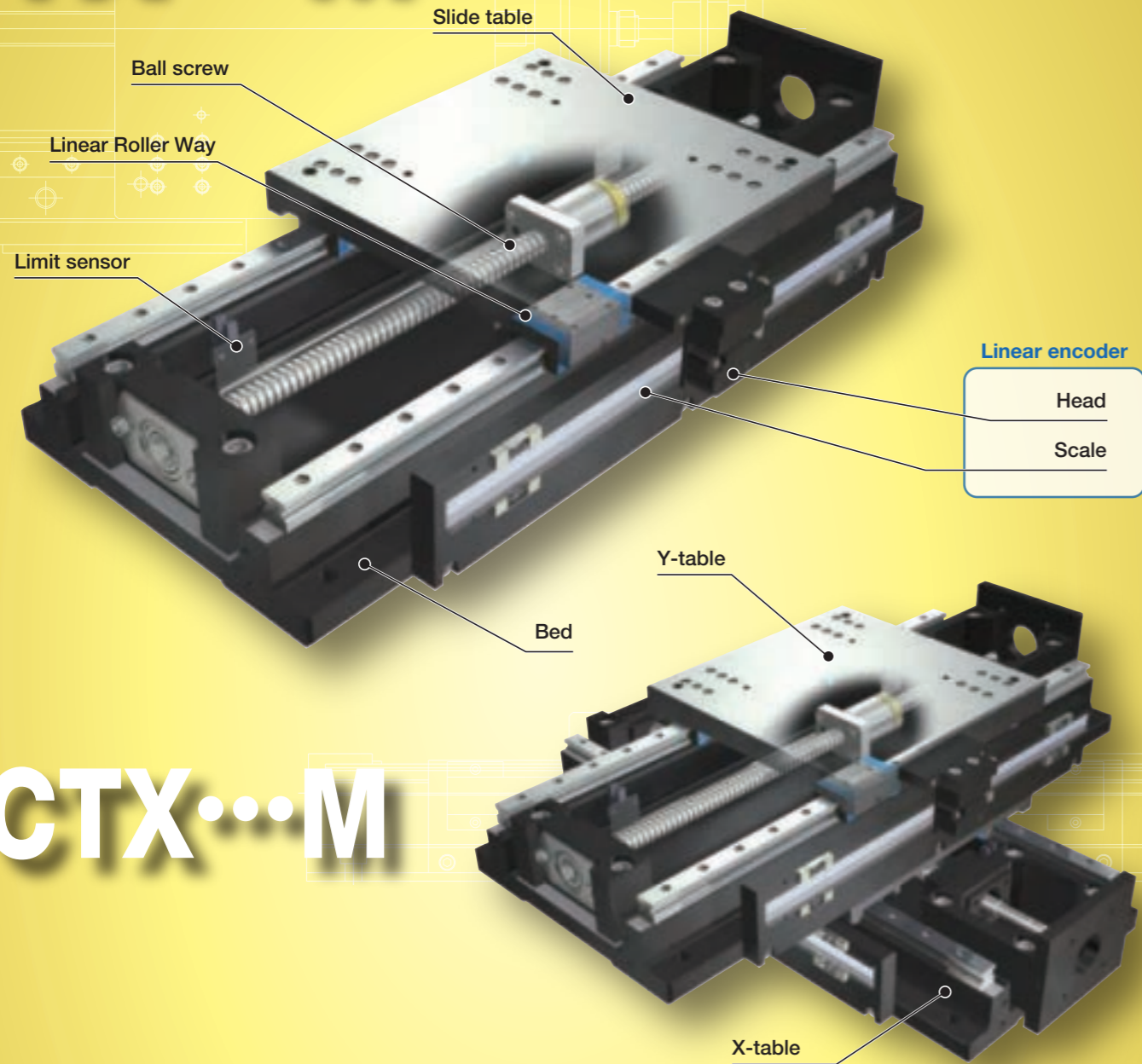
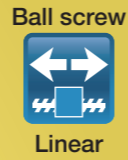


TX...M
CTX...M

TX...M • CTX...M

TX...M



CTX...M

Major product specifications

Driving method	Precision ball screw
Linear motion rolling guide	Linear Roller Way (roller type)
Built-in lubrication part	Lubrication part "C-Lube" is built-in
Material of table and bed	Cast iron
Sensor	Provided as standard

Accuracy

Positioning repeatability	±0.0005~0.0010
Positioning accuracy	0.003~0.020
Lost motion	0.001
Parallelism in table motion A	0.005~0.011
Parallelism in table motion B	-
Attitude accuracy	5~11sec
Straightness	0.003~0.008
Backlash	-

unit: mm

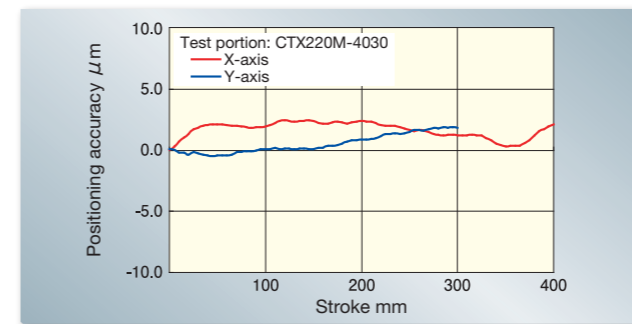
Points

1 Ultimate high accuracy table of rolling guide type

High precision, high rigidity Precision Positioning Table LH based positioning table with positioning accuracy almost the same as Air Stage with ultimate rolling guide C-Lube Linear Roller Way Super MX incorporated and by a thorough investigation of the accuracy of each part.

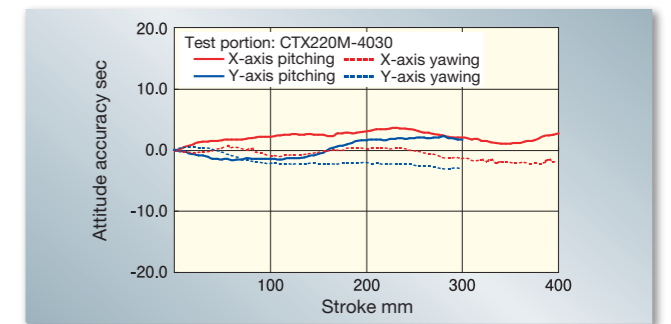
2 High positioning accuracy and resolution performance realized with an onboard super high accuracy linear encoder

Fully closed loop control is configured and the positioning accuracy of the entire stroke is guaranteed with a direct feedback of positional information from a super high accuracy linear encoder with resolution of 0.016 μm.



3 Ultimate high running performance produced by adopting roller type linear motion rolling guide

Ultimate running accuracy is achieved since components processed and assembled with high accuracy are combined with C-Lube Linear Roller Way Super MX that exhibits the highest level of running performance with a rolling guide.



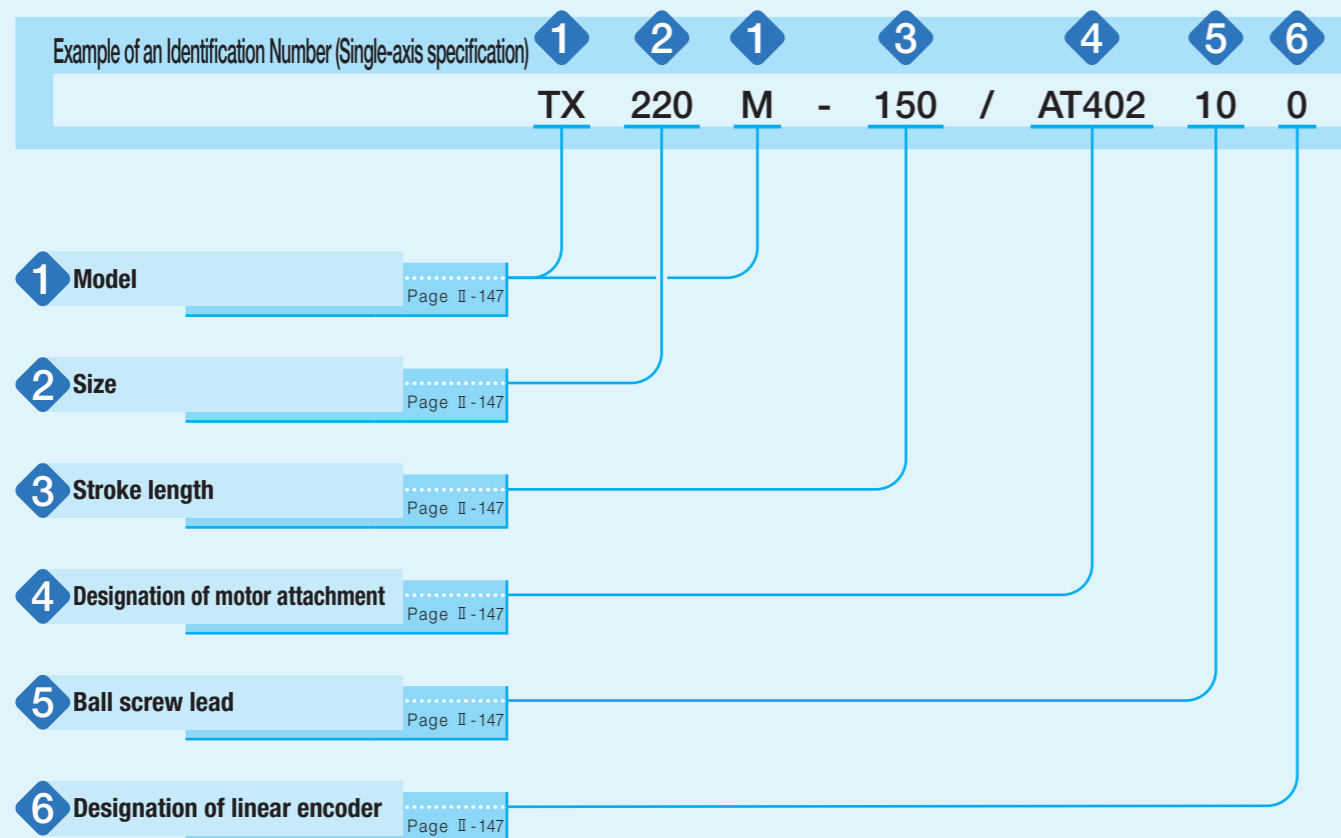
4 Simple system configuration is available

System configuration is made simple, and space saving and cost reduction of the device can be realized since air supply device for driving is not required like Air Stage.

Variation

Shape	Model and size	Table width (mm)	Stroke length (mm)								
			100	150	200	250	300	400	500	600	800
	TX120M	120	☆	☆	☆	☆	☆	-	-	-	-
	TX220M	220	-	☆	☆	☆	☆	☆	-	-	-
	TX320M	320	-	-	-	-	☆	☆	☆	-	-
	TX420M	420	-	-	-	-	-	-	☆	☆	☆

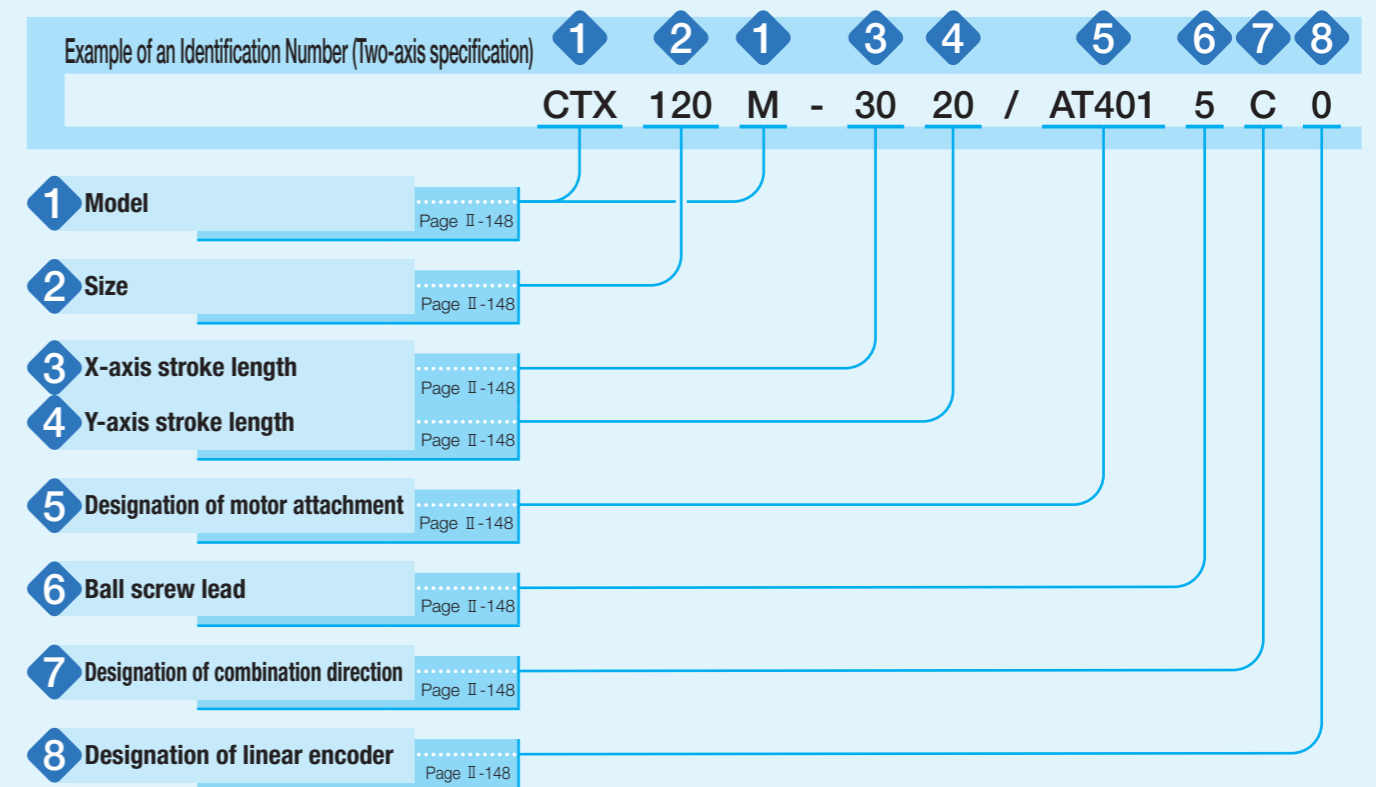
Identification Number



Identification Number and Specification

1 Model	TX...M: Super Precision Positioning Table TX (single-axis specification)
2 Size	Size indicates table width. Select a size from the list of Table 1.
3 Stroke length	Select a stroke length from the list of Table 1.
4 Designation of motor attachment	As for a motor attachment, select it from the list of Table 3. <ul style="list-style-type: none"> · Motor should be prepared by customer. · Please specify motor attachment applicable to motor for use. · A coupling shown in Table 4 is mounted on the main body before shipment. However, the final position adjustment should be made by customer since it is only temporarily fixed.
5 Ball screw lead	5: Lead 5mm 10: Lead 10mm
6 Designation of linear encoder	No symbol : Without linear encoder 0 : Resolution 0.0156 to 0.500 μm (For AC servomotor manufactured by YASKAWA ELECTRIC CORPORATION) 1 : Resolution 0.1 to 0.2 μm (AC servomotors manufactured by Mitsubishi Electric Corporation and Panasonic Corporation) 2 : Resolution 0.01 to 0.05 μm (AC servomotors manufactured by Mitsubishi Electric Corporation and Panasonic Corporation) When specifying the attachment for a stepper motor, set "No symbol". For details on the resolution, please see the section of maximum speed. For linear encoder specification, please see Table 10.

Identification Number



Identification Number and Specification

1 Model	CTX...M: Super Precision Positioning Table TX (two-axis specification)
2 Size	Size indicates table width. Select a size from the list of Table 2. Tables of different sizes can also be combined.
3 X-axis stroke length	Select a stroke length from the list of Table 2.
4 Y-axis stroke length	Stroke lengths of respective axes are displayed in cm. Different stroke lengths can be specified for X- and Y-axes.
5 Designation of motor attachment	As for a motor attachment, select it from the list of Table 3. <ul style="list-style-type: none"> · Motor should be prepared by customer. · Please specify motor attachment applicable to motor for use. · A coupling shown in Table 4 is mounted on the main body before shipment. However, the final position adjustment should be made by customer since it is only temporarily fixed.
6 Ball screw lead	5: Lead 5mm 10: Lead 10mm
7 Designation of combination direction	No symbol : Standard configuration C : Reverse configuration Standard configuration: A direction under the condition where X-axis motor side is placed at the front and Y-axis motor side is placed on the right side respectively. Reverse configuration: A direction under the condition where X-axis motor side is placed at the front and Y-axis motor side is placed on the left side respectively. Specify "No symbol" if 200mm is selected for Y-axis stroke length for CTX220M.
8 Designation of linear encoder	No symbol : Without linear encoder 0 : Resolution 0.0156 to 0.500 μm (For AC servomotor manufactured by YASKAWA ELECTRIC CORPORATION) 1 : Resolution 0.1 to 0.2 μm (AC servomotors manufactured by Mitsubishi Electric Corporation and Panasonic Corporation) 2 : Resolution 0.01 to 0.05 μm (AC servomotors manufactured by Mitsubishi Electric Corporation and Panasonic Corporation) When specifying the attachment for a stepper motor, set "No symbol". For details on the resolution, please see the section of maximum speed. For linear encoder specification, please see Table 10.

Identification Number and Specification

Table 1 Sizes and stroke lengths

Model and size	Table width mm	Stroke length mm
TX120M	120	100, 150, 200, 250, 300
TX220M	220	150, 200, 250, 300, 400
TX320M	320	300, 400, 500
TX420M	420	500, 600, 800

Table 2 Sizes, table width dimensions, and stroke lengths

Model and size	Table width mm	Stroke length mm	
		X-axis	Y-axis
CTX120M	120	100	100
		200	100
		200	200
		300	200
CTX220M	220	200	200
		300	200
		400	300

Table 3 Application of motor attachment

Type	Models of motor to be used				Flange size mm	Motor attachment						
	Manufacturer	Series	Model	Rated output W		TX120M CTX120M	TX220M CTX220M	TX320M	TX420M			
AC servo motor	YASKAWA ELECTRIC CORPORATION	Σ-V	SGMAV-02	200	□60	AT401	—	—	—			
			SGMAV-04	400		—	AT402	—	—			
			SGMAV-06	550		—	—	AT403	—			
			SGMAV-08	750		—	—	—	AT404			
	Mitsubishi Electric Corporation	J3	HF-KP23	200	□60	AT401	—	—	—			
			HF-KP43	400		—	AT402	AT403	—			
			HF-KP73	750		—	—	—	AT404			
			MSME02	200		□60	AT405	—	—	—		
	Panasonic Corporation	MINAS A5	MSME04	400	□60	—	AT406	AT407	—			
			MSME08	750		□80	—	—	—	AT408		
			Stepper motor	ORIENTAL MOTOR Co., Ltd.		α step	AR66	□60	AT409	—	—	—
							AR69		AT409	—	—	—
AR98	□85	—			AT411		AT412		—			
AR911		—			AT411		AT412		—			
AS66	□60	AT410			—		—		—			
AS69		AT410			—		—		—			
AS98	□85	—			AT411		AT412		—			
AS911		—			AT411		AT412		—			
RK	RK56	□60	AT410	—	—	—						
	RK59	□85	—	AT411	AT412	—						

Remark: For detailed motor specifications, please see respective motor manufacturer's catalog.

Table 4 Coupling models

Motor attachment	Coupling models	Manufacturer	Coupling inertia J_c $\times 10^{-5} \text{kg} \cdot \text{m}^2$
AT401	RA-30C- 8×14	Sakai Manufacturing Co., Ltd	0.281
AT402	RA-35C-12×14	Sakai Manufacturing Co., Ltd	0.847
AT403	RA-35C-14×15	Sakai Manufacturing Co., Ltd	0.847
AT404	RA-40C-15×19	Sakai Manufacturing Co., Ltd	1.365
AT405	RA-30C- 8×11	Sakai Manufacturing Co., Ltd	0.281
AT406	RA-35C-12×14	Sakai Manufacturing Co., Ltd	0.847
AT407	RA-35C-14×15	Sakai Manufacturing Co., Ltd	0.847
AT408	RA-40C-15×19	Sakai Manufacturing Co., Ltd	1.365
AT409	RA-30C- 8×10	Sakai Manufacturing Co., Ltd	0.281
AT410	RA-30C- 8× 8	Sakai Manufacturing Co., Ltd	0.281
AT411	RA-35C-12×14	Sakai Manufacturing Co., Ltd	0.847
AT412	RA-35C-14×15	Sakai Manufacturing Co., Ltd	0.847

Remark: For detailed coupling specifications, please see the manufacturer's catalog.

Specifications

Table 5 Accuracy

Model and size	Stroke length		Positioning Repeatability	Positioning accuracy	Lost motion ⁽¹⁾	Parallelism in table motion A	Attitude accuracy ⁽²⁾ sec	Straightness in vertical Straightness in horizontal	Squareness of XY motion
	X-axis	Y-axis							
Single-axis specification	TX120M	100	±0.0005 (±0.001)	0.003 (0.006)	0.001	0.005	5	0.003	—
		150							
		200							
		250							
	TX220M	150	±0.0005 (±0.001)	0.003 (0.006)	0.001	0.005	5	0.003	—
		200							
		250							
		300							
	TX320M	300	±0.0005 (±0.001)	0.004 (0.008)	0.001	0.006	6	0.004	—
		400							
		500							
	TX420M	500	±0.0005 (±0.001)	0.005 (0.013)	0.001	0.007	7	0.005	—
600									
800									
0.008 (0.020)									
Two-axis specification	CTX120M	100	±0.0005 (±0.001)	0.005 (0.007)	0.001	0.008	8	0.005	0.005
		200							
		200							
	CTX220M	200	±0.0005 (±0.001)	0.006 (0.010)	0.001	0.009	9	0.006	0.010
		300							
		300							
		300							
		400							
	300								

Notes ⁽¹⁾ When no linear encoder is used, this represents the value for backlash.

⁽²⁾ This represents accuracy in pitching and yawing.

Remark: The values in () indicate values without a linear encoder.

Table 6 Maximum speed attained when a motor manufactured by YASKAWA ELECTRIC CORPORATION is used (with linear encoder)

Resolution μm/pulse	Maximum speed mm/s		Serial conversion unit ⁽¹⁾	Linear encoder
	Lead 5mm	Lead 10mm		
0.0156	62.5	62.5	JZDP-D003-000-E YASKAWA ELECTRIC CORPORATION	LIP581 HEIDENHAIN K.K.
0.0312	125	125		
0.0625	250 (224)	250 (224)		
0.125	250 (224)	500 (448)		
0.250	250 (224)	500 (448)		
0.500	—	500 (448)		

Note ⁽¹⁾ Serial conversion unit is attached.

Remarks 1. The values in () are applicable to TX320M and TX420M.

2. Practical maximum speed varies depending on load condition.

3. To change the maximum speed, the resolution needs to be changed by setting the electronic gear for driver.

Table 7 Maximum speed attained when a motor manufactured by Panasonic Corporation is used (with linear encoder)

Resolution μm/pulse	Maximum speed mm/s		Linear encoder signal conversion unit ⁽¹⁾	Linear encoder
	Lead 5mm	Lead 10mm		
0.01	26.4	26.4	APE371 [TTL×50] HEIDENHAIN K.K.	LIP581 HEIDENHAIN K.K.
0.02	52	52		
0.04	104	104		
0.05	132	132	APE371 [TTL×10] HEIDENHAIN K.K.	
0.1	250 (224)	264		
0.2	250 (224)	500 (448)		

Note ⁽¹⁾ A linear encoder signal conversion unit corresponding to resolution is attached.

Remarks 1. The values in () are applicable to TX320M and TX420M.

2. Practical maximum speed varies depending on load condition.

3. When you wish to change the maximum speed, change the resolution using the internal switch of linear encoder signal conversion unit attached to the main body.

Table 8 Maximum speed attained when a motor manufactured by Mitsubishi Electric Corporation is used (with linear encoder)

Resolution μm/pulse	Maximum speed mm/s		Linear encoder signal conversion unit ⁽¹⁾	Linear encoder
	Lead 5mm	Lead 10mm		
0.01	40	40	APE371 [TTL×50] HEIDENHAIN K.K.	LIP581 HEIDENHAIN K.K.
0.02	80	80		
0.04	160	160		
0.05	200	200		
0.1	250 (224)	400	APE371 [TTL×10] HEIDENHAIN K.K.	
0.2	250 (224)	500 (448)		

Note ⁽¹⁾ A linear encoder signal conversion unit corresponding to resolution is attached.

Remarks 1. The values in () are applicable to TX320M and TX420M.

2. Practical maximum speed varies depending on load condition.

3. When you wish to change the maximum speed, change the resolution using the internal switch of linear encoder signal conversion unit attached to the main body.

Table 9 Maximum speed attained when no linear encoder is used

Motor type	Model and size	Maximum speed mm/s	
		Lead 5mm	Lead 10mm
AC servo motor	TX120M	250	500
	TX220M		
	TX320M	224	448
	TX420M		
Stepper motor	TX120M	150	300
	TX220M		
	TX320M		

Remark: The values of respective axes in tables of two-axis specification are the same as those of tables of single-axis specification.

Table 10 Linear encoder specification

Item	Content
Model	LIP581R
Manufacturer	HEIDENHAIN K.K.
Material of scale main body	Glass
Coefficient of linear expansion	/°C
Accuracy class	8×10 ⁻⁶
Output signal	±1
Signal cycle	Sine wave
Maximum operation speed	V _{pp} /4 μm
Cord diameter	1
Cord bending radius	m/s
	1.2
	mm
	φ4.5
	mm
	50 or more

Table 11 Serial conversion unit specification for YASKAWA ELECTRIC CORPORATION

Item	Content
Manufacturer	YASKAWA ELECTRIC CORPORATION
Model	JZDP-D003-000-E
Signal resolution	1/256 of input two phase sine wave pitch
Maximum responding frequency	kHz
Size	250
Mass	mm
	90×60×23
	kg
	0.15

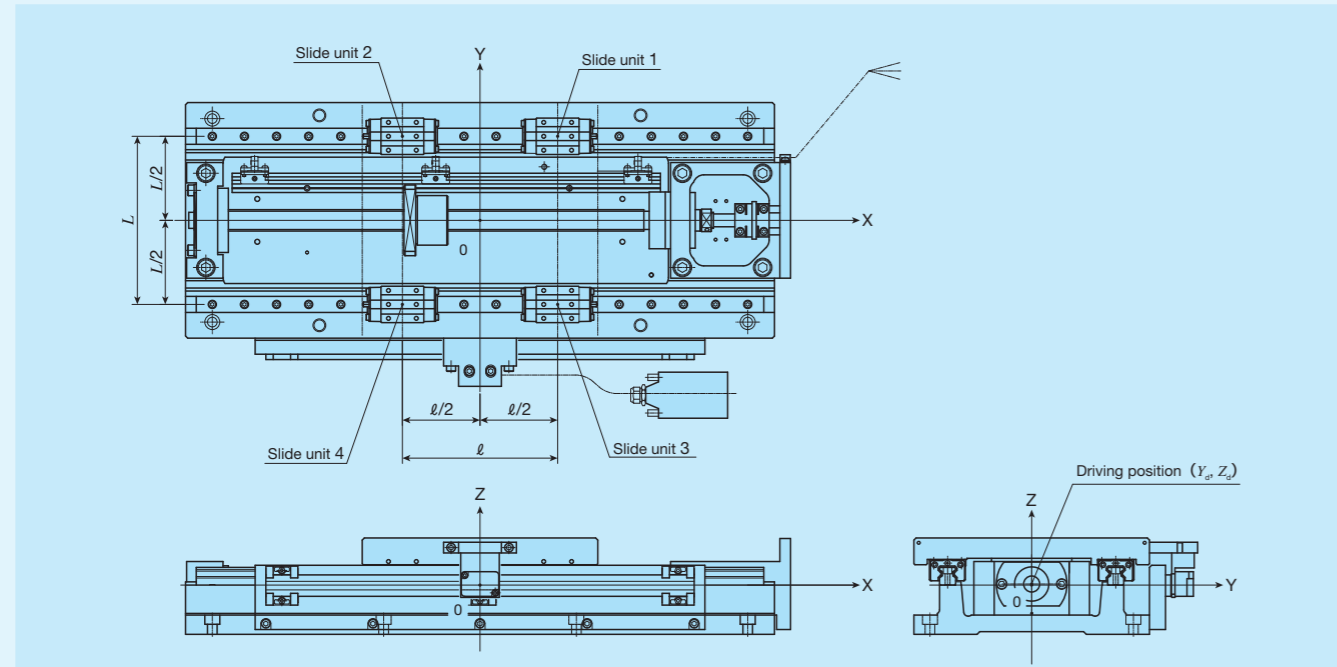
Table 12 Linear encoder signal conversion unit specification for Panasonic Corporation and Mitsubishi Electric Corporation

Item	Content		
Manufacturer	HEIDENHAIN K.K.		
Model	APE371 [TTL×50] APE371 [TTL×10]		
Signal resolution	Depends on the internal switch setting		
Maximum responding frequency	Depends on the internal switch setting		
Size	Converter section	mm	80×42×17
	Connector section	mm	48×42×17
	Cord length	mm	1 000
Mass	kg	0.20	

Table 13 Maximum carrying mass

Model and size	Ball screw lead mm	Maximum carrying mass kg	
		Horizontal	Vertical
TX120M	5	254	28
	10	154	28
TX220M	5	382	30
	10	187	29
TX320M	5	536	27
	10	254	25
TX420M	5	519	10
	10	237	8

Table 14 Specifications of linear motion rolling guide



Model and size	Basic dynamic load rating ⁽¹⁾ C N	Basic static load rating ⁽¹⁾ C ₀ N	Arrangement			
			L mm	l mm	Y _d mm	Z _d mm
TX120M	6 120	10 400	88	82	0	2
TX220M	11 500	20 000	157	145	0	1
TX320M	32 100	56 300	240	210	0	6
TX420M	38 200	70 300	300	290	0	0

Note ⁽¹⁾ Represent the value per slide unit.

Remark: The values of respective axes in tables of two-axis specification are the same as those of tables of single-axis specification.

Table 15.1 Specifications of ball screw 1

Model and size	Ball screw type	Lead mm	Shaft dia. mm	Axial clearance mm	Basic dynamic load rating C N	Basic static load rating C ₀ N
TX120M	Ground screw	5	15	0	7 070	12 800
		10			7 070	12 800
TX220M	Ground screw	5	20	0	8 230	17 150
		10			10 900	21 700
TX320M	Ground screw	5	25	0	16 700	43 500
		10			15 800	32 700
TX420M	Ground screw	5	25	0	16 700	43 500
		10			15 800	32 700

Remark: The values of respective axes in tables of two-axis specification are the same as those of tables of single-axis specification.

Table 15.2 Specifications of ball screw 2

unit: mm

Model and size	Stroke length	Shaft dia.	Overall length
TX120M	100	15	256
	150		306
	200		356
	250		406
	300		456
TX220M	150	20	370
	200		420
	250		470
	300		520
	400		620
TX320M	300	25	616
	400		716
	500		816
TX420M	500	25	916
	600		1 016
	800		1 216

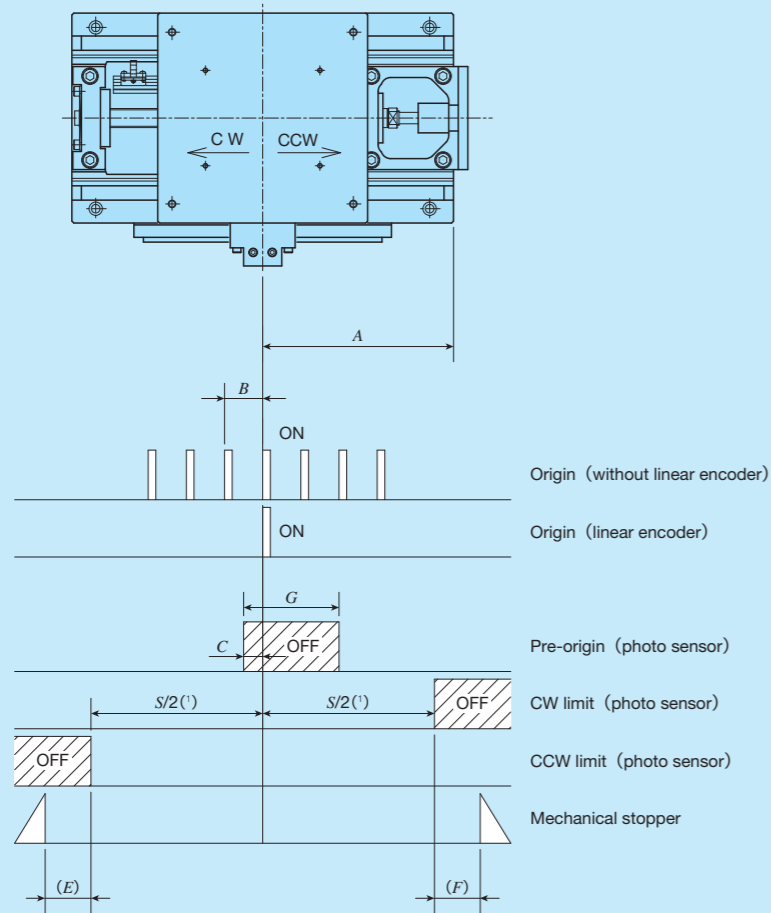
Table 16 Table inertia and starting torque

Model and size	Stroke length mm		Table inertia J _T × 10 ⁻⁵ kg·m ²		Coupling inertia J _C × 10 ⁻⁵ kg·m ²	Starting torque T _s N·m	
	X-axis	Y-axis	Lead 5mm	Lead 10mm			
Single-axis specification	TX120M	100		1.3	1.8	0.29	0.07
		150		1.5	2.0		
		200		1.6	2.2		
		250		1.8	2.4		
		300		2.0	2.6		
	TX220M	150		5.2	7.0	0.85	0.12
		200		5.8	7.6		
		250		6.4	8.2		
		300		7.1	8.8		
		400		8.3	10		
TX320M	300		20	26	0.85	0.26	
	400		23	29			
	500		26	32			
TX420M	500		30	39	0.85	0.30	
	600		33	42			
	800		39	48			
Two-axis specification	CTX120M	100	100	2.1	4.7	0.29	0.07
		200	100	2.4	5.1		
		200	200	2.5	5.8		
		300	200	2.9	6.2		
	CTX220M	200	200	8.2	16.9	0.85	0.13
		300	200	9.5	18.1		
		300	300	9.8	19.3		
		400	300	11.0	20.5		

Remark: As for tables of two-axis specification, the figures represent values in X-axis. For values in Y-axis, see the table for single-axis specification.

Sensor Specification

Table 17 Sensor timing chart



Model and size	Ball screw lead	A	B	C	E	F	G
TX120M	5	$L/2^{(1)}$	5	3	5.5	4.5	60
	10		10	7			
TX220M	5	$L/2^{(1)}$	5	3	14	10	58
	10		10	7			
TX320M	5	$L/2^{(1)}$	5	3	20	15	80
	10		10	7			
TX420M	5	$L/2^{(1)}$	5	3	18	15	100
	10		10	7			

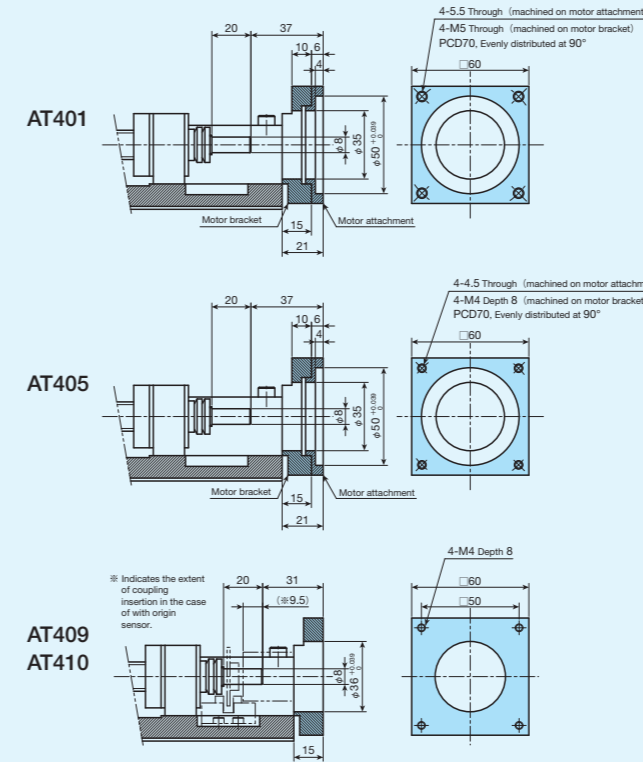
Note (1) See the dimension tables on pages II-157 to II-162.

Remarks 1. For the specifications of respective sensors, please see the section of sensor specification in General Explanation.

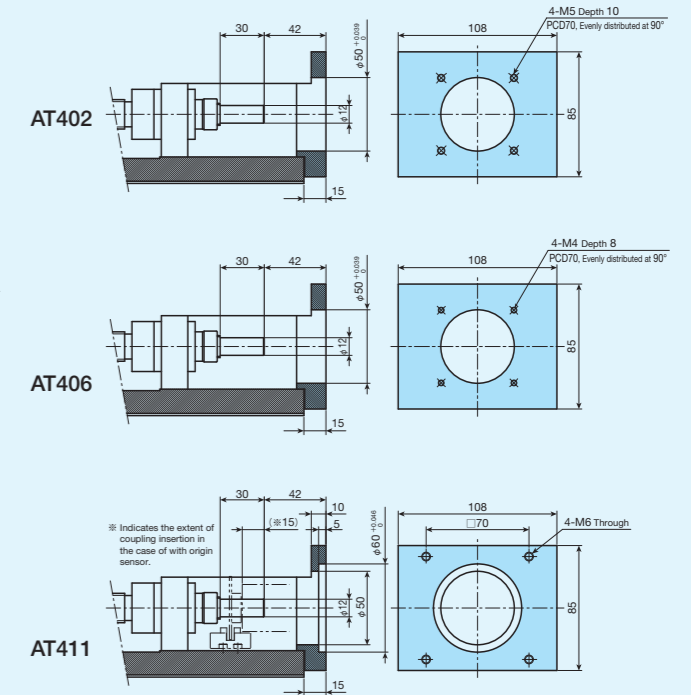
2. The values of respective axes in tables of two-axis specification are the same as those of tables of single-axis specification.

Dimensions of Motor Attachment

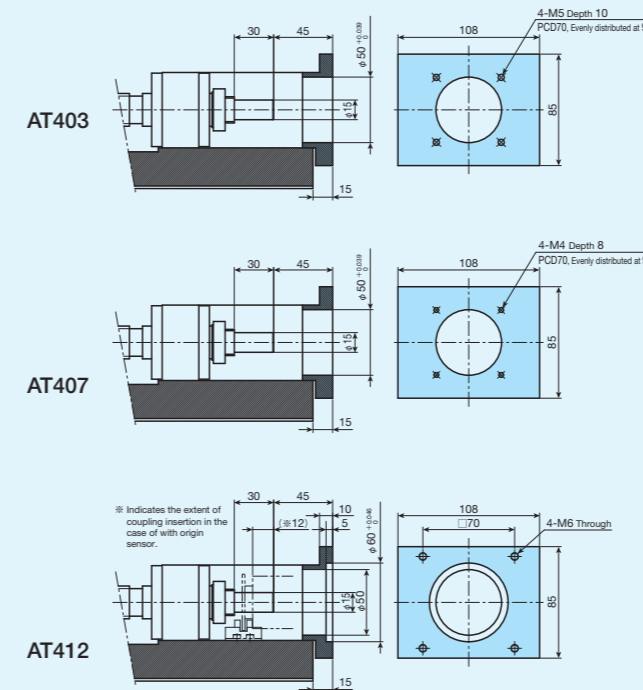
TX120M, CTX120M



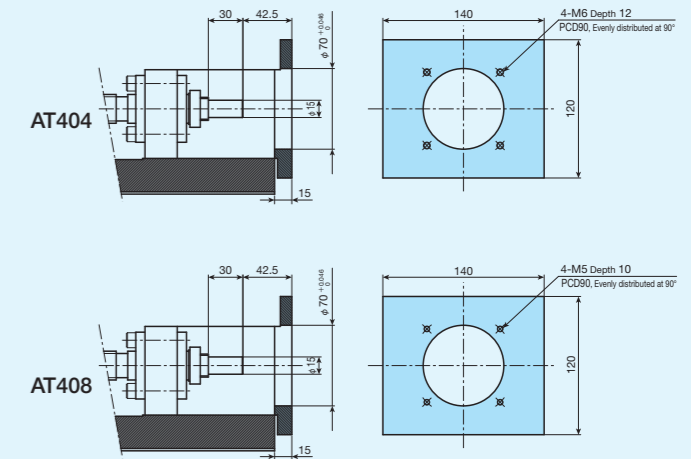
TX220M, CTX220M



TX320M

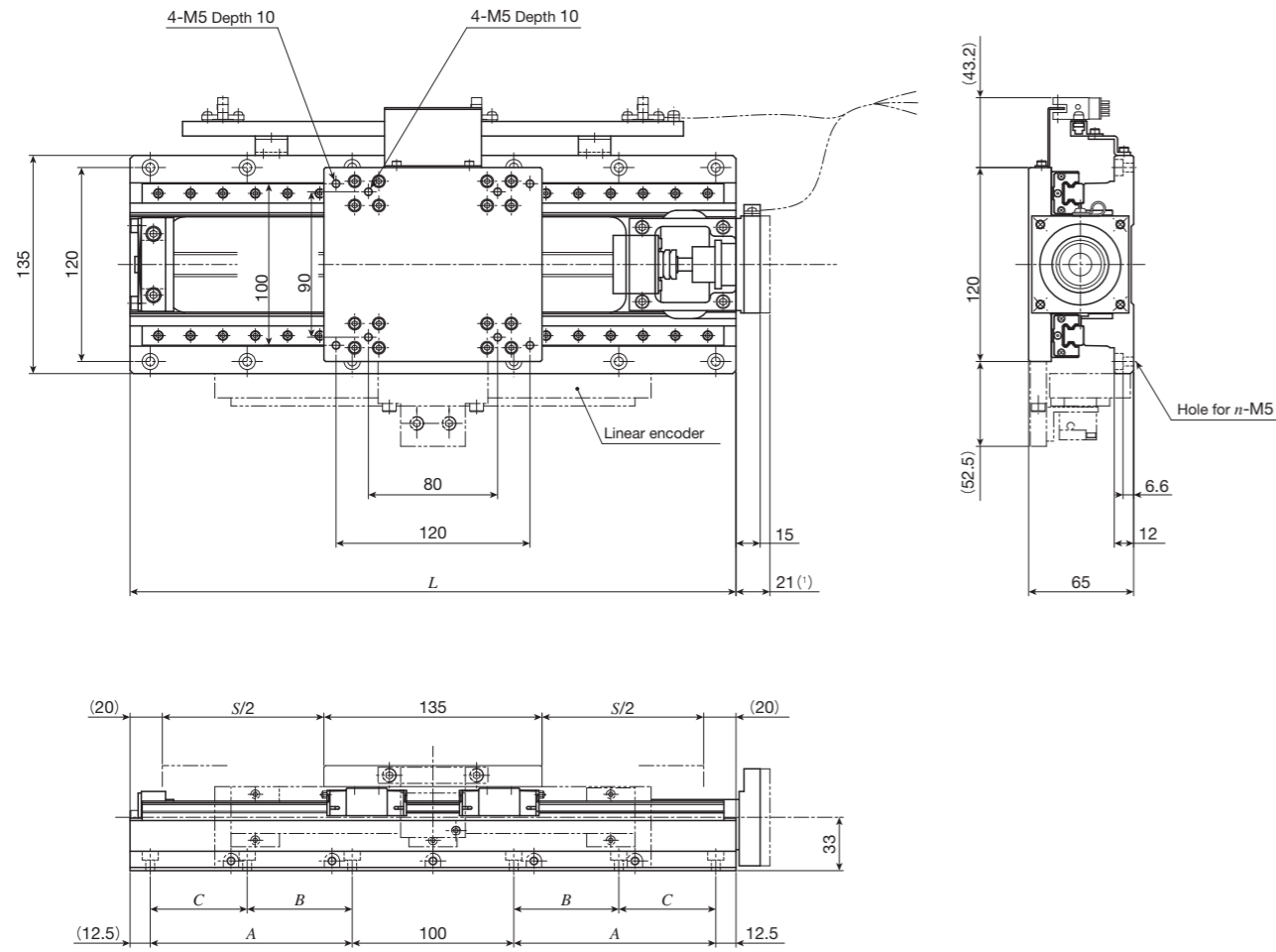


TX420M



IKO Super Precision Positioning Table TX

TX120M

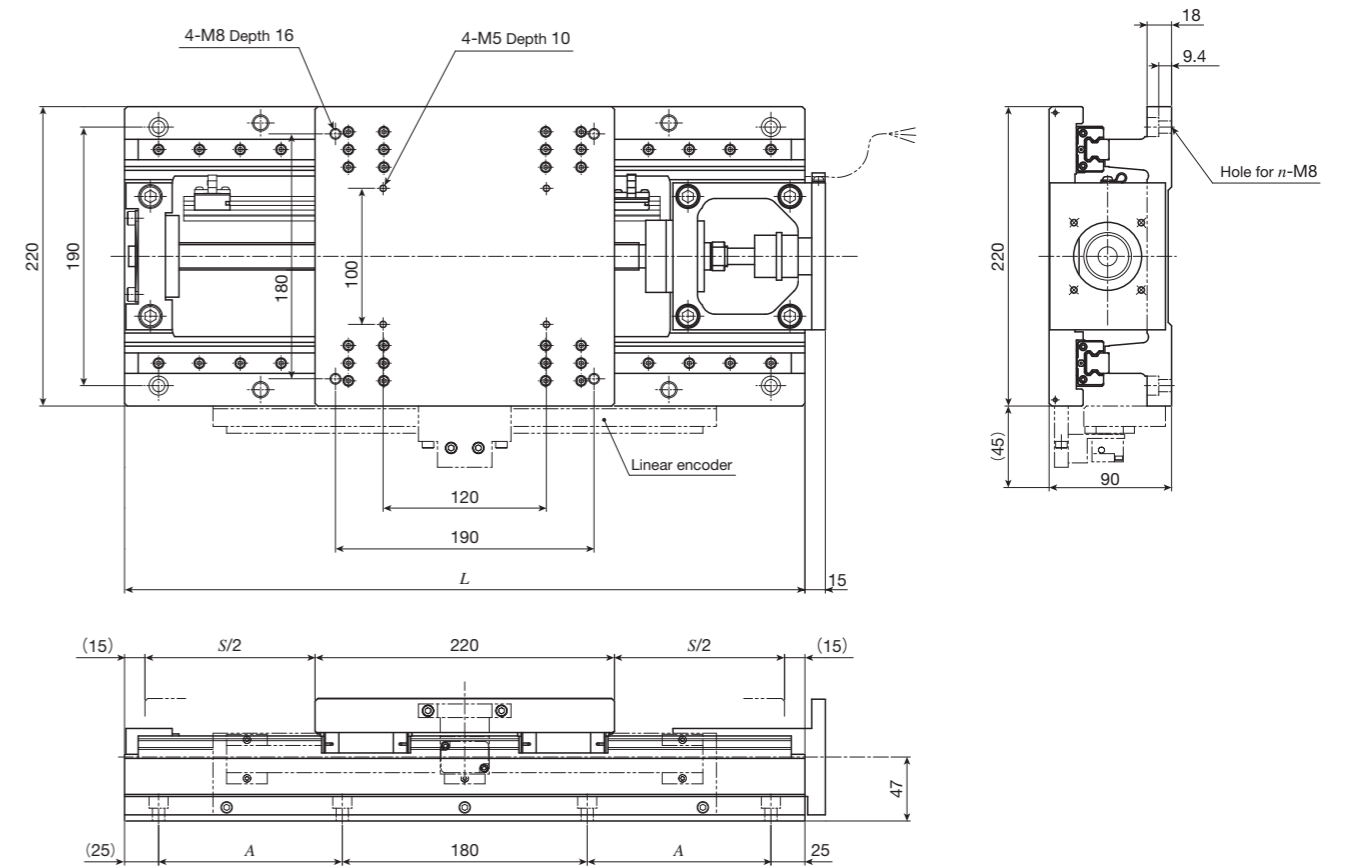


unit: mm

Identification number	Stroke length <i>S</i>	Overall length <i>L</i>	Mounting holes of bed				Mass (Ref.) kg
			<i>A</i>	<i>B</i>	<i>C</i>	<i>n</i>	
TX120M-100	100	275	75	—	—	8	12
TX120M-150	150	325	100	—	—	8	13
TX120M-200	200	375	125	—	—	8	14
TX120M-250	250	425	150	75	75	12	16
TX120M-300	300	475	175	100	75	12	17

Note (1) This applies to AT401 and AT405.

TX220M

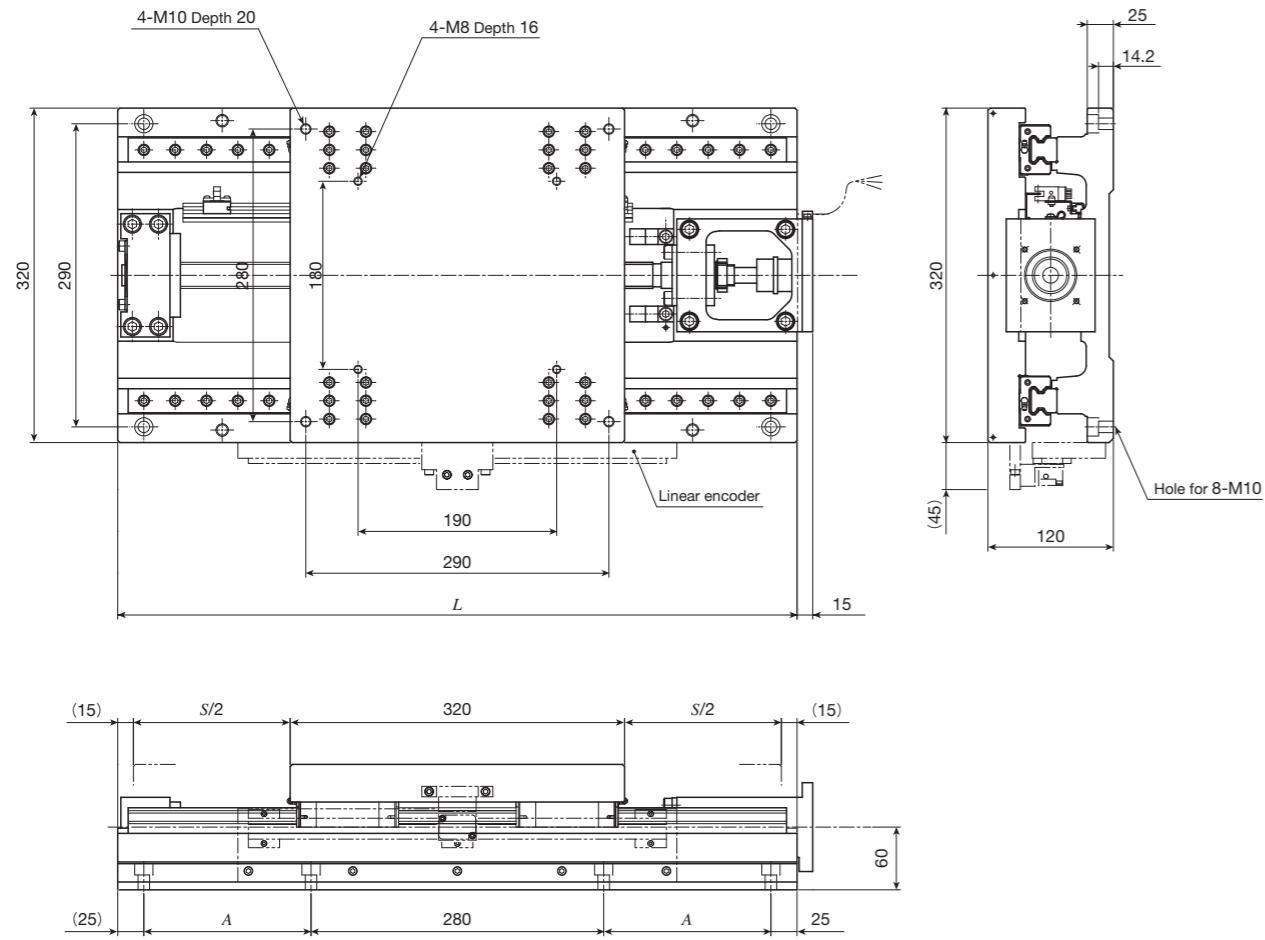


unit: mm

Identification number	Stroke length <i>S</i>	Overall length <i>L</i>	Mounting holes of bed		Mass (Ref.) kg
			<i>A</i> (the number of holes×pitch)	<i>n</i>	
TX220M-150	150	400	85	8	34
TX220M-200	200	450	110	8	37
TX220M-250	250	500	135	8	39
TX220M-300	300	550	160	8	42
TX220M-400	400	650	210 (2×105)	12	47

IKO Super Precision Positioning Table TX

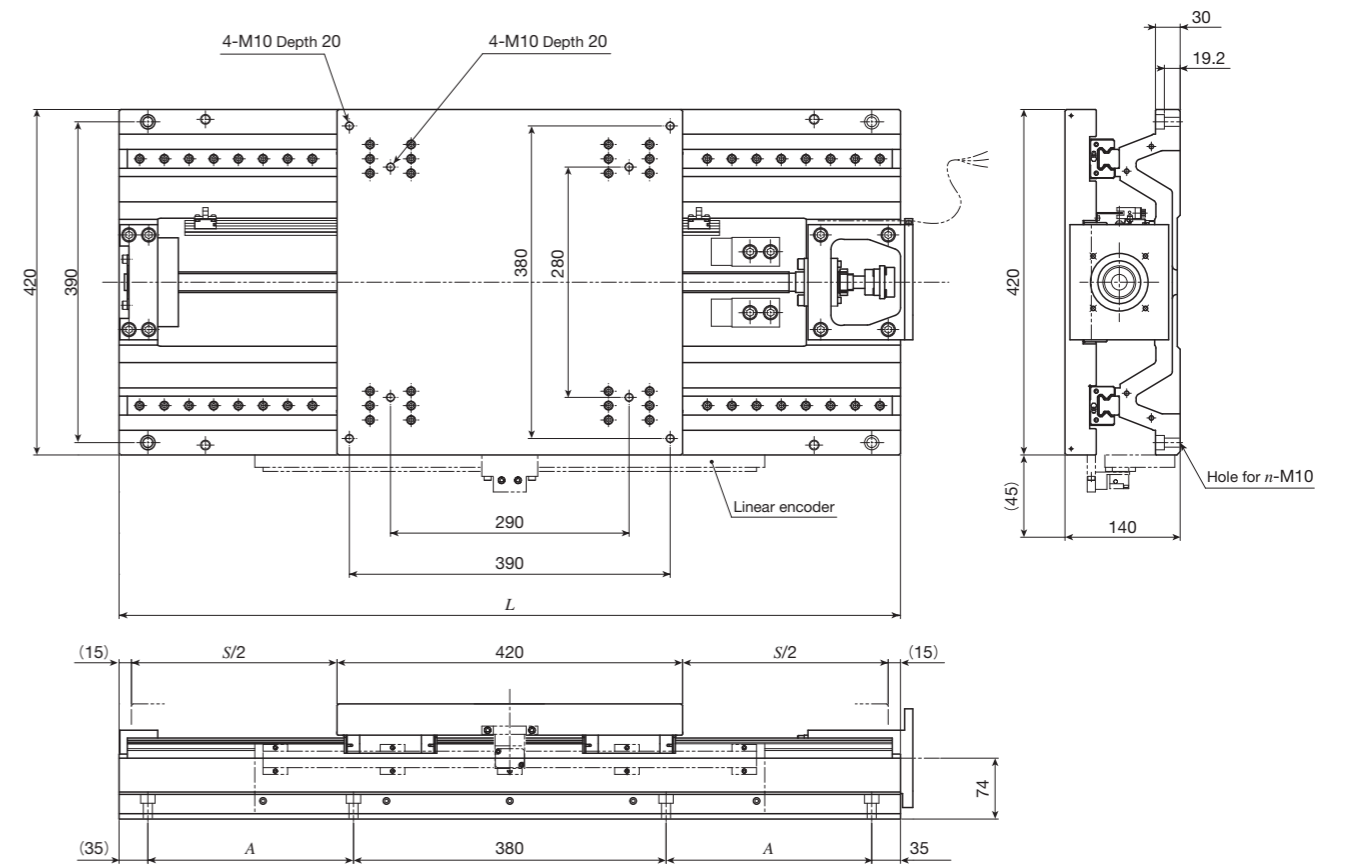
TX320M



unit: mm

Identification number	Stroke length <i>S</i>	Overall length <i>L</i>	Mounting holes of bed <i>A</i>	Mass (Ref.) kg
TX320M-300	300	650	160	104
TX320M-400	400	750	210	115
TX320M-500	500	850	260	124

TX420M

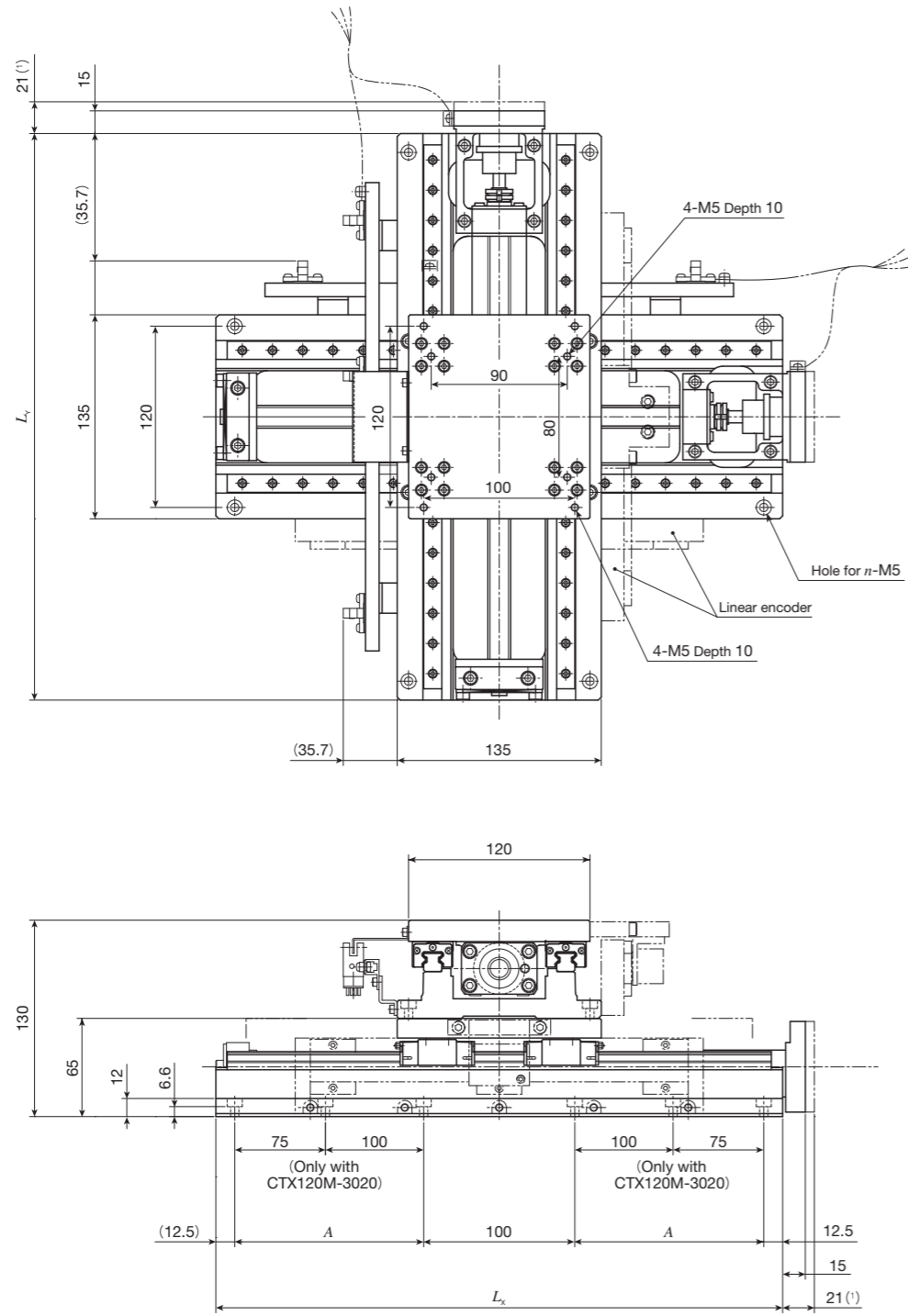


unit: mm

Identification number	Stroke length <i>S</i>	Overall length <i>L</i>	Mounting holes of bed		Mass (Ref.) kg
			<i>A</i> (the number of holes×pitch)	<i>n</i>	
TX420M-500	500	950	250	8	183
TX420M-600	600	1 050	300	8	197
TX420M-800	800	1 250	400 (2×200)	12	223

IKO Super Precision Positioning Table TX

CTX120M



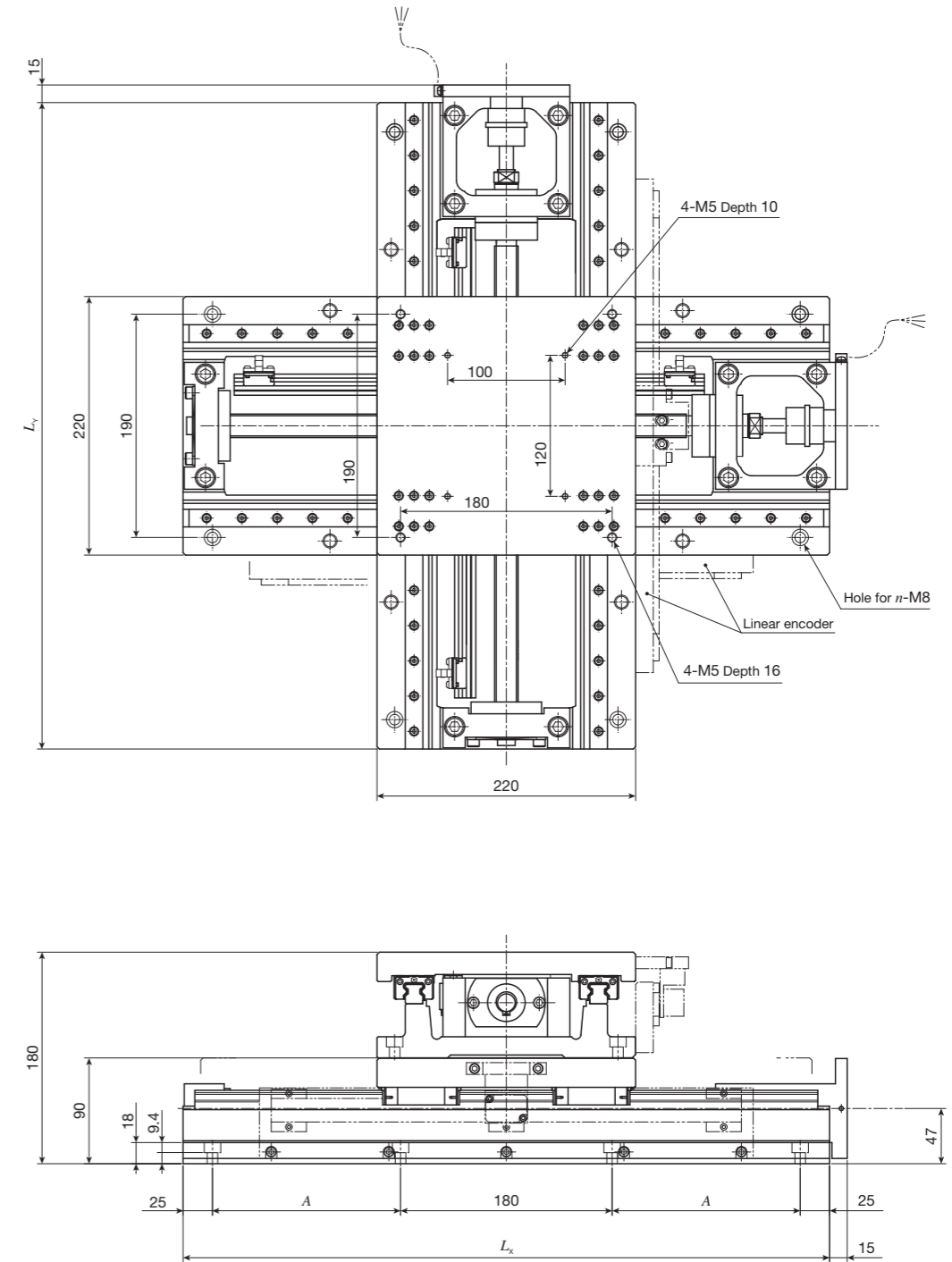
unit: mm

Identification number	Stroke length S		Overall length		Mounting holes of bed		Mass (Ref.) kg
	X-axis	Y-axis	L_x	L_y	A	n	
CTX120M-1010	100	100	275	275	75	8	23
CTX120M-2010	200	100	375	275	125	8	26
CTX120M-2020	200	200	375	375	125	8	28
CTX120M-3020	300	200	475	375	175	12	31

Note (1) This applies to AT401 and AT405.

Remark: As a combination of stroke length other than listed above and a table of different size as well as production of cableveyor specification are possible, please contact **IKO**.

CTX220M



unit: mm

Identification number	Stroke length S		Overall length		Mounting holes of bed		Mass (Ref.) kg
	X-axis	Y-axis	L_x	L_y	A (the number of holes \times pitch)	n	
CTX220M-2020	200	200	450	450	110	8	73
CTX220M-3020	300	200	550	450	160	8	78
CTX220M-3030	300	300	550	550	160	8	83
CTX220M-4030	400	300	650	550	210 (2 \times 105)	12	88

Remark: As a combination of stroke length other than listed above and a table of different size as well as production of cableveyor specification are possible, please contact **IKO**.