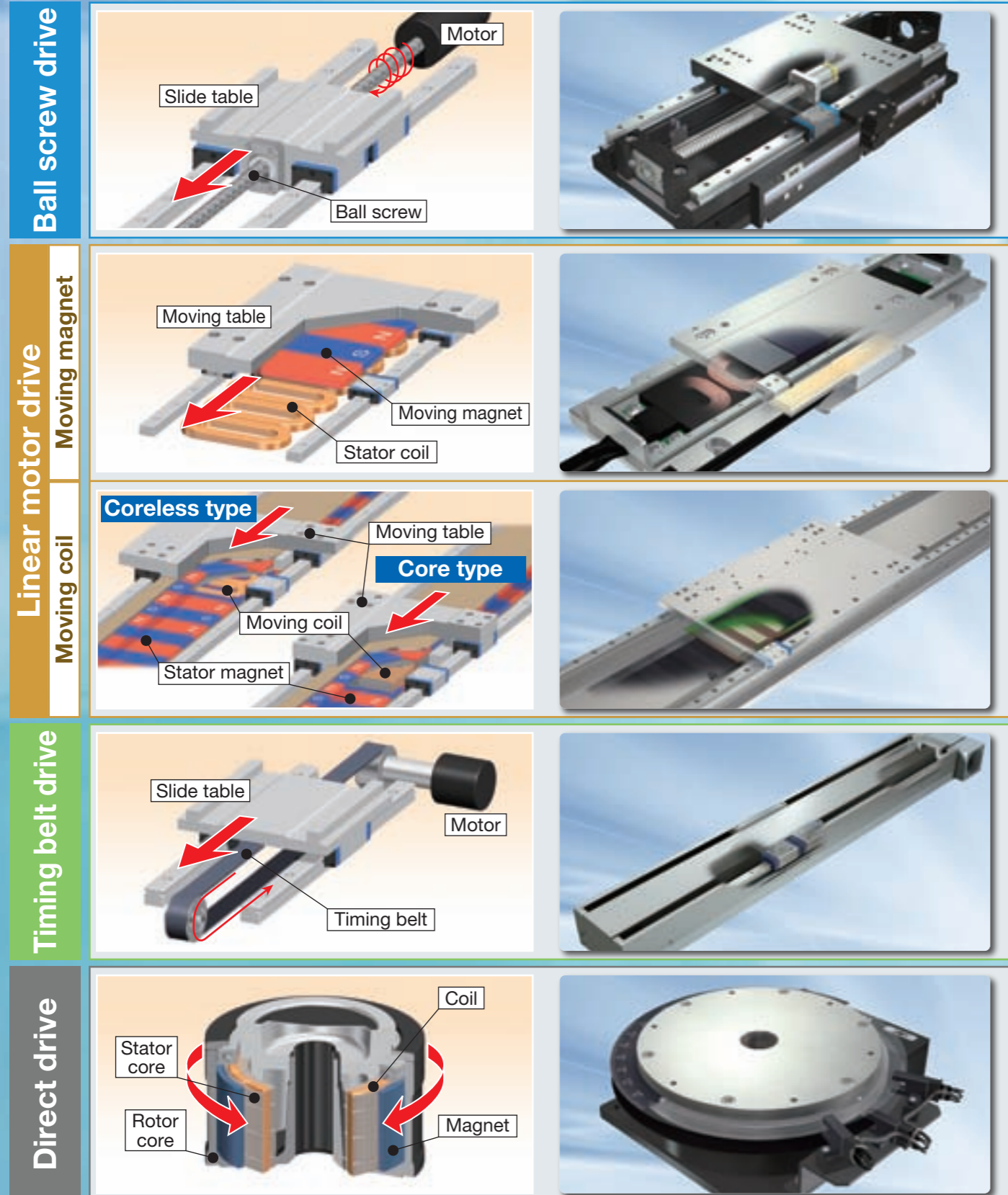


IKO Types and Characteristics

of Mechatronics Series

Types of Mechatronics Series



Characteristics of Mechatronics Series

	Motion direction	Stroke length	Thrust force	Speed	Acceleration	Positioning accuracy
Ball screw drive	Linear					
	Vertical	○	◎	○	△	○
	Alignment					
Linear motor drive Moving magnet	Linear	△	△	◎	◎	◎
	Linear	◎	△	◎	◎	◎
Linear motor drive Moving coil	Linear	◎	△	◎	◎	◎
Timing belt drive	Linear	◎	○	◎	◎	△
Direct drive	Rotation	—	△	◎	◎	◎

Code description ◎Excellent ○Good △Fair

Precision Positioning Table TE

- High-strength aluminum alloy is used for main components
- Light weight, low section and compact positioning table



TE...B

Precision Positioning Table TU

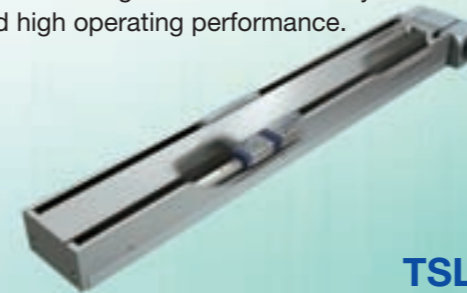
- High rigidity U-shaped track rail adopted
- Various table specifications are available according to your use.



TU

Precision Positioning Table LB

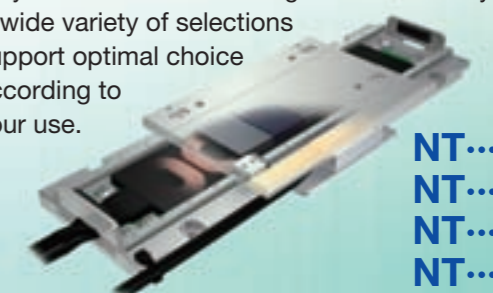
- High-speed type using a timing belt drive
- Parallel arrangement of Linear Way ensures stable and high operating performance.



TSLB

Nano Linear NT

- Pursuing ultimate compactification
- Very low cross sectional height of NT38V: only 11mm
- A wide variety of selections support optimal choice according to your use.



NT...V
NT...H
NT...XZ
NT...XZH

Precision Positioning Table L

- Standard type highly-proven in various fields
- Parallel arrangement of Linear Ways with stable performance



TSL...M

Precision Positioning Table LH

- Component parts from rigorous selection ensure high accuracy and reliability.
- High rigidity and large carrying mass



TSLH...M

CTLH...M

Alignment Stage SA

- Sectional height of 3 axes X, Y and θ is only 52mm (SA65DE).
- X- and Y-axis: $0.1\mu\text{m}$, θ -axis: excellent resolution as high as 0.36 sec (SA120DE)



SA...DE

Linear Motor Table LT

- Both high speed and high resolution are achieved.
- High acceleration / deceleration, high response and smooth operations
- Long term maintenance free specification with C-Lube built in



LT...CE
LT...LD
LT...H

Super Precision Positioning Table TX

- Achieved ultimate positioning performance with rolling guide type
- High accuracy attained by fully-closed loop control



TX...M

CTX...M

Cleanroom Precision Positioning Table TC

- Optional for use in high cleanliness environment for semiconductor and LCD manufacturing machines
- Light weight, low section and compact positioning table



TC...EB

Rotary Table RT

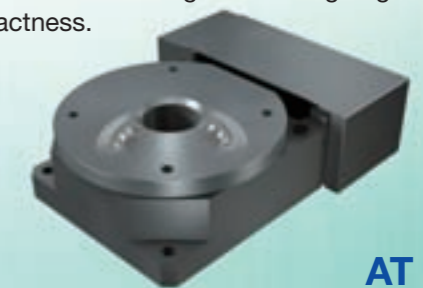
- High speed and high resolution rotary positioning table
- Crossed Roller Bearing ensures high accuracy and high rigidity.



RT

Alignment Table AT

- High accuracy positioning ensuring precise angle correction
- Crossed Roller Bearing ensures high rigidity and compactness.



AT

Micro Precision Positioning Table TM

- Ground ball screw drive realizes ultra-small size with sectional height of 20mm and width of 17mm.
- High positioning accuracy and excellent durability



TM

Precision Positioning Table TS/CT

- Compact structure with low cross sectional height
- Crossed Roller Way guaranteeing high reliability and high accuracy



TS

CT

Alignment Module AM

- Supports free designing of stage according to your use
- Control tolerance of height within $\pm 10\mu\text{m}$











AM

Precision Elevating Table TZ

- Unique wedge mechanism ensures compact and high accuracy vertical positioning.
- TZ...X achieving high accuracy and high rigidity through adoption of C-Lube Linear Roller Way Super MX



TZ
TZ...H
TZ...X

Motion direction and feeding mechanism		Shape	Series	Models of single-axis specification	Models of multi-axis specification	Reference page
 Linear	Ball screw drive		Precision Positioning Table TE	TE...B	—	Page II -4
			Precision Positioning Table TU	TU	—	Page II -30
			Precision Positioning Table L	TSL...M	—	Page II -96
			Precision Positioning Table LH	TSLH...M	CTLH...M	Page II -116
			Super Precision Positioning Table TX	TX...M	CTX...M	Page II -144
			Cleanroom Precision Positioning Table TC	TC...EB	—	Page II -164
			Micro Precision Positioning Table TM	TM	—	Page II -180
 Linear	Timing belt drive		Precision Positioning Table LB	TSLB	—	Page II -218
			Nano Linear NT	NT...V NT...H	NT...XZ NT...XZH	Page II -230
 Linear	Linear motor drive		Alignment Stage SA	SA...DE/X	SA...DE/XY SA...DE/XS SA...DE/XYS	Page II -266
			Linear Motor Table LT	LT...CE LT...LD LT...H	—	Page II -282
 Rotation	Direct drive		Rotary Table RT	RT	—	Page II -312
			Alignment Table AT	AT	—	Page II -322
 Alignment	Ball screw drive		Alignment Module AM	AM	—	Page II -334
			Alignment Stage SA	SA...DE/S	SA...DE/XS SA...DE/XYS	Page II -266
 Alignment	Linear motor drive		Alignment Stage SA	SA...DE/S	SA...DE/XS SA...DE/XYS	Page II -266
			Precision Elevating Table TZ	TZ TZ...H TZ...X	—	Page II -348
 Vertical	Ball screw drive		Precision Elevating Table TZ	TZ TZ...H TZ...X	—	Page II -348

A Variety of Models and Variations



Precision Positioning Table TE

TE...B

Ball screw drive



- High-strength aluminum alloy is used for main components
- Light weight, low section and compact positioning table
- High accuracy positioning
- Long term maintenance free specification with C-Lube built in
- Excellent cost performance

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Ball screw lead (mm)
TE50B	210	400	4, 8
TE60B	500	500	5, 10
TE86B	800	1 000	10, 20

Accuracy

Positioning repeatability	○
Positioning accuracy	○
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	○
Attitude accuracy	—
Straightness	—
Backlash	○

See page

II-4



Precision Positioning Table L

TSL...M

Ball screw drive



- Standard type highly-proven in various fields
- Parallel arrangement of Linear Ways with stable performance
- High running accuracy and positioning accuracy
- Many size variations support easy multi-axis system configurations.
- Long term maintenance free specification with C-Lube built in

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Ball screw lead (mm)
TSL 90 M	300	500	5, 10
TSL 120 M	600	500	5, 10
TSL 170 M	500	500	5, 10
TSL 170S M	1 000	500	5, 10
TSL 220 M	1 000	500	5, 10

Accuracy

Positioning repeatability	○
Positioning accuracy	○
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	○
Attitude accuracy	—
Straightness	—
Backlash	○

See page

II-96



Precision Positioning Table TU

TU

Ball screw drive



- Original high rigidity U-shaped track rail adopted
- Various table specifications are available according to your use.
- Slide table with high accuracy and high rigidity in a single structure
- Easy ordering just by specifying the identification number for the required functions and performance

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Ball screw lead (mm)
TU 25	100	200	4
TU 30	230	250	5
TU 40	285	400	4, 8
TU 50	560	500	5, 10
TU 60	1 010	1 000	5, 10, 20
TU 86	1 400	1 000	10, 20
TU100	1 140	1 000	20
TU130	1 260	1 121	25

Accuracy

Positioning repeatability	○
Positioning accuracy	○
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	○
Attitude accuracy	—
Straightness	—
Backlash	○

See page

II-30



Precision Positioning Table LH

TSLH...M

Ball screw drive



CTLH...M

(Single-axis specification)
(Two-axis specification)



- Component parts from rigorous selection ensure high accuracy and reliability.
- High rigidity and large carrying mass
- High running accuracy and positioning accuracy
- The series including ultra large size with table width of 420mm
- Long term maintenance free specification with C-Lube built in

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Ball screw lead (mm)
TSLH120M	300	500	5, 10
TSLH220M	400	500	5, 10
TSLH320M	500	448	5, 10
TSLH420M	800	448	5, 10
CTLH120M	300 × 300	500	5, 10
CTLH220M	400 × 400	500	5, 10
CTLH320M	500 × 500	448	5, 10

Accuracy

Positioning repeatability	○
Positioning accuracy	○
Lost motion	—
Parallelism in table motion A	○
Parallelism in table motion B	—
Attitude accuracy	—
Straightness	◎
Backlash	◎

See page

II-116

A Variety of Models and Variations



Super Precision Positioning Table TX

TX...M (Single-axis specification)  Ball screw drive
CTX...M (Two-axis specification)  Linear

- Achieved ultimate positioning performance with rolling guide type
- Fully-closed loop control equipped with super high accuracy linear encoder ensuring high accuracy
- Control method selectable according to needs
- Long term maintenance free specification with C-Lube built in

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Ball screw lead (mm)
TX 120M	300	500	5, 10
TX 220M	400	500	5, 10
TX 320M	500	448	5, 10
TX 420M	800	448	5, 10
CTX120M	300 × 200	500	5, 10
CTX220M	400 × 300	500	5, 10

Accuracy

Positioning repeatability	◎
Positioning accuracy	◎
Lost motion	◎
Parallelism in table motion A	◎
Parallelism in table motion B	—
Attitude accuracy	◎
Straightness	◎
Backlash	◎

See page

[II-144](#)



Cleanroom Precision Positioning Table TC

TC...EB  Ball screw drive  Linear

- Optional for use in high cleanliness environment for semiconductor and LCD manufacturing machines
- Light weight, low section and compact positioning table
- Compatible with cleanliness class 3
- Long term maintenance free specification with C-Lube built in

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Ball screw lead (mm)
TC50EB	200	400	4, 8
TC60EB	500	500	5, 10
TC86EB	800	1 000	10, 20

Accuracy

Positioning repeatability	○
Positioning accuracy	○
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	○
Attitude accuracy	—
Straightness	—
Backlash	○

See page

[II-164](#)



Micro Precision Positioning Table TM

TM  Ball screw drive  Linear

- Ground ball screw drive realizes ultra-small size with sectional height of 20mm and width of 17mm.
- High positioning accuracy and excellent durability
- Two types of slide table shapes selectable according to needs
- Super-miniature sensor can be built in.

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Ball screw lead (mm)
TM15	60	150	0.5, 1.0, 1.5
TM15G	50	150	0.5, 1.0, 1.5

Accuracy



Positioning repeatability	○
Positioning accuracy	○
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	—
Attitude accuracy	—
Straightness	—
Backlash	—

See page

[II-180](#)



Precision Positioning Table TS/CT

TS (Single-axis specification)  Ball screw drive
CT (Two-axis specification)  Linear

- Compact structure with low cross sectional height
- Crossed Roller Way guaranteeing high reliability and high accuracy positioning
- Compact design achieved by utilizing wide area of slide table

Specification

Model and size	Maximum stroke (mm)		Maximum speed (mm/s)	Ball screw lead (mm)
	X-axis	Y-axis		
TS 55/ 55	± 7.5		30	1
TS 75/ 75	± 12.5		30	1
TS125/125	± 25		250	1, 2, 5
TS125/220	± 60		250	2, 5
TS220/220	± 60		250	2, 5
TS220/310	± 90		250	2, 5
TS260/350	±125		250	2, 5
CT 55/ 55	± 7.5	± 7.5	30	1
CT 75/ 75	± 12.5	± 12.5	30	1
CT125/125	± 25	± 25	250	1, 2, 5
CT220/220	± 60	± 60	250	2, 5
CT260/350	± 75	±125	250	2, 5
CT350/350	±125	±125	250	2, 5

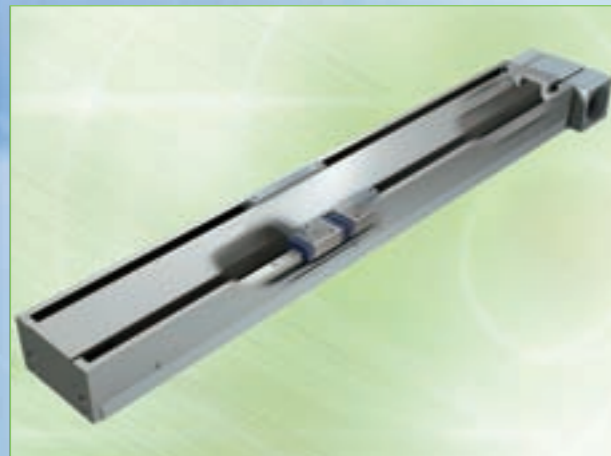
Accuracy

Positioning repeatability	○
Positioning accuracy	○
Lost motion	—
Parallelism in table motion A	◎
Parallelism in table motion B	○
Attitude accuracy	—
Straightness	—
Backlash	○

See page

[II-196](#)

A Variety of Models and Variations



Precision Positioning Table LB

TSLB

Timing belt drive



- Timing belt drive achieves high speed travel at 1,500mm/s.
- Parallel arrangement of Linear Way ensures stable and high operating performance.
- Long stroke up to 1,200mm

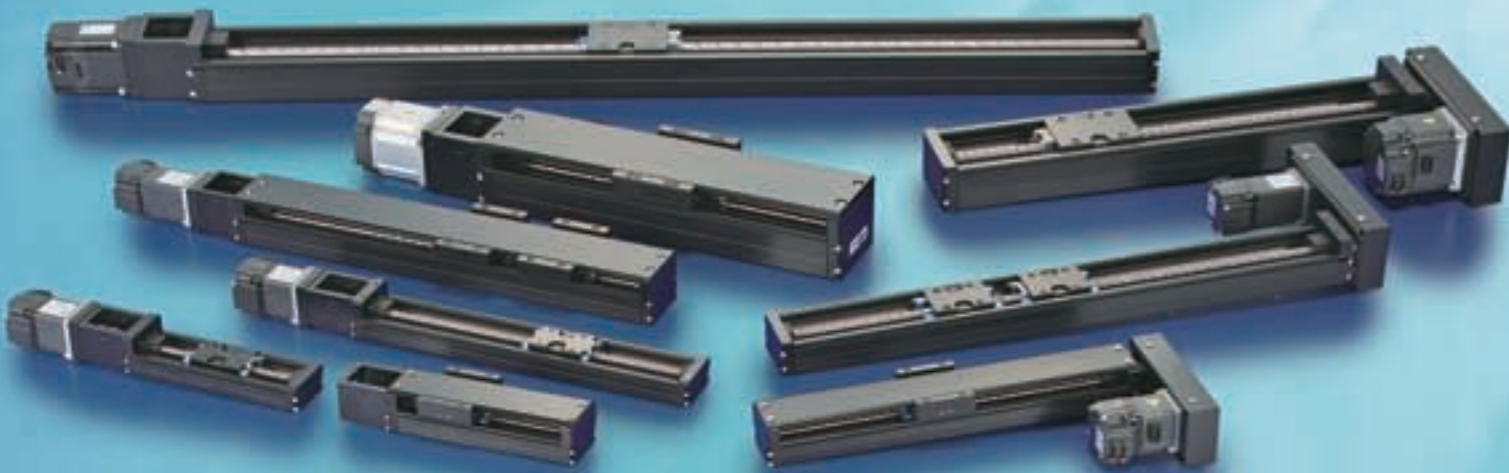
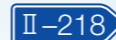
Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Resolution (mm)
TSLB 90	600	1 500	0.1
TSLB120	1 000	1 500	0.1
TSLB170	1 200	1 500	0.1

Accuracy

Positioning repeatability	△
Positioning accuracy	—
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	△
Attitude accuracy	—
Straightness	—
Backlash	—

See page



Nano Linear NT

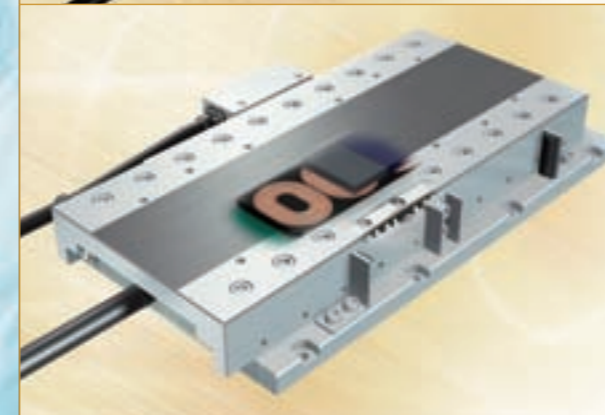
Standard Type

NT...V

Linear motor drive



- Pursuing ultimate compactification
- Very low cross sectional height of NT38V: only 11mm
- A wide variety of selections support optimal choice according to your use.
- High acceleration / deceleration ensuring highly responsive positioning
- Two-axis combination of X and Y



High Accuracy Type

NT...H

Linear motor drive



- Pursuing ultimate compactification
- High attitude accuracy
- High speed stability
- Simple system configuration



Pick and Place Unit

NT...XZ
NT...XZH

Linear motor drive



- Pursuing ultimate compactification
- High-tact positioning
- Ultrathin and space saving
- Operation monitoring function

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Resolution (μm)
NT38V	18	500	0.1, 0.5
NT55V	65	1 300	0.1, 0.5
NT80V	120	1 300	0.1, 0.5
NT88H	65	400	0.01, 0.05
NT80XZ	45	1 300	0.1, 0.5
NT90XZH	25	1 300	0.1, 0.5

Accuracy

Item	NT...V	NT...H	NT...XZ
Positioning repeatability	◎	◎	◎
Positioning accuracy	—	◎	—
Lost motion	—	—	—
Parallelism in table motion A	—	◎	—
Parallelism in table motion B	—	—	—
Attitude accuracy	—	◎	—
Straightness	—	◎	—
Backlash	—	—	—

See page



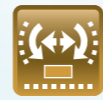
A Variety of Models and Variations



Alignment Stage SA

Linear motor drive

SA...DE



Linear Alignment

- Slim and compact design with sectional height of 3 axes, X, Y and θ being only 52mm (SA65DE)
- X- and Y-axis: 0.1 μ m, θ -axis: excellent resolution as high as 0.36 sec (SA120DE)
- Free and independent combination of X, Y and θ

Specification

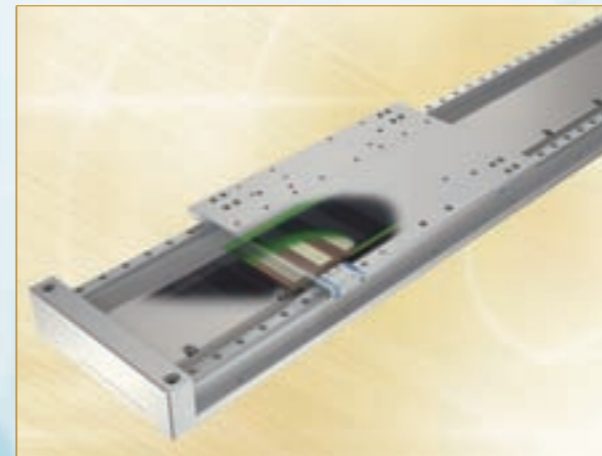
Model and size	Maximum stroke Maximum operating angle	Maximum speed	Resolution
SA 65 DE/X	10 (mm)	500 (mm/s)	0.1, 0.5 (μ m)
SA120 DE/X	20 (mm)	800 (mm/s)	0.1, 0.5 (μ m)
SA 65 DE/S	50 (degree)	720 (degree/s)	0.64 (s)
SA120 DE/S	60 (degree)	420 (degree/s)	0.36 (s)
SA200 DE/S	280 (degree)	270 (degree/s)	0.25 (s)

Accuracy

Positioning repeatability	◎
Positioning accuracy	—
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	—
Attitude accuracy	—
Straightness	—
Backlash	—

See page

II-266



Linear Motor Table LT

Compact Type

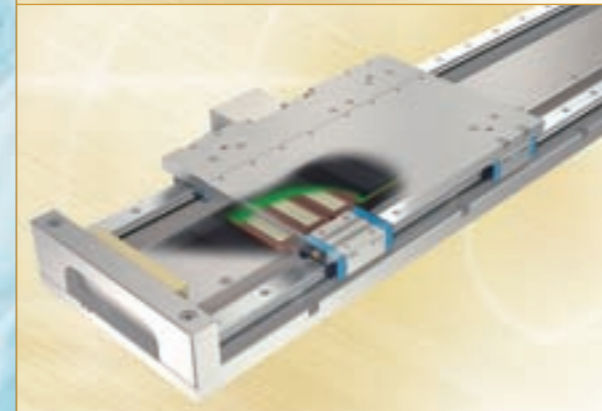
Linear motor drive

LT...CE



Linear

- Compact
- High static stability
- High speed stability
- High acceleration / deceleration and high response
- Long term maintenance free specification with C-Lube built in



Long Stroke Type

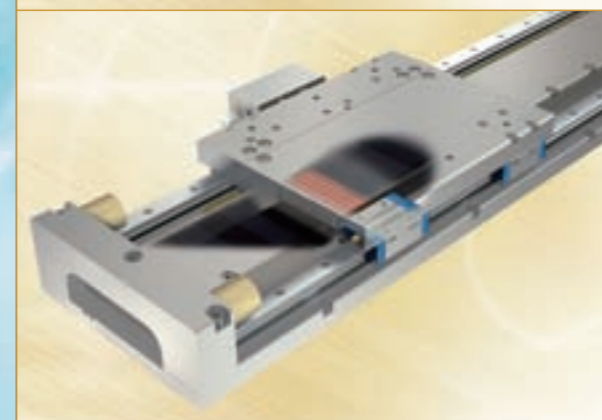
Linear motor drive

LT...LD



Linear

- Super long stroke
- High static stability
- High speed stability
- Both high speed and high resolution are achieved.
- Long term maintenance free specification with C-Lube built in



High Thrust Type

Linear motor drive

LT...H



Linear

- High thrust
- High acceleration / deceleration, high response and smooth operations
- High static stability
- Air-cooling capable
- Long term maintenance free specification with C-Lube built in

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Resolution (μ m)
LT100CE	1 000	2 000	0.1, 0.5, 1.0
LT150CE	1 200	2 000	0.1, 0.5, 1.0
LT130LD	2 760	3 000	0.1, 0.5, 1.0
LT170LD	2 720	3 000	0.1, 0.5, 1.0
LT130H	2 710	1 500	0.1, 0.5, 1.0
LT170H	2 670	1 500	0.1, 0.5, 1.0

Accuracy

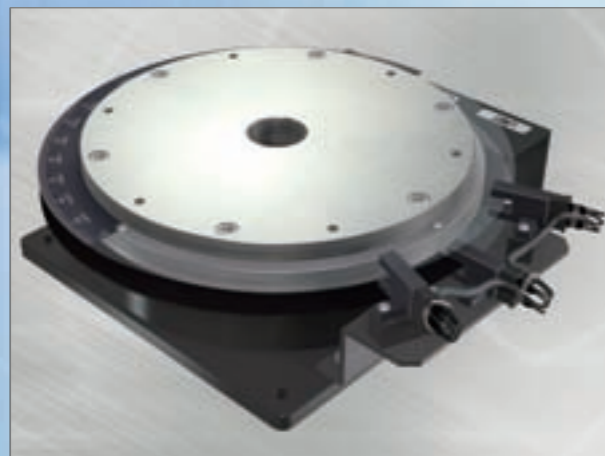
Item	LT...CE	LT...LD	LT...H
Positioning repeatability	◎	◎	◎
Positioning accuracy	—	—	—
Lost motion	—	—	—
Parallelism in table motion A	—	—	—
Parallelism in table motion B	—	—	—
Attitude accuracy	—	—	—
Straightness	—	—	—
Backlash	—	—	—

See page

II-282



A Variety of Models and Variations



Rotary Table RT

RT

Direct drive



Rotation

- High speed and high resolution rotary positioning table
- Crossed Roller Bearing ensures high accuracy and high rigidity.
- High resolution optical encoder adopted
- Compact and smooth rotation

Specification

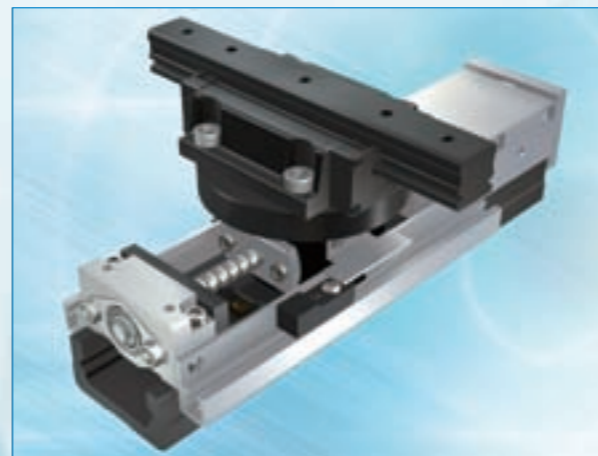
Model and size	Maximum operating angle (degree)	Max. number of revolution (s ⁻¹)	Number of encoder fraction sizes
RT158A2	360-degree endless	2.5	2 621 440

Accuracy

Positioning repeatability	◎
Positioning accuracy	◎
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	—
Attitude accuracy	○
Straightness	—
Backlash	—

See page

II-312



Alignment Module AM

AM

Ball screw drive



Alignment

- Supports free designing of stage according to your use
- Control tolerance of height within $\pm 10 \mu\text{m}$
- Variety of positioning operations in combination of X, Y, and θ
- Ideal for large size equipment
- High accuracy, high rigidity, and high reliability

Specification

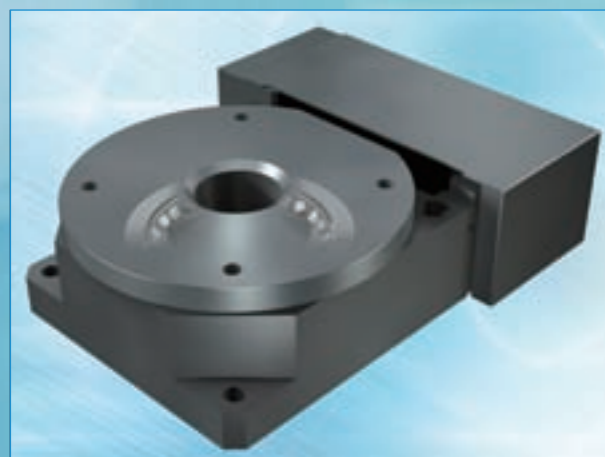
Model and size	Maximum stroke (mm)	Length of track rail (mm)	Ball screw lead (mm)
AM25	30	130	4
AM40	30	180	4
AM60	90	290	5
AM86	120	390	5

Accuracy

Positioning repeatability	○
Positioning accuracy	○
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	○
Attitude accuracy	—
Straightness	—
Backlash	○

See page

II-334



Alignment Table AT

AT

Ball screw drive



Alignment

- High accuracy positioning ensuring precise angle correction
- Crossed Roller Bearing ensures high rigidity and compactness.
- High positioning repeatability
- A series of 3 sizes

Specification

Model and size	Maximum operating angle (degree)	Ball screw lead (mm)	Rotator resolution (μm)
AT120	± 5	1	1
AT200	± 5	1	1
AT300	± 10	2	2

Accuracy

Positioning repeatability	◎
Positioning accuracy	—
Lost motion	—
Parallelism in table motion A	—
Parallelism in table motion B	—
Attitude accuracy	—
Straightness	—
Backlash	—

See page

II-322



Precision Elevating Table TZ

TZ

Ball screw drive



Linear

- Unique wedge mechanism ensures compact and high accuracy vertical positioning.
- TZ···X achieving high accuracy and high rigidity through adoption of C-Lube Linear Roller Way Super MX
- Linear encoder mountable
- Long term maintenance free with C-Lube built in
- A series of two types of reduction ratios

Specification

Model and size	Maximum stroke (mm)	Maximum speed (mm/s)	Ball screw lead (mm)
TZ120	10	100	4
TZ120X	10	100	4
TZ200H	24	125	5
TZ200X	24	125	5

Accuracy

Positioning repeatability	○
Positioning accuracy	○
Lost motion	○
Parallelism in table motion A	—
Parallelism in table motion B	—
Attitude accuracy	○
Straightness	—
Backlash	—

See page

II-348