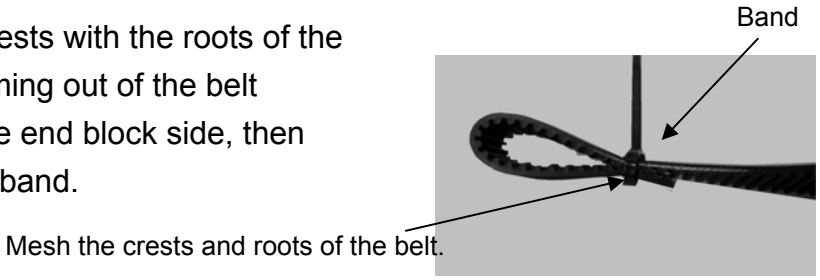
Discontinue



(16) After the motor has been mounted on the motor block, loosen the four (4) screws securing the bearing clamp plate on the bottom side of the motor block. (The screws need not be removed.)
After making sure that the bearing clamp plate can rotate a little, centering around the bearing, evenly tighten the loosened screws securing the bearing clamp plate. (This work is done to eliminate misalignment of the motor set position from the bearing clamp plate.)



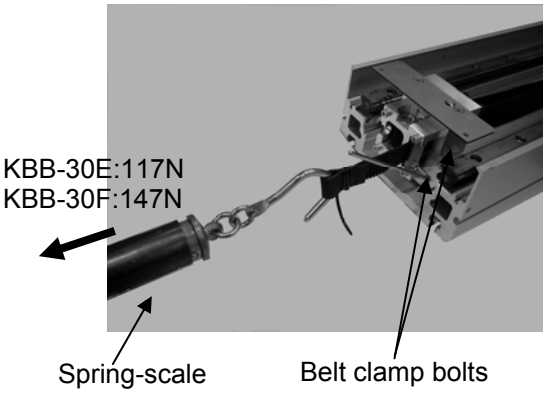
(17) Mesh the crests with the roots of the belt end coming out of the belt clamp on the end block side, then bundle with band.



(18) Pass the hook of the spring-scale through the folded loop of the timing belt and pull the timing belt with the following force.

KBB-30E (100 W) axis: 117 N (12 kgf)
KBB-30F (200 W) axis: 147 N (15 kgf)

While the belt is pulled, tighten the belt clamp bolts.



(19) Mount the frame cover, motor cover, cover caps and end plate, using the originally set screws.

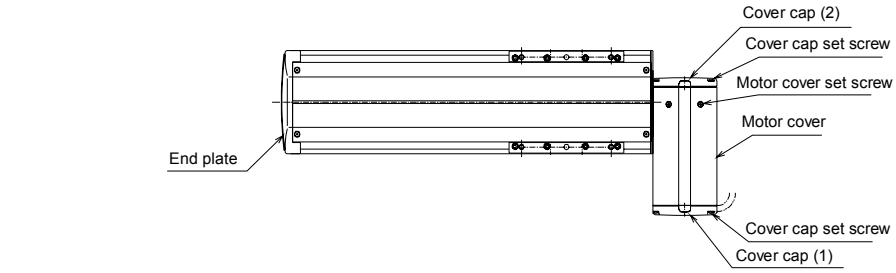
! CAUTION

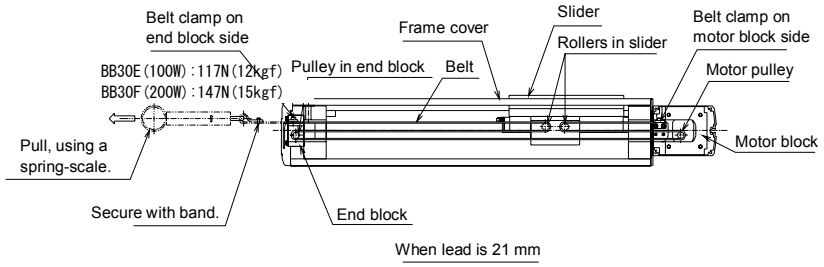
- The new timing belt may elongate initially. If the initial elongation has occurred and the belt tension has reduced, restretch the belt to the specified value.
- The programmed (teaching) position may shift due to restretching of the belt. When this happens, modify the program (teaching).

5.1.2.3 Right Side Mounted Motor

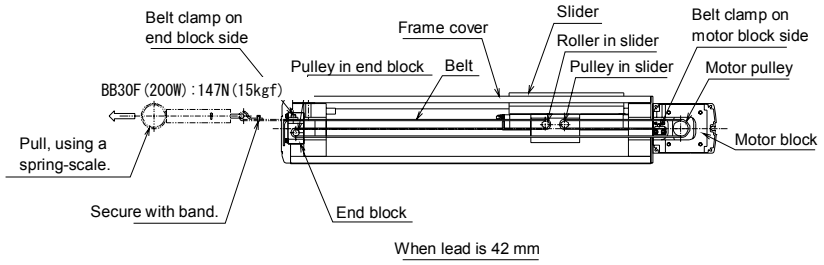
(1) Provide a new timing belt.

(2) The timing belt should be stretched as shown below.





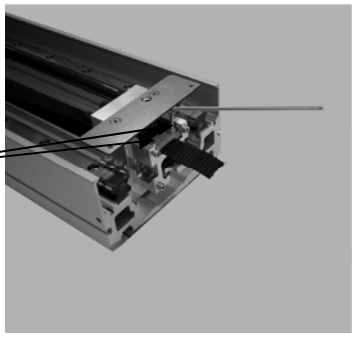
When lead is 21 mm



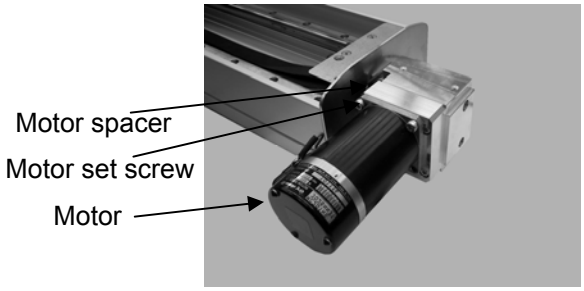
When lead is 42 mm

(3) Remove the frame cover, motor cover, cover caps and end plate by loosening respective set screws.

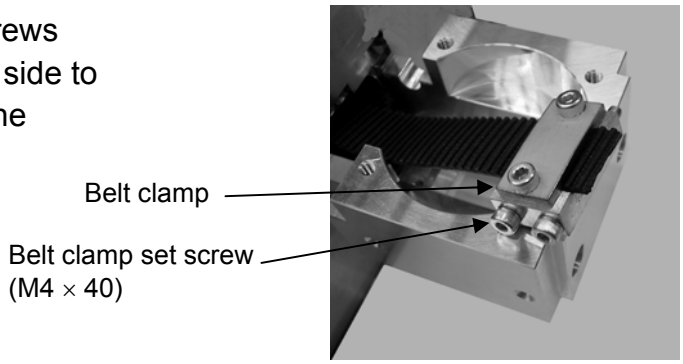
(4) Loosen the belt clamp screws on the end block side to loosen the belt.



(5) Remove the motor and motor spacer by loosening respective set screws.
(No motor spacer is attached to the 42 mm-lead axis (actuator).)



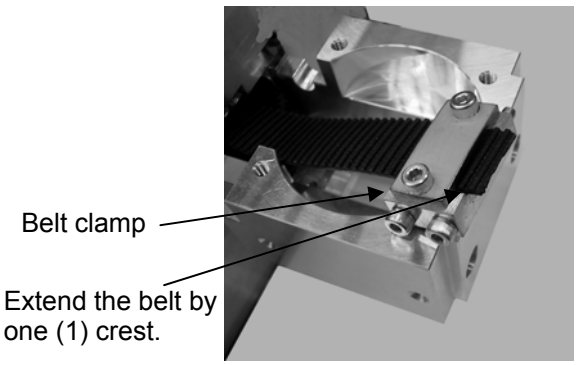
(6) Loosen the belt clamp set screws (M4 × 40) on the motor block side to remove the belt clamp from the motor block.



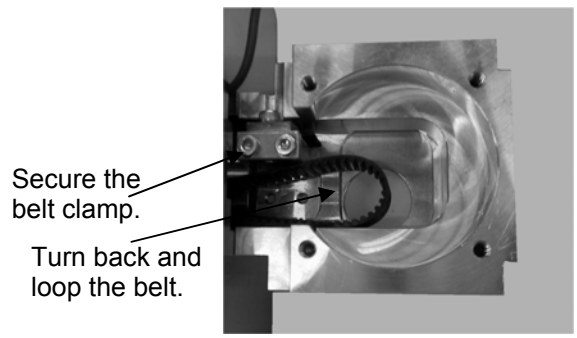
(7) Loosen the steel plate screws of the belt clamp securing the belt on the motor block side and remove the belt.

(8) Pull the end of the belt to remove it from the actuator.

(9) Pass the new belt through the hole on the motor block and attach it to the belt clamp again.
The belt should be secured by extending it by one (1) crest from the belt clamp.



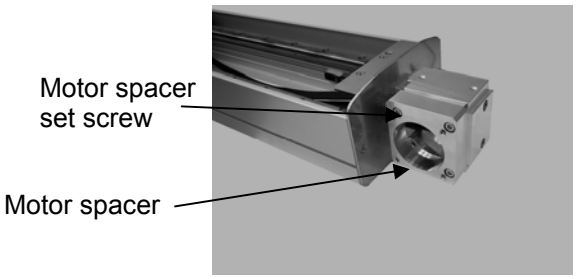
(10) Mount the belt clamp on the motor block with the set screws.
Then, engage the belt with the motor pulley as shown in the figure in Step (2) above.
In the motor block, turn back the belt so that the motor can be mounted.



CAUTION

DO NOT mount the belt by twisting.
For the 21 mm-lead axis (actuator) and 42 mm-lead axis (actuator), the belt clamp set positions differ.
(The above figure refers to the 21 mm-lead axis (actuator).)

(11) Mount the motor spacer on the motor block by using the originally set screws.
(No motor spacer is attached to the 42 mm-lead axis (actuator).)

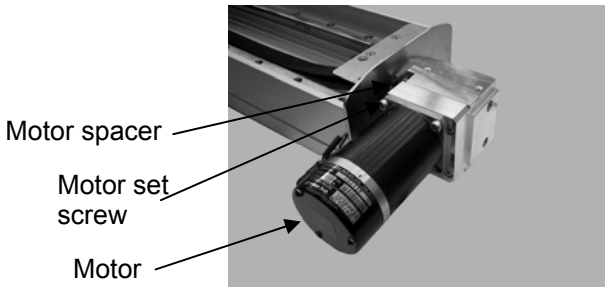


(12) Temporarily connect the motor with the controller, using the controller cable.

(13) Connect the teach pendant with the controller and perform home return.

(14) The motor will start rotating. Move the slider by hand to the vicinity of the home point.

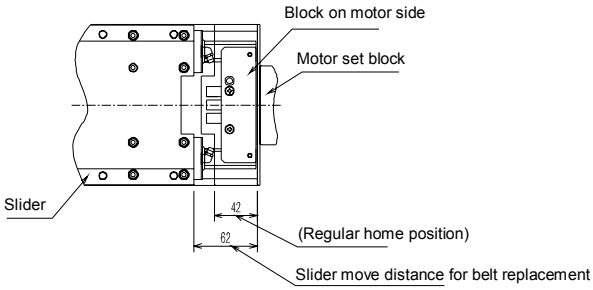
(15) After the motor has stopped (i.e., after the motor has returned to the home point), move the slider manually so that the clearance between the slider and steel plate can be 62 mm.
Turn off the controller power, then mount the motor on the motor spacer, using the originally set screws.



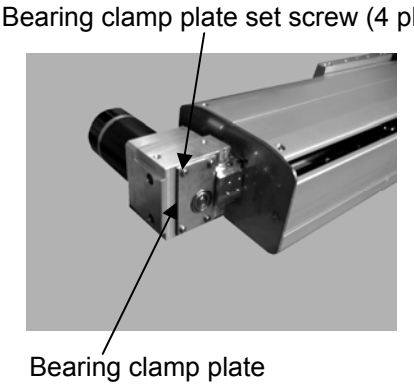
CAUTION

Tighten the four (4) screws gradually and evenly to prevent the motor from being inclined.

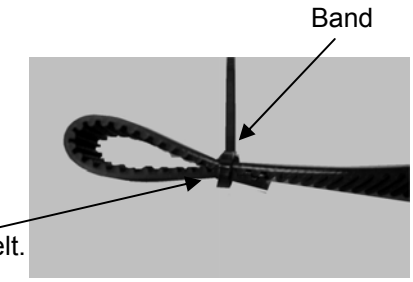
(No motor spacer is attached to the 42 mm-lead axis (actuator).)



(16) After the motor has been mounted on the motor block, loosen the four (4) screws securing the bearing clamp plate on the bottom side of the motor block. (The screws need not be removed.)
After making sure that the bearing clamp plate can rotate a little, centering around the bearing, evenly tighten the loosened screws securing the bearing clamp plate. (This work is done to eliminate misalignment of the motor set position from the bearing clamp plate.)



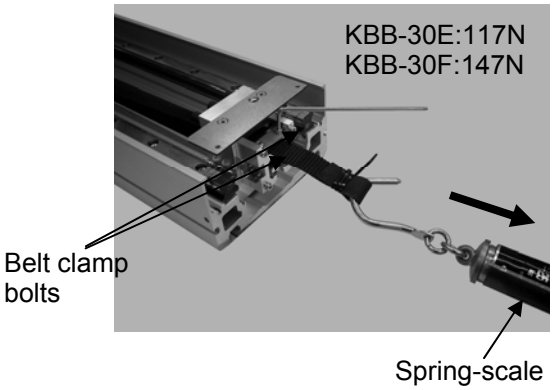
(17) Mesh the crests with the roots of the belt end coming out of the belt clamp on the end block side, then bundle with band.



(18) Pass the hook of the spring-scale through the folded loop of the timing belt and pull the timing belt with the following force.

KBB-30E (100 W) axis: 117 N (12 kgf)
KBB-30F (200 W) axis: 147 N (15 kgf)

While the belt is pulled, tighten the belt clamp bolts.



(19) Mount the frame cover, motor cover, cover caps and end plate, using the originally set screws.

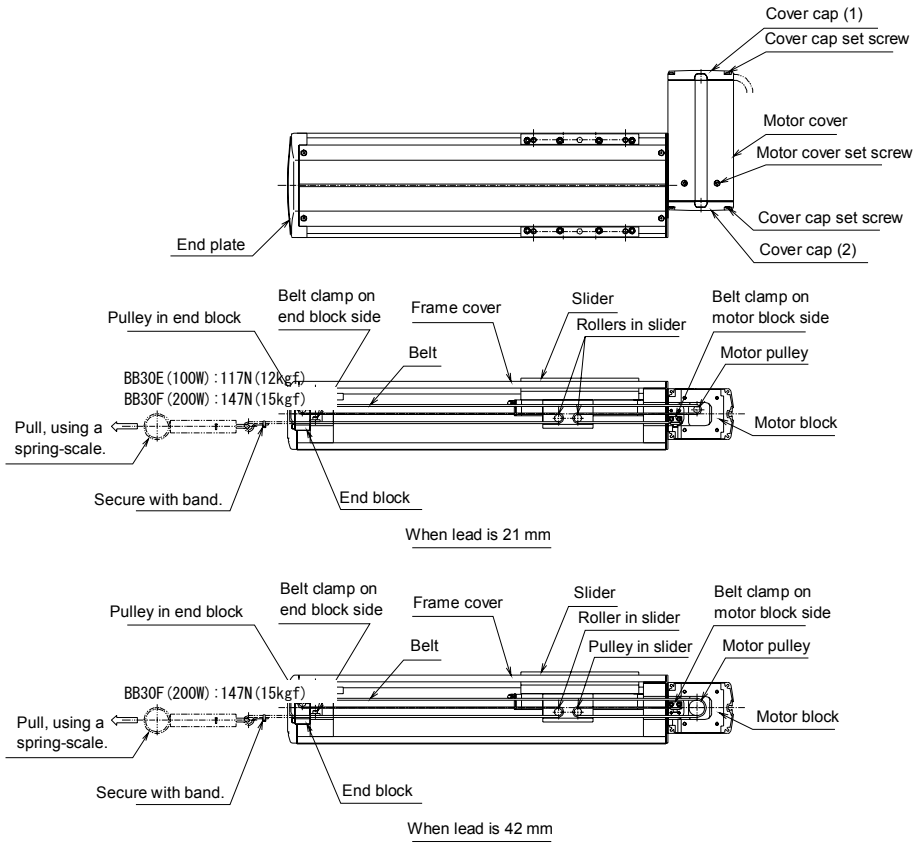
! CAUTION

- The new timing belt may elongate initially. If the initial elongation has occurred and the belt tension has reduced, restretch the belt to the specified value.
- The programmed (teaching) position may shift due to restretching of the belt. When this happens, modify the program (teaching).

5.1.2.4 Left Side Mounted Motor

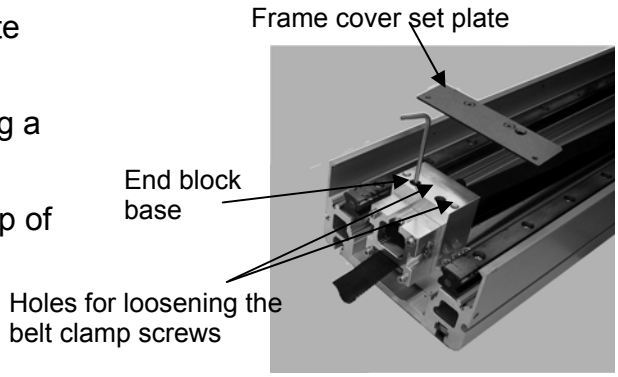
(1) Provide a new timing belt.

(2) The timing belt should be stretched as shown below.

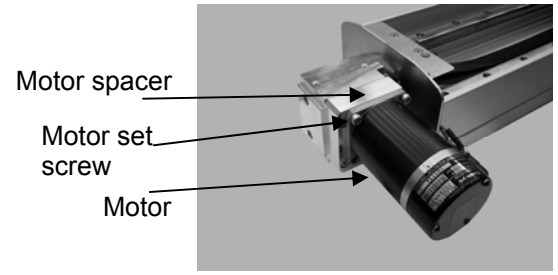


(3) Remove the frame cover, motor cover, cover caps and end plate by loosening respective set screws.

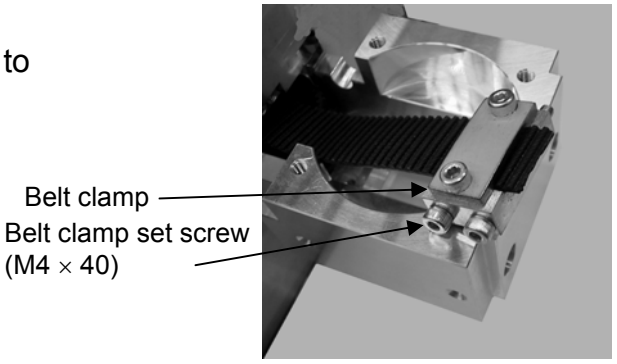
(4) Remove the frame cover set plate from the end block base, then loosen the belt clamp by inserting a hexagonal wrench key from the holes for loosening the belt clamp of the end block base.



(5) Remove the motor and motor spacer by loosening respective set screws.
(No motor spacer is attached to the 42 mm-lead axis (actuator).)



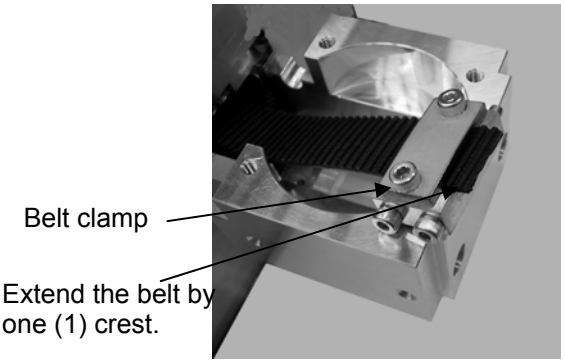
(6) Loosen the belt clamp set screws (M4 × 40) on the motor block side to remove the belt clamp from the motor block.



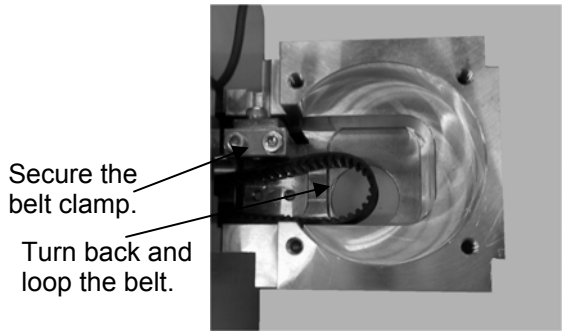
(7) Loosen the steel plate screws of the belt clamp securing the belt on the motor block side and remove the belt.

(8) Pull the end of the belt to remove it from the actuator.

(9) Pass the new belt through the hole on the motor block and attach it to the belt clamp again.
The belt should be secured by extending it by one (1) crest from the belt clamp.



(10) Mount the belt clamp on the motor block with the set screws.
Then, engage the belt with the motor pulley as shown in the figure in Step (2) above.
In the motor block, turn back the belt so that the motor can be mounted.

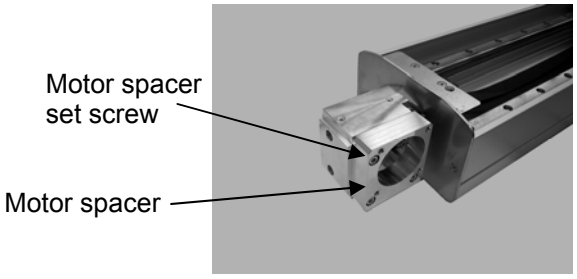


CAUTION

DO NOT mount the belt by twisting.

For the 21 mm-lead axis (actuator) and 42 mm-lead axis (actuator), the belt clamp set positions differ. (The above figure refers to the 21 mm-lead axis (actuator).)

(11) Mount the motor spacer on the motor block by using the originally set screws.
(No motor spacer is attached to the 42 mm-lead axis (actuator).)

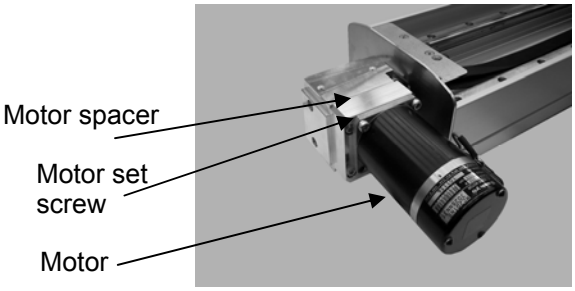


(12) Temporarily connect the motor with the controller, using the controller cable.

(13) Connect the teach pendant with the controller and perform home return.

(14) The motor will start rotating. Move the slider by hand to the vicinity of the home point.

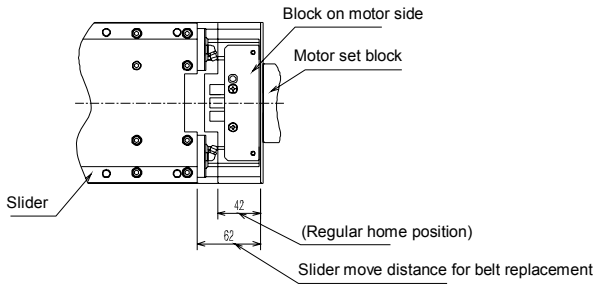
(15) After the motor has stopped (i.e., after the motor has returned to the home point), move the slider manually so that the clearance between the slider and steel plate can be 62 mm.
Turn off the controller power, then mount the motor on the motor spacer, using the originally set screws.



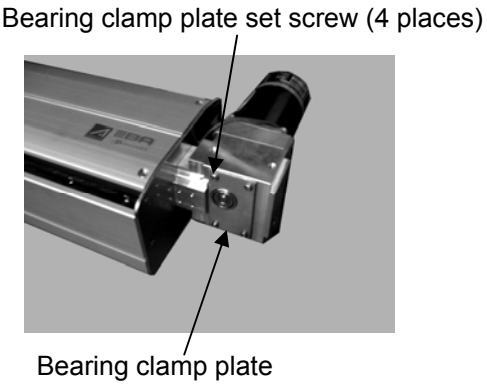
CAUTION

Tighten the four (4) screws gradually and evenly to prevent the motor from being inclined.

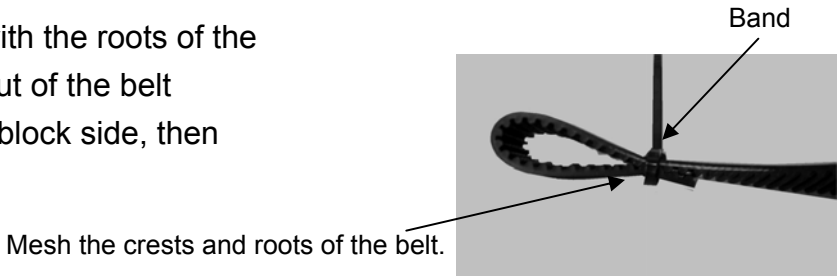
(No motor spacer is attached to the 42 mm-lead axis (actuator).)



(16) After the motor has been mounted on the motor block, loosen the four (4) screws securing the bearing clamp plate on the bottom side of the motor block. (The screws need not be removed.)
After making sure that the bearing clamp plate can rotate a little, centering around the bearing, evenly tighten the loosened screws securing the bearing clamp plate. (This work is done to eliminate misalignment of the motor set position from the bearing clamp plate.)



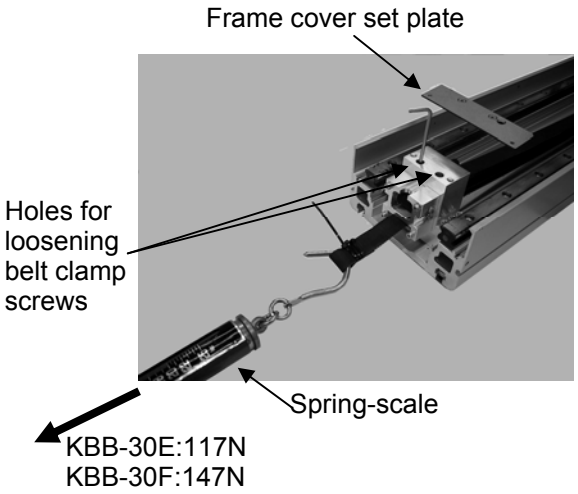
(17) Mesh the crests with the roots of the belt end coming out of the belt clamp on the end block side, then bundle with band.



(18) Pass the hook of the spring-scale through the folded loop of the timing belt and pull the timing belt with the following force.

KBB-30E (100 W) axis: 117 N (12 kgf)
KBB-30F (200 W) axis: 147 N (15 kgf)

While the belt is pulled, tighten the belt clamp bolts.



(19) Mount the frame cover set plate, frame cover, motor cover, cover caps and end plate, using the originally set screws.

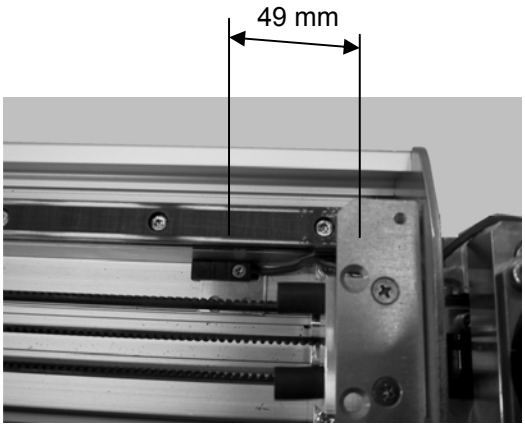
! CAUTION

- The new timing belt may elongate initially. If the initial elongation has occurred and the belt tension has reduced, restretch the belt to the specified value.
- The programmed (teaching) position may shift due to restretching of the belt. When this happens, modify the program (teaching).

5.2 Adjusting Home Position

(1) The home position can be adjusted by adjusting the distance between the home point sensor and motor block.

(2) Mount the home point sensor as shown below.



5.3 Replacing Linear Guide

- If replacement of the linear guide is required, contact our sales agent in your territory. NEVER replace the linear guide by the customer.
- Only the linear guide built in a single actuator can be replaced. Replacement of the linear guide built in the machine or combined with other equipment is not possible.

Section 6 Spare Parts

6.1 Spare Parts

If the robot went wrong, but no repair part is available at hand, it cannot be repaired even if a trouble has been found at an early stage. To avoid this, it is recommended that each customer keep the spare parts at hand.

No.	Part name	Description
1	Timing belt	The belt differs with the stroke. For details, contact us.
2	AC servo motor (Absolute encoder)	Lead 21 mm, with pulley (100 W)
3	AC servo motor (Absolute encoder)	Lead 21 mm, with pulley (200 W)
4	AC servo motor (Absolute encoder)	Lead 42 mm, with pulley (200 W)