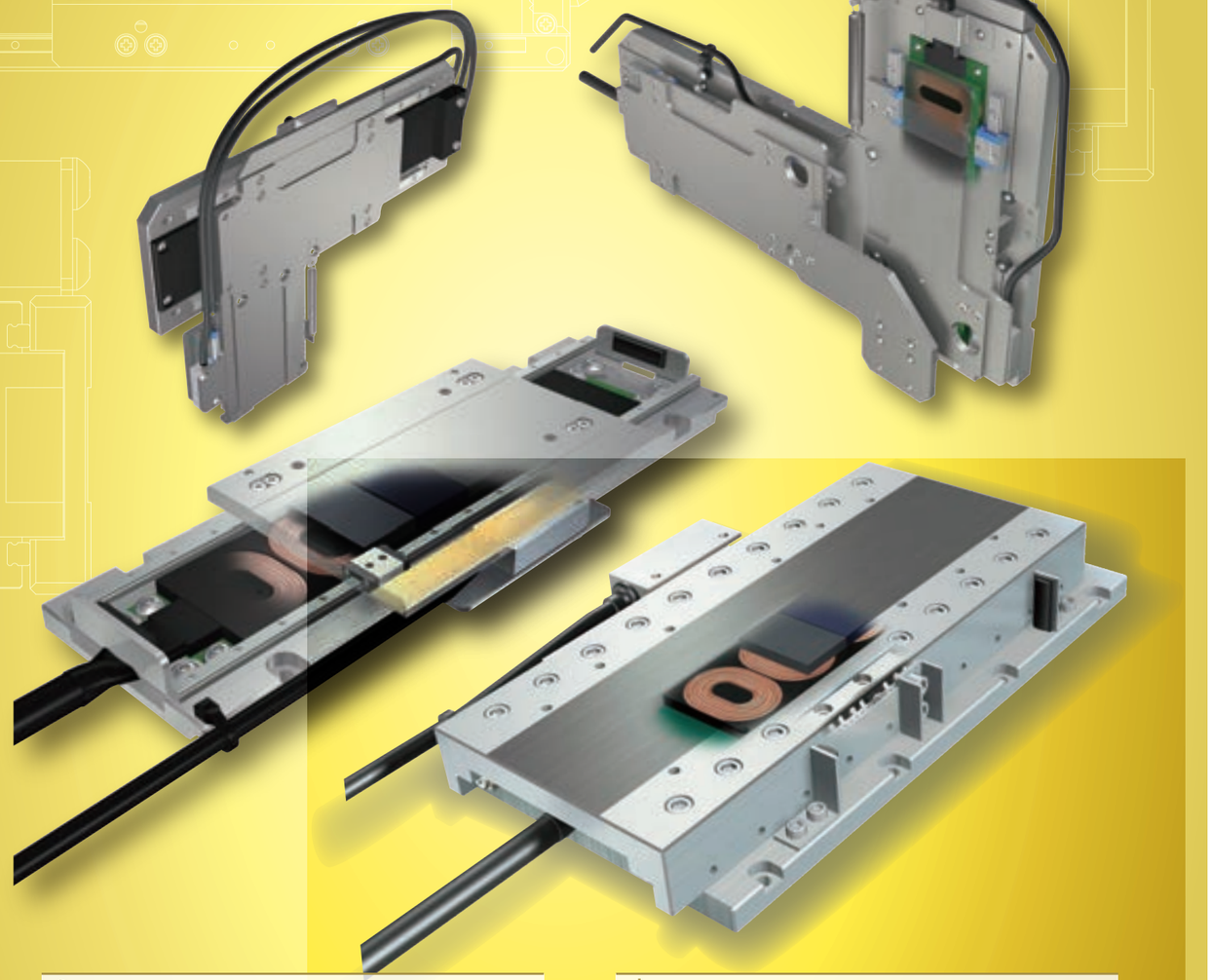
# NT
# (NT…V, NT…H, NT…XZ, NT…XZH)

# NT

Linear motor

Linear motion



## Major product specifications

| | |
|---|---|
| Driving method | Linear motor |
| Linear motion rolling guide | Linear Way(ball type)<br>Crossed Roller Way(roller type) |
| Built-in lubrication part | Lubrication part "C-Lube" is built-in (except for NT38V, NT55V and NT···H) |
| Material of table and bed | High carbon steel |
| Sensor | Provided as standard |

## Accuracy

unit: mm

| | |
|---|---|
| Positioning repeatability | ±0.0001～0.0005 |
| Positioning accuracy | – |
| Lost motion | – |
| Parallelism in table motion A | – |
| Parallelism in table motion B | – |
| Attitude accuracy | – |
| Straightness | – |
| Backlash | – |





# *Ultracompact, state-of-the-art linear motor table NT series!*

Nano Linear NT is a moving magnet type linear motor table with extremely low profile.
For guiding parts of the moving table, Linear Way or Crossed Roller Way well-established in the area of miniature linear motion rolling guides is used in combination with linear motor and high-resolution linear encoder to realize highly accurate positioning.
Thanks to adoption of high-performance neodymium magnet, large thrust force can be acquired and therefore high-speed and highly responsive positioning is possible, despite its very small body. In addition, high cleanliness is realized as the mechanical contact part is only the linear motion rolling guide thanks to adoption of a landmark driving method without moving cables.

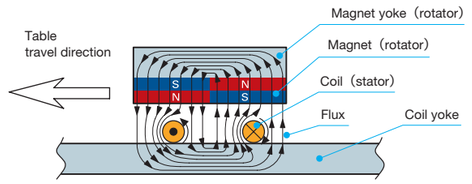
## Nano Linear NT specifications list

| Model and size | | Standard type NT···V | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NT38V10 | | NT38V18 | | NT55V25 | | NT55V65 | | NT80V25 | | NT80V65 | | NT80V120 | |
| Sectional shape | | 38, 11, 26 | | | | 55, 14 | | | | 80, 16 | | | | | |
| Maximum thrust | N | 3 | | 3 | | 25 | | 25 | | 36 | | 36 | | 36 | |
| Rated thrust | N | 0.6 | | 0.8 | | 7 | | 7 | | 8 | | 8 | | 8 | |
| Maximum load mass | kg | 0.5 | | 0.5 | | 5 | | 5 | | 5 | | 5 | | 5 | |
| Effective stroke length | mm | 10 | | 18 | | 25 | | 65 | | 25 | | 65 | | 120 | |
| Resolution | μm | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 |
| Maximum speed | mm/s | 270 | 500 | 270 | 500 | 270 | 1000 1300 | 270 | 1000 1300 | 270 | 1000 1300 | 270 | 1000 1300 | 270 | 1000 1300 |
| Positioning repeatability | μm | ±0.5 | | ±0.5 | | ±0.5 | | ±0.5 | | ±0.5 | | ±0.5 | | ±0.5 | |

| Model and size | | High accuracy type NT···H | | | | Pick and place unit NT···XZ | | | | High thrust pick and place unit NT···XZH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NT88H25 | | NT88H65 | | NT80XZ4510 | | | | NT90XZH2510 | | | |
| Sectional shape | | 88, 25 | | | | 210, 18, 5, 153, 18 | | | | (268), 260, 29.5, 160, (168), 29.5 | | | |
| | | | | | | X-axis | | Z-axis | | X-axis | | Z-axis | |
| Maximum thrust | N | 25 | | 25 | | 50 | | 25 | | 70 | | 70 | |
| Rated thrust | N | 5 | | 5 | | 10 | | 2.5 | | Natural air cooling: 16<br>Air cooling: 20 | | Natural air cooling: 16<br>Air cooling: 20 | |
| Maximum load mass | kg | 5 | | 5 | | – | | 0.1 | | – | | 0.2 | |
| Effective stroke length | mm | 25 | | 65 | | 45 | | 10 | | 25 | | 10 | |
| Resolution | μm | 0.01 | 0.05 | 0.01 | 0.05 | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 |
| Maximum speed | mm/s | 90 | 400 | 90 | 400 | 270 | 1000 1300 | 270 | 800 800 | 270 | 1000 1300 | 270 | 1000 1000 |
| Positioning repeatability | μm | ±0.1 | | ±0.1 | | ±0.5 | | ±0.5 | | ±0.5 | | ±0.5 | |

## Operating principle of Nano Linear NT

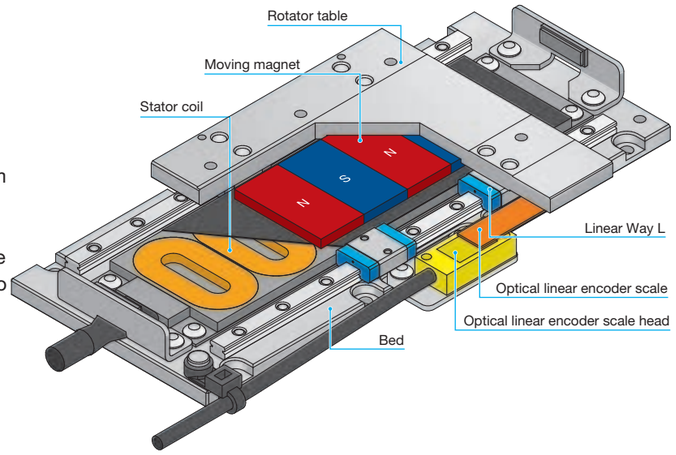
Nano Linear NT is structured with magnet and optical linear encoder scale deployed as a rotator, and an air-core coil and optical linear encoder scale head deployed as a stator within its compact body. As indicated in the right figure, the coil is subject to horizontal force due to flux that always works in vertical direction by the magnet and coil yoke, and rotational flux that is generated around the coil by the coil current (Fleming's left-hand rule). By switching the coil current to certain direction corresponding to the flux direction, continuous thrust force in a certain direction can be obtained and linear motions of the rotator is maintained. Traveling and accurate positioning are performed by acceleration control by current amount and feedback by linear encoder.




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

# NT···V [ Standard type ]

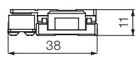
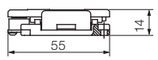
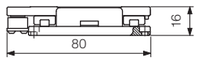
NT···V is a linear motor table with excellent cost effectiveness realized by use of Linear Way L for miniature linear motion rolling guide in the cable guiding parts, reduction of number of parts and review of parts shapes. NT38V10, the smallest in the series, is only 11mm in sectional height, 38mm in table width and 62mm in overall length. It contributes further miniaturization of positioning mechanism. Motion network EtherCAT compatible driver and SSCNETⅢ/H compatible driver are also available and smoother and higher speed and accuracy motions are realized by streamlined wiring.




# Points

## 1 ● Ultracompact

We pursued further miniaturization thoroughly. Especially, NT38V10, the smallest in the series, is only 11mm in sectional height, 38mm in table width and 62mm in overall length. The occupied space is not increased even when many tables are layered, so further miniaturization of the positioning mechanism is promoted.

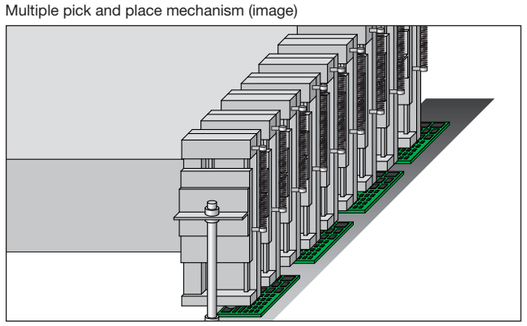
| Model and size | NT38V10 | NT38V18 | NT55V25 | NT55V65 | NT80V25 | NT80V65 | NT80V120 |
|---|---|---|---|---|---|---|---|
| Sectional shape (mm) |  | |  | |  | | |



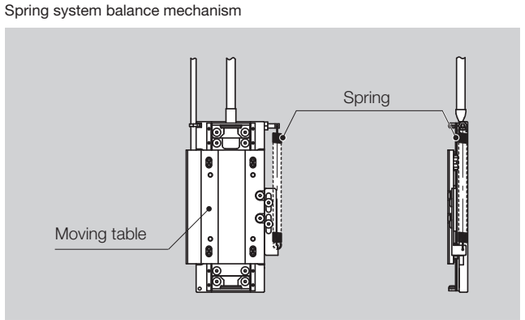
## 2 ● Compatible with vertical mounting structure

Falling of moving table in power shutdown is prevented by integration of individual spring system balance mechanism. Making use of low profile and compact characteristics of NT···V, multiple pick and place mechanism can be established.

Multiple pick and place mechanism (image)



Spring system balance mechanism



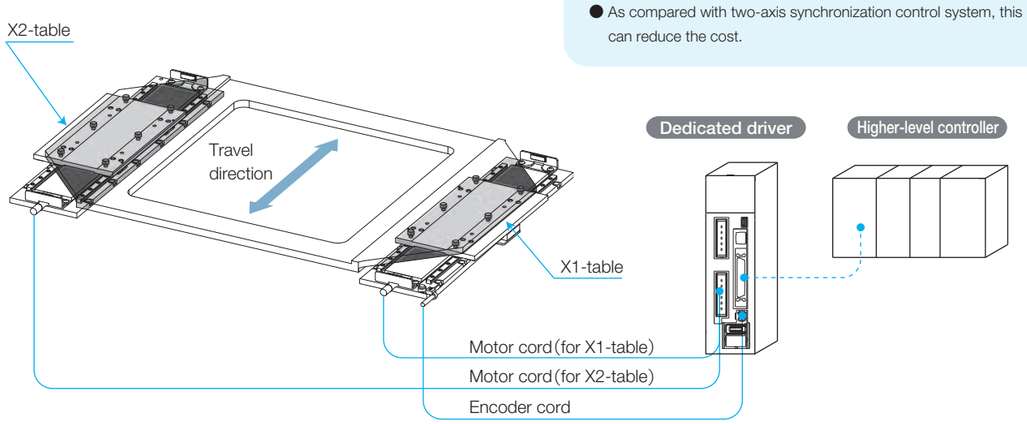

Remark: Vertical mounting structure is prepared based on respective usages. As we select spring according to your use conditions, please contact IKO.

## 3 ● Two-axis parallel operation

Performing rigid-connection of two units of NT···V arranged in parallel and driving with a single specific driver enables high thrust force and stable attitude accuracy.

### Features of two-axis parallel operation

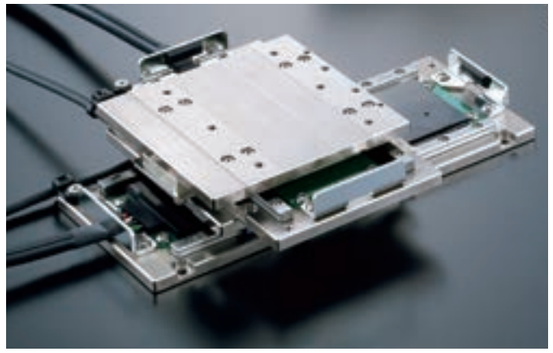
- Large thrust force can be obtained by two-axis driving.
- Driving right and left tables can minimize the table delay and flame torsion.
- Table delay and flame torsion are minimized, which ensures high positioning accuracy.
- As compared with two-axis synchronization control system, this can reduce the cost.

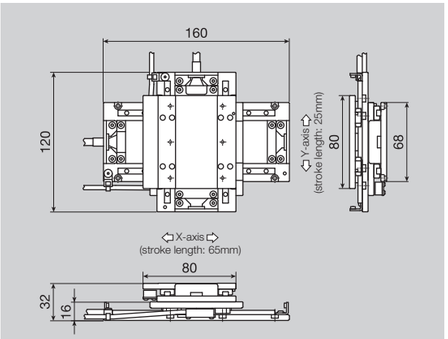



Remark: If two-axis parallel operation is required, please contact IKO.

## 4 ● XY two-axis combination specification

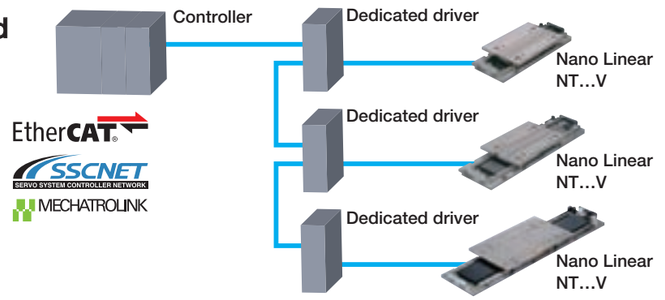
Two units of NT80V can be used in combination without any special attachment and XY-table with low profile can be easily established.






## 5 ● Motion network is supported

Drivers compatible with motion network EtherCAT, SSCNETⅢ/H , and MECHATROLINK are also available, so an advanced system with streamlined wiring can be configured.

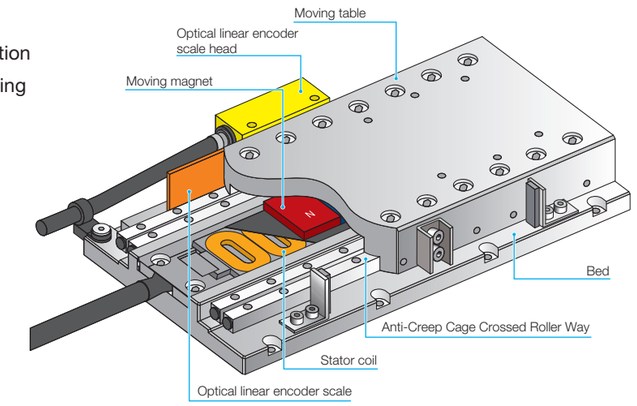



Remark: EtherCAT® is registered trademark and patented technology, licensed by BeckhoffAutomation GmbH, Germany.
SSCNETⅢ/H is a motion network communication system for servo system control developed by Mitsubishi Electric Corporation.
MECHATROLINK is an open field network controlled by MECHATROLINK Members Association.

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

# NT···H [ High accuracy type ]

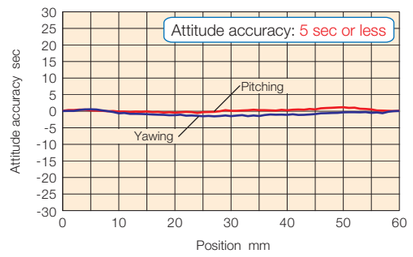
NT···H is a high-accuracy linear motor table that has realized high rigidity and smooth motions without pulsation comparative with air static pressure bearing by positioning accuracy and running straightness below 1 $\mu$m, using roller type Anti-Creep Cage Crossed Roller Way in the table guiding parts.




## Points

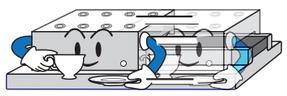
### 1 ● High attitude accuracy

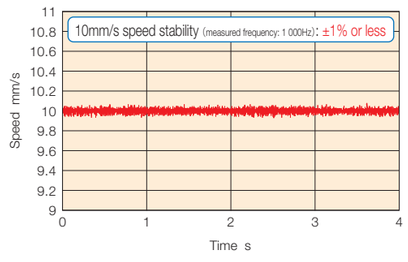
Combination of parts processed with high accuracy and Anti-Creep Cage Crossed Roller Way realizes attitude accuracy of 5 sec or less. Variations in attitude due to movement is minimized, which ensures high positioning repeatability.




### 2 ● High speed stability

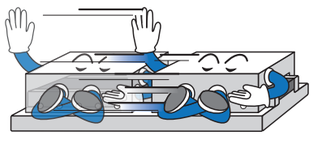
Speed stability is improved further thanks to smooth-motion Crossed Roller Way, coreless moving magnet type linear motor and high-performance servo driver.

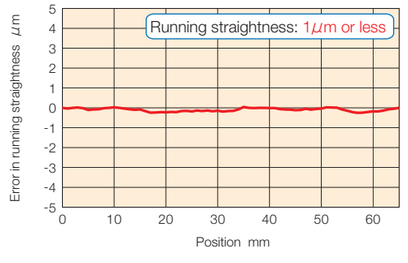





### 3 ● High running accuracy

High running accuracy as good as less than 1 $\mu$m running straightness is realized by precise finishing and assembly of components.

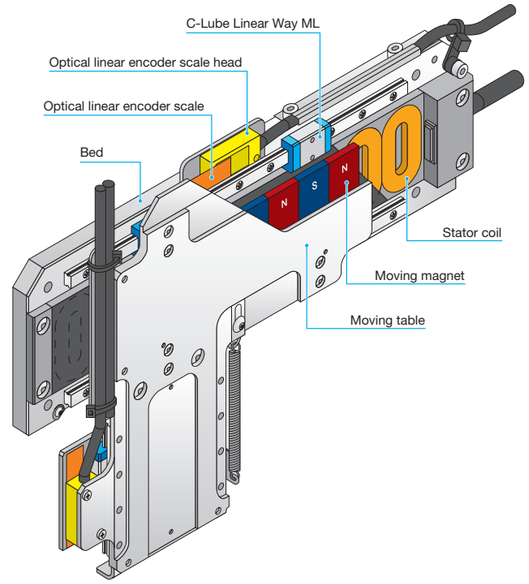







# NT···XZ [ Pick and place unit ]

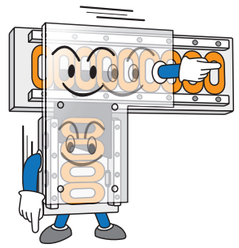
NT···XZ is a linear motor drive pick and place unit with ultra thin profile with 18mm thickness, realized by integrating X-axis moving table and Z-axis bed, using C-Lube Linear Way ML for miniature linear motion rolling guide in the table guiding parts. By entering a positioning program, you may set flexible operation patterns and change strokes according to works easily.




## Points

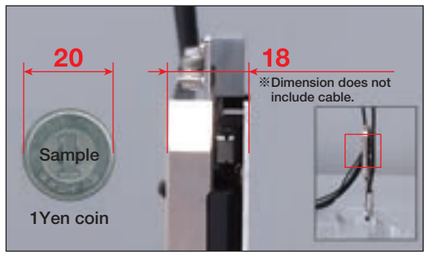
### 1 ● High-tact positioning

Pick and place unit of unparalleled structure with linear motor drive. Optical linear encoders are installed on both axes to realize accurate and high-tact positioning.



### 2 ● Ultrathin and space saving

Ultra thin profile of 18mm thickness is realized by integrating X-axis moving table and Z-axis bed. Parallel install of four units in a space of 100mm width is possible, and such space saving arrangement contributes to improvement of efficiency.

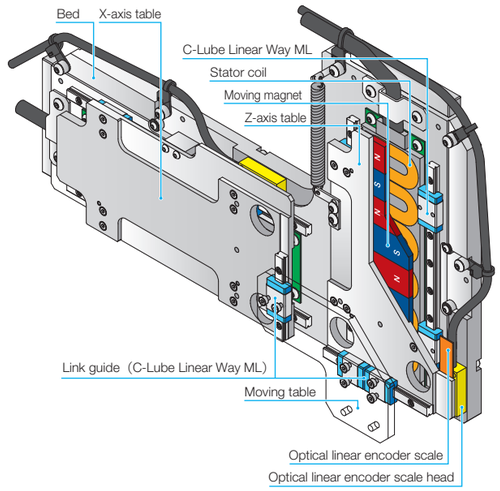

### 3 ● Operation monitoring function

The track can be verified from PC by using the driver monitoring function.

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

# NT···XZH [ High thrust pick and place unit ]

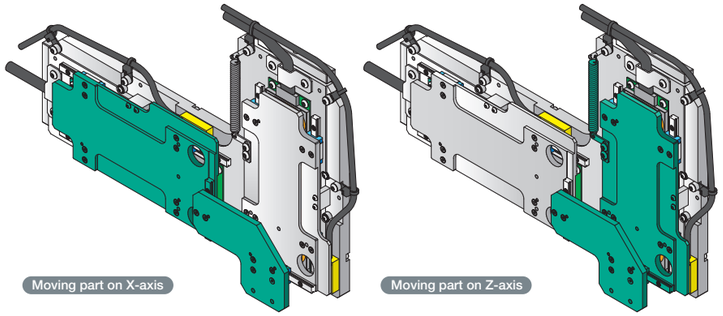
NT···XZH is a linear motor drive high thrust pick and place unit with compact integral X- and Z- axis, using C-Lube Linear Way ML for miniature linear motion rolling guide in the table guiding parts. Thanks to adoption of a system to drive moving table by using a link mechanism, it realizes both higher thrust force of the linear motor and weight reduction of the moving parts and reduces tact time. By entering a positioning program, you may set flexible operation patterns and change strokes according to works easily.

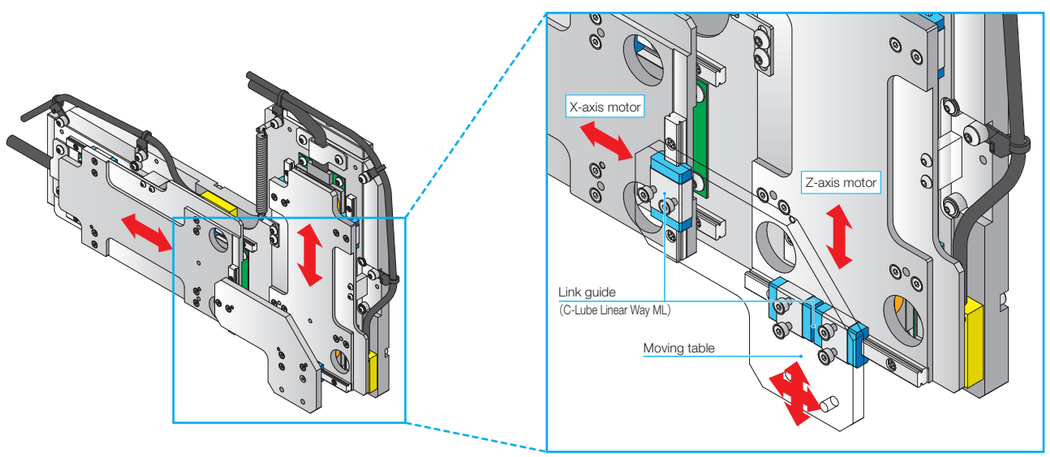



# Points

## 1 ● High thrust and high tact

Thanks to X- and Z-axis motor located on the flat surface and adoption of a system to drive moving table by using a link mechanism, it realizes both higher thrust force of the linear motor and weight reduction of the moving parts and significantly reduces tact time.




## 2 ● High resolution and high responsiveness

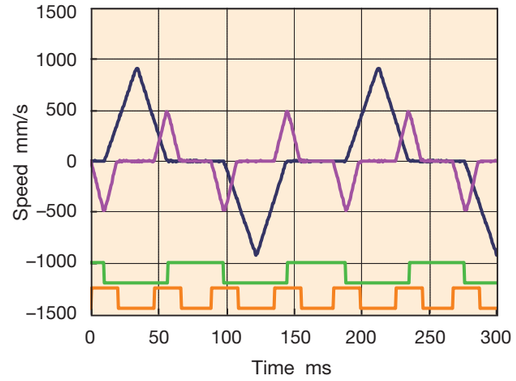
Performing fully-closed loop control by incorporating an optical linear encoder in both axes enables high resolution and high response.

**Measuring condition**

| NT90XZH2510/5 | |
|---|---|
| Effective thrust force | : X-axis; 14.8 N, Z-axis; 15.7 N |
| Carrying mass | : 150 g |
| Stroke | : X-axis; 22 mm, Z-axis; 5 mm |
| Acceleration / deceleration time | : X-axis; 24 ms, Z-axis; 9 ms |

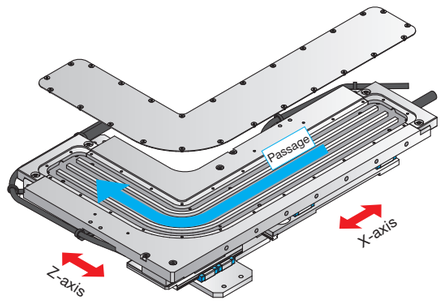
*Enables high-speed positioning!*

**Settling time: 2 ms, Number of cycles: 334 times/min**

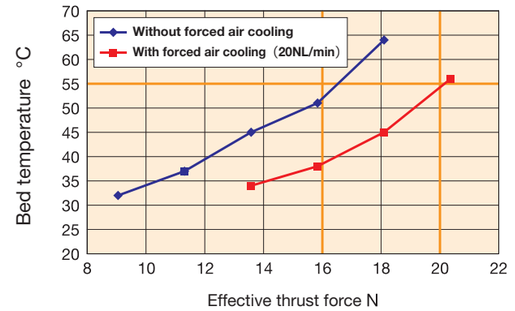



## 3 ● Air cooling

With the structure that heat-generating coils are converged at the stator, cooling and heat discharge to the mounting base are easy. When the air cooling option is specified, tact time can be shortened further.

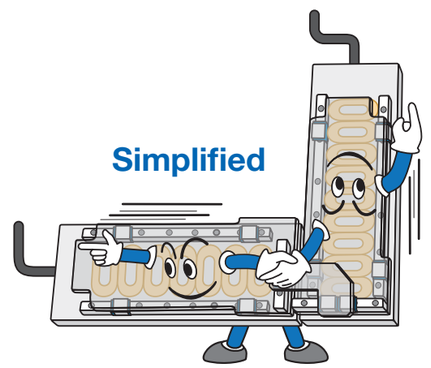



**NT90XZH temperature (ambient temperature: 20°C)**




## 4 ● Cableless moving parts

Though it is multi-axial unit, wiring is easy and higher cleanliness is realized by adopting cableless moving magnet system for the moving parts.




## 5 ● Operation monitoring function

As with NT···XZ, the track can be verified from PC by using the driver monitoring function.

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

# Identification Number

Example of identification number of NT···V

| 1 | 2 | 1 | 3 | | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| NT | 55 | V | 25 | / | 5 | | L | SC | 1 |

1 Model — Page Ⅱ-239
2 Size — Page Ⅱ-239
3 Stroke length — Page Ⅱ-239
4 Resolution of linear encoder — Page Ⅱ-239
5 Cover — Page Ⅱ-239
6 Cord direction — Page Ⅱ-239
7 Designation of sensor — Page Ⅱ-239
8 Specification number — Page Ⅱ-239

# Identification Number and Specification

**1 Model**
NT···V: Nano Linear NT···V

**2 Size**
38: Width 38mm
55: Width 55mm
80: Width 80mm

**3 Stroke length**
10: 10mm (applicable to NT38V)
18: 18mm (applicable to NT38V)
25: 25mm (applicable to NT55V and NT80V)
65: 65mm (applicable to NT55V and NT80V)
120: 120mm (applicable to NT80V)

**4 Resolution of linear encoder**
1 : 0.1μm
1F: 0.1μm High speed specification (applicable to NT55V and NT80V) When 1F is selected, a system configuration using dedicated driver ADVA is necessary.
5 : 0.5μm

**5 Cover**
No symbol: Without cover
D: With cover (applicable to NT38V)

**6 Cord direction**
L : Leftward
R: Rightward
Select from the cord direction indicated in Fig. 1. (direction for pulling out a cord when placing an encoder on the lower side)

**7 Designation of sensor**
No symbol: Without sensor
SC : With sensor (limit and pre-origin) and sensor bracket
Applicable to NT55V and NT80V
two types of dedicated drivers, ADVA and MR-J4-10B ready for SSCNETⅢ/H, are available for Nano Linear NT55V and NT80V. If MR-J4-10B is used, SC must be selected.

**8 Specification number**
1: Specification number 1
The specification number is limited to 1.

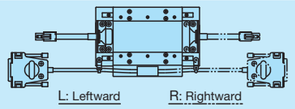



*Fig. 1 NT···V cord direction*



# Identification Number

Example of identification number of NT···H

| 1 | 2 | 1 | 3 | | 4 | 5 |
|---|---|---|---|---|---|---|
| NT | 88 | H | 65 | / | 05 | R |

1 Model — Page Ⅱ-240
2 Size — Page Ⅱ-240
3 Stroke length — Page Ⅱ-240
4 Resolution of linear encoder — Page Ⅱ-240
5 Cord direction — Page Ⅱ-240

# Identification Number and Specification

**1 Model**
NT···H: Nano Linear NT···H

**2 Size**
88: Width 88mm

**3 Stroke length**
25: 25mm
65: 65mm

**4 Resolution of linear encoder**
01: 0.01μm
05: 0.05μm

**5 Cord direction**
L : Leftward
R: Rightward
Select from the direction indicated in Fig. 2. (direction for pulling out a cord when placing an encoder on the lower side)

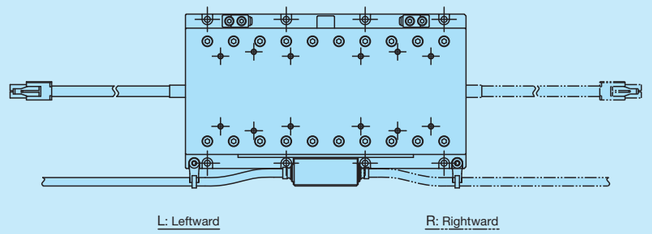
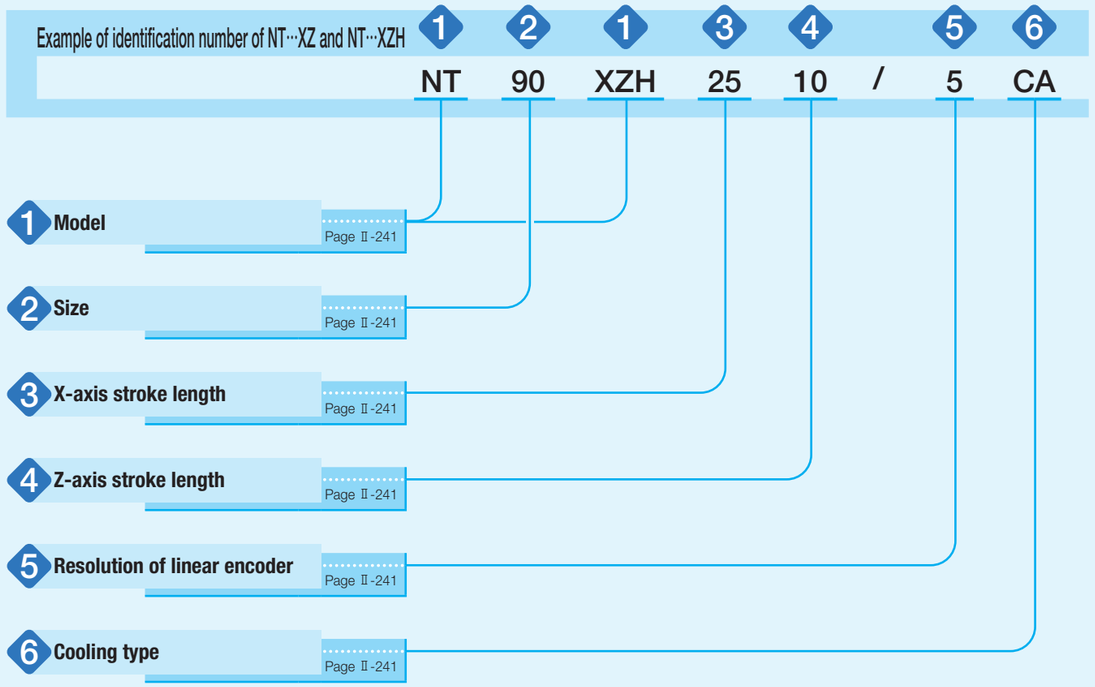



*Fig. 2 NT88H cord direction*



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

# Identification Number




# Identification Number and Specification

**1 Model**

NT···XZ : Nano Linear NT···XZ
NT···XZH: Nano Linear NT···XZH, high thrust type

**2 Size**

80: Z-axis width of 80mm (applicable to NT···XZ)
90: Z-axis width of 90mm (applicable to NT···XZH)

**3 X-axis stroke length**

25: 25mm (applicable to NT···XZH)
45: 45mm (applicable to NT···XZ)

**4 Z-axis stroke length**

10: 10mm

**5 Resolution of linear encoder**

1 : 0.1μm
1F: 0.1μm High speed specification
5 : 0.5μm

**6 Cooling type**

No symbol: Natural air cooling
CA : Air cooling (applicable to NT···XZH)



# Specifications

*Table 1 Specification / Performance of NT38V*

| Item \ Model and size | | NT38V10 | | NT38V18 | |
|---|---|---|---|---|---|
| Maximum thrust(1) | N | 3 | | | |
| Rated thrust(2) | N | 0.6 | | 0.8 | |
| Maximum load mass | kg | 0.5 | | | |
| Effective stroke length | mm | 10 | | 18 | |
| Resolution | μm | 0.1 | 0.5 | 0.1 | 0.5 |
| Maximum speed | mm/s | 270 | 500 | 270 | 500 |
| Positioning repeatability(3) | μm | ±0.5 | | | |
| Mass of moving table | kg | 0.036 (with cover 0.040) | | 0.048 (with cover 0.052) | |
| Total mass(4) | kg | 0.190 (with cover 0.198) | | 0.230 (with cover 0.239) | |
| Ambient temperature and humidity in operation | | 0~40℃ · 20~80%RH (keep dewdrop free) | | | |

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) When the temperature of the product is constant.
(4) Mass of the cord is not included.

*Table 2 Specification / Performance of NT55V*

| Item \ Model and size | | NT55V25 | | | NT55V65 | | |
|---|---|---|---|---|---|---|---|
| Maximum thrust(1) | N | 25 | | | | | |
| Rated thrust(2) | N | 7 | | | | | |
| Maximum load mass | kg | 5 | | | | | |
| Effective stroke length | mm | 25 | | | 65 | | |
| Resolution | μm | 0.1 | | 0.5 | 0.1 | | 0.5 |
| Maximum speed | mm/s | 270 | 1 000(5) | 1 300 | 270 | 1 000(5) | 1 300 |
| Positioning repeatability(3) | μm | ±0.5 | | | | | |
| Mass of moving table | kg | 0.17 | | | 0.17 | | |
| Total mass(4) | kg | 0.42 | | | 0.5 | | |
| Ambient temperature and humidity in operation | | 0~40℃ · 20~80%RH (keep dewdrop free) | | | | | |

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) When the temperature of the product is constant.
(4) Mass of the cord is not included.
(5) Applicable to high speed specification.

*Table 3 Specification / Performance of NT80V*

| Item \ Model and size | | NT80V25 | | | NT80V65 | | | NT80V120 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Maximum thrust(1) | N | 36 | | | | | | | | |
| Rated thrust(2) | N | 8 | | | | | | | | |
| Maximum load mass | kg | 5 | | | | | | | | |
| Effective stroke length | mm | 25 | | | 65 | | | 120 | | |
| Resolution | μm | 0.1 | | 0.5 | 0.1 | | 0.5 | 0.1 | | 0.5 |
| Maximum speed | mm/s | 270 | 1 000(5) | 1 300 | 270 | 1 000(5) | 1 300 | 270 | 1 000(5) | 1 300 |
| Positioning repeatability(3) | μm | ±0.5 | | | | | | | | |
| Mass of moving table | kg | 0.28 | | | 0.28 | | | 0.47 | | |
| Total mass(4) | kg | 0.68 | | | 0.83 | | | 1.4 | | |
| Ambient temperature and humidity in operation | | 0~40℃ · 20~80%RH (keep dewdrop free) | | | | | | | | |

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) When the temperature of the product is constant.
(4) Mass of the cord is not included.
(5) Applicable to high speed specification.



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

## Specifications

*Table 4 Specification / Performance of NT···H*

| Item \ Model and size | | NT88H25 | | NT88H65 | |
|---|---|---|---|---|---|
| Maximum thrust(1) | N | 25 | | | |
| Rated thrust(2) | N | 5 | | | |
| Maximum load mass | kg | 5 | | | |
| Effective stroke length | mm | 25 | | 65 | |
| Resolution | μm | 0.01 | 0.05 | 0.01 | 0.05 |
| Maximum speed | mm/s | 90 | 400 | 90 | 400 |
| Positioning accuracy (3) | μm | 1 | | | |
| Positioning repeatability(4) | μm | ±0.1 | | | |
| Parallelism in motion A | μm | 5 | | | |
| Attitude accuracy(5) | Sec | 5 | | | |
| Straightness in vertical and straightness in horizontal | μm | 1 | | | |
| Mass of moving table | kg | 0.7 | | 0.9 | |
| Total mass(6) | kg | 1.6 | | 2 | |
| Ambient temperature and humidity in operation | | 0~40℃ · 20~80%RH (keep dewdrop free) | | | |

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) The value is for the temperature of ambient and product being 20℃.
(4) When the temperature of the product is constant.
(5) This represents accuracy in pitching and yawing.
(6) Mass of the cord is not included.

*Table 5 Specification / Performance of NT···XZ and NT···XZH*

| Item \ Model and size | | NT80XZ4510 | | | | NT90XZH2510 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | X-axis | | Z-axis | | X-axis | | Z-axis | |
| Maximum thrust(1) | N | 50 | | 25 | | 70 | | | |
| Rated thrust(2) | N | 10 | | 2.5 | | Natural air cooling: 16 | | Air cooling(3) : 20 | |
| Maximum load mass | kg | 0.1 | | | | 0.2 | | | |
| Effective stroke length | mm | 45 | | 10 | | 25 | | 10 | |
| Resolution | μm | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 | 0.1 | 0.5 |
| Maximum speed | mm/s | 270 | 1 000(7) | 1 300 | 270 | 800(7) | 800 | 270 | 1 000(7) | 1 300 | 270 | 1 000(7) | 1 000 |
| Positioning repeatability(4) | μm | ±0.5 | | | | ±0.5 | | | |
| Mass of moving table | kg | 0.6(5) | | 0.12 | | 0.38 | | 0.35 | |
| Total mass(6) | kg | 1.6 | | | | 2.8 | | | |
| Ambient temperature and humidity in operation | | 0~40℃ · 20~80%RH (keep dewdrop free) | | | | | | | |

Notes (1) The duration of maximum thrust is up to 1 second.
(2) This is based on the case of mounting on a metal mating member material at an ambient temperature of 20℃.
(3) This is under air flow of 20NL/min.
(4) When the temperature of the product is constant.
(5) Mass of moving table of Z-axis is included.
(6) Mass of the cord is not included.
(7) Applicable to high speed specification.

## ■ Thrust characteristics of NT···V

### NT38V

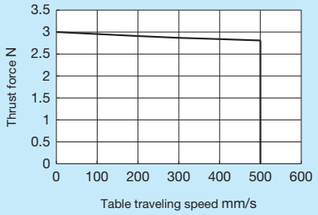



*Fig. 3 Thrust characteristic of NT38V*

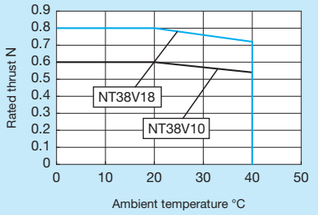



*Fig. 4 Rated thrust characteristic of NT38V*

Remark: This is a case when mounting on a metal mating member material.

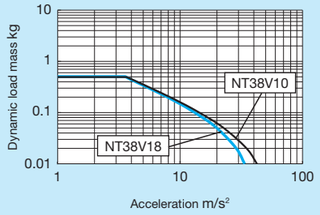



*Fig. 5 Dynamic load mass of NT38V*

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.



### NT55V

● Use with driver ADVA-01NL or MR-J4

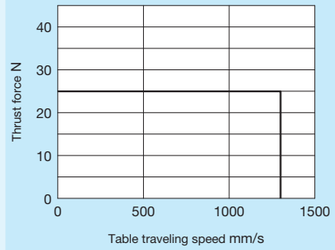



*Fig. 6 Thrust characteristic of NT55V*

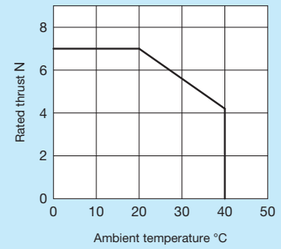



*Fig. 7 Rated thrust characteristic of NT55V*

Remark: This is a case when mounting on a metal mating member material.

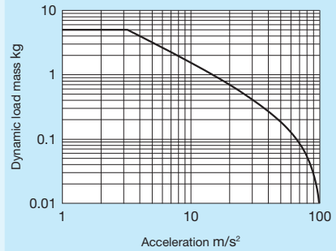



*Fig. 8 Dynamic load mass of NT55V*

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.

● Use with driver ADVA-R5ML

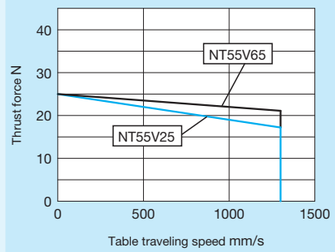



*Fig. 9 Thrust characteristic of NT55V*

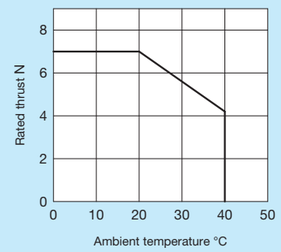



*Fig. 10 Rated thrust characteristic of NT55V*

Remark: This is a case when mounting on a metal mating member material.

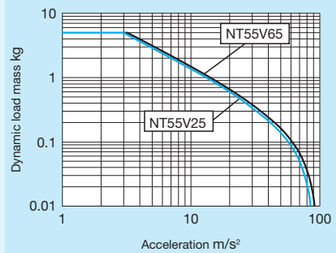



*Fig. 11 Dynamic load mass of NT55V*

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.

### NT80V

● Use with driver ADVA-01NL or MR-J4

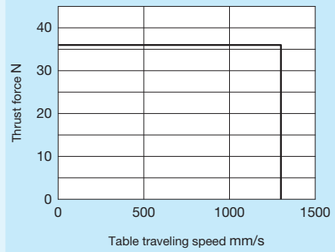



*Fig. 12 Thrust characteristic of NT80V*

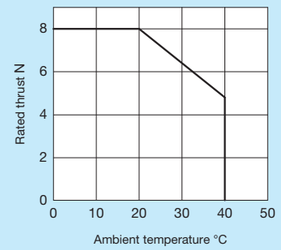



*Fig. 13 Rated thrust characteristic of NT80V*

Remark: This is a case when mounting on a metal mating member material.

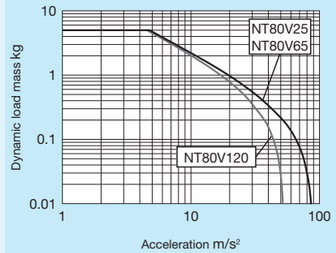



*Fig. 14 Dynamic load mass of NT80V*

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.

● Use with driver ADVA-R5ML

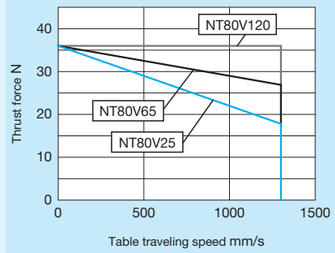



*Fig. 15 Thrust characteristic of NT80V*

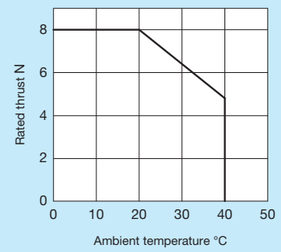



*Fig. 16 Rated thrust characteristic of NT80V*

Remark: This is a case when mounting on a metal mating member material.

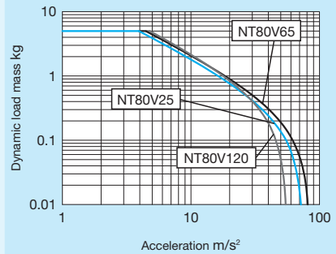



*Fig. 17 Dynamic load mass of NT80V*

Remark: This is a value calculated based on the thrust force with table moving speed set to 500mm/s.

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

## ■ Thrust characteristics of NT···H

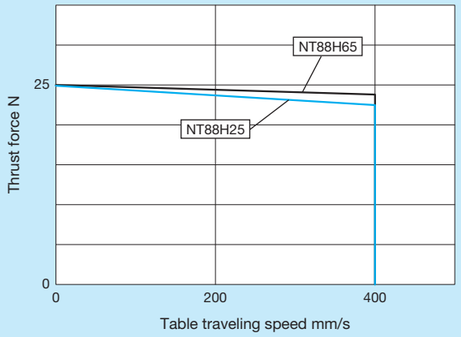



*Fig. 18 Thrust characteristic of NT88H*

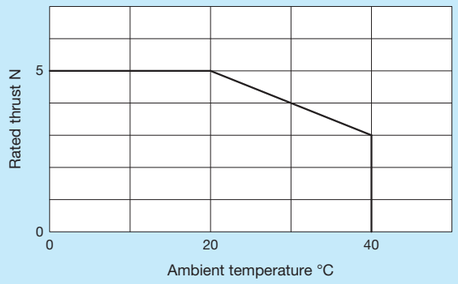



*Fig. 19 Rated thrust characteristic of NT88H*

Remark: This is a case when mounting on a metal mating member material.

## ■ Thrust characteristics of NT···XZ and NT···XZH

● Use with driver ADVA-01NL

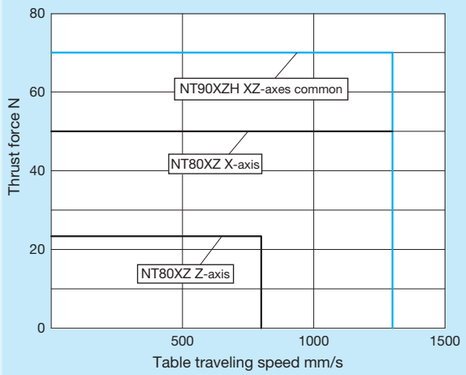



*Fig. 20 Thrust characteristics of NT···XZ and NT···XZH*

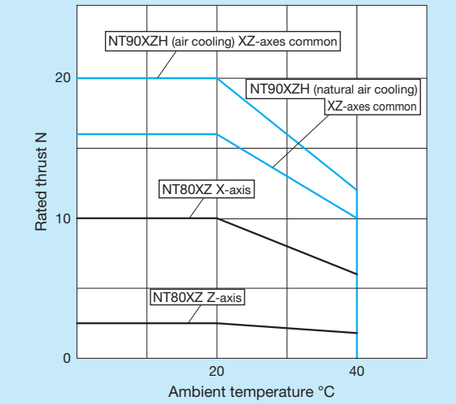



*Fig. 21 Rated thrust characteristics of NT···XZ and NT···XZH*

Remark: This is a case when mounting on a metal mating member material.

● Use with driver ADVA-R5ML

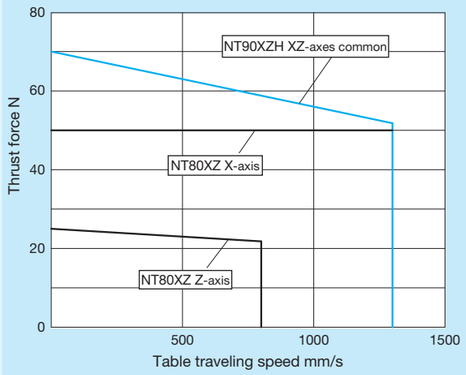



*Fig. 22 Thrust characteristics of NT···XZ and NT···XZH*

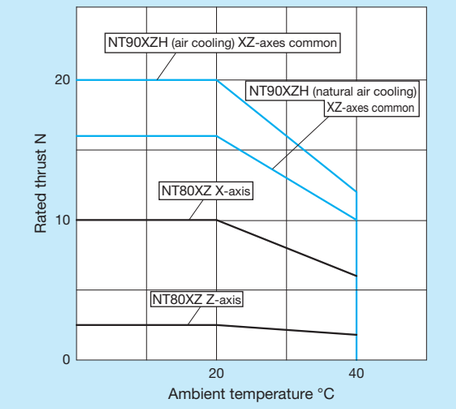


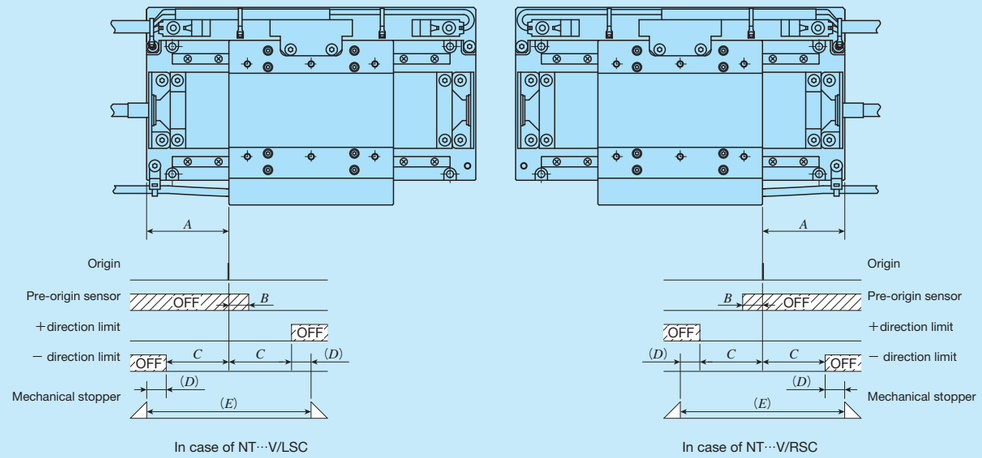

*Fig. 23 Rated thrust characteristics of NT···XZ and NT···XZH*

Remark: This is a case when mounting on a metal mating member material.



# Sensor Specification

***Table 6 Sensor timing chart for NT55V/SC and NT80V/SC***




unit: mm

| Model and size | *A* | *B*(1) | *C*(1) | *D*(1) | *E*(1) |
|---|---|---|---|---|---|
| NT55V 25/SC | 20 | 4 | 12.5 | 3 | 31 |
| NT55V 65/SC | 40 | 4 | 32.5 | 3 | 71 |
| NT80V 25/SC | 20 | 4 | 12.5 | 3 | 31 |
| NT80V 65/SC | 40 | 4 | 32.5 | 3 | 71 |
| NT80V120/SC | 70 | 4 | 60 | 5.5 | 131 |

Note (1) Respective values are for reference and are not guaranteed values.
For detailed dimensions, please contact **IKO**.

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

## ● NT···V, NT···XZ and NT···XZH do not have a built-in sensor

Return to origin operation in a system configuration using driver ADVA and the system configuration for NT38V is conducted by external input. In the return to origin operation, the moving table turns around after contacting the mechanical stopper, and then stops at the origin position. Since, however, a limit sensor and a pre-origin sensor can be mounted on NT55V and NT80V with a supplemental signal (/SC), the return to origin operation using each sensor is also possible.
Forward / backward direction limit detection in a system configuration using the driver ADVA is performed by driver's software limit function. The stroke range can be set by parameters for driver. In addition, the software limit function is only enabled in position control mode and return to origin must be completed. In case of speed control mode and thrust force control mode, mount an external sensor.



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

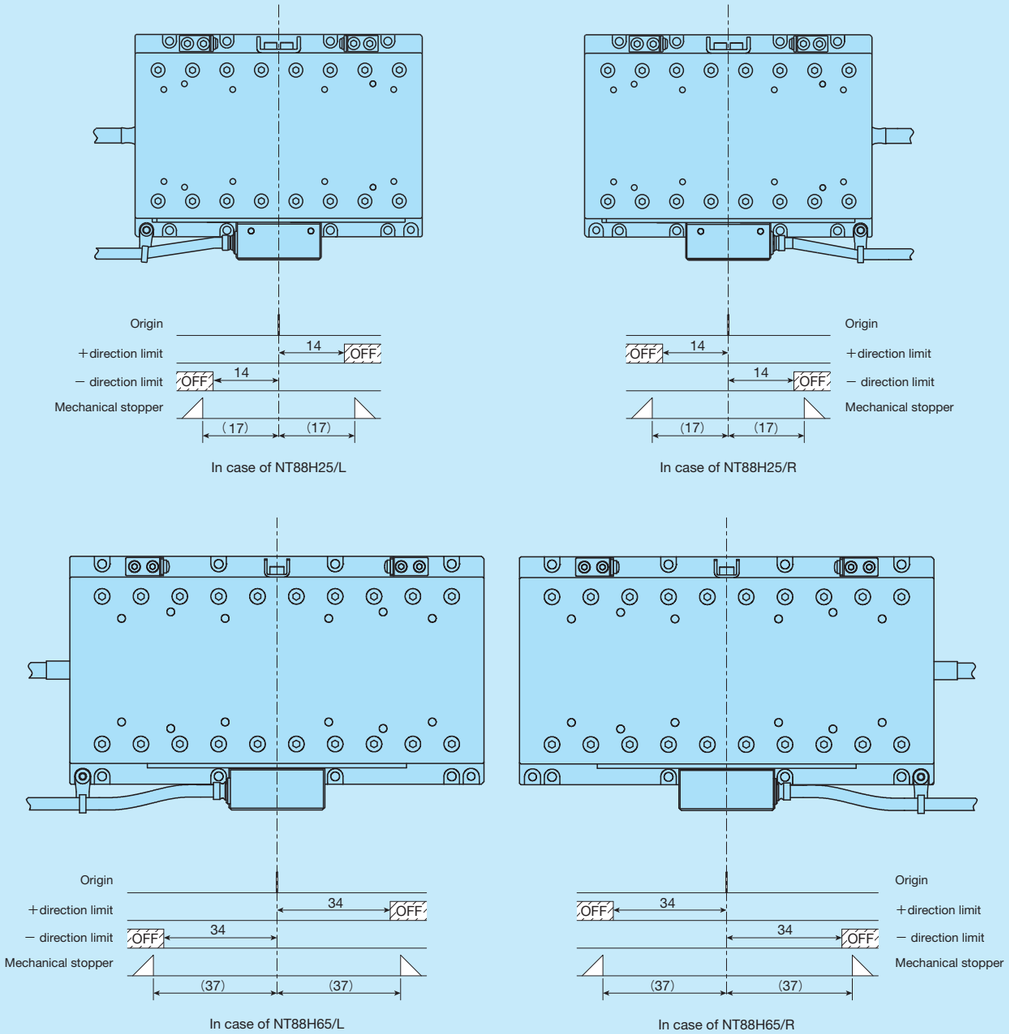



***Fig. 24 Sensor timing chart for NT···H***

Remarks 1. For return to origin operation in a standard system configuration, use the return to origin function (limit inversion method) of the driver. It is necessary to input the limit signal output from the encoder interface to the driver.
2. Pre-origin sensor is not provided.
3. For the specifications of respective sensors, please see the section of sensor specification in General Explanation.

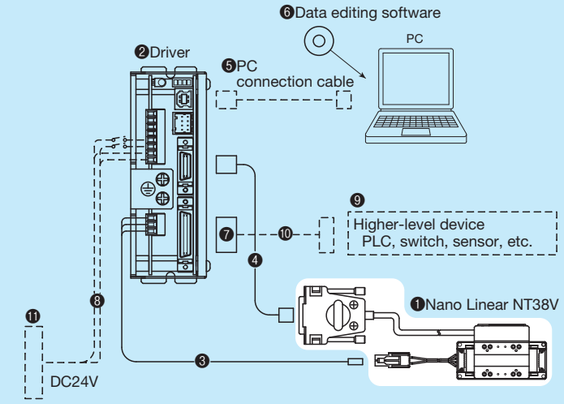


# System Configuration

## ■ System configuration for NT38V

There are dedicated driver for Nano Linear NT38V, and the system configuration is shown in Table 7. For detailed driver specifications, please see the section of driver specifications on page Ⅱ-345. When you place an order, please specify desired identification numbers from the list of Table 7.

***Table 7 System configuration for NT38V***




| No. | Name | Identification number |
|---|---|---|
| ❶ | Nano Linear NT···V | NT38V |
| ❷ | Driver | NCR-DCE0D3B-021D-S135 |
| ❸ | Motor extension cord (3m(1)) | TAE20T8-AM03 |
| ❹ | Encoder extension cord (1.5m(1)) | TAE20U8-EC |
| ❺ | PC connection cable | This must be prepared by customer<br>USB cable<br>A plug - Mini B plug |
| ❻ | Data editing software | NCR-XCR000-S135 |
| ❼ | Connectors for input & output signal | TAE20U9-CN(2) |
| ❽ | Power cord | This must be prepared by customer. |
| ❾ | Higher-level device | |
| ❿ | Higher-level device connection cord | |
| ⓫ | DC24V power supply | |

Notes (1) For specific cord length, please contact IKO.
(2) Connectors for input & output signal TAE20U9-CN is a combined product of 10136-3000PE (connector) and 10336-52F0-008 (cover) from Sumitomo 3M Limited.



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

## ■ System configuration for NT55V, NT80V, NT···XZ and NT···XZH

Two series of dedicated drivers, ADVA and MR-J4, are available for Nano Linear NT55V, NT80V, NT···XZ and NT···XZH, and the system configuration varies depending on the driver used. For ADVA, two types of specification, pulse train specification and high speed network EtherCAT specification, are available. For MR-J4, only high speed network SSCNET Ⅲ/H specification is available. Table 8 shows the correspondence between drivers and tables. Table 9 shows the example of identification number for ADVA, and Table 10 shows the tables and model number of applicable MR-J4. For detailed driver specification, please see the driver specification on page Ⅱ-359 to Ⅱ-362.
Please also note that the drivers compatible with MECHATROLINK will be prepared based on respective usages. If needed, please contact IKO.

***Table 8 Nano Linear NT···V, NT···XZ, NT···XZH and model numbers of applicable drivers***

| Driver type | Applicable Nano Linear model |
|---|---|
| ADVA | NT55V、NT80V、NT···XZ、NT···XZH |
| MR-J4 | NT55V、NT80V |

Remark: MR-J4 is only applicable to sensor-included specification / SC.

***Table 9 Model number for ADVA***

ADVA – 01NL EC / NT55V25
① Model ② ③ ④

| ② Current and voltage | |
|---|---|
| 01NL | Single-phase / Three-phase 200 V |
| R5ML | Single-phase 100 V |

| ③ Command type | |
|---|---|
| No symbol | Pulse train command |
| EC | EtherCAT |

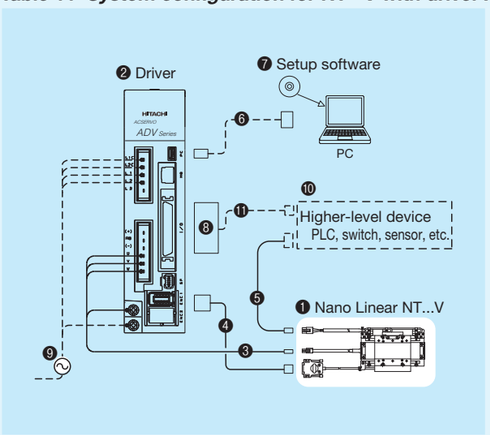
| ④ Applicable Nano Linear model | |
|---|---|
| NT55V 25 | NT55V 25 |
| NT55V 65 | NT55V 65 |
| NT80V 25 | NT80V 25 |
| NT80V 65 | NT80V 65 |
| NT80V120 | NT80V120 |
| NT80XZ-X | NT80XZ X-axis |
| NT80XZ-Z | NT80XZ Z-axis |
| NT90XZH | For both NT90XZH X-axis and Z-axis |

***Table 10 Nano Linear NT···V and model number of applicable MR-J4***

| Model number of table | Model number of driver |
|---|---|
| NT55V 25 | MR-J4-10B-RJ/NT55V25 |
| NT55V 65 | MR-J4-10B-RJ/NT55V65 |
| NT80V 25 | MR-J4-10B-RJ/NT80V25 |
| NT80V 65 | MR-J4-10B-RJ/NT80V65 |
| NT80V120 | MR-J4-10B-RJ/NT80V120 |

Remark: MR-J4-10B is only applicable to sensor-included specification / SC.

***Table 11 System configuration for NT···V with driver ADVA***




| No. | Name | Model and size |
|---|---|---|
| ❸ | Motor extension cord (3m) (1) | TAE20V3-AM03 |
| ❹ | Encoder extension cord (2m) (1) | TAE20V4-EC02 |
| ❺ | Sensor extension cord (2) | TAE10V8-LC□□ |
| ❻ | PC connection cable | USB mini B cable<br>This must be prepared by customer. |
| ❼ | Setup software | ProDriveNext<br>Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd. |
| ❽ | I/O connector | TAE20R5-CN (3) |
| ❾ | Power cord | This must be prepared by customer. |
| ❿ | Higher-level device | |
| ⓫ | I/O connector connection cable | |

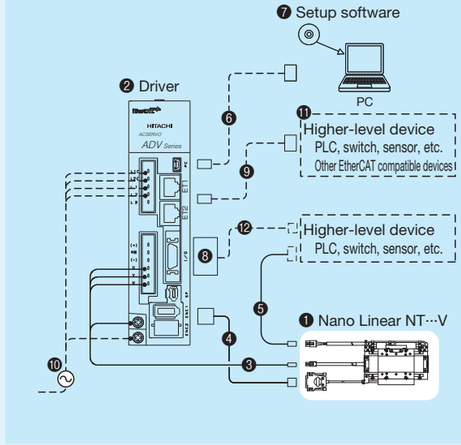
Notes (1) For specific cord length, please contact IKO.
(2) The lengths of the sensor extension cord is specified in the fields of □□ located at the end of the identification number with a length from 3 to 10m in units of 1m.
(3) I/O connector TAE20R5-CN is a combined product of 10150-3000PE (connector) and 10350-52F0-008 (cover) from Sumitomo 3M Limited.



## ● Setup software

To operate Nano Linear NT55V, NT80V, NT···XZ and NT···XZH, initial setting of driver parameters is required. Parameter setting for driver is performed using the setup software. It can also be used for gain adjustment and operational status check. In the driver, the setup software and PC connection cable are not provided. These can be shared in plural drivers but at least 1 set is required. Please prepare these on your own or place an order separately according to your requirement.

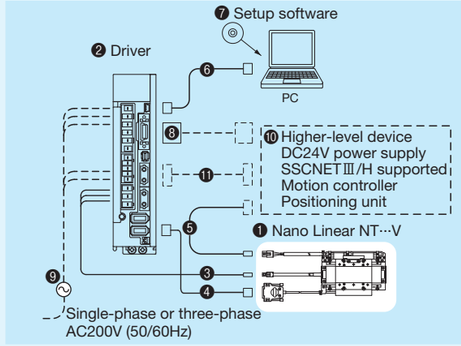
***Table 12 System configuration for NT···V with driver ADVA···EC***




| No. | Name | Model and size |
|---|---|---|
| ❸ | Motor extension cord (3m) (1) | TAE20V3-AM03 |
| ❹ | Encoder extension cord (2m) (1) | TAE20V4-EC02 |
| ❺ | Sensor extension cord (2) | TAE10V8-LC□□ |
| ❻ | PC connection cable | USB mini B cable<br>This must be prepared by customer. |
| ❼ | Setup software | ProDriveNext<br>Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd. |
| ❽ | I/O connector | TAE20V5-CN (3) |
| ❾ | Ethernet cable | This must be prepared by customer. |
| ❿ | Power cord | |
| ⓫ | Higher-level device | |
| ⓬ | I/O connector connection cable | |

Notes (1) For specific cord length, please contact IKO.
(2) The lengths of the sensor extension cord is specified in the fields of □□ located at the end of the identification number with a length from 3 to 10m in units of 1m.
(3) I/O connector TAE20V5-CN is a combined product of 10120-3000PE (connector) and 10320-52F0-008 (cover) from Sumitomo 3M Limited.

***Table 13 System configuration for NT···V with driver MR-J4-10B (SSCNETⅢ/H compatible)***



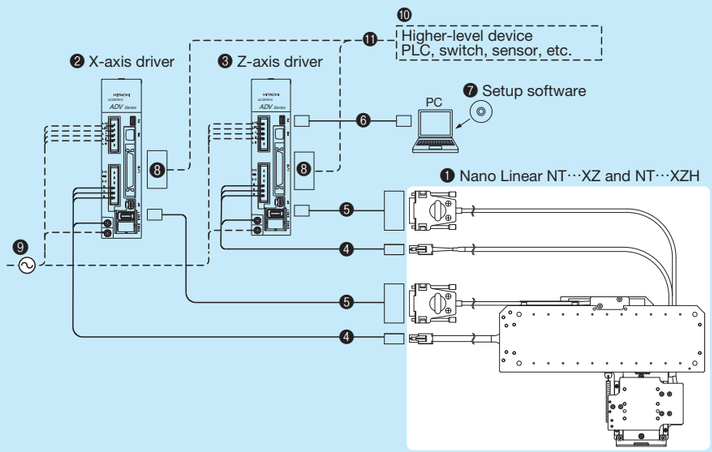

| No. | Name | Identification Number |
|---|---|---|
| ❸ | Motor extension cord (3m) (1) | TAE20V3-AM03 |
| ❹ | Encoder extension cord (2m) (1) | TAE20V6-EC02 |
| ❺ | Sensor extension cord (2) | TAE10V8-LC□□ |
| ❻ | PC connection cable (3m) | MR-J3USBCBL3M |
| ❼ | Setup software | SW1DNC-MRC2-J |
| ❽ | I/O connection connector | MR-CCN1 (3) |
| ❾ | Power cord | This must be prepared by customer. |
| ❿ | Higher-level device (4) | |
| ⓫ | SSCNETⅢ/H connection cable | |

Notes (1) For specific cord length, please contact IKO.
(2) The lengths of the sensor extension cord is specified in the fields of □□ located at the end of the identification number with a length from 3 to 10m in units of 1m.
(3) Connectors for input/output connection MR-CCN1 is a combined product of 10120-3000PE (connector) and 10320-52F0-008 (cover) from Sumitomo 3M Limited.
(4) The higher-level devices are a motion controller, positioning unit and DC24V power supply ready for SSCNETⅢ/H from Mitsubishi Electric Corporation.



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

*Table 14 System configuration for NT···XZ and NT···XZH*



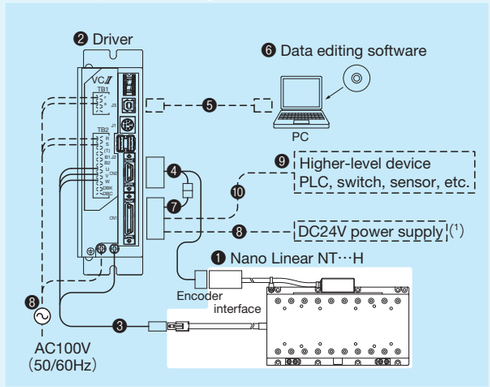

| No. | Name | 数量 | Model and size | |
|---|---|---|---|---|
| ❶ | Nano Linear NT···XZ and NT···XZH | 1 | NT80XZ4510 | NT90XZH2510 |
| ❷ | Driver for X-axis | 1 | ADVA-01NL/NT80XZ-X | ADVA-01NL/NT90XZH |
| ❸ | Driver for Z-axis | 1 | ADVA-01NL/NT80XZ-Z | ADVA-01NL/NT90XZH |
| ❹ | Motor extension cord (3m) (1) | 2 | TAE20V3-AM03 | |
| ❺ | Encoder extension cord (2m) (1) | 2 | TAE20V4-EC02 | |
| ❻ | PC connection cable | 1 | USB mini B cable (This must be prepared by customer.) | |
| ❼ | Setup software | 1 | ProDriveNext<br>Please download from the official website of Hitachi Industrial Equipment Systems Co., Ltd. | |
| ❽ | I/O connector | 2 | TAE20R5-CN (2) | |
| ❾ | Power cord | – | This must be prepared by customer. | |
| ❿ | Higher-level device | – | | |
| ⓫ | I/O connector connection cable | – | | |

Notes (1) For specific cord length, please contact IKO.
(2) I/O connector TAE20R5-CN is a combined product of 10150-3000PE (connector) and 10350-52F0-008 (cover) from Sumitomo 3M Limited.

## ■ System configuration of NT···H

There are dedicated driver for Nano Linear NT···H, and the system configuration is shown in Table 15. For detailed driver specification, please see the section of driver specification on page Ⅱ-346. When you place an order, please specify desired model numbers from the list of Table 15.

*Table 15 System configuration of NT···H*




| No. | Name | Model number |
|---|---|---|
| ❶ | Nano Linear NT···H | NT88H |
| ❷ | Driver | NCR-DDA0A1A-051D-T08 |
| ❸ | Motor extension cord (3m) (2) | TAE20T8-AM03 |
| ❹ | Encoder extension cord (2m) (2) | TAE20T9-EC02 |
| ❺ | PC connection cable | This must be prepared by customer.<br>USB cable<br>A plug - B plug |
| ❻ | Data editing software | NCR-XCR000-S135 |
| ❼ | Connector set | TAE20U0-CN (3) |
| ❽ | Power cord | This must be prepared by customer. |
| ❾ | Higher-level device | |
| ❿ | I/O connector connection cable | |

Notes (1) DC24V power supply must be prepared separately by customer.
(2) For specific cord length, please contact IKO.
(3) The connector set TAE20U0-CN is a set of I/O connector and connector for sensor (crimp wired (200mm)).
The I/O connector is a combined product of 10136-3000PE (connector) and 10336-52F0-008 (cover) from Sumitomo 3M Limited.
The connector for sensor is a combined product of 170365-1 (contact) and 172157-1 (housing) from Tyco Electronics Japan G.K..

## ● Data editing software

To operate Nano Linear NT···H, initial setting of driver parameters is required. Parameter setting for driver is performed using the data edition software.
In the driver, the data edition software and PC cable are not provided. These can be shared in plural drivers but at least 1 set is required. Please place an order separately according to your requirement.





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

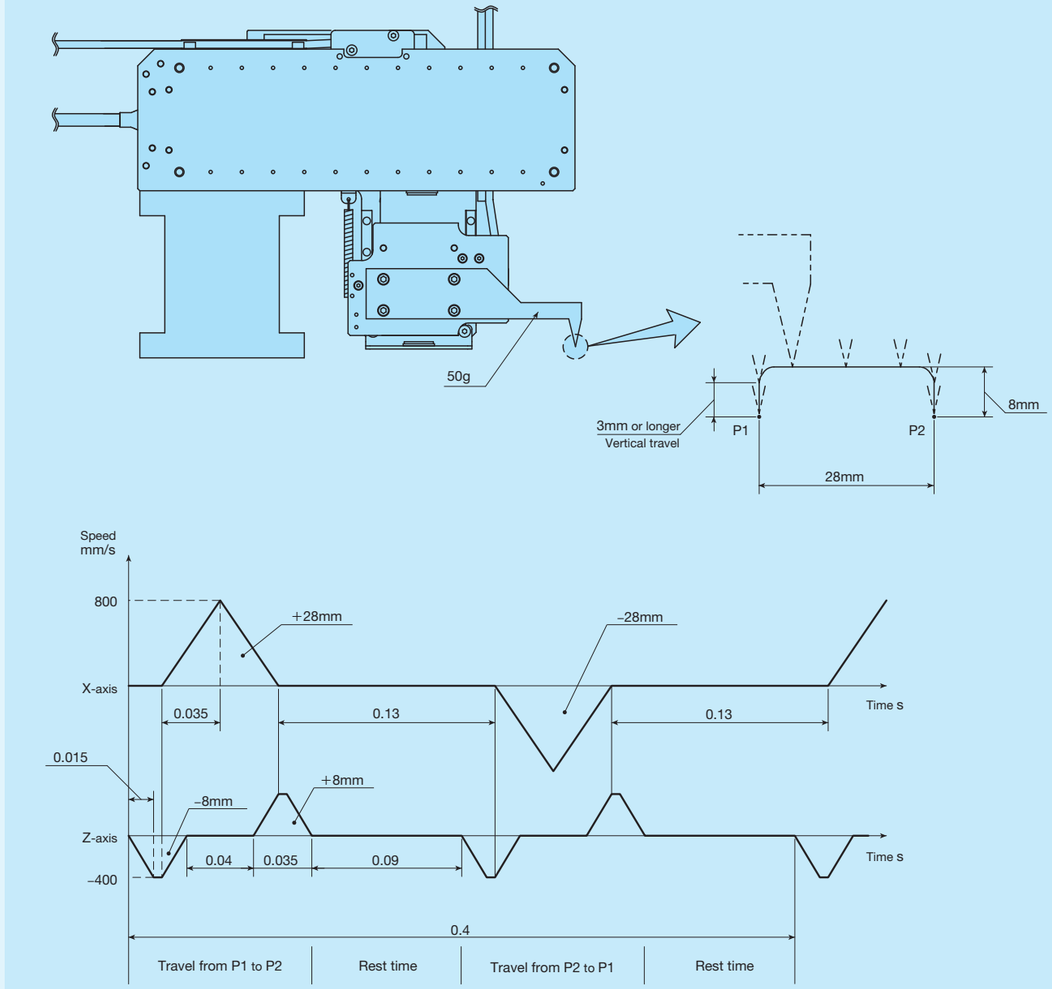
# Example Operation Pattern

## ■ Example operation pattern of NT···XZ pick and place

Described below is a representative example of operation pattern of pick and place.

***Table 16 Operational conditions***

| Item | | Operational conditions |
|---|---|---|
| Carrying mass | g | 50 |
| X-axis travel distance | mm | 28 |
| Z-axis travel distance | mm | 8 |
| Rest time in P1 and P2 | s | 0.09 |
| 1 cycle time | s | 0.4 |
| X-axis effective thrust force | N | 8.9 |
| Z-axis effective thrust force | N | 2.5 |

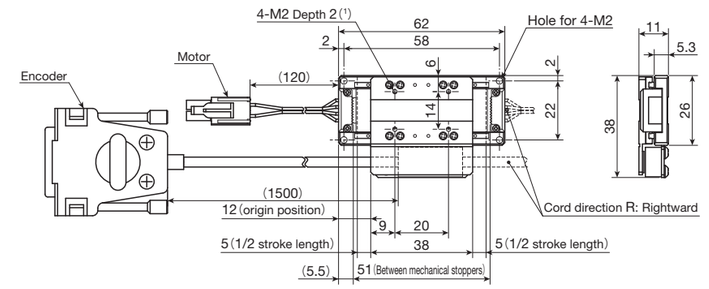



Remark: The speed pattern diagram shows a program pattern, not actual motions.

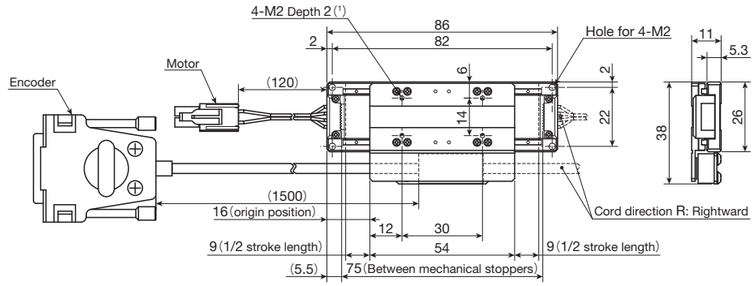


# IKO Nano Linear NT

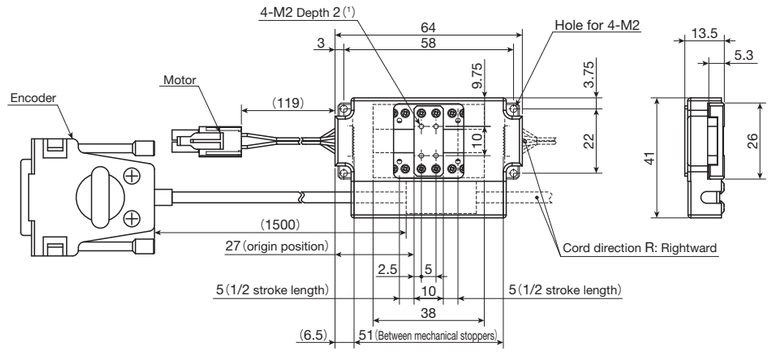
## NT38V10



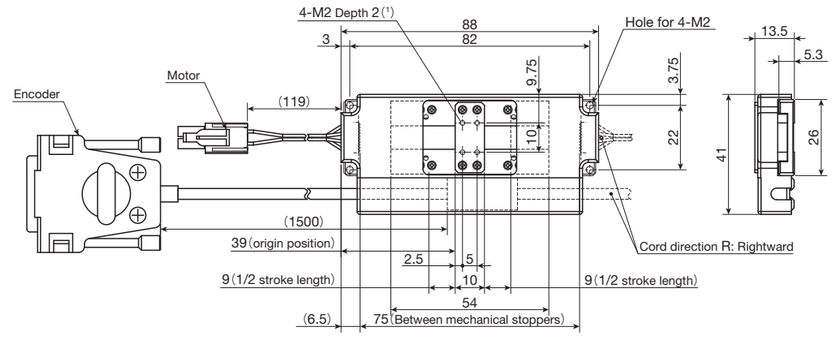

## NT38V18




## NT38V10/D



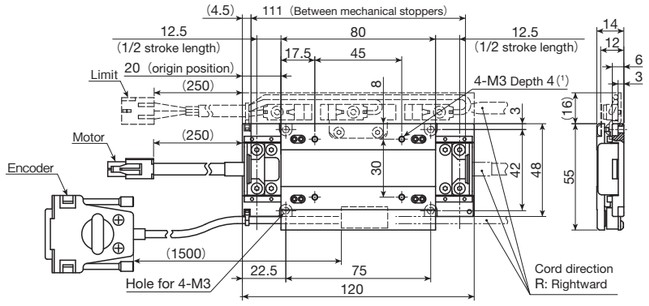

## NT38V18/D



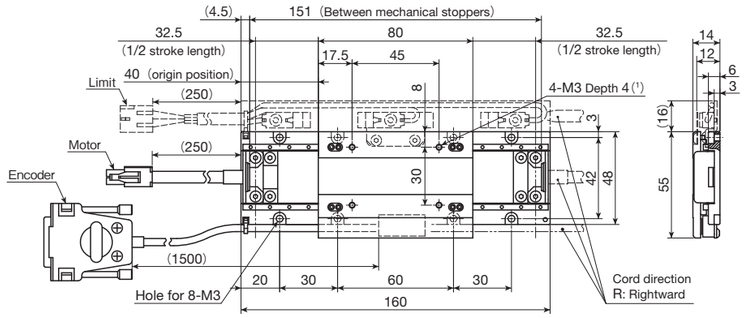

Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the through hole.

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

## NT55V25



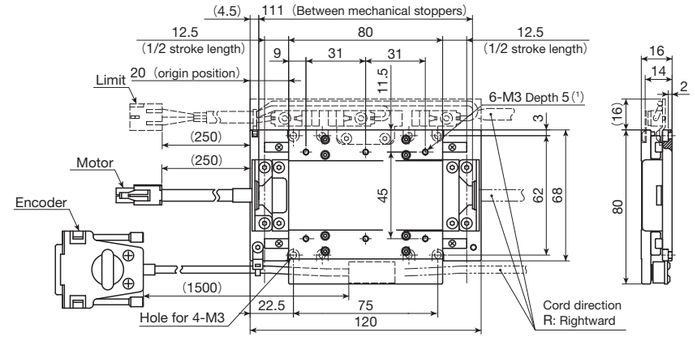

## NT55V65



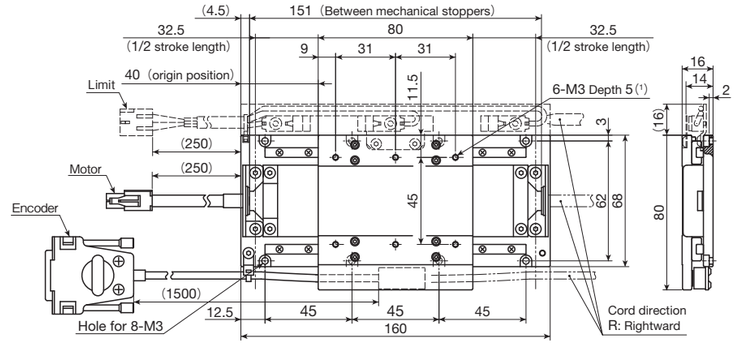

Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the through hole.

Remark: Dashed line portions in the dimensional figures indicate the sensor-included specification / SC.

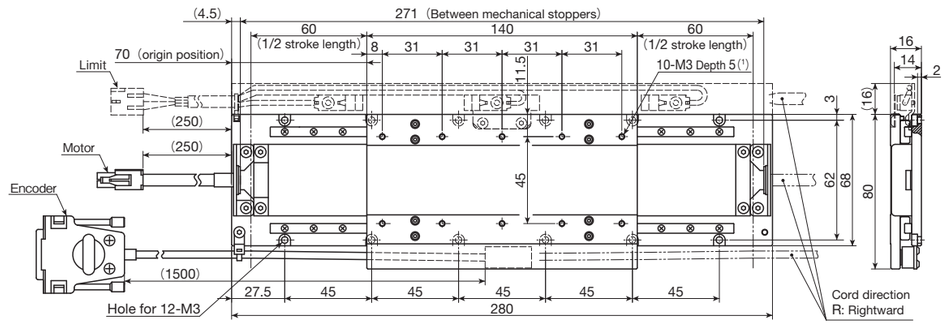
## NT80V25




## NT80V65




## NT80V120




Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the through hole.

Remarks 1. Dashed line portions in the dimensional figures indicate the sensor-included specification / SC.

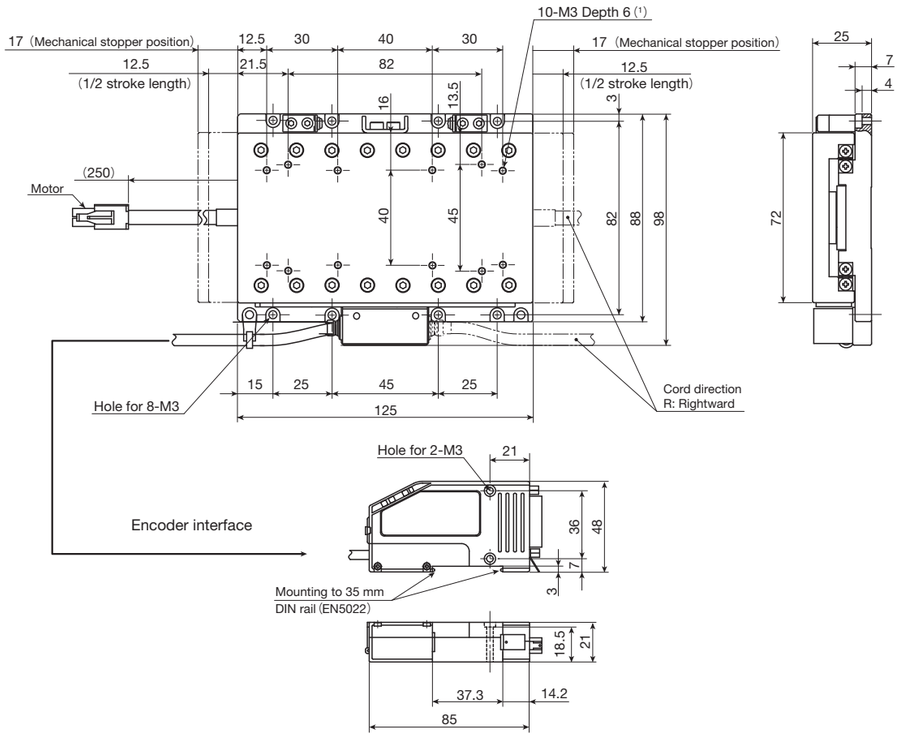
2. XY two-axis specification table combined with NT80V with NT80V25 used as an upper axis is assembled in IKO before shipping.

NT

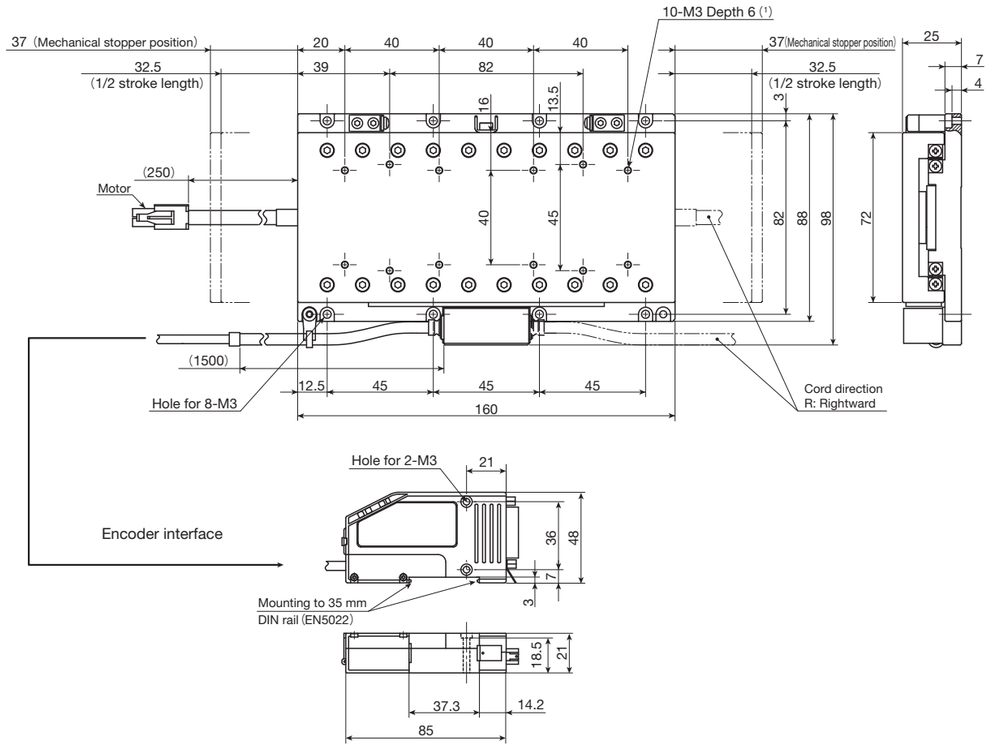


1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

## NT88H25



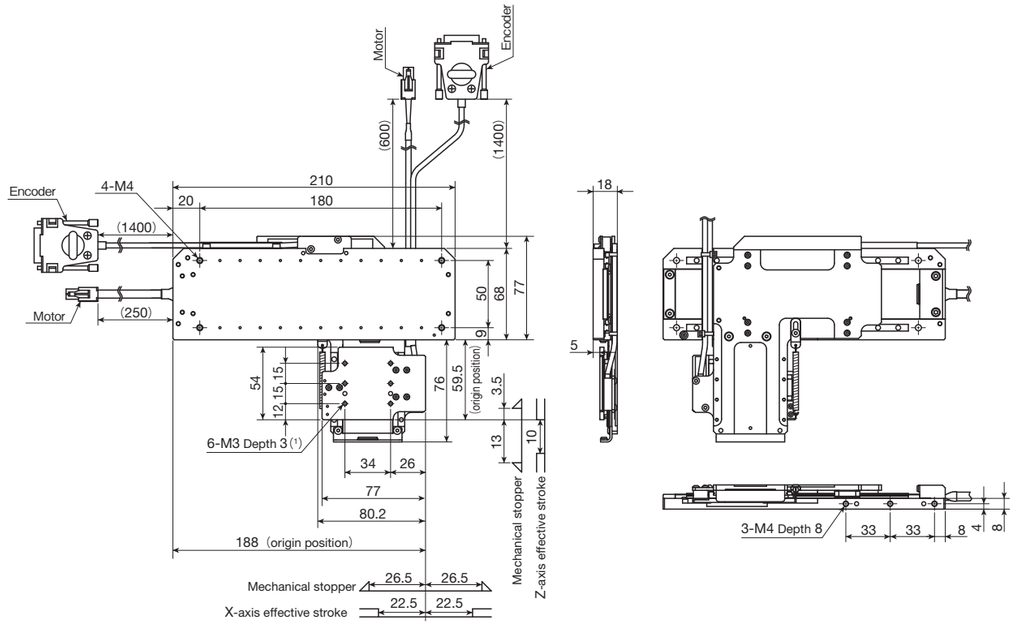

## NT88H65



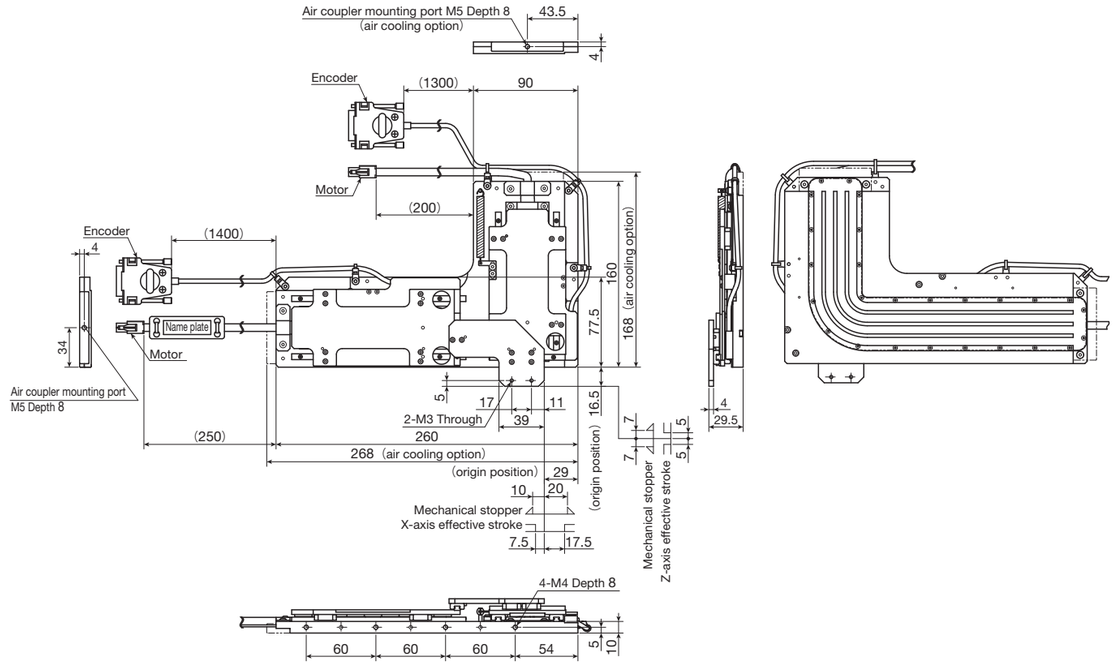

Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the tapped hole.



## NT80XZ




## NT90XZH




Note (1) Too deep insertion depth of the mounting bolt may affect the running performance of the moving table, so never insert a bolt longer than the depth of the through hole.

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