



Pneumatic components

# Safety precautions

Always read this section before starting use.

Refer to Intro 69 for general precautions of the cylinder, and to Intro 78 for general precautions of the cylinder switch.

RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

New handling system and hybrid robot

## Design & Selection

### 1. Lubrication

#### ⚠ CAUTION

##### ■ Cylinder

This cylinder is oil-free. If lubrication is required, use Turbine Oil Class 1 ISO VG32. Packing may be damaged if a different lubricant is used, and operation faults may occur. Once the cylinder is lubricated, check that lubricant is supplied. Operation may be unstable if insufficient lubrication is made.

##### ■ LM guide

Lubricate from the grease nipple per 100 km travel.

Supply one of the following grease:  
Lithium-based grease (JIS No. 2)  
Urea-based grease (JIS No. 2)



### 2. Service life

#### ⚠ CAUTION

■ The life of the unit is greatly affected by the life of pneumatic components.

General components are used for pneumatic components, so life is 3 to 5 million operations or a travel of approx. 1,000 km. (The values above are not guaranteed as life is greatly affected by working conditions, environment, etc.)

## Installation & Adjustment

### 1. Mounting attitude

#### ⚠ WARNING

■ Units other than the HRL-1 (L) can be installed only horizontally. Installation upside down will lead to damage.

Select the load capacity of the vertical installation (Z axis installation) based on the built-in cylinder thrust.



### 2. Quality of air

#### ⚠ CAUTION

■ The compressed air supplied to drive the unit must be clean and have low moisture.

Install a filter, etc., on the pneumatic circuit. Note the filter's filtration, flow, and installation (near the direction valve). Remove drainage accumulated in the filter. (Regularly check that drainage does not reach the element.)

● If harmful compressed air is supplied, the life of consumables (packing, gasket, etc.) in components (filter, directional control valve, cylinder, etc.) will drop and operation faults may occur.

■ Do not use ultra dry air for this product, or the product life will be shortened.



### 3. Piping

#### ⚠ CAUTION

■ Flush piping with compressed air before piping to the cylinder.

If cutting chips or sealing tape used during piping, or rust enters the pipe, fault such as air leakage may occur.



### 4. Alignment adjustment

#### ⚠ CAUTION

When a 3-position all ports closed drive valve is used or if the block valve assembled slider table is slid with using external force assembled, negative pressure will be generated on the drive valve, and the seal belt may drop off, leading to air leakage, so adjust with the block released.

Modular unit

RRC
GRC
RV3*
NHS
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -*HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

## During Use & Maintenance

### 1. Position locking

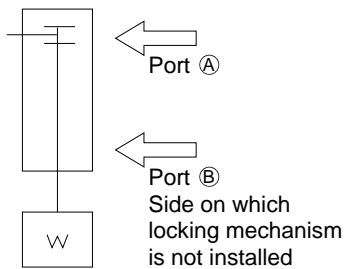
#### ⚠ WARNING

- Supply pressure to the port (B), and release the lock after removing load applied on the locking mechanism.

If both ports (A) and (B) are exhausted and pressure is supplied to port (A) while the piston is locked, the lock may be released and the piston rod may pop out, which is hazardous.

- If the cylinder is held while pressure is applied to the locking mechanism, the stop pin may be dislocated. Do not use the 3-position closed center and 3-position P/A/B connection solenoid valve.

- If back pressure is applied in the locked state, the lock may be released. Use the discrete solenoid valve as a single unit or use an individual exhaust manifold.



### 2. External environment

#### ⚠ CAUTION

- Install the unit and other device products (filter, directional control valve, cylinder, etc.) where they will not be subjected to rain water or direct sunlight. Do not use this product outdoors.



- Do not use this product where it will be subject to cutting chips, oil, coolant, oil mist, etc. If this type of environment is unavoidable due to installation, provide a protective cover, etc.



- Do not use this product where foreign matter such as cutting chips, dust, or spatter, etc., contact to or enter in the units.

If this type of environment is unavoidable due to installation, provide a protective cover, etc.



- Do not use this product in an environment where it may be corroded.

Damage or operation faults will be occurred in this environment.



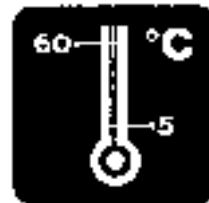
### 3. Ambient temperature

#### ⚠ CAUTION

- The range of the ambient temperature in which can use the unit is 5 to 60°C.

Do not use the unit if the temperature exceeds 60°C, or damage or operation faults may occur.

If the temperature is less than 5°C, moisture in the circuit may freeze and lead to damage or faults. Take measures to prevent freezing.



### 4. Repair parts

#### ⚠ CAUTION

The cylinder and valve packing, O-ring, gasket, cushion rubber and shock absorber used in this unit are consumables. Refer to device catalogs for details on part types.

If use is continued with a weak shock absorber, vibration and impact increase and may decrease stopping accuracy and damage the guide or other parts. Replace the shock absorber.

# New Handling System

Possibility

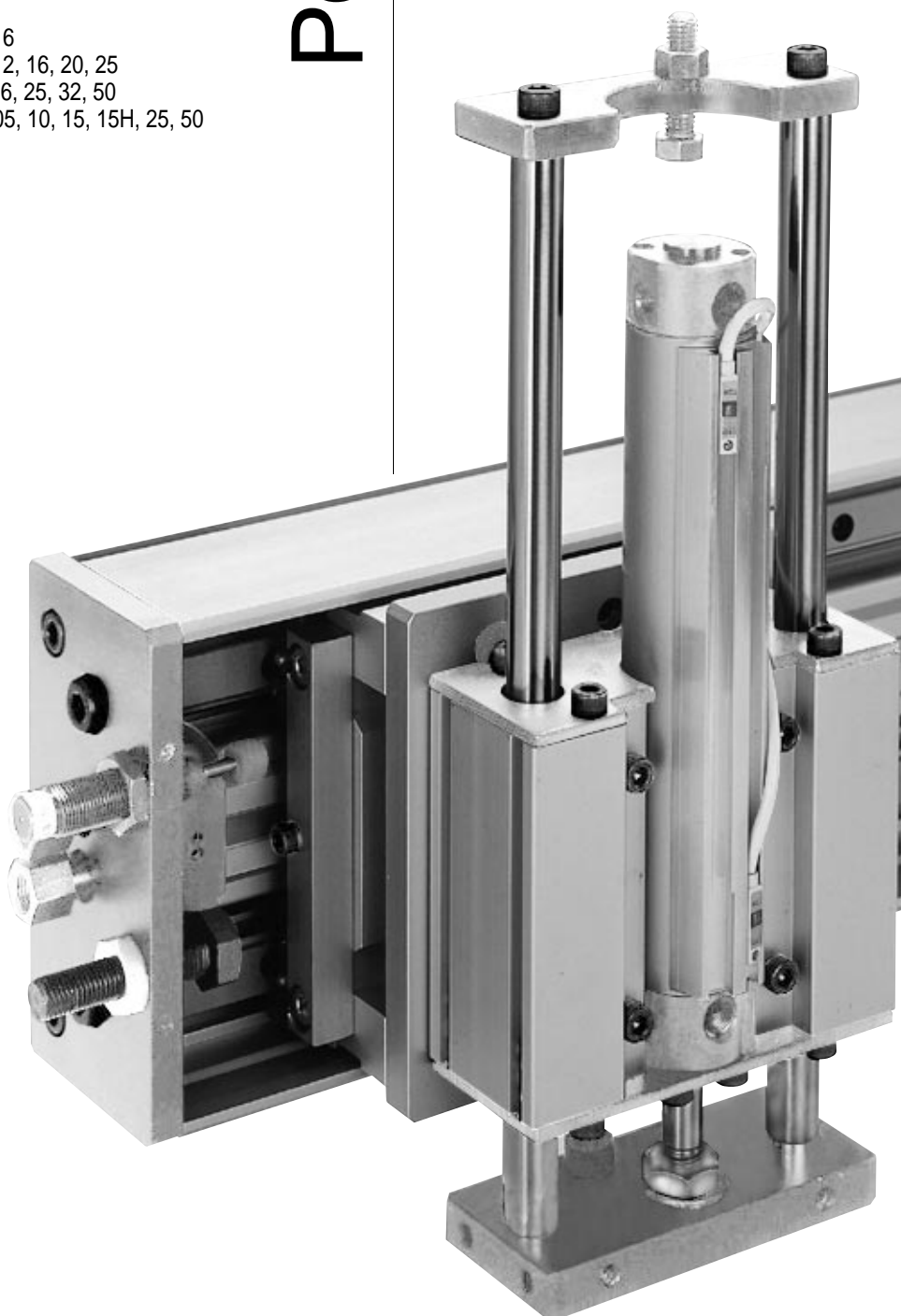
RRC
GRC
RV3*
<b>NHS</b>
<b>HR</b>
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -*.HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

New handling system

X axis module — NSR-1, 10, 15, 30, 50

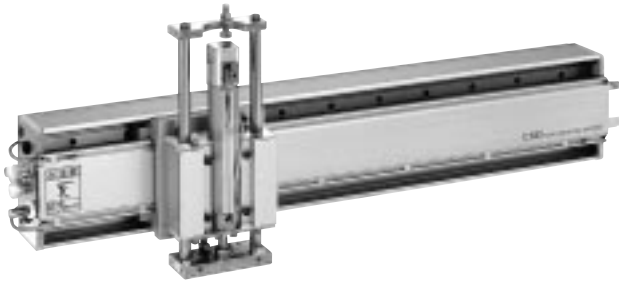
Z axis module —  
 LCY-16  
 LCS-12, 16, 20, 25  
 STL-16, 25, 32, 50  
 HRL-05, 10, 15, 15H, 25, 50

X/Z axis installation attachment

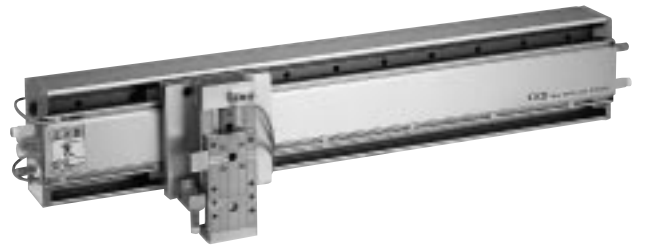


# Features

## ● NHS-H



## ● NHS-C



## ● NSR

### ● LM guide of high rigidity

2 guide rails provided, and high accuracy and rigidity maintained even if large allowable moment load applied

### ● Air drive by rodless cylinder

Pre-lubricated rodless cylinder for high speed installed

### ● With shock absorber

Absorber stops smoothly at stroke end.

### ● One body forming high rigidity aluminum frame

### ● Stop bolt for fine adjustment

### ● Stroke end position detecting switch

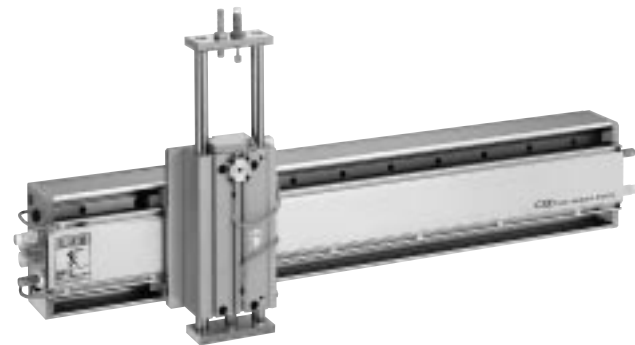
Cylinder switch with reliability and secure operation

### ● T slot for frame main body assembly

Square nut integrated, and this can be installed on any position over frame overall length

### ● Front guard

Dust proof and sensor rail panel



## ● NHS-S



## ● NHS-L

RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

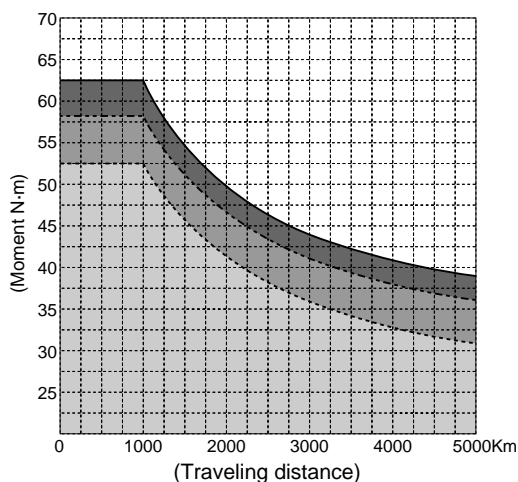
New handling system  
Modular unit

RRC
GRC
RV3*
<b>NHS</b>
<b>HR</b>
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -*HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

# Module concept

# X MODULE

The X axis module is the most important part of the transfer unit, and its performance determines whether the transfer unit meets user needs. The NSR X axis module was prepared with this in mind. The SRL2 super rodless cylinder was incorporated for the drive. Space saving, high speed, high load, and high accuracy are incorporated in design. The rigid LM guide withstands moment and lateral loads for the guide. The maximum guide span was incorporated to optimize features. The device is finished with extruded aluminum to reduce weight and add rigidity. Standard parts include a shock



Graph for NSR-1-10  
NSR-1-15.

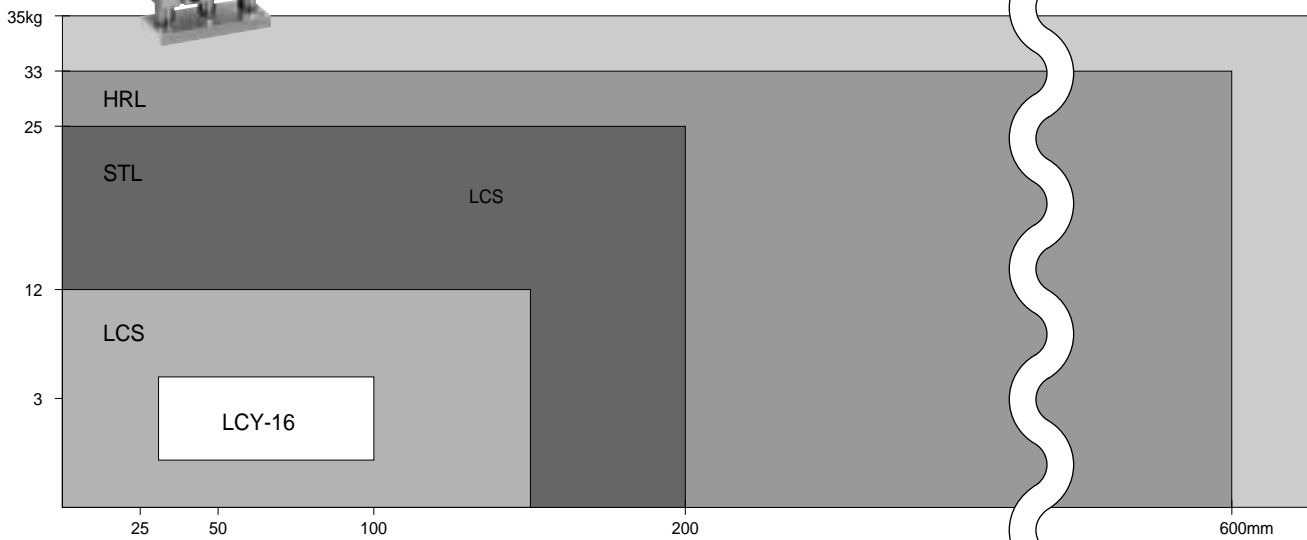
Slider speed 500mm/s  
Unit stroke length 500mm  
— M1  
- - - M3  
· · · M2

absorber to absorb the shock and vibration at the stroke end, a stop bolt to set an accurate stop, and a cylinder switch to detect the stroke end. The NSR X axis module was designed and manufactured with required functions, to provide a practical, cost-reducing module. Options, including a cable duct and full stroke adjustment block, are available to for users' as needed.

# Z MODULE



The Z axis module conducts transfer work closest to the target object, and its rigidity cannot be too strong or too weak. Considering overhang and space, the module should be as thin as possible, and considering functions, this section should have drop prevention.



The CKD Z-axis module responds to these needs, and is available in 15 models and 4 types, including thin highly-rigid LCY, high accuracy table LCS, low-cost STL, and high-load long-stroke compatible HRL. This line up of transfer Z axis modules with a load of 3 to 33kg enables the user to freely select a compact part transfer that meets individual applications and needs. Attachments to combine the X axis module with the Z axis module are available, enabling the user to easily assemble part transfer.



RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

New handling system  
Modular unit

RRC
GRC
RV3*
<b>NHS</b>
<b>HR</b>
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -*HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

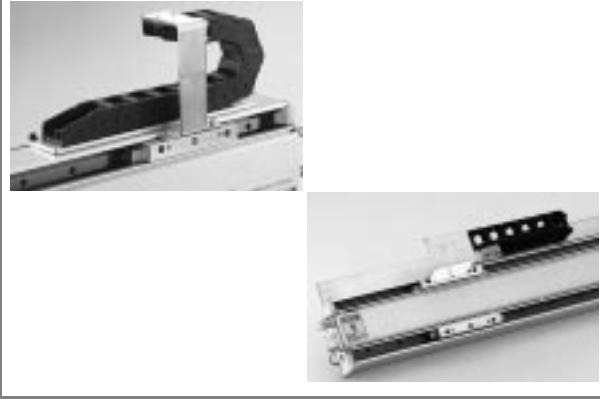
### ● Adjustable stroke block

The block which adjustment of full stroke length is enabled.  
Shock absorber and stop bolt already installed.



### ● Cable bearer

- 2 types of horizontal and vertical installations.
- 2 types of standard and large capacity. (NSR-10, 15)



### ● 2 head

2-station head available for 2 step feeding and high moment.

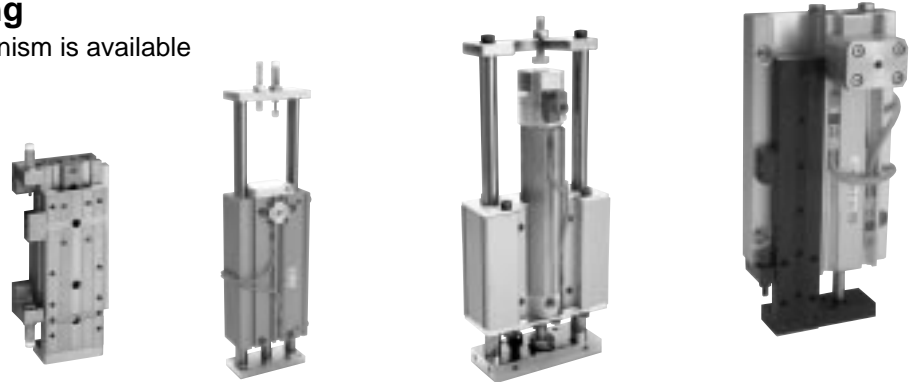


# OPTION

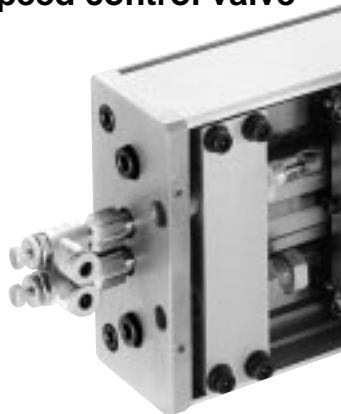
■ Wide options / line up to meet diverse needs

### ● Position locking

Position locking mechanism is available for Z axis.  
(Excluding STL-BP-16)



### ● Speed control valve



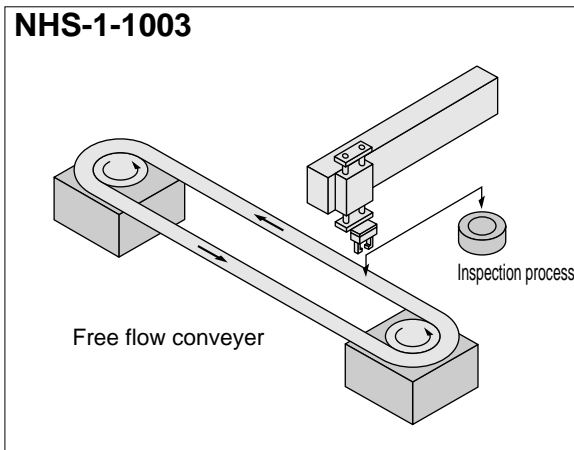
### ● LB bracket

Advanced LB type bracket available for bottom installation to improve installation.



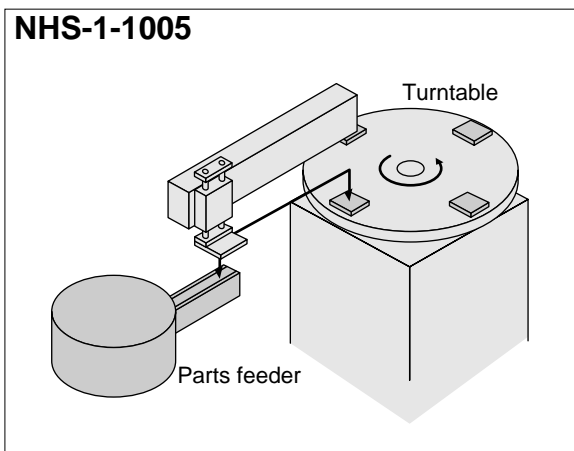
## Applications

### NHS-1-1003



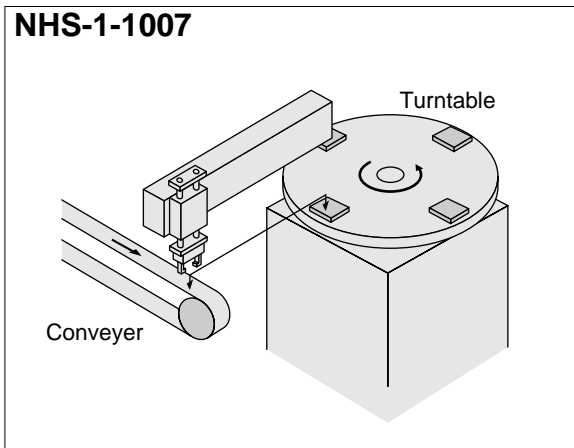
● Pick out small valves from free flow conveyor, and perform inspection, and return them to conveyor again.

### NHS-1-1005



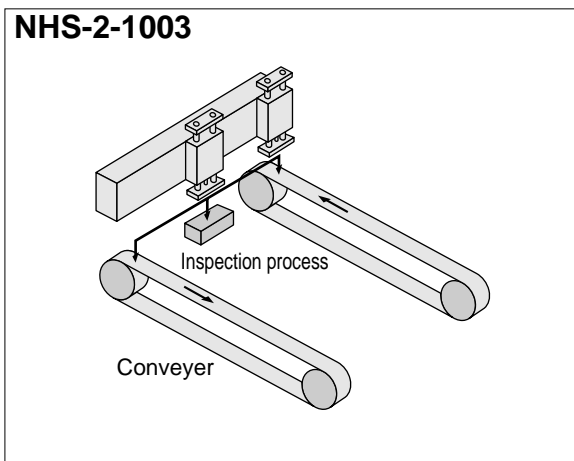
● Absorb 2 electric parts arranged from parts feeder same time, assemble and transfer these parts to jig on turntable.

### NHS-1-1007



● Transfer automobile parts came from conveyer to jig on turntable.

### NHS-2-1003



● Transfer 2 parts for automobile same time by 2 heads, since parts are inspected between conveyer.

RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -H-C
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

New handling system  
Modular unit



● : Standard, ■ : Not available

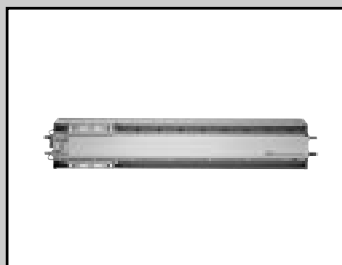
- RRC
- GRC
- RV3\*
- NHS**
- HR
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFHB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2  
-HC
- CKH2
- CKLB2
- NCK/  
SCK/FCK
- FJ
- FK
- Ending

- RRC
- GRC
- RV3\*
- NHS**
- HR
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFHB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2  
-HC
- CKH2
- CKLB2
- NCK/  
SCK/FCK
- FJ
- FK
- Ending

Variation	Load capacity (kg)													Stroke length (mm)													X-axis Max. stroke length (mm)	Z axis unit Z axis cylinder	Page			
	X axis				Z axis									X axis		Z axis																
	10	15	30	50	3	4	5	6	7	10	12	20	33	10	15	30	50	30	40	50	75	100	125	150	175	200				250	300	301 to 600
NSR (X-axis module)	●	●	●	●	■	■	■	■	■	■	■	■	■	50 to 2000	50 to 2000	■	■	■	■	■	■	■	■	■	■	■	■	■	■	2000	-	144
NHS-H (H: Z-axis module HRL)	●	●	●	●	■	■	●	■	●	●	●	●	●	50 to 2000	50 to 2000	■	■	●	●	●	●	●	●	■	■	●	●	●	●	2000	HRL	152
NHS-C (C: Z-axis module LCS)	●	●	●	●	■	●	■	●	■	●	●	■	■	50 to 2000	50 to 2000	●	●	●	●	●	●	■	■	■	■	■	■	■	■	2000	LCS	162
NHS-S (S: Z-axis module STL-B)	●	●	●	●	●	■	■	■	■	●	■	■	■	50 to 2000	50 to 2000	■	■	●	●	●	●	●	●	●	●	●	■	■	■	2000	STL-B	168
NHS-L (L: Z-axis module LCY)	●	■	■	■	●	■	■	■	■	■	■	■	■	50 to 2000	■	■	■	●	●	●	●	■	■	■	■	■	■	■	■	2000	LCY	174

# NSR Series

- Stroke length: 50 to 2000mm
- Load capacity: 10, 15, 30, 50kg



## Specifications

Descriptions	NSR-10	NSR-15	NSR-30	NSR-50
Cylinder bore size mm	$\phi 20$		$\phi 32$	$\phi 40$
Slider speed mm/s	100 to 1000			
Shock absorber	NCK-00-1.2-C	NCK-00-2.6-C	FCK-M-3-C	FCK-M-5-C
Stroke length mm	50 to 2000 (1mm pitch)			
Max. stroke length mm	2000			
Allowable moment N·m	M1=36.4, M2=30.6, M3=34.2		M1, M3=85.9 M2=82.9	M1, M3=156.2 M2=150.7
Tilt of slider	$\pm 0.1^\circ$ or less			
Port size	Rc1/8		Rc1/4	Rc1/2
Position detection sensor	T type proximity switch lead wire 3m			
Max. horizontal load capacity kg	10	15	30	50
Speed control valve (option)	SC3W-6-6		SC3W-8-8	SC3W-15-10
Working fluid	Clean compressed air			
Working pressure MPa	0.2 to 0.7			
Withstanding pressure MPa	1.05			
Ambient temperature $^\circ\text{C}$	5 to 60			
Lubrication	Refer to page 133 for lubrication			
Repeatability mm	$\pm 0.02$			
Product weight kg	(st $\times$ 0.0109) + 5.5	(st $\times$ 0.0109) + 5.6	(st $\times$ 0.0176) + 10.7	(st $\times$ 0.0311) + 17.9

## Stroke length adjustment section specifications

Descriptions	Blank	R	L	D
Adjustable stroke right mm	0 to -15	Full stroke length	0 to -15	Full stroke length
Adjustable stroke left mm	0 to -15	0 to -15	Full stroke length	Full stroke length

## Shock absorber specifications

Descriptions	NCK-00-1.2-C	NCK-00-2.6-C	FCK-M-3-C	FCK-M-5-C
Max. absorbing capacity J	12	26	30	50
Absorbing stroke length mm	10	15	16	25
Max. colliding speed mm/s	2000			
Max. cycle rate cycle/min.	30	25	20	12

## Cable bearer specifications

Descriptions	Cable bearer model no.	Bore size (mm)	Lift capacity (kg/m)
NSR-10, 15-B, F	TKP0320-2B-R37	19 $\times$ 24	MAX1.6
NSR-10, 15-X	TKP0320-3B-R37	19 $\times$ 50	MAX1.6
NSR-10, 15-W	TKP0450-38B-R50	25 $\times$ 38	MAX3.0
NSR-30-B, F	TKP0450-58B-R50	25 $\times$ 58	MAX3.0
NSR-50-B, F	TKP0450-78B-R50	25 $\times$ 78	MAX3.0

### Adjustable stroke block additional weight list

Model no.	Additional weight (kg)
NSR-1-10-R	0.685
NSR-1-10-L	0.685
NSR-1-10-D	1.370
NSR-1-15-R	0.810
NSR-1-15-L	0.810
NSR-1-15-D	1.620
NSR-1-30-R	1.140
NSR-1-30-L	1.140
NSR-1-30-D	2.280
NSR-1-50-R	1.750
NSR-1-50-L	1.750
NSR-1-50-D	3.499

### Mounting bracket LB additional weight list

Model no.	Additional weight (kg)
NSR-10	0.8
NSR-15	0.8
NSR-30	2.9
NSR-50	4.8

### Cable bearer additional weight list

Model no.	Additional weight (kg)
NSR-1-10,15-B	$(st/2 \times 0.0011) + 0.482$
NSR-1-10,15-W	$(st/2 \times 0.0018) + 0.55$
NSR-1-10,15-F	$(st + 178) \times 0.0024 + 0.125$
NSR-1-10,15-X	$(st + 178) \times 0.003 + 0.13$
NSR-1-30-B	$(st/2 \times 0.0028) + 1.148$
NSR-1-30-F	$(st + 234) \times 0.0042 + 0.2$
NSR-1-50-B	$(st/2 \times 0.0034) + 1.234$
NSR-1-50-F	$(st + 178) \times 0.0049 + 0.22$

### 2 head specifications

Descriptions	NSR-2-10	NSR-2-15	NSR-2-30	NSR-2-50
Max. horizontal transfer weight kg/1 head	5	7.5	15	25
Stroke length mm	50 to 1000			
Max. stroke length mm	1800		1740	1690
Pitch between heads mm	200 to 999		260 to 999	310 to 999
Max. pitch between heads mm	999			
Product additional weight kg	$(Pitch \text{ between heads} \times 0.0109) + 1.7$		$(Pitch \text{ between heads} \times 0.0176) + 2.79$	$(Pitch \text{ between heads} \times 0.0311) + 4.66$

Note 1: If pitch between heads and stroke length are added, maximum stroke length is to be 2000mm or less.

RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

New handling system  
Modular unit

## How to order

**NSR** **2** **10** **1000** **500** **L** **3** **B** **A**

**A** Head number

**B** Load capacity

**C** X-axis stroke length  
Note 1

**D** Pitch between heads  
Note 2, Note 3

**E** Stroke length  
adjustment block

**F** Port position, speed control valve,  
mounting bracket  
Note 4, Note 5

**G** Cable bearer  
Note 6

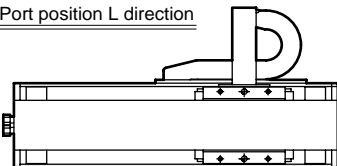
**H** Switch

### Note on model no. selection

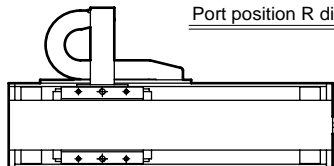
- Note 1** If X-axis stroke length of NSR-30, 50 and NSR-10, 15 are 1001mm and over, tension method is provided for front cover.
- Note 2** Can be selected only for 2 head.
- Note 3** If pitch between heads and stroke length are added, to be 2000mm or less.
- Note 4** Two speed control valves, SC3W6-6 (NSR-10, 15), SC3W8-8 (NSR-30) and SC3W15-10 (NSR-50) are attached.
- Note 5** If port position R is selected, installation attitude of cable bearer is reverse.  
(Exit is port side)

Symbol	Descriptions			
<b>A Head number</b>				
1	1 piece			
2	2 pieces			
<b>B Load capacity (kg)</b>				
10	10			
15	15			
30	30			
50	50			
<b>C X-axis stroke length (1mm pitch)</b>				
50	50			
to	to			
2000	2000			
<b>D Pitch between heads (1mm pitch)</b>				
	Load capacity (kg)			
	10	15	30	50
200	200	200	260	310
to	to	to	to	to
999	999	999	999	999
<b>E Adjustable stroke block</b>				
Blank	None			
L	Left			
R	Right			
D	Both sides			
<b>F Port position, speed control valve, mounting bracket</b>				
Blank	Port position L			
2	Port position R			
3	Port position L, speed control valve			
4	Port position R, speed control valve			
5 Note 7	Port position L, mounting bracket LB			
6 Note 7	Port position R, mounting bracket LB			
7 Note 7	Port position L, speed control valve, bracket LB			
8 Note 7	Port position R, speed control valve, bracket LB			
<b>G Cable bearer</b>				
Blank	None			
B	Vertical installation			
F	Horizontal installation			
W	Vertical installation			
X	Horizontal installation			
<b>H Switch</b>				
Blank	2 wire proximity T2H3 (with 2 pc.)			
A	3 wire proximity T3H3 (with 2 pc.)			

Port position L direction



Port position R direction



Note 6 Refer to table below for the cable bearer capacity.

Descriptions	B	F	W	X
NSR-*-10, 15	19×24	19×24	25×38	19×50
NSR-*-30	25×58	25×58	-	-
NSR-*-50	25×78	25×78	-	-

● Only NSR-10, 15 can be selected for the "W" and "X".

Note 7 Option 5, 6, 7 and 8, and cable bearer B and W can not be combined.

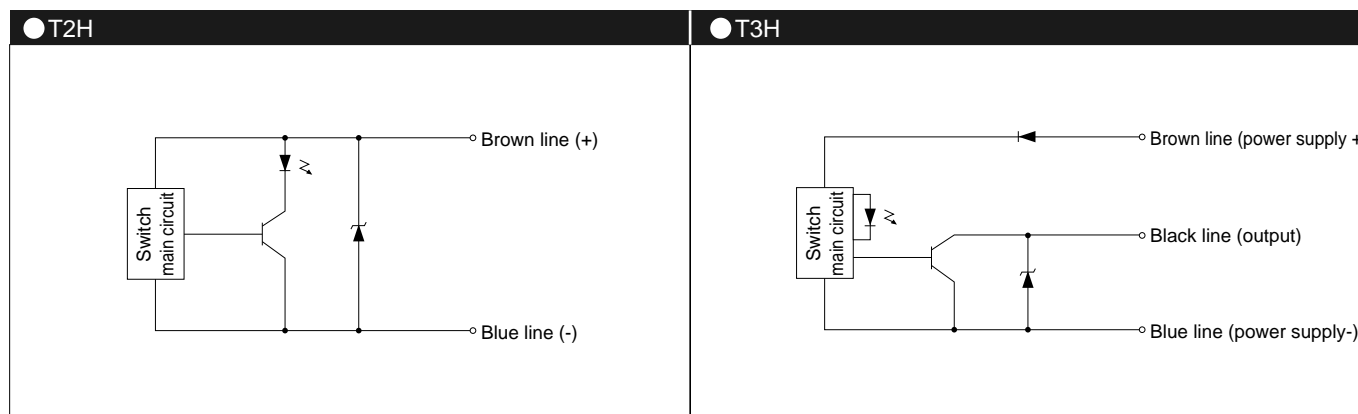
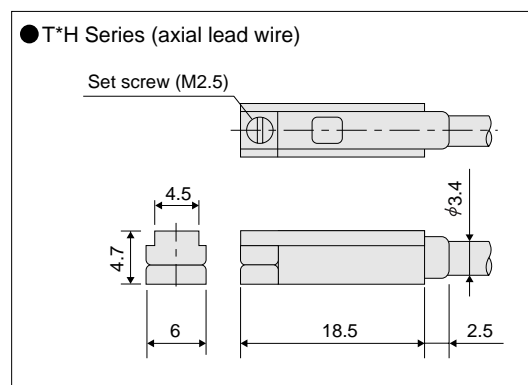
Note 8 Consult with CKD for the specifications other than above.

### Switch specifications (T Series)

Descriptions	Proximity 2 wire	Proximity 3 wire
	T2H3	T3H3
Applications	Programmable controller	Programmable controller, relay
Output method	-	NPN output
Power voltage	-	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less
Load current	5 to 20mA (Note 1)	100mA or less
Current consumption	-	10mA or less with 24 VDC (when turned ON)
Internal voltage drop	4 V or less	0.5V or less
Light	LED (ON lighting)	
Leakage current	1mA or less	10 $\mu$ A or less
Lead wire length (standard)	3m (oil resistant vinyl cabtire cable 2-conductor 0.2mm <sup>2</sup> )	3m (oil resistant vinyl cabtire cable 3-conductor 0.2mm <sup>2</sup> )
Maximum shock resistance	980m/s <sup>2</sup>	
Insulation resistance	20M $\Omega$ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000 VAC for one minute	
Ambient temperature	-10 to + 60°C	
Protective structure	IEC standards IP67, JIS C0920 (dust proof type), oil resistance	

Note 1: Maximum load current: 20mA at 25°C. The current will be lower than 20mA if ambient temperature around switch is higher than 25°C. (5 to 10mA when 60°C)

### Dimensions



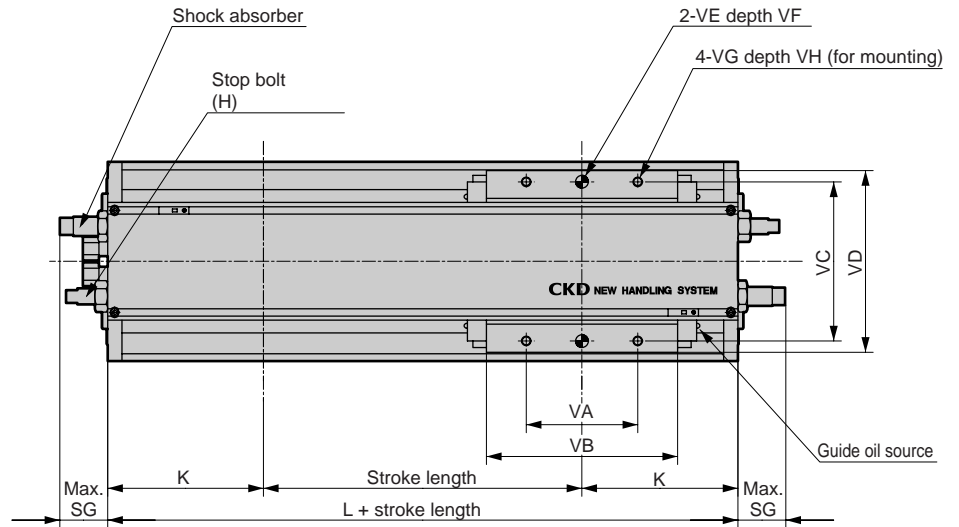
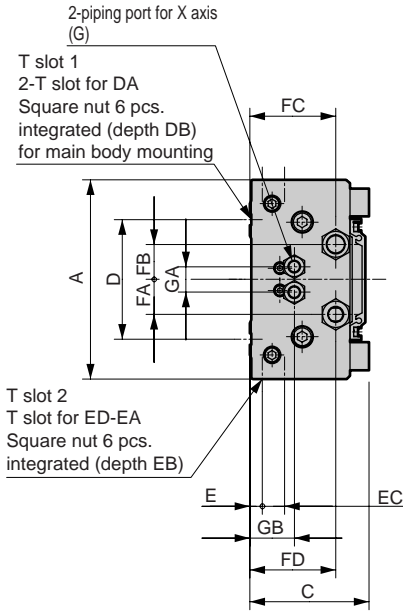
- RRC
- GRC
- RV3\*
- NHS**
- HR
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HLB
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2 \*-HC
- CKH2
- CKLB2
- NCK/SCK/FCK
- FJ
- FK
- Ending

New handling system  
Modular unit

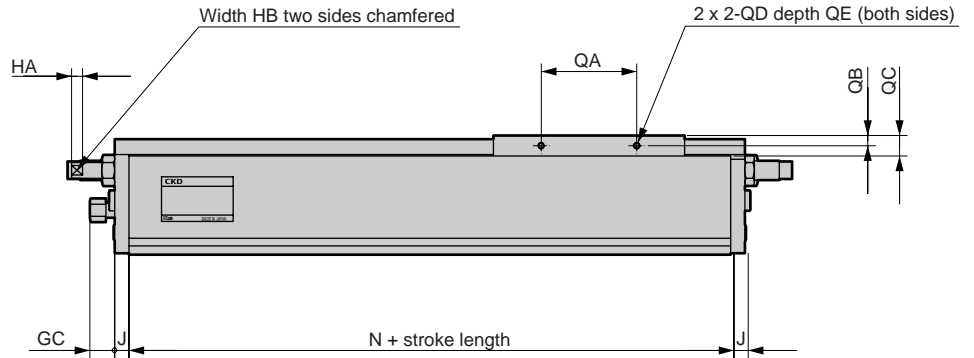
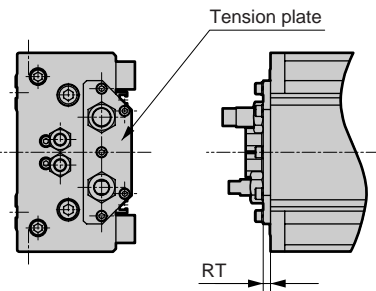
## Dimensions



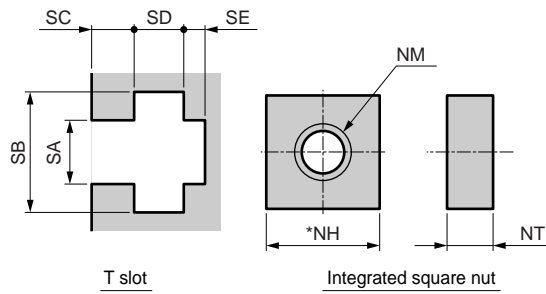
### ● Basic type



### ● Tension plate type



### ● T slot section details dimension



T slot 1								
Model no.	SA	SB	SC	SD	SE	NH	NM	NT
NSR-10	7	11	5	6	1	10	M6	5
NSR-15	7	11	5	6	1	10	M6	5
NSR-30	10.5	17.6	8	9	2	17	M10	8
NSR-50	12.5	19.6	9	10.4	1.6	19	M12	10

T slot 2								
Model no.	SA	SB	SC	SD	SE	NH	NM	NT
NSR-10	5	8.5	4	4	1	8	M4	3.2
NSR-15	5	8.5	4	4	1	8	M4	3.2
NSR-30	5.5	9.5	4	4.5	2.5	9	M5	4
NSR-50	6.5	10.6	4.5	6	3	10	M6	5

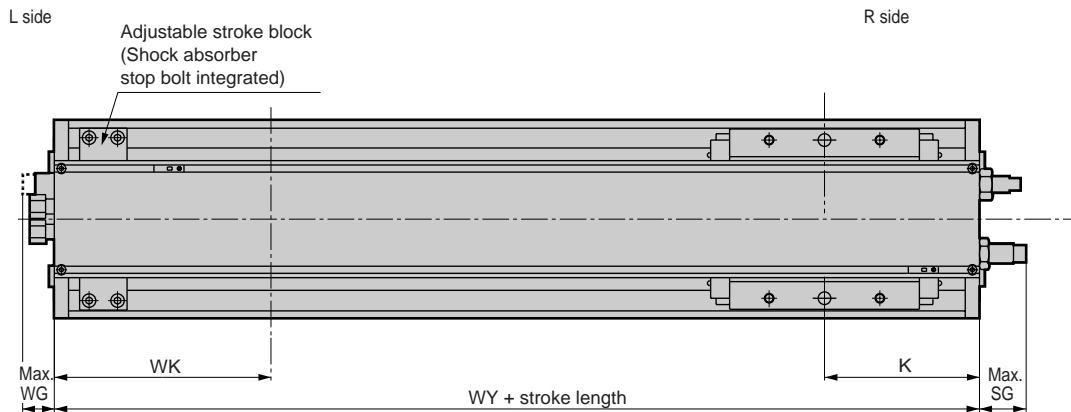
Model no.	A	C	D	DA	DB	E	EA	EB	EC	ED	FA	FB	FC	FD	G	GA	GB
NSR-10	125	75	75	M6	11	8	M4	8	-	2	22	22	54	54	Rc1/8	16	28
NSR-15	125	75	75	M6	11	8	M4	8	-	2	22	22	54	54	Rc1/8	16	28
NSR-30	165	105	110	M10	18	11.5	M5	10.5	14	4	25	24	78	82	Rc1/4	27	37.5
NSR-50	200	120	130	M12	21	11.5	M6	13	16	4	30	30	88.5	88.5	Rc1/2	35	46.5
Model no.	VC	VD	VE	VF	VG	VH	WG	WK	WL	WY							
NSR-10	100	114	φ8H7	12	M6	12	-	137	274	235							
NSR-15	100	114	φ8H7	12	M6	12	20	137	274	235							
NSR-30	130	154	φ10H7	15	M10	24	25	174	348	307							
NSR-50	165	190	φ10H7	15	M12	25	48.5	196	392	339							

### Dimensions

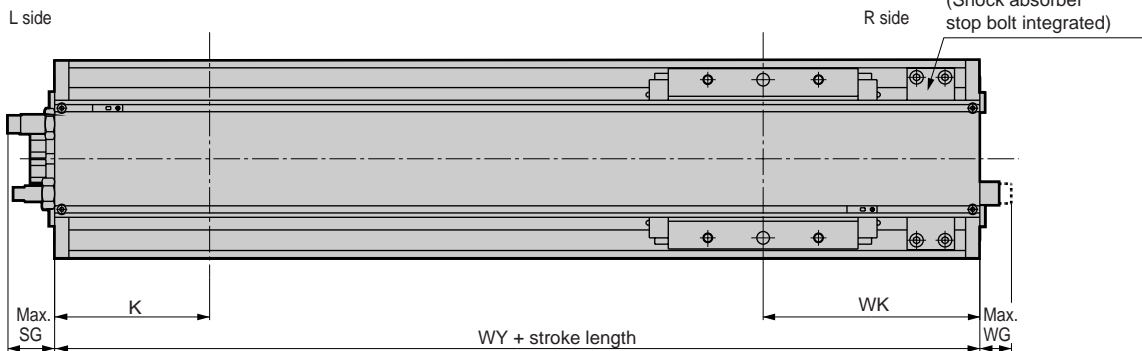


#### ● Type with adjustable stroke block

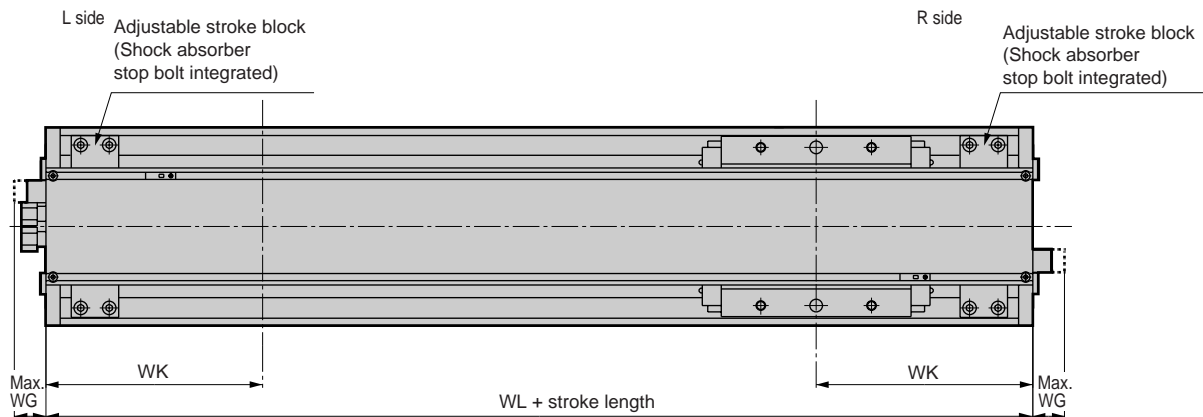
##### ● L (adjustable stroke block left side installation type)



##### ● R (adjustable stroke block right side installation type)



##### ● D (adjustable stroke block both sides installation type)



RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK

Ending

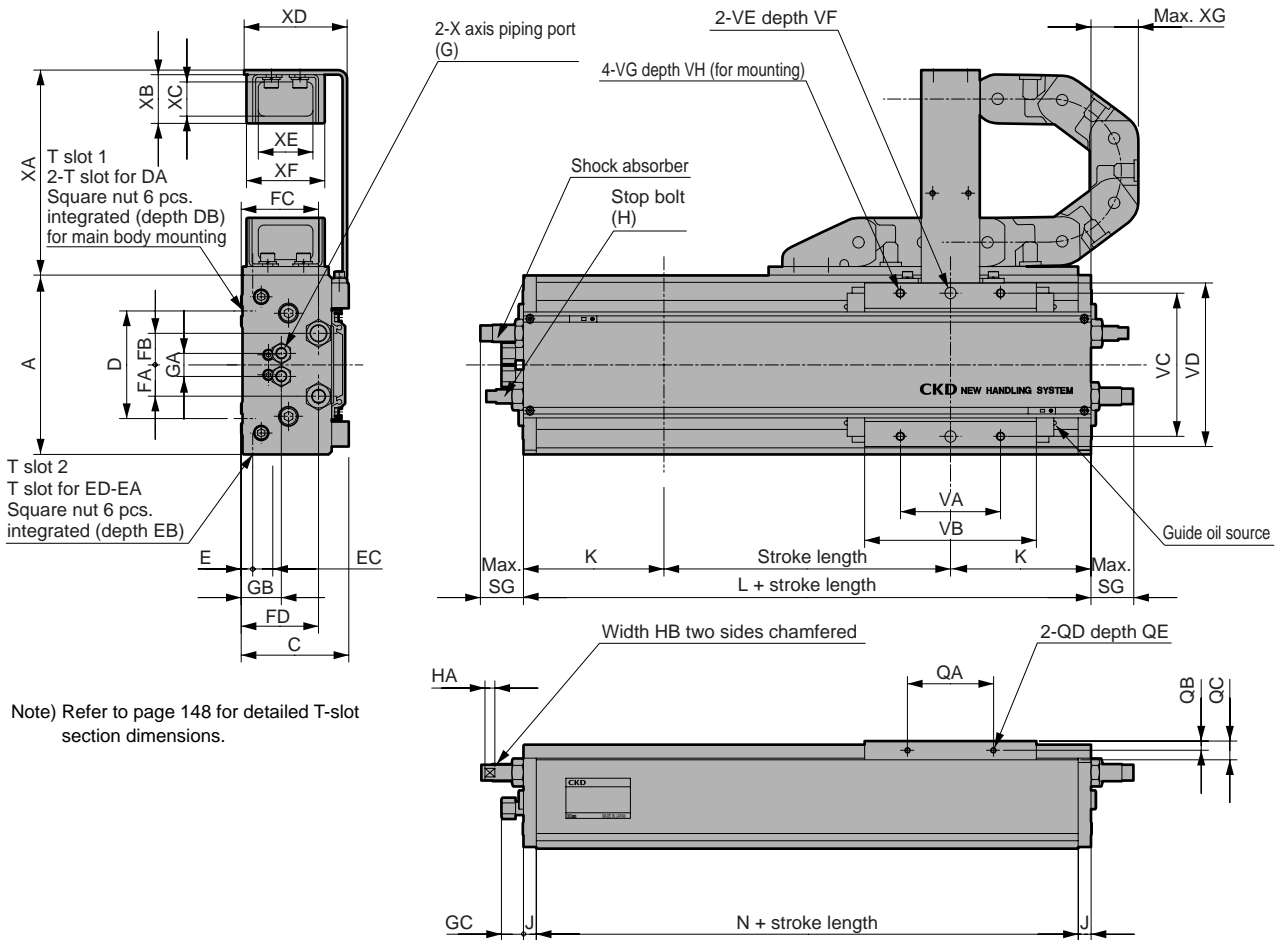
New handling system  
Modular unit

	GC	H	HA	HB	J	K	L	N	QA	QB	QC	QD	QE	RT	SG	VA	VB
	16	M10×1.25	7	8	9	98	196	178	60	6.5	13	M4	10	4.5	30	70	120
	16	M10×1.25	7	8	9	98	196	178	60	6.5	13	M4	10	4.5	56	70	120
	8.5	M12×1.25	7	10	16	133	266	234	70	8	17	M5	12	4.5	66	110	150
	5.5	M12×1.25	7	10	16	143	286	254	70	9.5	20	M6	14	4.5	101.5	135	177

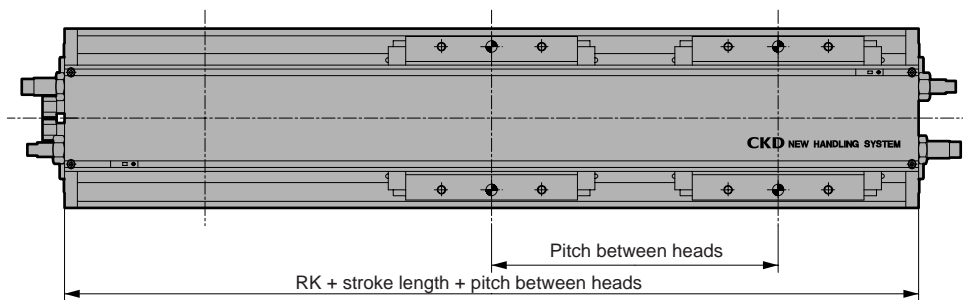
## Dimensions



### ● Type with cable bearer (vertical installation)



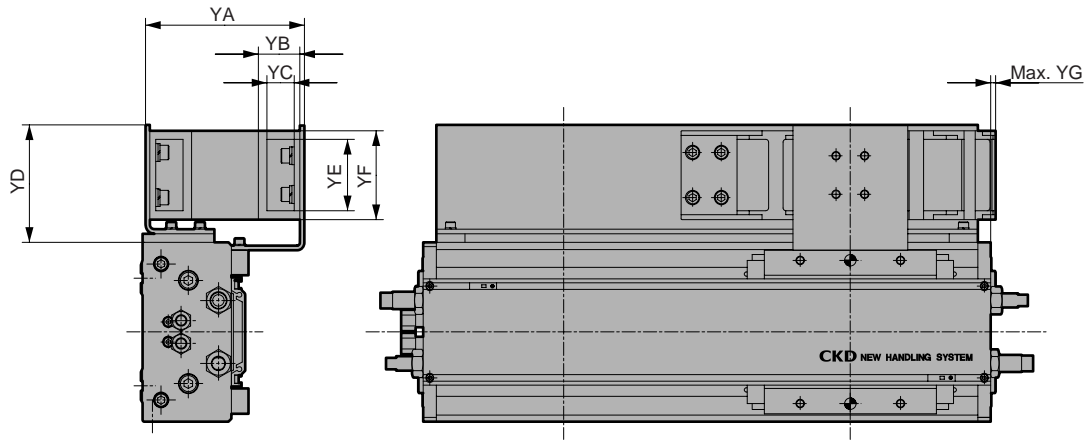
### ● 2 head type



Model no.	A	C	D	DA	DB	E	EA	EB	EC	ED	FA	FB	FC	FD	G	GA	GB		
NSR-10	125	75	75	M6	11	8	M4	8	-	2	22	22	54	54	Rc1/8	16	28		
NSR-15	125	75	75	M6	11	8	M4	8	-	2	22	22	54	54	Rc1/8	16	28		
NSR-30	165	105	110	M10	18	11.5	M5	10.5	14	4	25	24	78	82	Rc1/4	27	37.5		
NSR-50	200	120	130	M12	21	11.5	M6	13	16	4	30	30	88.5	88.5	Rc1/2	35	46.5		
Model no.	RG	RH	RJ	RK	SG	VA	VB	VC	VD	VE	VF	VG	VH	Cable bearer	XA	XB	XC		
NSR-10	20	7.5	20	196	30	70	120	100	114	φ8H7	12	M6	12	B	112.2	29	19		
														W	145.2	36	25		
NSR-15	20	7.5	20	196	56	70	120	100	114	φ8H7	12	M6	12	B	112.2	29	19		
														W	145.2	36	25		
NSR-30	12	-	60	266	66	110	150	130	154	φ10H7	15	M10	24	-	160.5	36	25		
NSR-50	15	-	60	286	101.5	135	177	165	190	φ10H7	15	M12	25	-	162.5	36	25		

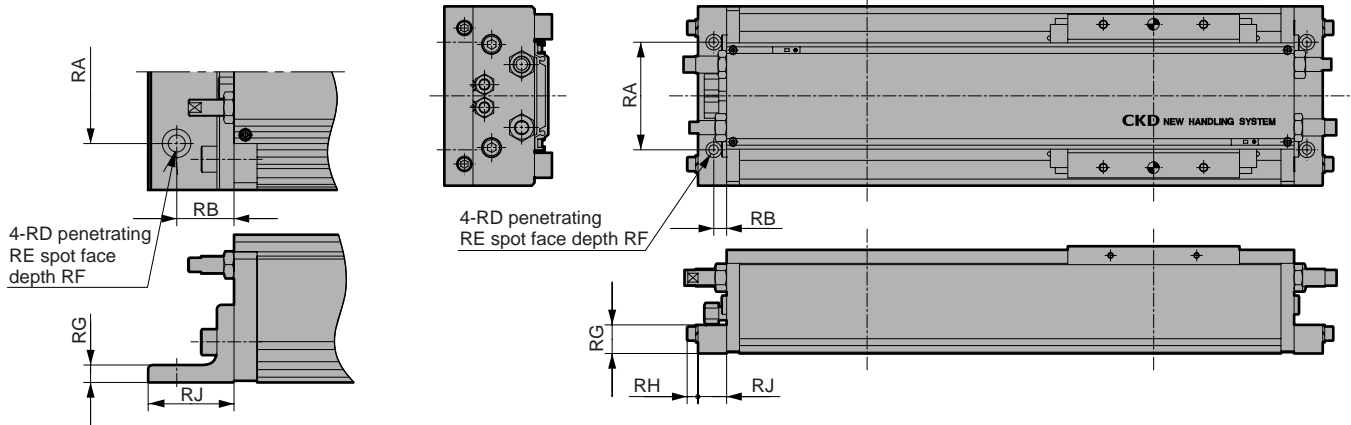


● Type with cable bearer (horizontal installation)



● Type with LB bracket

(NSR-30/50)



- RRC
- GRC
- RV3\*
- NHS**
- HR
- LN
- FH100
- HAP
- BSA2
- BHA/  
BHG
- LHA
- LHAG
- HKP
- HLA/  
HLB
- HLAG/  
HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HLB
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2  
\*-HC
- CKH2
- CKLB2
- NCK/  
SCK/FCK
- FJ
- FK

Ending

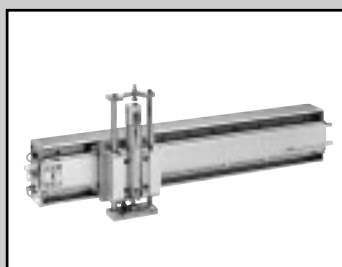
	GC	H			HA	HB	J	K	L	N	QA	QB	QC	QD	QE	RA	RB	RD	RE	RF
	16	M10×1.25			7	8	9	98	196	178	60	6.5	13	M4	10	75	9	φ7	φ12	6.5
	16	M10×1.25			7	8	9	98	196	178	60	6.5	13	M4	10	75	9	φ7	φ12	6.5
	8.5	M12×1.25			7	10	16	133	266	234	70	8	17	M5	12	100	40	φ12	φ20	1
	5.5	M12×1.25			7	10	16	143	286	254	70	9.5	20	M6	14	100	40	φ14.5	φ26	1
	XD	XE	XF	XG	Cable bearer	YA	YB	YC	YD	YE	YF	YG								
	65	24	36	33	F	114	29	19	56	24	36	34								
	72.5	38	56	75	X	114	29	19	82	50	62	34								
	65	24	36	33	F	114	29	19	56	24	36	34								
	72.5	38	56	75	X	114	29	19	82	50	62	34								
	100.5	58	78	46	-	155	34	25	95	58	74	45								
	117.5	78	98	36	-	155	34	25	115	78	94	35								

New handling system  
Modular unit

New handling system Z-axis module (HRL)

# NHS-H Series

- X axis stroke length: 50 to 2000mm Z axis stroke length: 50 to 600mm
- Load capacity: 5, 7, 10, 12, 20, 33kg



## Specifications

Combination model no.	NHS*-10***	NHS*-15**	NHS*-30**	NHS*-50**
Descriptions	NSR-10	NSR-15	NSR-30	NSR-50
Cylinder bore size mm	φ20		φ32	φ40
Slider speed mm/s	100 to 1000			
Shock absorber	NCK-00-1.2-C	NCK-00-2.6-C	FCK-M-3-C	FCK-M-5-C
Stroke length mm	50 to 2000 (1mm pitch)			
Max. stroke length mm	2000			
Allowable moment N·m	M1=36.4, M2=30.6, M3=34.2		M1, M3=85.9 M2=82.9	M1, M3=156.2 M2=150.7
Tilt of slider	± 0.1° or less			
Port size	Rc1/8		Rc1/4	Rc1/2
Position detection sensor	T type proximity switch lead wire 3m			
Max. horizontal load capacity kg	10	15	30	50
Speed control valve (option)	SC3W-6-6		SC3W-8-8	SC3W-15-10
Repeatability mm	± 0.02			
Product weight kg	(st×0.0109) + 5.5	(st×0.0109) + 5.6	(st×0.0176) + 10.7	(st×0.0311) + 17.9

## Z axis combination specifications

Combination model no.	NHS*-1005	NHS*-1007				
	NHS*-1505	NHS*-1507	NHS*-1510	NHS*-1512		
			NHS*-3010	NHS*-3012	NHS*-3020	
			NHS*-5010	NHS*-5012	NHS*-5020	NHS*-5033
Z-axis model no.	HRL-1*-05	HRL-1*-10	HRL-1*-15	HRL-1*-15H	HRL-1*-25	HRL-1*-50
Cylinder bore size mm	φ20	φ25	φ32	φ32	φ40	φ50
Speed mm/s	50 to 300					
Shock absorber (Note 1)	NCK-00-0.7		NCK-00-1.2		NCK-00-12	
Stroke length mm	50 to 300 (standard body) 301 to 600 (long body)					
Allowable moment N·m	Refer to technical data (page 180)					
Port size	Rc1/8					Rc1/4
Position detection sensor	T type proximity switch lead wire 3m					
Max. load capacity (Note 2) kg	5	7	10	12	20	33
Adjustable stroke length mm	0 to -10 (lowered end)					
Speed control valve (option)	SC3W-6-6				SC3W-6-8	SC3W-8-8
Working fluid	Clean compressed air					
Working pressure MPa	0.3 to 0.7					
Withstanding pressure MPa	1.05					
Ambient temperature °C	5 to 60					
Lubrication	Refer to page 133 for lubrication					
Repeatability mm	± 0.1					
Product weight (standard body) kg	2 + (0.003×st)	2.1 + (0.0037×st)	2.8 + (0.0051×st)	2.9 + (0.0069×st)	10.8 + (0.0081×st)	11.9 + (0.0122×st)
Product weight (long body) kg	2.3 + (0.003×st)	2.4 + (0.0037×st)	3.1 + (0.0051×st)	3.2 + (0.0069×st)	12.5 + (0.0081×st)	13.6 + (0.0122×st)
Movable part weight (standard body) kg	0.9 + (0.0025×st)	0.9 + (0.0027×st)	1.3 + (0.0041×st)	1.6 + (0.0059×st)	4.1 + (0.0066×st)	5.2 + (0.0102×st)
Movable part weight (long body) kg	1.0 + (0.0025×st)	1.0 + (0.0027×st)	1.5 + (0.0041×st)	1.8 + (0.0059×st)	4.4 + (0.0066×st)	5.7 + (0.0102×st)

Note 1: Use at 74% or less of the shock absorber's allowable value at working speed and air pressure.

Note 2: Load capacity varies with air pressure, speed, absorption energy, and the load's center of gravity.

### X axis stroke length adjustment section specifications

Descriptions	Blank	R	L	D
Adjustable stroke right mm	0 to -15	Full stroke length	0 to -15	Full stroke length
Adjustable stroke left mm	0 to -15	0 to -15	Full stroke length	Full stroke length

### Z axis shock absorber specifications

Descriptions	HRL-1*-05, 10	HRL-1*-15, 15H	HRL-1*-25, 50
Shock absorber	NCK-00-0.7	NCK-00-1.2	NCK-00-12
Max. absorbing capacity J	7	12	120
Absorbing stroke length mm	8	10	25
Max. colliding speed mm/s	1500	2000	3000
Max. cycle rate cycle/min.	30	30	12

Note: Use at 74% or less of the shock absorber's allowable value at working speed and air pressure.

### Attachment weight

X axis model no.	NSR-10	NSR-15	NSR-30	NSR-50
Attachment weight kg	0.4	0.4	1	1.4

### X axis shock absorber specifications

Descriptions	NCK-00-1.2-C	NCK-00-2.6-C	FCK-M-3-C	FCK-M-5-C
Max. absorbing capacity J	12	26	30	50
Absorbing stroke length mm	10	15	16	25
Max. colliding speed mm/s	2000			
Max. cycle rate cycle/min	30	25	20	12

### Cable bearer specifications

Descriptions		Cable bearer model no.	Bore size (mm)	Lift capacity (kg/m)
Z-axis	HRL-05, 10, 15, 15H	TKP0180-2B-R28	14×40	MAX1.0
	HRL-25, 50	TKP0320-3B-R37	19×50	MAX1.6
X-axis	NHS-10, 15-B, T	TKP0320-2B-R37	19×24	MAX1.6
	NHS-10, 15-W, Y	TKP0450-38B-R50	25×38	MAX3.0
	NHS-30-B, T	TKP0450-58B-R50	25×58	MAX3.0
	NHS-50-B, T	TKP0450-78B-R50	25×78	MAX3.0

### Adjustable stroke block additional weight list

Model no.	Additional weight (kg)
NSR-1-10-R	0.685kg
NSR-1-10-L	0.685kg
NSR-1-10-D	1.370kg
NSR-1-15-R	0.810kg
NSR-1-15-L	0.810kg
NSR-1-15-D	1.620kg
NSR-1-30-R	1.140kg
NSR-1-30-L	1.140kg
NSR-1-30-D	2.280kg
NSR-1-50-R	1.750kg
NSR-1-50-L	1.750kg
NSR-1-50-D	3.499kg

### Cable bearer additional weight list

Model no.	Additional weight (kg)
NHS-1-10, 15**-B	$(X \text{ stroke length} / 2 \times 0.0011) + 0.482$
NHS-1-10, 15**-W	$(X \text{ stroke length} / 2 \times 0.0018) + 0.55$
NHS-1-10, 15**-T	$(X \text{ stroke length} / 2 \times 0.0011) + (Z \text{ stroke length} \times 0.0006) + 0.682$
NHS-1-10, 15**-Y	$(X \text{ stroke length} / 2 \times 0.0018) + (Z \text{ stroke length} \times 0.0006) + 0.75$
NHS-1-30**-B	$(X \text{ stroke length} / 2 \times 0.0028) + 1.148$
NHS-1-30**-T	$(X \text{ stroke length} / 2 \times 0.0028) + (Z \text{ stroke length} \times 0.0006) + 1.348$
NHS-1-50**-B	$(X \text{ stroke length} / 2 \times 0.0034) + 1.234$
NHS-1-50**-T	$(X \text{ stroke length} / 2 \times 0.0034) + (Z \text{ stroke length} \times 0.0006) + 1.434$

### 2 head specifications

Descriptions	NHS-2-10	NHS-2-15	NHS-2-30	NHS-2-50
Max. horizontal transfer weight kg/1 head	5	7.5	15	25
Stroke length mm	50 to 1000			
Max. stroke length mm	1800		1731	1690
Pitch between heads mm	200 to 999		269 to 999 (Note 1)	310 to 999
Max. pitch between heads mm	999			
Product additional weight kg	$(\text{Pitch between heads} \times 0.0109) + 1.7$		$(\text{Pitch between heads} \times 0.0176) + 2.79$	$(\text{Pitch between heads} \times 0.0311) + 4.66$

Note 1 If NHS-H type and NHS-2-30 are combined, note that pitch between heads differs from discrete X axis.

RRC  
GRC  
RV3\*  
NHS  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/  
BHG  
LHA  
LHAG  
HKP  
HLA/  
HLB  
HLAG/  
HLBG  
HEP  
HCP  
HMF  
HMFB  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2  
\*-HC  
CKH2  
CKLB2  
NCK/  
SCK/FCK  
FJ  
FK  
Ending

New handling system  
Modular unit

## How to order

**NHS** **2** **1005** **1000** **H100** **500** **L** **3** **B** **A** **Q**

**A** Head number

**B** Load capacity

**C** X-axis stroke length  
Note 1

**D** Z axis type

**E** Z-axis stroke length

**F** Pitch between heads  
Note 2

**G** Stroke length adjustment block

**H** Port position/speed control valve  
Note 4

**I** Cable bearer  
Note 5

**J** Switch

**K** Z axis position locking



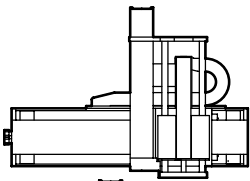
### Note on model no. selection

Note 1 If X axis stroke length of NSR-30, 50 and NSR-10, 15 are 1001mm and over, tension method is provided for front cover.

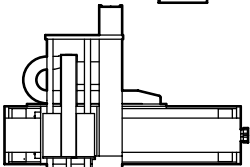
Note 2 Can be selected only for 2 head.

Note 3 If pitch between heads and stroke length are added, to be 2000mm or less.

Note 4 If port position R is selected, installation attitude of cable bearer is reverse. (Exit is port side)



Port position L direction



Port position R direction

Note 5 Refer to table below for cable bearer X and Z axis capacity.

Descriptions	B/T	W/Y
X-axis		
NHS*-10** -15**	19 x 24	25 x 38
NHS*-30**	25 x 58	-
NHS*-50**	25 x 78	-
Z axis		
HRL-1*-05 10, 15, 15H	14 x 40	14 x 40
HRL-1*-25, 50	19 x 50	-

● "W" and "Y" can be selected for only NHS\*-10\*\*,15\*\*.

Note 6 Consult with CKD for the specifications other than the right table.

Symbol	Descriptions
<b>A X axis head number</b>	
1	1 piece
2	2 pieces

<b>B Load capacity (kg)</b>		
	X-axis	Z axis
1005	10	5
1007		7
1505		5
1507	15	7
1510		10
1512		12
3010	30	10
3012		12
3020		20
5010	50	10
5012		12
5020		20
5033		33

<b>C X-axis stroke length (1mm pitch)</b>	
50	50
to	to
2000	2000

<b>D Z axis type</b>	
H	HRL-05
	HRL-10
	HRL-15
	HRL-15H
	HRL-25
	HRL-50

<b>E Z-axis stroke length (mm)</b>		
50	50	Standard body
75	75	
100	100	
125	125	
150	150	
200	200	
250	250	Long body
300	300	
301 to 600	301 to 600	

<b>F Pitch between heads (1mm pitch)</b>				
	Load capacity (kg)			
	10	15	30	50
200	200	200	269	310
to	to	to	to	to
999	999	999	999	999

<b>G Adjustable stroke block</b>	
Blank	None
L	Left
R	Right
D	Both sides

<b>H Port position/speed control valve</b>	
Blank	X axis port position L
2	X axis port position R
3	X axis port position L, X Z axis speed control valve
4	X axis port position R, X Z axis speed control valve

<b>I Cable bearer</b>	
Blank	None
B	X axis vertical installation
T	X axis vertical installation, Z axis installation
W	X axis vertical installation
Y	X axis vertical installation, Z axis installation

<b>J Switch</b>	
Blank	2 wire proximity switch (2pcs.) X axis...T2H3, Z axis...T2H3
A	3 wire proximity switch (2pcs.) X axis...T3H3, Z axis...T3H3

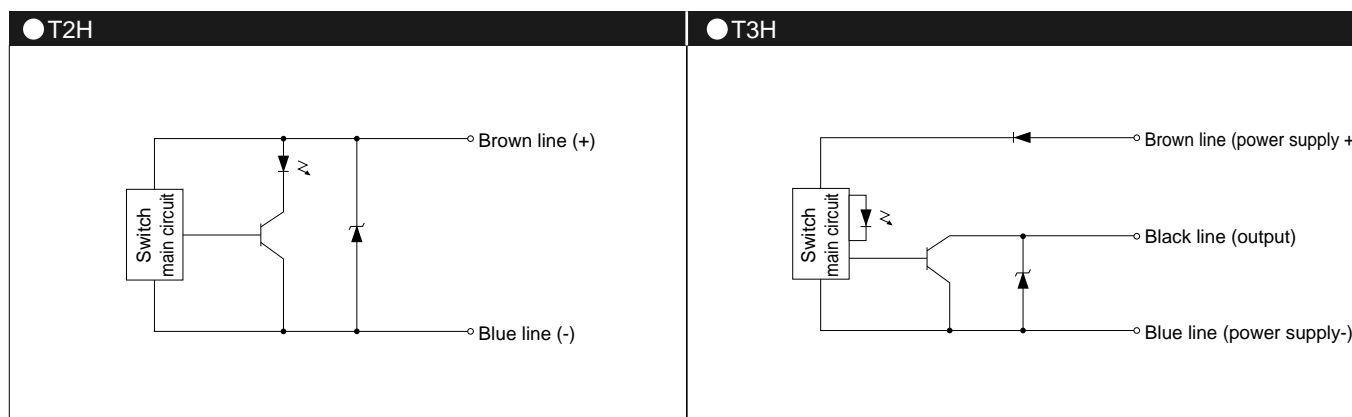
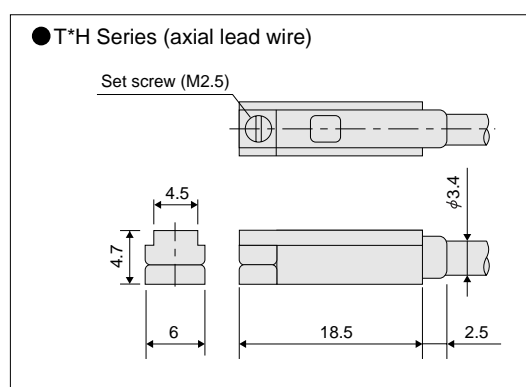
<b>K Z axis position locking</b>	
Blank	None
Q	Selected

### Switch specifications (T Series)

Descriptions	Proximity 2 wire	Proximity 3 wire
	T2H3	T3H3
Applications	Programmable controller	Programmable controller, relay
Output method	-	NPN output
Power voltage	-	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less
Load current	5 to 20mA (Note 1)	100mA or less
Current consumption	-	10mA or less with 24 VDC (when turned ON)
Internal voltage drop	4 V or less	0.5V or less
Light	LED (ON lighting)	
Leakage current	1mA or less	10 $\mu$ A or less
Lead wire length (standard)	3m (oil resistant vinyl cabtire cable 2-conductor 0.2mm <sup>2</sup> ) / 3m (oil resistant vinyl cabtire cable 3-conductor 0.2mm <sup>2</sup> )	
Maximum shock resistance	980m/s <sup>2</sup>	
Insulation resistance	20M $\Omega$ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000 VAC for one minute	
Ambient temperature	-10 to + 60°C	
Protective structure	IEC standards IP67, JISC0920 (dust proof type), oil resistance	

Note 1: Maximum load current: 20mA at 25°C. The current will be lower than 20mA if ambient temperature around switch is higher than 25. (5 to 10mA when 60°C)

### Dimensions



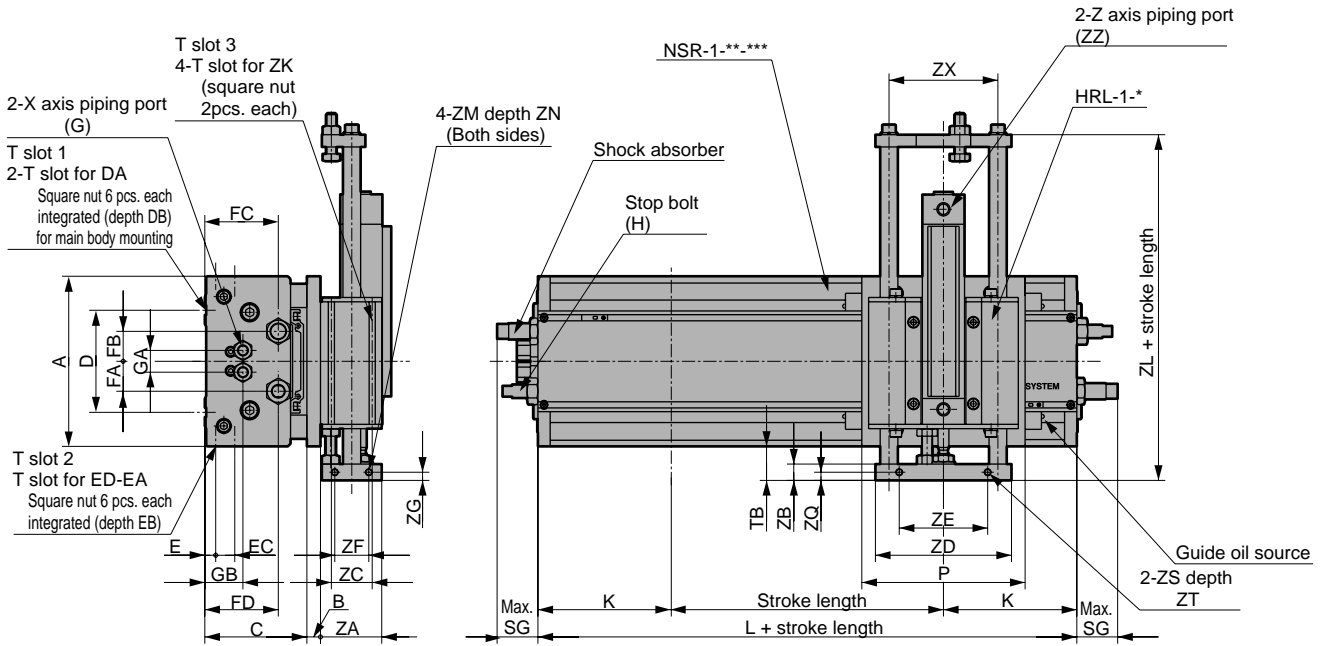
- RRC
- GRC
- RV3\*
- NHS**
- HR
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2 \*-HC
- CKH2
- CKLB2
- NCK/SCK/FCK
- FJ
- FK
- Ending

New handling system  
Modular unit

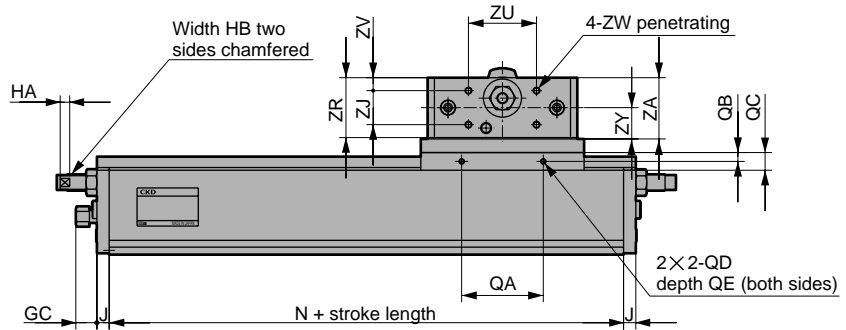
## Dimensions



### ● Basic type



Note) Refer to page 148 on detail of T slot 1 and 2 section.  
Refer to pages 202 to 205 on detail of T slot 3 section.



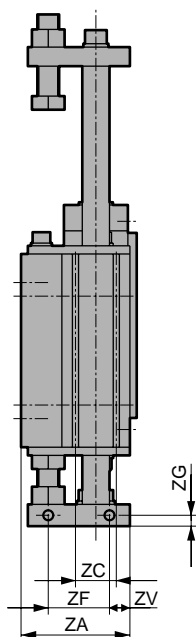
Model no.	A	B	C	D	DA	DB	E	EA	EB	EC	ED	FA	FB	FC	FD
NHS-*-10**-H	125	10	75	75	M6	11	8	M4	8	-	2	22	22	54	54
NHS-*-15**-H	125	10	75	75	M6	11	8	M4	8	-	2	22	22	54	54
NHS-*-30**-H	165	15	105	110	M10	18	11.5	M5	10.5	14	4	25	24	78	82
NHS-*-50**-H	200	15	120	130	M12	21	11.5	M6	13	16	4	30	30	88.5	88.5

Model no.	SG
NHS-*-10**-H	30
NHS-*-15**-H	56
NHS-*-30**-H	66
NHS-*-50**-H	101.5

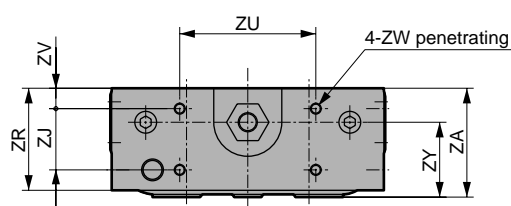
Model no.	TB		ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZJ	ZK	ZL		ZM	ZN	ZQ	ZR	ZS
	Standard body	Long body										Standard body	Long body					
HRL-1-05	25	47.5	45	12	30	100	65	25	6	25	M4	154	199	M5	10	6	44	M5
HRL-1-10	25	47.5	45	12	30	100	65	25	6	25	M4	154	199	M5	10	6	44	M5
HRL-1-15	25	52.5	45	12	30	120	75	25	6	25	M4	154	209	M5	10	6	44	M5
HRL-1-15H	25	52.5	45	12	30	120	75	25	6	25	M4	154	209	M5	10	6	44	M5
HRL-1-25	45	74	80	16	30	200	-	45	8	45	M4	252	310	M8	10	-	75	-
HRL-1-50	25	54	80	19	30	200	-	45	9.5	45	M4	255	313	M8	10	-	75	-

- RRC
- GRC
- RV3\*
- NHS**
- HR
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2 \*-HC
- CKH2
- CKLB2
- NCK/SCK/FCK
- FJ
- FK
- Ending

● HRL-1-25 and over



HRL-1-25 and over



Note) Refer to NSR dimensions on pages 148 to 151 for dimensions (with adjustable stroke block and cable bearer, etc.) when X axis option installed.

	G	GA	GB	GC	H	HA	HB	J	K	L	N	P	QA	QB	QC	QD	QE
	Rc1/8	16	28	16	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10
	Rc1/8	16	28	16	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10
	Rc1/4	27	37.5	8.5	M12×1.25	7	10	16	133	266	234	150	70	8	17	M5	12
	Rc1/2	35	46.5	5.5	M12×1.25	7	10	16	143	286	254	177	70	9.5	20	M6	14

	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
	10	50	9.5	M5	80	23	Rc1/8
	10	50	9.5	M5	80	23	Rc1/8
	10	60	9.5	M5	94	23	Rc1/8
	10	60	9.5	M5	94	23	Rc1/8
	-	100	15	M8	150	55	Rc1/8
	-	100	15	M8	150	55	Rc1/4

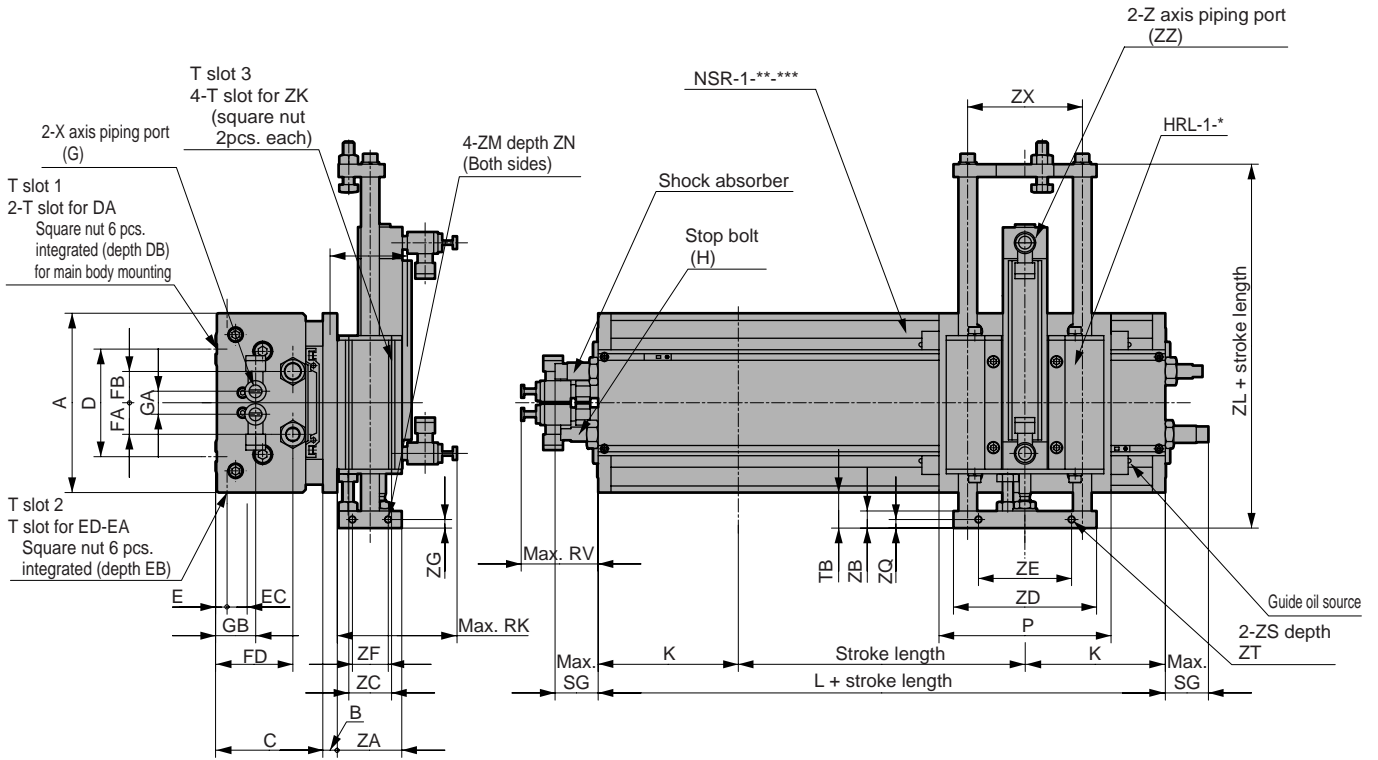
- RRC
- GRC
- RV3\*
- NHS**
- HR**
- LN
- FH100
- HAP
- BSA2
- BHA/  
BHG
- LHA
- LHAG
- HKP
- HLA/  
HLB
- HLAG/  
HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2  
\*-HC
- CKH2
- CKLB2
- NCK/  
SCK/FCK
- FJ
- FK
- Ending

New handling system  
Modular unit

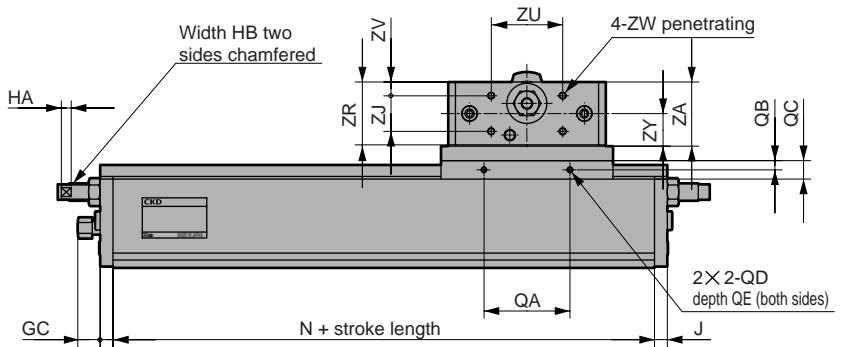
## Dimensions



● Type with speed control valve



Note) Refer to page 148 on detail of T slot 1 and 2 section.  
Refer to pages 202 to 205 on detail of T slot 3 section.



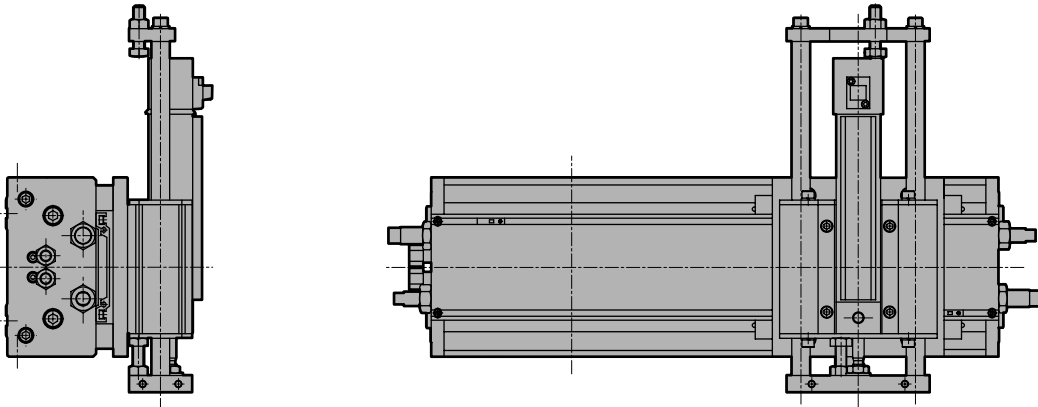
Model no.	A	B	C	D	DA	DB	E	EA	EB	EC	ED	FA	FB	FC	FD
NHS-*-10**-H	125	10	75	75	M6	11	8	M4	8	-	2	22	22	54	54
NHS-*-15**-H	125	10	75	75	M6	11	8	M4	8	-	2	22	22	54	54
NHS-*-30**-H	165	15	105	110	M10	18	11.5	M5	10.5	14	4	25	24	78	82
NHS-*-50**-H	200	15	120	130	M12	21	11.5	M6	13	16	4	30	30	88.5	88.5

Model no.	RV	RW	SG	XG	
				B,T	W,Y
NHS-*-10**-H	54.2	196	30	33	75
NHS-*-15**-H	54.2	196	56	33	75
NHS-*-30**-H	53.2	266	66	46	-
NHS-*-50**-H	65.2	286	101.5	36	-

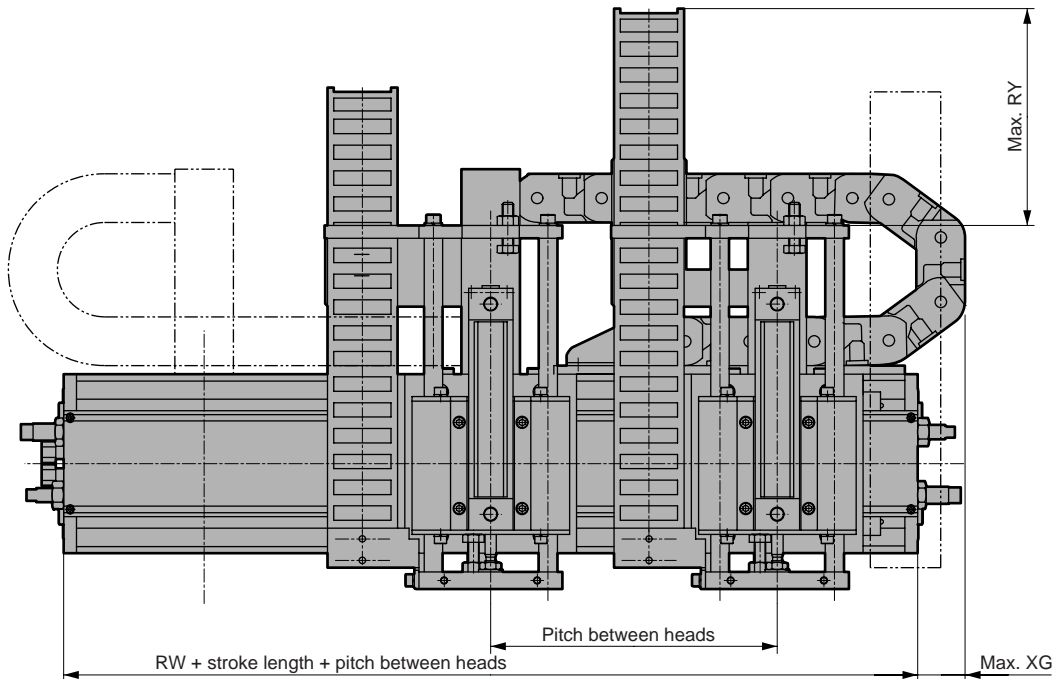
Model no.	RK	RY	TB		ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZJ	ZK	ZL		ZM	ZN	ZQ	ZR
			Standard body	Long body										Standard body	Long body				
HRL-1-05	79.7	215	25	47.5	45	12	30	100	65	25	6	25	M4	154	199	M5	10	6	44
HRL-1-10	82.2	215	25	47.5	45	12	30	100	65	25	6	25	M4	154	199	M5	10	6	44
HRL-1-15	85.7	215	25	52.5	45	12	30	120	75	25	6	25	M4	154	209	M5	10	6	44
HRL-1-15H	85.7	215	25	52.5	45	12	30	120	75	25	6	25	M4	154	209	M5	10	6	44
HRL-1-25	115.2	335	45	74	80	16	30	200	-	45	8	45	M4	252	310	M8	10	-	75
HRL-1-50	126.2	335	25	54	80	19	30	200	-	45	9.5	45	M4	255	313	M8	10	-	75



● Z axis position locking type



● 2 head type



Note) Refer to NSR dimensions on pages 148 to 151 for dimensions (with adjustable stroke block and cable bearer, etc.) when X axis option installed.

	G	GA	GB	GC	H	HA	HB	J	K	L	N	P	QA	QB	QC	QD	QE
	Rc1/8	16	28	16	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10
	Rc1/8	16	28	16	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10
	Rc1/4	27	37.5	8.5	M12×1.25	7	10	16	133	266	234	150	70	8	17	M5	12
	Rc1/2	35	46.5	5.5	M12×1.25	7	10	16	143	286	254	177	70	9.5	20	M6	14

	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
	M5	10	50	9.5	M5	80	23	Rc1/8
	M5	10	50	9.5	M5	80	23	Rc1/8
	M5	10	60	9.5	M5	94	23	Rc1/8
	M5	10	60	9.5	M5	94	23	Rc1/8
	-	-	100	15	M8	150	55	Rc1/8
	-	-	100	15	M8	150	55	Rc1/4

RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/SCK/FCK
FJ
FK

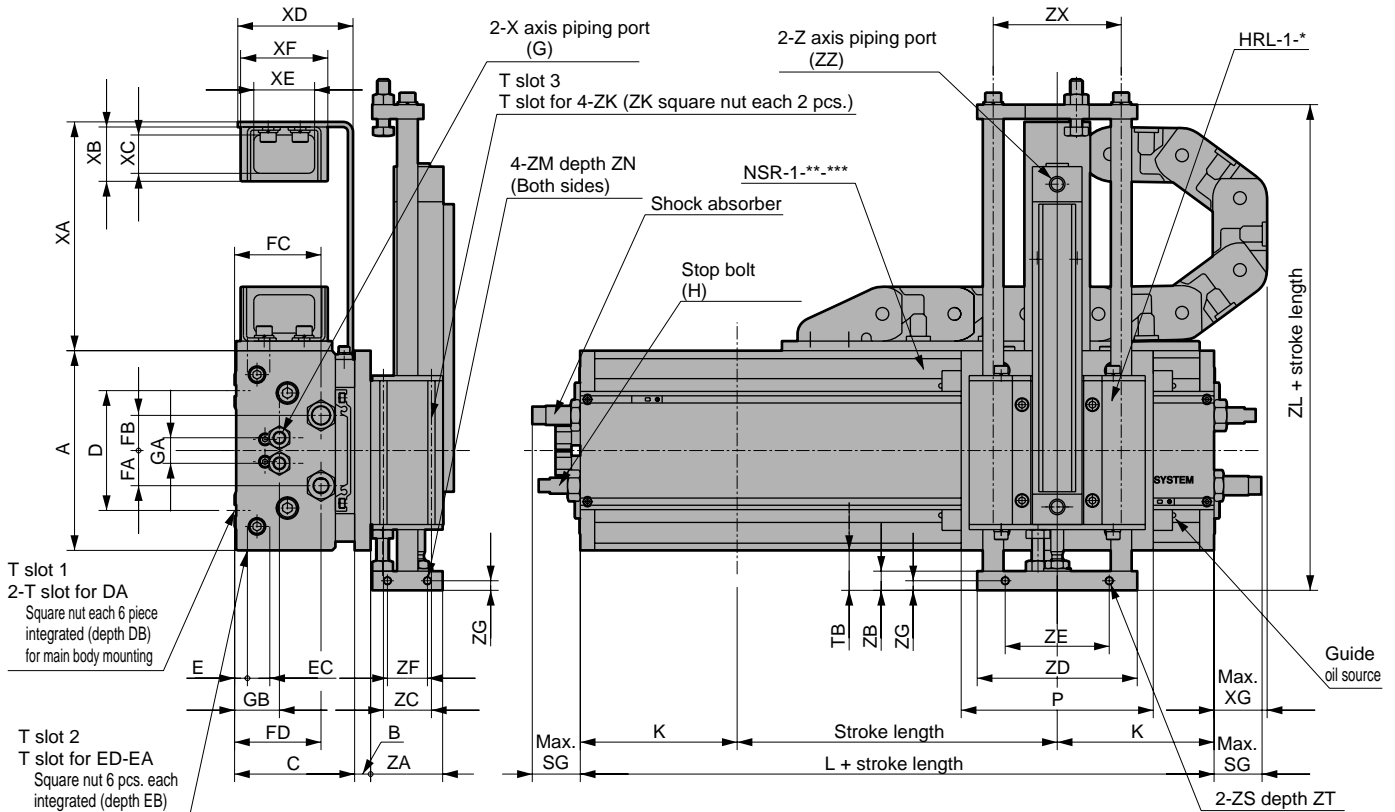
Ending

New handling system  
Modular unit

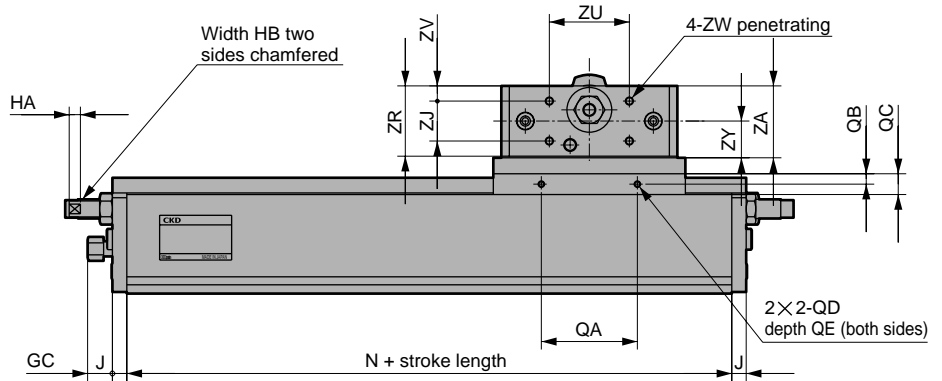
## Dimensions



● Cable bearer type

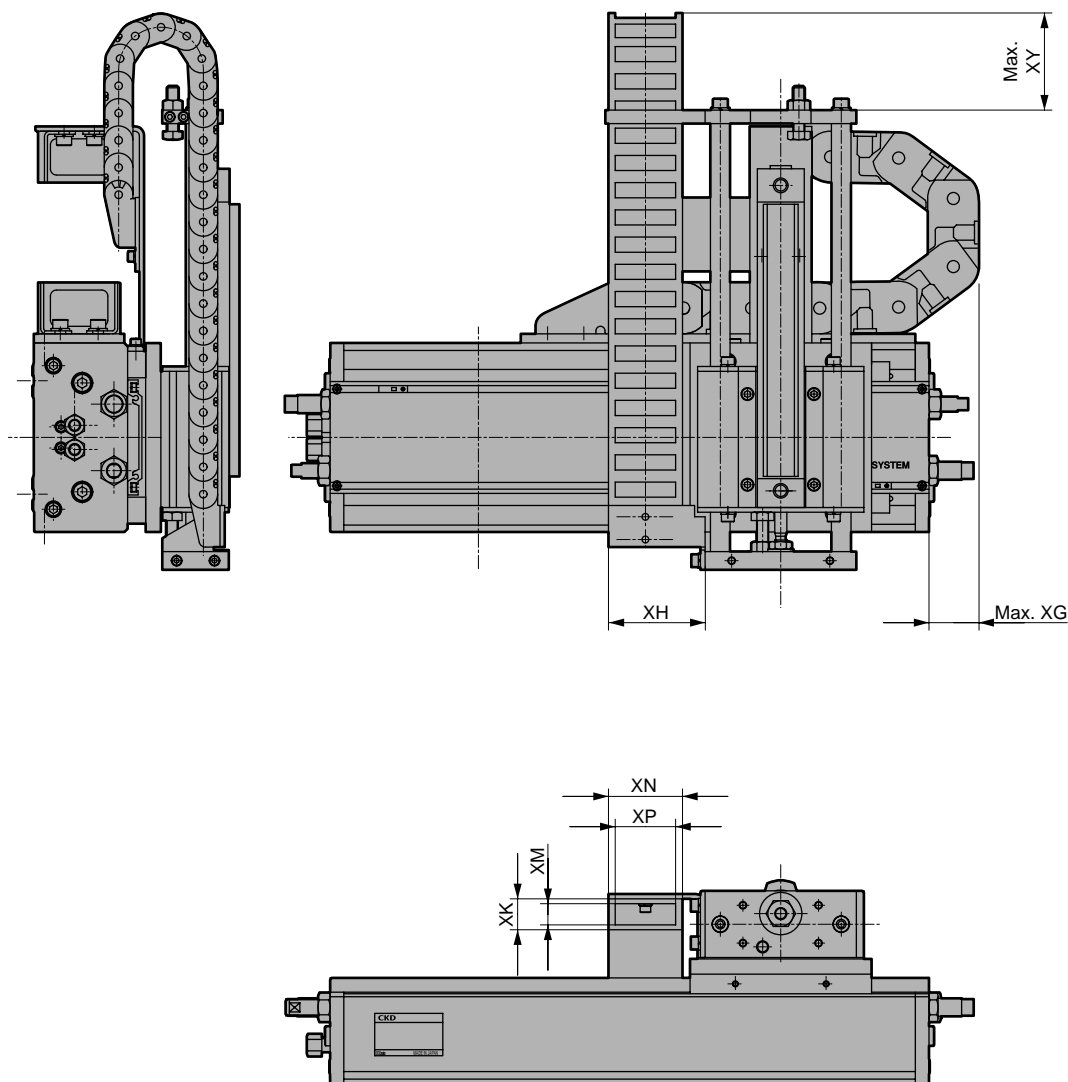


Note) Refer to page 148 on detail of T slot 1 and 2 section.  
Refer to pages 202 to 205 on detail of T slot 3 section.



Model no.	A	B	C	D	DA	DB	E	EA	EB	EC	ED	FA	FB	FC	FD		
NHS-1-10**-H	125	10	75	75	M6	11	8	M4	8	-	2	22	22	54	54		
NHS-1-15**-H	125	10	75	75	M6	11	8	M4	8	-	2	22	22	54	54		
NHS-1-30**-H	165	15	105	110	M10	18	11.5	M5	10.5	14	4	25	24	78	82		
NHS-1-50**-H	200	15	120	130	M12	21	11.5	M6	13	16	4	30	30	88.5	88.5		
Model no.	G	GA	GB	GC	H	HA	HB	J	K	L	N	P	QA	QB	QC	QD	QE
NHS-1-10**-H	Rc1/8	16	28	16	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10
NHS-1-15**-H	Rc1/8	16	28	16	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10
NHS-1-30**-H	Rc1/4	27	37.5	8.5	M12×1.25	7	10	16	133	266	234	150	70	8	17	M5	12
NHS-1-50**-H	Rc1/2	35	46.5	5.5	M12×1.25	7	10	16	143	286	254	177	70	9.5	20	M6	14
Model no.	SG	XA	XB	XC	XD	XE	XF	XG									
NHS-1-10**-H	30	B W	112.2 145.2	29 36	19 25	65 72.5	24 38	33 75									
NHS-1-15**-H	56	B W	112.2 145.2	29 36	19 25	65 72.5	24 38	33 75									
NHS-1-30**-H	66	-	160.5	36	25	100.5	58	46									
NHS-1-50**-H	101.5	-	162.5	36	25	117.5	78	36									

● Cable bearer type



Note) Refer to NSR dimensions on pages 148 to 151 for dimensions (with adjustable stroke block and cable bearer, etc.) when X axis option installed.

Model no.	TB		XH	XK	XM	XN	XP	XY	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZJ	ZK
	Standard body	Long body															
HRL-1-05	25	47.5	54	20.5	14	49	40	150	45	12	30	100	65	25	6	25	M4
HRL-1-10	25	47.5	54	20.5	14	49	40	150	45	12	30	100	65	25	6	25	M4
HRL-1-15	25	52.5	64	20.5	14	49	40	150	45	12	30	120	75	25	6	25	M4
HRL-1-15H	25	52.5	64	20.5	14	49	40	150	45	12	30	120	75	25	6	25	M4
HRL-1-25	45	74	75	29	19	62	50	300	80	16	30	200	-	45	8	45	M4
HRL-1-50	25	54	75	29	19	62	50	300	80	19	30	200	-	45	9.5	45	M4
Model no.	ZL		ZM	ZN	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ			
	Standard body	Long body															
HRL-1-05	154	199	M5	10	6	44	M5	10	50	9.5	M5	80	23	Rc1/8			
HRL-1-10	154	199	M5	10	6	44	M5	10	50	9.5	M5	80	23	Rc1/8			
HRL-1-15	154	209	M5	10	6	44	M5	10	60	9.5	M5	94	23	Rc1/8			
HRL-1-15H	154	209	M5	10	6	44	M5	10	60	9.5	M5	94	23	Rc1/8			
HRL-1-25	252	310	M8	10	-	75	-	-	100	15	M8	150	55	Rc1/8			
HRL-1-50	255	313	M8	10	-	75	-	-	100	15	M8	150	55	Rc1/4			

RRC
GRC
RV3*
<b>NHS</b>
<b>HR</b>
LN
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

New handling system  
Modular unit

New handling system Z-axis module (LCS)

# NHS-C Series

- X axis stroke length: 50 to 2000mm
- Z axis stroke length: 30 to 150mm
- Load capacity: 4, 6, 10, 12kg



## X axis specifications

Combination model no.	NHS*-10**	NHS*-15**	NHS*-30**	NHS*-50**
Descriptions	NSR-10	NSR-15	NSR-30	NSR-50
Cylinder bore size mm	φ20		φ32	φ40
Slider speed mm/s	100 to 1000			
Shock absorber	NCK-00-1.2-C	NCK-00-2.6-C	FCK-M-3-C	FCK-M-5-C
Stroke length mm	50 to 2000 (1mm) pitch			
Max. stroke length mm	2000			
Allowable moment N-m	M1=36.4, M2=30.6, M3=34.2		M1, M3=85.9 M2=82.9	M1, M3=156.2 M2=150.7
Tilt of slider	±0.1° or less			
Port size	Rc1/8		Rc1/4	Rc1/2
Position detection sensor	T type proximity switch lead wire 3m			
Max. horizontal load capacity kg	10	15	30	50
Speed control valve (option)	SC3W-6-6		SC3W-8-8	SC3W-15-10
Repeatability mm	±0.02			
Product weight kg	(st×0.0109) + 5.5	(st×0.0109) + 5.6	(st×0.0176) + 10.7	(st×0.0311) + 17.9

## Z axis combination specifications

Combination model no.	NHS*-1004	NHS*-1006		
	NHS*-1504	NHS*-1506	NHS*-1510	NHS*-1512
Z axis model no.	LCS-12	LCS-16	LCS-20	LCS-25
Cylinder bore size mm	φ12 x 2	φ16 x 2	φ20 x 2	φ25 x 2
Speed mm/s	50 to 300			
Cushion	With shock absorber			
Stroke length mm	30, 40, 50, 75, 100, 125, 150			
Allowable moment N-m	Refer to technical data (page 180)			
Port size	M5		Rc1/8	
Position detection sensor	T type proximity switch lead wire 3m			
Max. load capacity (Note 1) kg	4	6	10	12
Adjustable stroke length mm	Each 0 to -8: (both ends) (Only for lowered end when position locking is provided)			
Speed control valve (option)	SC3W-M5-6		SC3W-6-6	
Working fluid	Clean compressed air			
Working pressure MPa	0.3 to 0.7			
Withstanding pressure MPa	1.05			
Ambient temperature °C	5 to 60			
Lubrication	Refer to page 133 for lubrication			
Repeatability mm	±0.05			
Product weight kg	(st×0.0036) + 0.35	(st×0.006) + 0.6	(st×0.0092) + 0.9	(st×0.015) + 1.6

Note 1: Load capacity varies with air pressure, speed, absorption energy, and the load's center of gravity.

## X axis stroke length adjustment section specifications

Descriptions	Blank	R	L	D
Adjustable stroke right mm	0 to -15	Full stroke length	0 to -15	Full stroke length
Adjustable stroke left mm	0 to -15	0 to -15	Full stroke length	Full stroke length

## Z axis shock absorber specifications

Descriptions	LCS-12	LCS-16	LCS-20,25
Shock absorber	NCK-00-0.3	NCK-00-0.7	NCK-00-1.2
Max. absorbing capacity J	3	7	12
Absorbing stroke length mm	7	8	10
Max. colliding speed mm/s	1500	1500	2000
Max. cycle rate cycle/min.	35	30	12

### X axis shock absorber specifications

Descriptions	NCK-00-1.2-C	NCK-00-2.6-C	FCK-M-3-C	FCK-M-5-C
Max. absorbing capacity J	12	26	30	50
Absorbing stroke length mm	10	15	16	25
Max. colliding speed mm/s	2000			
Max. cycle rate cycle/min.	30	25	20	12

### Cable bearer specifications

Descriptions	Cable bearer model no.	Bore size (mm)	Lift capacity (kg/m)
NHS-10, 15-B	TKPO320-2B-R37	19×24	MAX1.6
NHS-10, 15-W	TKPO450-38B-R50	25×38	MAX3.0
NHS-30-B	TKPO450-58B-R50	25×58	MAX3.0
NHS-50-B	TKPO450-78B-R50	25×78	MAX3.0

### Attachment weight

Descriptions	NSR-10	NSR-15	NSR-30	NSR-50
Attachment weight kg	0.5	0.5	1	1.4

### Adjustable stroke block additional weight list

Model no.	Additional weight (kg)
NSR-1-10-R	0.685kg
NSR-1-10-L	0.685kg
NSR-1-10-D	1.370kg
NSR-1-15-R	0.810kg
NSR-1-15-L	0.810kg
NSR-1-15-D	1.620kg
NSR-1-30-R	1.140kg
NSR-1-30-L	1.140kg
NSR-1-30-D	2.280kg
NSR-1-50-R	1.750kg
NSR-1-50-L	1.750kg
NSR-1-50-D	3.499kg

### Cable bearer additional weight list

Model no.	Additional weight (kg)
NHS-C-1-10, 15**-B	(X stroke length / 2×0.0011) + 0.482
NHS-C-1-10, 15**-W	(X stroke length / 2×0.0018) + 0.55
NHS-C-1-30**-B	(X stroke length / 2×0.0028) + 1.148
NHS-C-1-50**-B	(X stroke length / 2×0.0034) + 1.234

### 2 head specifications

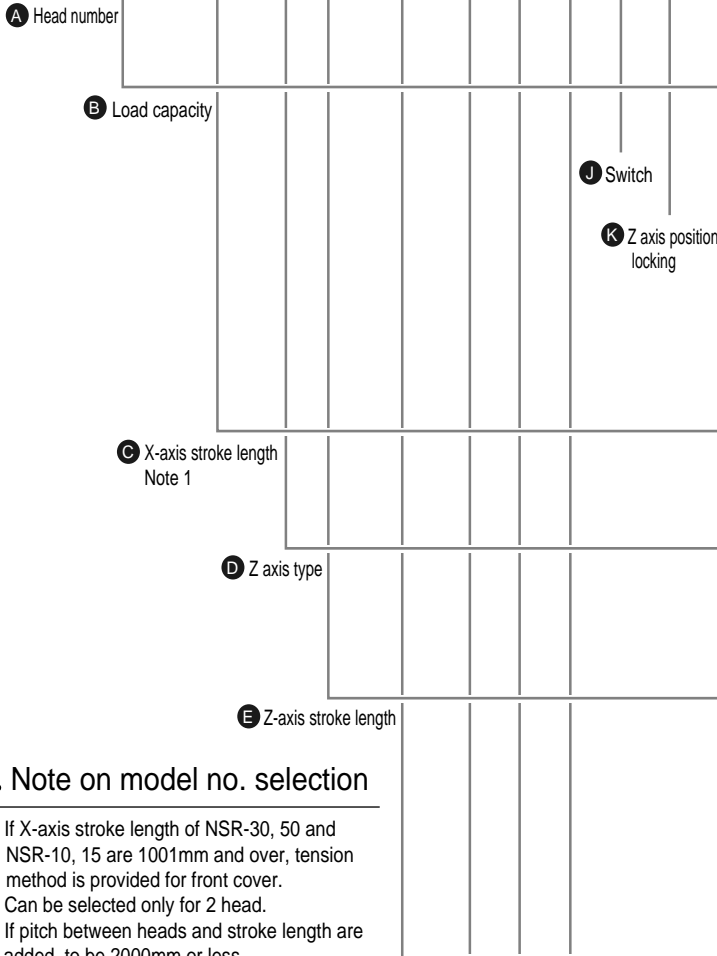
Descriptions	NHS-2-10	NHS-2-15	NHS-2-30	NHS-2-50
Max. horizontal transfer weight kg/1 head	5	7.5	15	25
Stroke length mm	50 to 1000			
Max. stroke length mm	1800		1740	1690
Pitch between heads mm	200 to 999		260 to 999	310 to 999
Max. pitch between heads mm	999			
Product additional weight kg	(Pitch between heads×0.0109) + 1.7		(Pitch between heads×0.0176) + 2.79	(Pitch between heads×0.0311) + 4.66

RRC  
GRC  
RV3\*  
**NHS**  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/  
BHG  
LHA  
LHAG  
HKP  
HLA/  
HLB  
HLAG/  
HLBG  
HEP  
HCP  
HMF  
HMFB  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2  
\*-HC  
CKH2  
CKLB2  
NCK/  
SCK/FCK  
FJ  
FK  
Ending

New handling system  
Modular unit

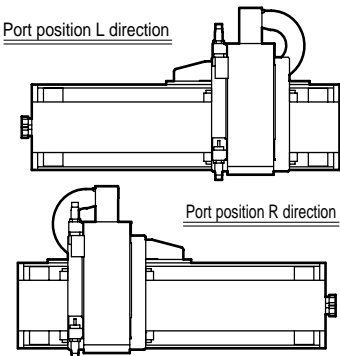
## How to order

**NHS-2-1004-1000-C100-500-L-3-B-A-Q**



### Note on model no. selection

- Note 1 If X-axis stroke length of NSR-30, 50 and NSR-10, 15 are 1001mm and over, tension method is provided for front cover.
- Note 2 Can be selected only for 2 head.
- Note 3 If pitch between heads and stroke length are added, to be 2000mm or less.
- Note 4 If port position R is selected, installation attitude of cable bearer is reverse. (Exit is port side)



Note 5 Refer to below table for the cable bearer capacity.

Descriptions	B	W
NHS-*-10** -15**	19 x 24	25 x 38
NHS-*-30**	25 x 58	-
NHS-*-50**	25 x 78	-

Note 6 Consult with CKD for the specifications other than the right table.

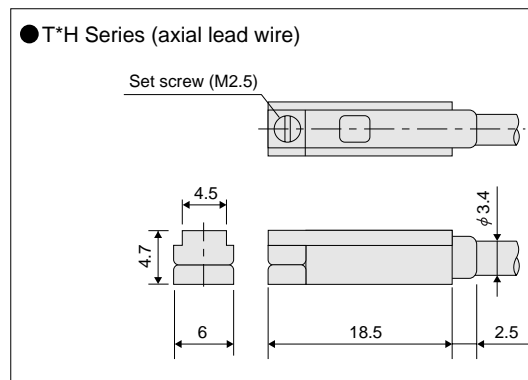
Symbol	Descriptions				
<b>A X axis head number</b>					
1	1 piece				
2	2 pieces				
<b>B Load capacity (kg)</b>					
	X-axis	Z axis			
1004	10	4			
1006	10	6			
1504	15	4			
1506	15	6			
1510	15	10			
1512	15	12			
3010	30	10			
3012	30	12			
5010	50	10			
5012	50	12			
<b>C X-axis stroke length (1mm pitch)</b>					
50	50				
to	to				
2000	2000				
<b>D Z axis type</b>					
C	LCS-12				
	LCS-16				
	LCS-20				
	LCS-25				
<b>E Z-axis stroke length (mm)</b>					
	Bore size (φ)	12	16	20	25
30	30	●	●	●	●
40	40	●	●	●	●
50	50	●	●	●	●
75	75	●	●	●	●
100	100	●	●	●	●
125	125		●	●	●
150	150			●	●
<b>F Pitch between heads (1mm pitch)</b>					
	Load capacity (kg)				
	10	15	30	50	
200	200	200	260	310	
to	to	to	to	to	
999	999	999	999	999	
<b>G Adjustable stroke block</b>					
Blank	None				
L	Left				
R	Right				
D	Both sides				
<b>H Port position/speed control valve</b>					
Blank	X axis port position L				
2	X axis port position R				
3	X axis port position L, X Z axis speed control valve				
4	X axis port position R, X Z axis speed control valve				
<b>I Cable bearer</b>					
Blank	None				
B	X axis vertical installation				
W	X axis vertical installation				
<b>J Switch</b>					
Blank	2 wire proximity switch (2pcs.) X axis...T2H3, Z axis...T2H3				
A	3 wire proximity switch (2pcs.) X axis...T3H3, Z axis...T3H3				
<b>K Z axis position locking</b>					
Blank	None				
Q	Selected				

### Switch specifications (T Series)

Descriptions	Proximity 2 wire	Proximity 3 wire
	T2H3	T3H3
Applications	Programmable controller	Programmable controller, relay
Output method	-	NPN output
Power voltage	-	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less
Load current	5 to 20mA (note)	100mA or less
Current consumption	-	10mA or less with 24 VDC (when turned ON)
Internal voltage drop	4 V or less	0.5V or less
Light	LED (ON lighting)	
Leakage current	1mA or less	10 $\mu$ A or less
Lead wire length (standard)	3m (oil resistant vinyl cabtire cable 2-conductor 0.2mm <sup>2</sup> )	3m (oil resistant vinyl cabtire cable 3-conductor 0.2mm <sup>2</sup> )
Maximum shock resistance	980m/s <sup>2</sup>	
Insulation resistance	20M $\Omega$ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000 VAC for one minute	
Ambient temperature	-10 to + 60°C	
Protective structure	IEC standards IP67, JISC0920 (dust proof type), oil resistance	

Note 1: Maximum load current: 20mA at 25°C. The current will be lower than 20mA if ambient temperature around switch is higher than 25°C (5 to 10mA when 60°C)

### Dimensions



RRC

GRC

RV3\*

**NHS**

HR

LN

FH100

HAP

BSA2

BHA/  
BHG

LHA

LHAG

HKP

HLA/  
HLBHLAG/  
HLBG

HEP

HCP

HMF

HMFB

HFP

HLC

HGP

FH500

HBL

HDL

HMD

HJL

BHE

CKG

CK

CKA

CKS

CKF

CKJ

CKL2

CKL2  
-H-C

CKH2

CKLB2

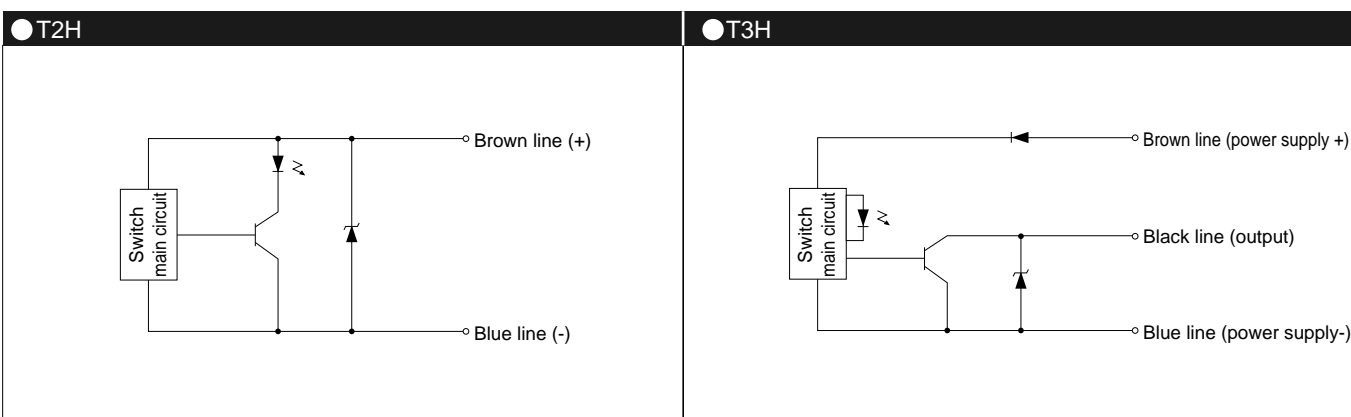
NCK/  
SCK/FCK

FJ

FK

Ending

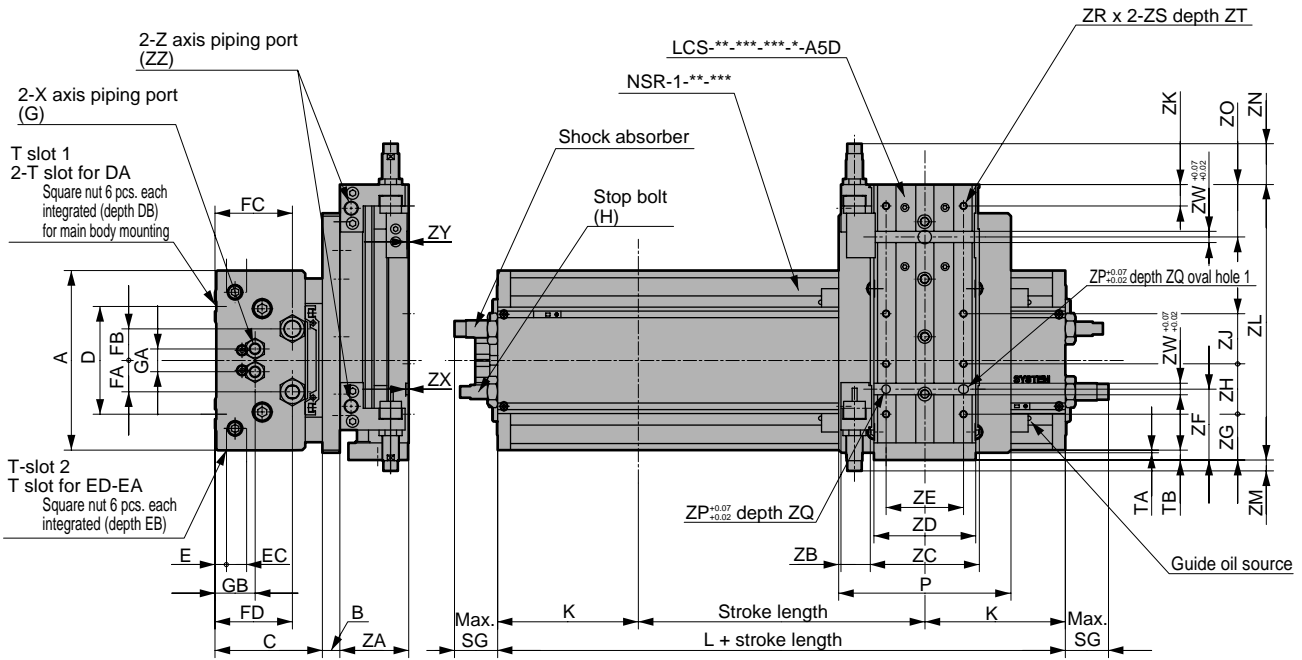
New handling system  
Modular unit



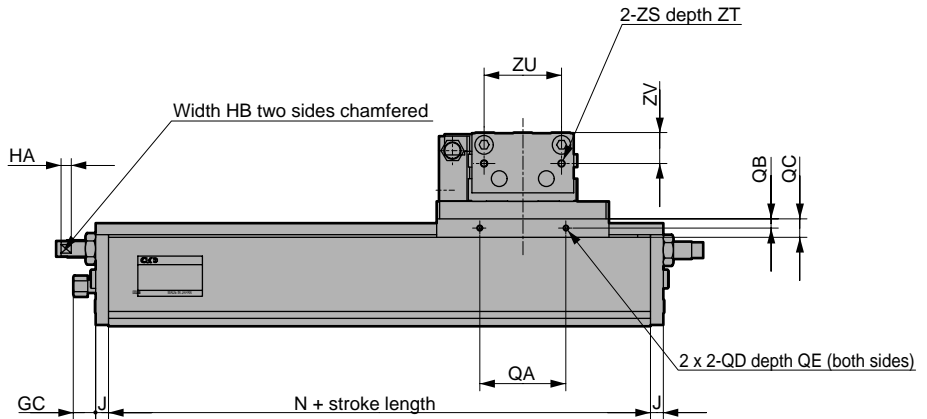
## Dimensions



● Basic type



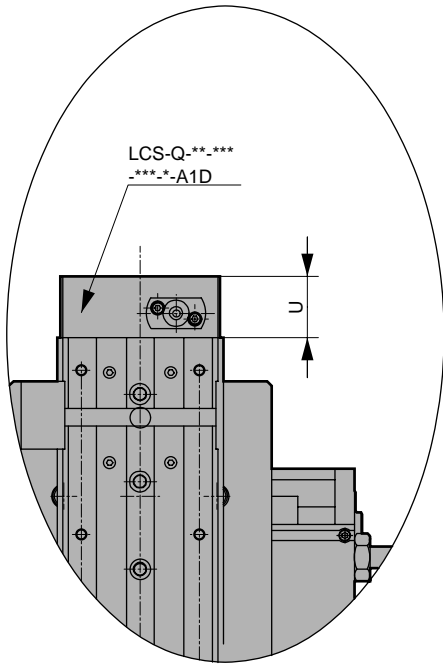
Note) Refer to page 148 for detailed T-slot section dimensions.



Model no.	A	B	C	D	DA	DB	E	EA	EB	EC	ED	FA	FB	FC	FD	G	GA	GB	GC
NHS-*-10**-C	125	12	75	75	M6	11	8	M4	8	-	2	22	22	54	54	Rc1/8	16	28	16
NHS-*-15**-C	125	12	75	75	M6	11	8	M4	8	-	2	22	22	54	54	Rc1/8	16	28	16
NHS-*-30**-C	165	15	105	110	M10	18	11.5	M5	10.5	14	4	25	24	78	82	Rc1/4	27	37.5	8.5
NHS-*-50**-C	200	15	120	130	M12	21	11.5	M6	13	16	4	30	30	88.5	88.5	Rc1/2	35	46.5	8.5
Model no.	U	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZJ			ZK	ZL			ZM		
										30st or less	40, 50st	75st and over		30st or less	40, 50st	75st and over			
LCS-12	24.5	30	16	52	48	36	38.5	26	25	-	-	25	14	91	Stroke length + 61	Stroke length + 70	11		
LCS-16	28	38	18	62	56	42	43	28	30	-	-	30	10	96	Stroke length + 66	Stroke length + 83	12.5		
LCS-20	30	48	20.5	76	71	54	49.5	32	35	-	-	35	15	110.5	Stroke length + 80.5	Stroke length + 92	7.5		
LCS-25	30	60	20.5	91	85	69	49.5	32	35	-	-	35	20	122.5	Stroke length + 92.5	Stroke length + 113	7.5		



● Position locking type



Note) Refer to NSR dimensions on pages 148 to 151 for dimensions (with adjustable stroke block and cable bearer, etc.) when X axis option installed.

RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK

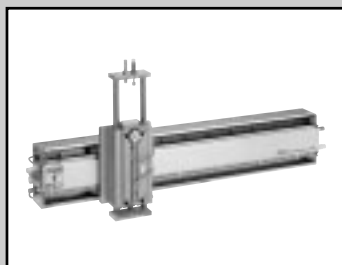
Ending

New handling system  
Modular unit

	H	HA	HB	J	K	L	N	P	QA	QB	QC	QD	QE	SG	TA	TB			
																LCS-12	LCS-16	LCS-20	LCS-25
	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10	30	2	17	18	7	21
	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10	56	2	17	18	7	21
	M12×1.25	7	10	16	133	266	234	150	70	8	17	M5	12	66	-	-	-	26	18
	M12×1.25	7	10	16	143	286	234	177	70	9.5	20	M6	14	101.5	10	-	-	16	18
	ZN	ZO		ZP	ZQ	ZR			ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ			
		50 or less	75 and over			30st or less	40, 50st	70st and over											
	25	21	28.5	3	4	3	3	4	M4	6	36	14	4	1.5	0.8	M5 depth 4			
	27.5	25.5	34	6	6	3	3	4	M5	7.5	42	18	8	2	1	M5 depth 4			
	28.5	30	36.5	6	6	3	3	4	M5	7.5	54	21.5	8	2	1	Rc1/8			
	25.5	37.5	48	6	6	3	3	4	M6	9	59	27.5	8	2	1	Rc1/8			

# NHS-S Series

- X axis stroke length: 50 to 2000mm Z axis stroke length: 50 to 200mm  
Load capacity: 3, 7, 12, 33kg



RRC  
GRC  
RV3\*  
NHS  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/  
BHG  
LHA  
LHAG  
HKP  
HLA/  
HLB  
HLAG/  
HLBG  
HEP  
HCP  
HMF  
HMFb  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2  
\*-HC  
CKH2  
CKLB2  
NCK/  
SCK/FCK  
FJ  
FK  
Ending

## X axis specifications

Combination model no.	NHS-*-10**	NHS-*-15**	NHS-*-30**	NHS-*-50**
Descriptions	NSR-10	NSR-15	NSR-30	NSR-50
Cylinder bore size mm	φ20		φ32	φ40
Slider speed mm/s	100 to 1000			
Shock absorber	NCK-00-1.2-C	NCK-00-2.6-C	FCK-M-3-C	FCK-M-5-C
Stroke length mm	50 to 2000 (1mm pitch)			
Max. stroke length mm	2000			
Allowable moment N·m	M1=36.4, M2=30.6, M3=34.2		M1, M3=85.9 M2=82.9	M1, M3=156.2 M2=150.7
Tilt of slider	±0.1° or less			
Port size	Rc1/8		Rc1/4	Rc1/2
Position detection sensor	T type proximity switch lead wire 3m			
Max. horizontal load capacity kg	10	15	30	50
Speed control valve (option)	SC3W-6-6		SC3W-8-8	SC3W-15-10
Repeatability mm	±0.02			
Product weight kg	(st×0.0109) + 5.5	(st×0.0109) + 5.6	(st×0.00176) + 10.7	(st×0.00311) + 17.9

## Z axis combination specifications

Combination model no.	NHS-*-1003			
	NHS-*-1503	NHS-*-1507	NHS-*-1512	
		NHS-*-3007	NHS-*-3012	
		NHS-*-5007	NHS-*-5012	NHS-*-5033
Z-axis model no.	STL-B-16	STL-B-25	STL-B-32	STL-B-50
Cylinder bore size mm	φ16	φ25	φ32	φ50
Speed mm/s	50 to 300			
Cushion	Lowered end shock absorber, upper end rubber cushion			
Stroke length mm	50, 75, 100, 125, 150, 175, 200			
Allowable moment N·m	Refer to technical data (page 180)			
Port size	M5		Rc1/8	Rc1/4
Position detection sensor	T type proximity switch lead wire 3m			
Max. load capacity (Note 1) kg	3	7	12	33
Adjustable stroke length mm	0 to -25 (lowered end)			
Speed control valve (option)	SC3W-M5-6		SC3W-6-6	SC3W-8-8
Working fluid	Clean compressed air			
Working pressure MPa	0.3 to 0.7			
Withstanding pressure MPa	1.05			
Ambient temperature °C	5 to 60			
Lubrication	Refer to page 133 for lubrication			
Repeatability mm	±0.5			
Product weight kg	st×0.015 + 0.53	st×0.0229 + 1.16	st×0.0335 + 2.5	st×0.062 + 4.46

Note 1: Load capacity varies with air pressure, speed, absorption energy, and the load's center of gravity.

### X axis stroke length adjustment section specifications

Descriptions	Blank	R	L	D
Adjustable stroke right mm	0 to -15	Full stroke length	0 to -15	Full stroke length
Adjustable stroke left mm	0 to -15	0 to -15	Full stroke length	Full stroke length

### Z axis shock absorber specifications

Descriptions	STL-B-16	STL-B-25	STL-B-32	STL-B-50
Shock absorber	NCK-00-0.3	NCK-00-0.7	NCK-00-1.2	NCK-00-2.6
Max. absorbing capacity J	3	7	12	50
Absorbing stroke length mm	7	8	10	15
Max. colliding speed mm/s	1500	1500	2000	2000
Max. cycle rate cycle/min.	35	30	30	25

### X axis shock absorber specifications

Descriptions	NCK-00-1.2-C	NCK-00-2.6-C	FCK-M-3-C	FCK-M-5-C
Max. absorbing capacity J	12	26	30	26
Absorbing stroke length mm	10	15	16	25
Max. colliding speed mm/s	2000			
Max. cycle rate cycle/min.	30	25	20	12

### Attachment weight

Descriptions	NSR-10	NSR-15	NSR-30	NSR-50
Attachment weight kg	0.5	0.5	1	1.4

### Cable bearer specifications

Descriptions	Cable bearer model no.	Bore size (mm)	Lift capacity (kg/m)
NHS-10, 15-B	TKP0320-2B-R37	19×24	MAX1.6
NHS-10, 15-W	TKP0450-38B-R50	25×38	MAX3.0
NHS-30-B	TKP0450-58B-R50	25×58	MAX3.0
NHS-50-B	TKP0450-78B-R50	25×78	MAX3.0

### Adjustable stroke block additional weight list

Model no.	Additional weight (kg)
NSR-1-10-R	0.685kg
NSR-1-10-L	0.685kg
NSR-1-10-D	1.370kg
NSR-1-15-R	0.810kg
NSR-1-15-L	0.810kg
NSR-1-15-D	1.620kg
NSR-1-30-R	1.140kg
NSR-1-30-L	1.140kg
NSR-1-30-D	2.280kg
NSR-1-50-R	1.750kg
NSR-1-50-L	1.750kg
NSR-1-50-D	3.499kg

### Cable bearer additional weight list

Model no.	Additional weight (kg)
NHS-1-10, 15**-B	$(X \text{ stroke length} / 2 \times 0.0011) + 0.482$
NHS-1-10, 15**-W	$(X \text{ stroke length} / 2 \times 0.0018) + 0.55$
NHS-1-30**-B	$(X \text{ stroke length} / 2 \times 0.0028) + 1.148$
NHS-1-50**-B	$(X \text{ stroke length} / 2 \times 0.0034) + 1.234$

### 2 head specifications

Descriptions	NHS-2-10	NHS-2-15	NHS-2-30	NHS-2-50
Max. horizontal transfer weight kg/1 head	5	7.5	15	25
Stroke length mm	50 to 1000			
Max. stroke length mm	1800		1740	1690
Pitch between heads mm	200 to 999		260 to 999	310 to 999
Max. pitch between heads mm	999			
Product additional weight kg	$(\text{Pitch between heads} \times 0.0109) + 1.7$		$(\text{Pitch between heads} \times 0.0176) + 2.79$	$(\text{Pitch between heads} \times 0.0311) + 4.66$

RRC  
GRC  
RV3\*  
**NHS**  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/  
BHG  
LHA  
LHAG  
HKP  
HLA/  
HLB  
HLAG/  
HLBG  
HEP  
HCP  
HMF  
HMFB  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2  
\*-HC  
CKH2  
CKLB2  
NCK/  
SCK/FCK  
FJ  
FK

Ending  
New handling system  
Modular unit

## How to order

**NHS** **2** **1003** **1000** **S100** **500** **L** **3** **B** **A** **Q**

**A** X axis head number

**B** Load capacity

**C** X-axis stroke length  
Note 1

**D** Z axis type

**E** Z-axis stroke length

**F** Pitch between heads  
Note 2

**G** Stroke length adjustment block

**H** Port position/speed control valve  
Note 4

**I** Cable bearer  
Note 5

**J** Switch

**K** Z axis position locking  
Note 6

Symbol	Descriptions			
<b>A X axis head number</b>				
1	1 piece			
2	2 pieces			
<b>B Load capacity (kg)</b>				
	X-axis	Z-axis		
1003	10	3		
1503	15	3		
1507	15	7		
1512	15	12		
3007	30	7		
3012	30	12		
5007	50	7		
5012	50	12		
5033	50	33		
<b>C X-axis stroke length (1mm pitch)</b>				
50	50			
to	to			
2000	2000			
<b>D Z axis type</b>				
S	STL-BP-16			
	STL-BP-25			
	STL-BP-32			
	STL-BP-50			
<b>E Z-axis stroke length (mm)</b>				
50	50			
75	75			
100	100			
125	125			
150	150			
175	175			
200	200			
<b>F Pitch between heads (1mm pitch)</b>				
	Load capacity (kg)			
	10	15	30	50
200	200	200	260	310
to	to	to	to	to
999	999	999	999	999
<b>G Adjustable stroke block</b>				
Blank	None			
L	Left			
R	Right			
D	Both sides			
<b>H Port position/speed control valve</b>				
Blank	X axis port position L			
2	X axis port position R			
3	X axis port position L, X Z axis speed control valve			
4	X axis port position R, X Z axis speed control valve			
<b>I Cable bearer</b>				
Blank	None			
B	X axis vertical installation			
W	X axis vertical installation			
<b>J Switch</b>				
Blank	2 wire proximity switch (2pcs.) X axis...T2H3, Z axis...T2H3			
A	3 wire proximity switch (2pcs.) X axis...T3H3, Z axis...T3H3			
<b>K Z axis position locking</b>				
Blank	None			
Q	Selected			

### Note on model no. selection

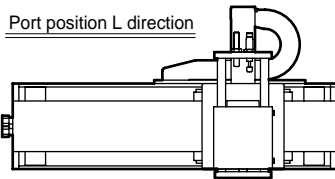
Note 1 If X-axis stroke length of NSR-30, 50 and NSR-10, 15 are 1001mm and over, tension method is provided for front cover.

Note 2 Can be selected only for 2 head.

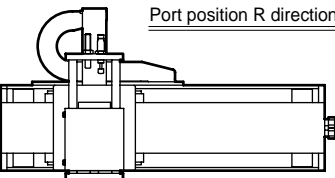
Note 3 If pitch between heads and stroke length are added, to be 2000mm or less.

Note 4 Installation attitude of cable bearer is reverse when port position R is selected. (Exit is port side)

Port position L direction



Port position R direction



Note 5 Refer to table below for the cable bearer capacity.

Descriptions	B	W
NHS-*-10** -15**	19 x 24	25 x 38
NHS-*-30**	25 x 58	-
NHS-*-50**	25 x 78	-

Note 6 Position locking of STL-BP-16 is not available.

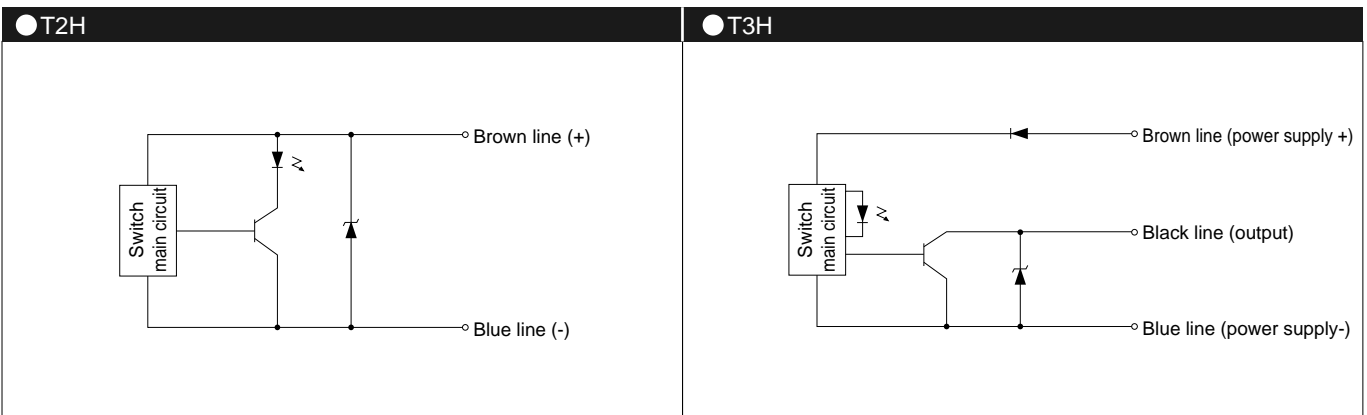
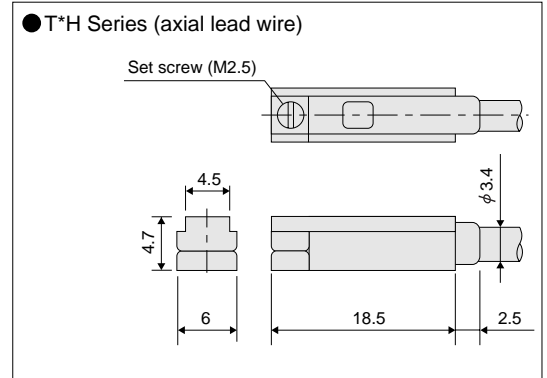
Note 7 Consult with CKD for the specifications other than the right table.

### Switch specifications (T Series)

Descriptions	Proximity 2 wire	Proximity 3 wire
	T2H3	T3H3
Applications	Programmable controller	Programmable controller, relay
Output method	-	NPN output
Power voltage	-	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less
Load current	5 to 20mA (note)	100mA or less
Current consumption	-	10mA or less with 24 VDC (when turned ON)
Internal voltage drop	4 V or less	0.5V or less
Light	LED (ON lighting)	
Leakage current	1mA or less	10 $\mu$ A or less
Lead wire length (standard)	3m (oil resistant vinyl cabtire cable 2-conductor 0.2mm <sup>2</sup> )	3m (oil resistant vinyl cabtire cable 3-conductor 0.2mm <sup>2</sup> )
Maximum shock resistance	980m/s <sup>2</sup>	
Insulation resistance	20M $\Omega$ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000 VAC for one minute	
Ambient temperature	-10 to + 60°C	
Protective structure	IEC standards IP67, JISC0920 (dust proof type), oil resistance	

Note 1: Maximum load current: 20mA at 25°C. The current will be lower than 20mA if ambient temperature around switch is higher than 25°C (5 to 10mA when 60°C)

### Dimensions



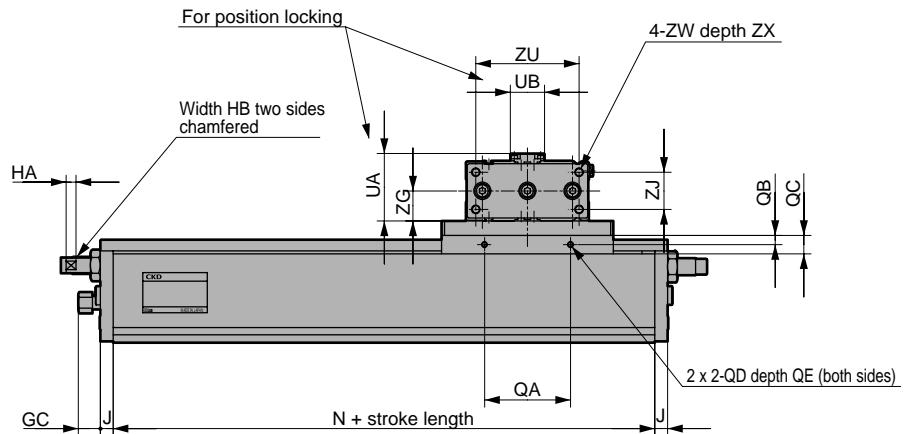
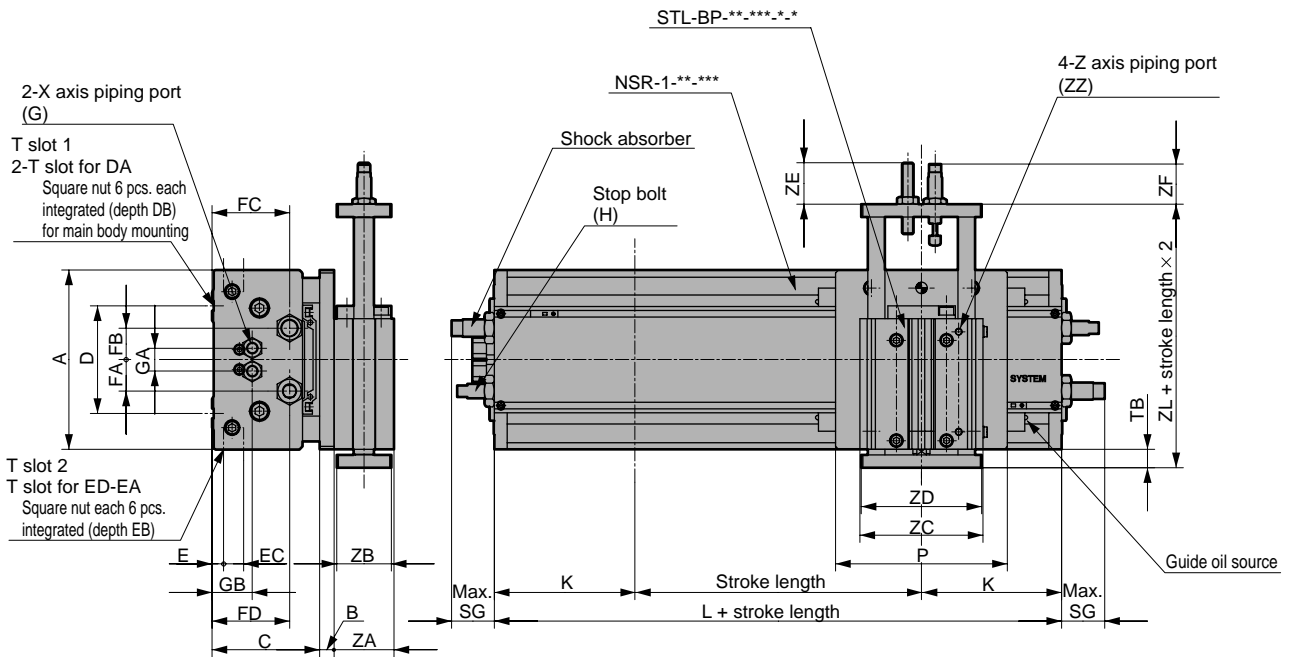
RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/SCK/FCK
FJ
FK
Ending

New handling system  
Modular unit

## Dimensions



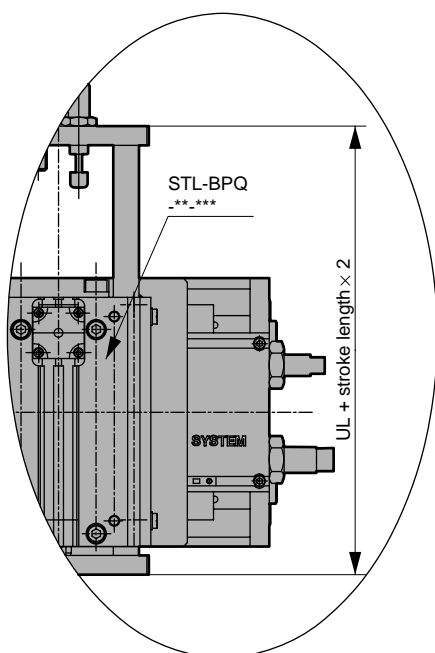
● Basic type



Note) Refer to page 148 for detailed T-slot section dimensions.

Model no.	A	B	C	D	DA	DB	E	EA	EB	EC	ED	FA	FB	FC	FD	
NHS-*-10**-S	125	10	75	75	M6	11	8	M4	8	-	2	22	22	54	54	
NHS-*-15**-S	125	10	75	75	M6	11	8	M4	8	-	2	22	22	54	54	
NHS-*-30**-S	165	15	105	110	M10	18	11.5	M5	10.5	14	4	25	24	78	82	
NHS-*-50**-S	200	15	120	130	M12	21	11.5	M6	13	16	4	30	30	88.5	88.5	
Model no.	SG	TB														
NHS-*-10**-S	30	13														
NHS-*-15**-S	56	13														
NHS-*-30**-S	66	13														
NHS-*-50**-S	101.5	13														
Model no.	UA	UB	UL	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZJ	ZL	ZU	ZW	ZX	ZZ
STL-BP-16	-	-	-	30	28	64	62	30.5	25.5	15	18	73.5	52	M5	Penetrating	M5
STL-BP-25	47	24	109	42	38	86	84	29	28	21	26	84	72	M6	Penetrating	M5
STL-BP-32	54	32	129.5	47	45	111	109	45.5	30.5	23.5	29	104.5	93	M8	Penetrating	Rc1/8
STL-BP-50	73.5	43	174	66	64	147	145	49	50	33	44	124	125	M10	Penetrating	Rc1/4

● Position locking type



Note) Refer to NSR dimensions on pages 148 to 151 for dimensions (with adjustable stroke block and cable bearer, etc.) when X axis option installed.

	G	GA	GB	GC	H	HA	HB	J	K	L	N	P	QA	QB	QC	QD	QE
	Rc1/8	16	28	16	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10
	Rc1/8	16	28	16	M10×1.25	7	8	9	98	196	178	120	60	6.5	13	M4	10
	Rc1/4	27	37.5	8.5	M12×1.25	7	10	16	133	266	234	150	70	8	17	M5	12
	Rc1/2	35	46.5	5.5	M12×1.25	7	10	16	143	286	254	177	70	9.5	20	M6	14

RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -H-C
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

New handling system  
Modular unit

New handling system Z-axis module (LCY)

# NHS-L Series

- X axis stroke length: 50 to 2000mm
- Z axis stroke length: 30 to 100mm
- Load capacity: 3kg



RRC  
GRC  
RV3\*  
**NHS**  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/  
BHG  
LHA  
LHAG  
HKP  
HLA/  
HLB  
HLAG/  
HLBG  
HEP  
HCP  
HMF  
HMFB  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2  
-\*.HC  
CKH2  
CKLB2  
NCK/  
SCK/FCK  
FJ  
FK

## X axis specifications

Descriptions	NHS-1-1003- (Xst)-L (Zst)	
Cylinder bore size	mm	φ20
Slider speed	mm/s	100 to 500
Cushion		With shock absorber
Stroke length	mm	50 to 2000 (1mm) pitch
Max. stroke length	mm	2000
Allowable moment	N·m	M1 = 36, M2 = 30, M3 = 34
Port size		Rc1/8
Position detection sensor		T type proximity switch lead wire 3m
Tilt of slider		±0.1° or less
Max. horizontal load capacity	kg	10
Speed control valve (option)		SC3W-6-6
Repeatability	mm	±0.02
Product weight	kg	(st×0.0109) + 5.5

## Z axis specifications

Descriptions	NHS-1-1003	
Z-axis model no.	LCY-16	
Cylinder bore size	mm	φ16
Speed	mm/s	50 to 300
Cushion		Rubber cushion
Stroke length	mm	30,50,75,100
Allowable moment	N·m	Refer to technical data (page 180)
Port size		M5
Position detection sensor		K type proximity switch lead wire 3m
Max. load capacity (Note 1)	kg	3
Adjustable stroke length	mm	0 to -5 (lowered end)
Speed control valve (option)		SC3W-M5-4
Working fluid		Clean compressed air
Working pressure	MPa	0.2 to 0.7
Withstanding pressure	MPa	1.05
Ambient temperature	C°	5 to 60
Lubrication		Refer to page 133 for lubrication
Repeatability	mm	±0.05
Product weight	kg	(Z st×0.003) + 0.8

Note 1: Load capacity varies with air pressure, speed, absorption energy, and the load's center of gravity.

## X axis cable bearer specifications

Descriptions	B	W
Maker	Tsubakimoto Chain	
Model no.	TKP0320-2B-R37	TKP0450-38B-R50
Bore size	mm 19×24	25×38
Lift capacity	kg/m MAX1.6	MAX3.0
Product additional weight	kg (st/2×0.0011) + 0.482	(st/2×0.0018) + 0.55

## 2 head specifications

Descriptions	NHS-2-1003	
Max. horizontal load capacity	kg/1 head	3
Stroke length	mm	50 to 1000
Max. stroke length	mm	1800
Pitch between heads	mm	200 to 999
Max. pitch between heads	mm	999
Product additional weight	kg	(Xst + pitch between heads×0.0109) + (Zst x 0.003×2) + 7.3



### How to order

**NHS** **2** **1003** **1000** **L100** **500** **L** **3** **B** **A** **Q**

**A** Head number

**B** Load capacity

**C** X-axis stroke length  
Note 1

**D** Z axis type

**E** Z-axis stroke length

**F** Pitch between heads  
Note 2

**G** Stroke length  
adjustment block

**H** Port position/  
speed control valve  
Note 4

**I** Cable bearer

**J** Switch

**K** Z axis position  
locking

Symbol	Descriptions	
<b>A X axis head number</b>		
1	1 piece	
2	2 pieces	
<b>B Load capacity (kg)</b>		
	X-axis	Z-axis
1003	10	3
<b>C X-axis stroke length (1mm pitch)</b>		
50	50	
to	to	
2000	2000	
<b>D Z axis type</b>		
L	LCY-16	
<b>E Z-axis stroke length (mm)</b>		
30	30	
50	50	
75	75	
100	100	
<b>F Pitch between heads (1mm pitch)</b>		
200	200	
to	to	
999	999	
<b>G Adjustable stroke block</b>		
Blank	None	
L	Left	
R	Right	
D	Both sides	
<b>H Port position/speed control valve</b>		
Blank	X axis port position L	
2	X axis port position R	
3	X axis port position L, X Z axis speed control valve	
4	X axis port position R, X Z axis speed control valve	
<b>I Cable bearer</b>		
Blank	None	
B	X axis vertical installation and capacity: 19×24	
W	X axis vertical installation and capacity: 25×38	
<b>J Switch</b>		
Blank	2 wire proximity switch (2pcs.) X axis...T2H3, Z axis...K2H3	
A	3 wire proximity switch (2pcs.) X axis...T3H3, Z axis...K3H3	
<b>K Z axis position locking</b>		
Blank	None	
Q	Selected	

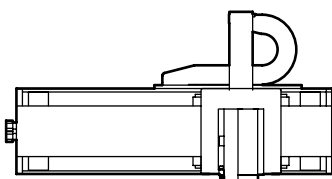
RRC  
GRC  
RV3\*  
**NHS**  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/  
BHG  
LHA  
LHAG  
HKP  
HLA/  
HLB  
HLAG/  
HLBG  
HEP  
HCP  
HMF  
HMFB  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2  
\*-HC  
CKH2  
CKLB2  
NCK/  
SCK/FCK  
FJ  
FK  
Ending

New handling system  
Modular unit

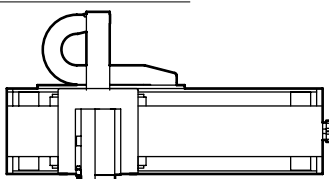
### Note on model no. selection

- Note 1 If X axis stroke length is 1001mm and over, tension method is provided for front cover.  
 Note 2 Can be selected only for 2 head.  
 Note 3 If pitch between heads and stroke length are added, to be 2000mm or less.  
 Note 4 If port position R is selected, installation attitude of cable bearer is reverse. (Exit is port side)

Port position L direction




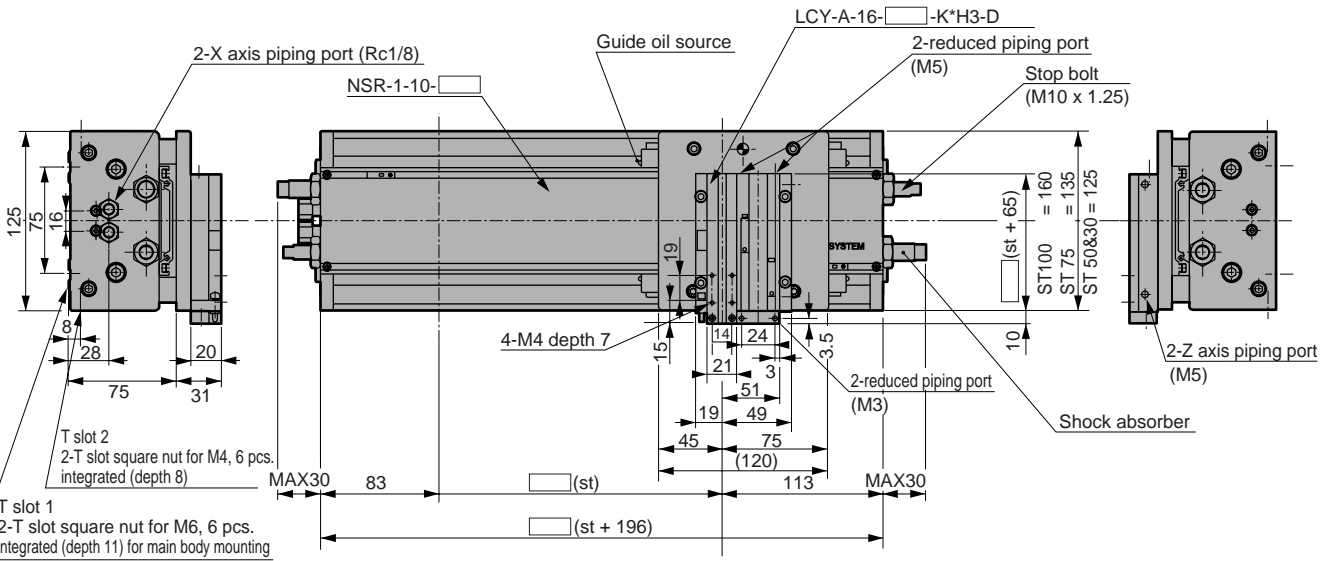
Port position R direction



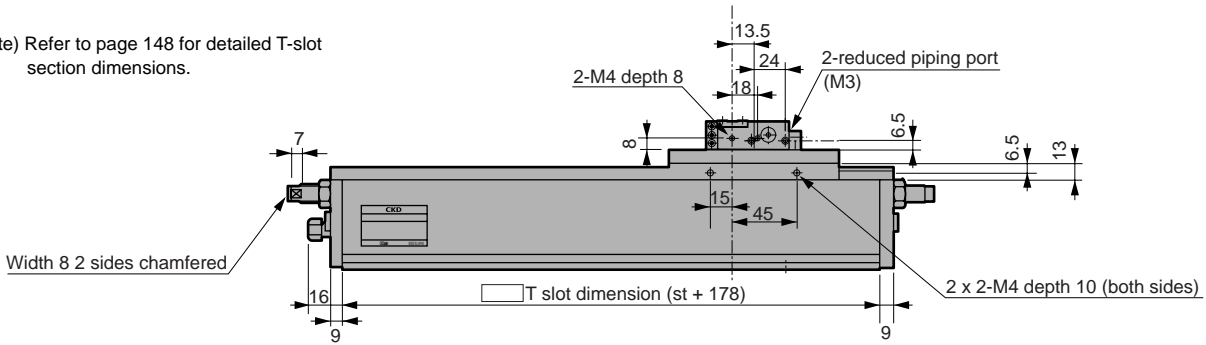
Note 5 Consult with CKD for the specifications other than the right table.

## Dimensions

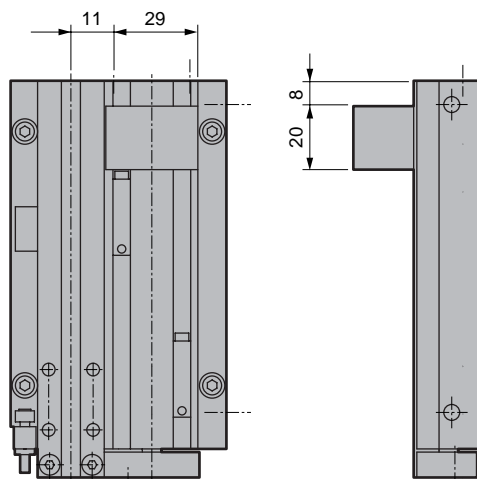
● Basic type 



Note) Refer to page 148 for detailed T-slot section dimensions.



● Position locking type



Refer to NSR dimensions on pages 148 to 151 for dimensions (with adjustable stroke block and cable bearer, etc.) when axis option installed.

RRC
GRC
RV3*
<b>NHS</b>
<b>HR</b>
LN
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/SCK/FCK
FJ
FK
Ending

### Switch specifications (T Series)

Descriptions	Proximity 2 wire	Proximity 3 wire
	T2H3	T3H3
Applications	Programmable controller	Programmable controller, relay
Output method	-	NPN output
Power voltage	-	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less
Load current	5 to 20mA (note)	100mA or less
Current consumption	-	10mA or less with 24 VDC (when turned ON)
Internal voltage drop	4 V or less	0.5V or less
Light	LED (ON lighting)	
Leakage current	1mA or less	10 $\mu$ A or less
Lead wire length (standard)	3m (oil resistant vinyl cabtire cable 2-conductor 0.2mm <sup>2</sup> )	3m (oil resistant vinyl cabtire cable 3-conductor 0.2mm <sup>2</sup> )
Maximum shock resistance	980m/s <sup>2</sup>	
Insulation resistance	20M $\Omega$ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000 VAC for one minute	
Ambient temperature	-10 to + 60°C	
Protective structure	IEC standards IP67, JISC0920 (dust proof type), oil resistance	

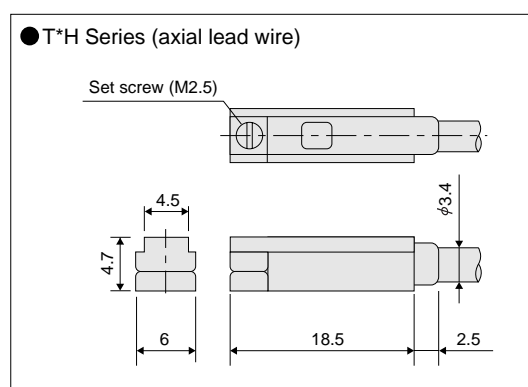
Note 1: Maximum load current: 20mA at 25°C. The current will be lower than 20mA if ambient temperature around switch is higher than 25°C (5 to 10mA when 60°C)

### Switch specifications (K Series)

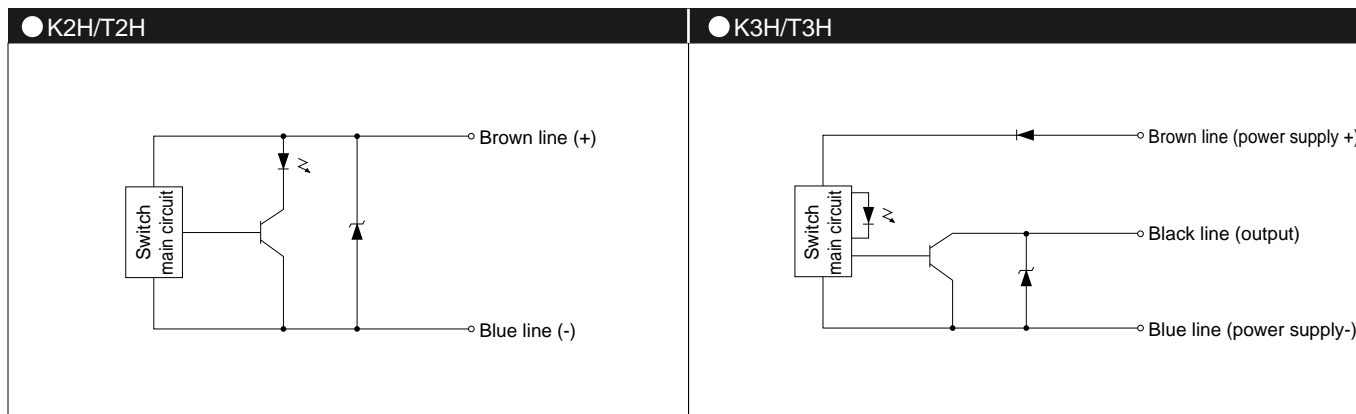
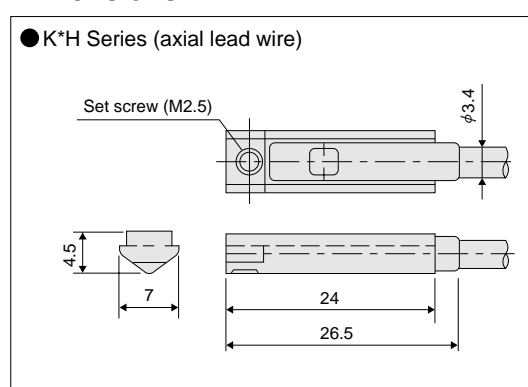
Descriptions	Proximity 2 wire	Proximity 3 wire
	K2H3	K3H3
Applications	Programmable controller	Programmable controller, relay
Output method	-	NPN output
Power voltage	-	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC and over
Load current	5 to 20mA (note)	50mA or less
Current consumption	-	10mA or less with 24 VDC (when turned ON)
Internal voltage drop	4 V or less	0.5V or less
Light	LED (ON lighting)	
Leakage current	1mA or less	10 $\mu$ A or less
Lead wire length (standard)	3m (oil resistant vinyl cabtire cable 2-conductor 0.2mm <sup>2</sup> )	3m (oil resistant vinyl cabtire cable 3-conductor 0.2mm <sup>2</sup> )
Maximum shock resistance	980m/s <sup>2</sup>	
Insulation resistance	20M $\Omega$ and over with 500 VDC megger	
Withstand voltage	No failure impressed at 1000 VAC for one minute	
Ambient temperature	-10 to + 60°C	
Protective structure	IEC standards IP67, JISC0920 (dust proof type), oil resistance	

Note 1: Maximum load current: 20mA at 25°C. The current will be lower than 20mA if ambient temperature around switch is higher than 25°C (5 to 10mA when 60°C)

### Dimensions



### Dimensions



RRC

GRC

RV3\*

**NHS**

HR

LN

FH100

HAP

BSA2

BHA/  
BHG

LHA

LHAG

HKP

HLA/  
HLBHLAG/  
HLBG

HEP

HCP

HMF

HMFB

HFP

HLC

HGP

FH500

HBL

HDL

HMD

HJL

BHE

CKG

CK

CKA

CKS

CKF

CKJ

CKL2

CKL2  
\*-HC

CKH2

CKLB2

NCK/  
SCK/FCK

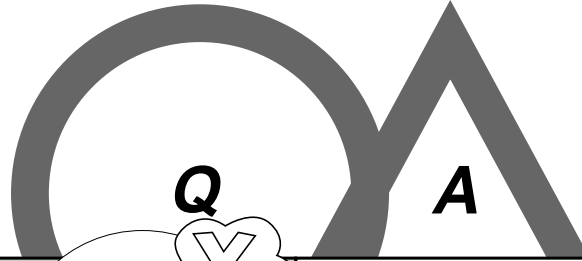
FJ

FK

Ending

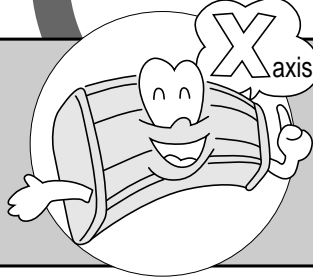
New handling system  
Modular unit

RRC
GRC
RV3*
<b>NHS</b>
<b>HR</b>
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending



## Q1

**What are features of X axis module ?**

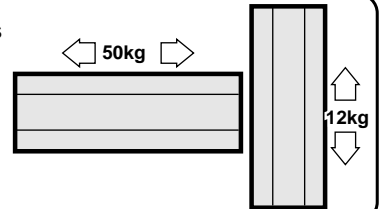


The first feature is the large moment load. The THK LM guide is used with two rails to withstand high moment load. The second feature is ample options. Full stroke adjustment (both sides or one side), with cable bearer (horizontal or vertical), and other options to match piping port positions, etc., is selectable.

## Q2

**Is the X axis module load up to 50kg even vertically?**

The maximum 50kg load is for horizontal transfer. For vertical, the load is 12kg. \* Select vertical transfer according to the inner cylinder's thrust.



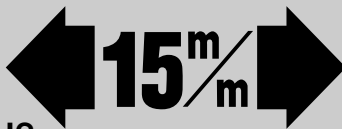
## Q3

**Can the reed X axis module sensor be used?**

The X axis module sensor is installed on the T groove on the front cover, so the distance with the magnet on the slider is limited and a reed switch cannot be used. T2 or T3 cylinder switch can be installed. When using a PLC that may have leakage current, use the T3 (leakage current  $10\mu A$  or less).

## Q4

**How far can the X axis module's stroke be adjusted?**



With the standard, the stroke can be reduced up to 15mm each from left and right. If larger stroke adjustment is required, select full stroke adjustment. Note that the stroke cannot be increased past the standard stroke with any type.

## Q5

**Does anything differ in the X axis module when the stroke is larger than the standard stroke (1000mm)?**

The NSR-10 and 15 have a tension mechanism on the front cover. The max. stroke length is 2000mm. There are not differences in the NSR-30 and 50.

## Q6

**Can braking be done with the X axis module?**

Consult with CKD when braking is required.





### Q7

**How do the 4 types of Z axis module differ?**



Select the X axis module according to the load capacity and required accuracy. Select the LCY (NHS-L) for high accuracy and light load. Select the LCS (NHS-C) for high accuracy and medium load. Select the HRL (NHS-H) for medium accuracy and high load. Select the STL (NHS-S) for low accuracy and low cost.

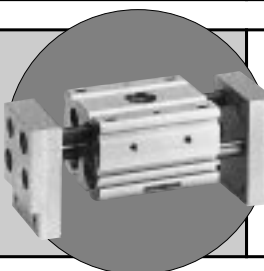
### Q8

**Does the Z axis module have position locking mechanism?**

Position locking mechanism is provided with all models as an option. Expect for the STL-BP-16.

### Q9

**Can a gripper be installed on the end of the Z axis module?**



Consult with CKD as this may be possible in some cases. (This may be handled if gripper installation is designated.)

### Q10

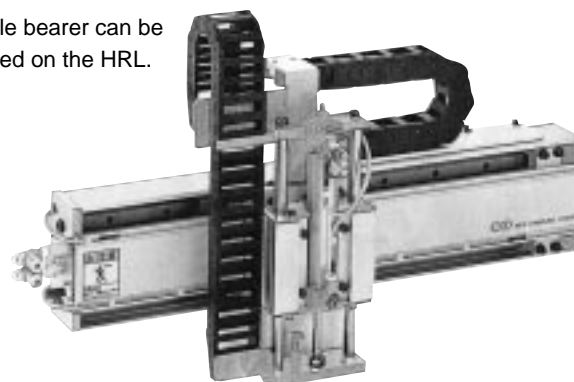
**Are X and Z axis module valves installed?**

Valves are not installed on each module, and must be installed by the user.

### Q11

**Is a cable bearer provided on the Z axis module?**

A cable bearer can be installed on the HRL.



RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFb
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

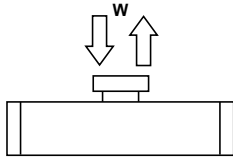
New handling system  
Modular unit

- RRC
- GRC
- RV3\*
- NHS**
- HR
- LN
- FH100
- HAP
- BSA2
- BHA/BHG
- LHA
- LHAG
- HKP
- HLA/HLB
- HLAG/HLBG
- HEP
- HCP
- HMF
- HMFB
- HFP
- HLC
- HGP
- FH500
- HBL
- HDL
- HMD
- HJL
- BHE
- CKG
- CK
- CKA
- CKS
- CKF
- CKJ
- CKL2
- CKL2-\*.HC
- CKH2
- CKLB2
- NCK/SCK/FCK
- FJ
- FK
- Ending

## Cylinder (NSR) used for X axis

### Load capacity and moment load

#### ● Vertical load: W

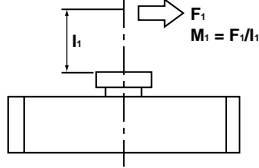


● Load capacity and moment is to be within range of following graph. If graph exceeds specifications, damage may be caused. Check if total of moment is 1.0 or less with following formula.

#### ● Formula

$$\frac{M1}{M1max.} + \frac{M2}{M2max.} + \frac{M3}{M3max.} \leq 1.0$$

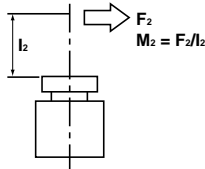
#### ● Bending moment: M<sub>1</sub>



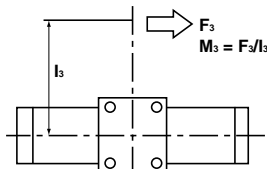
#### ● Load allowable

Model no.	Bending moment M1max	Radial moment M2max	Twisting moment M3max
NSR-10	36.4N·m	30.6N·m	34.2N·m
NSR-15	36.4N·m	30.6N·m	34.2N·m
NSR-30	85.9N·m	82.9N·m	85.9N·m
NSR-50	156.2N·m	150.7N·m	156.2N·m

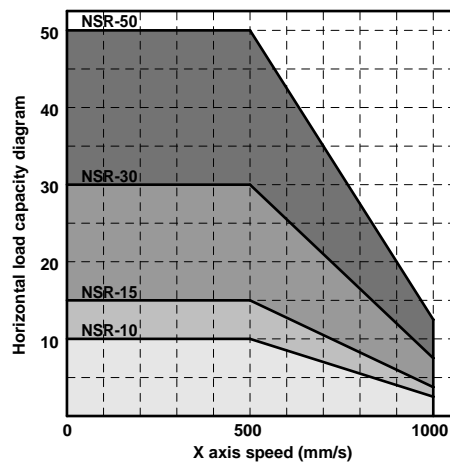
#### ● Radial moment: M<sub>2</sub>



#### ● Twist moment: M<sub>3</sub>



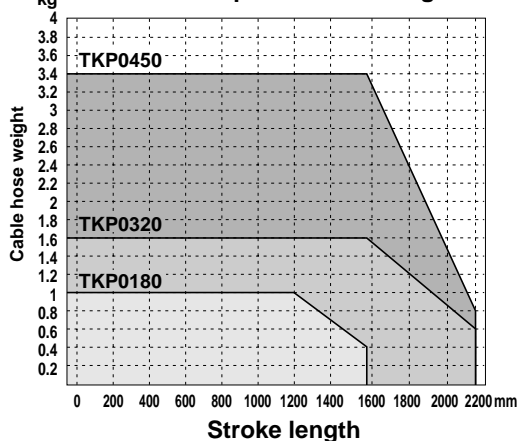
X axis speed-load capacity diagram



### Hose weight of cable bearer

● Hose weight of cable bearer is to be weight of following graphs or less. Volume percent is to be 50% or less. If capacity is not satisfied, consult with CKD.

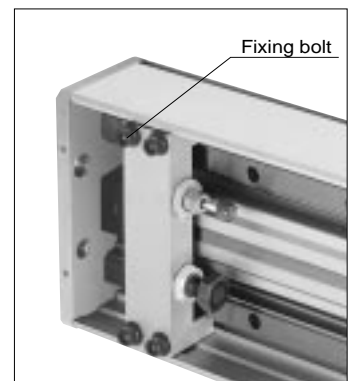
Cable bearer performance diagram



### Adjustable stroke block

- Adjustable stroke block can be moved by loosening fixing bolt.
- Tighten adjustable stroke block at required position with torque on following table after movement. If tightened with torque other than above, adjustable stroke block may be shifted.

Model no.	Tightening torque
NSR-10,15	520 to 560N.cm
NSR-30	980 to 1200N.cm
NSR-50	2800 to 2950N.cm

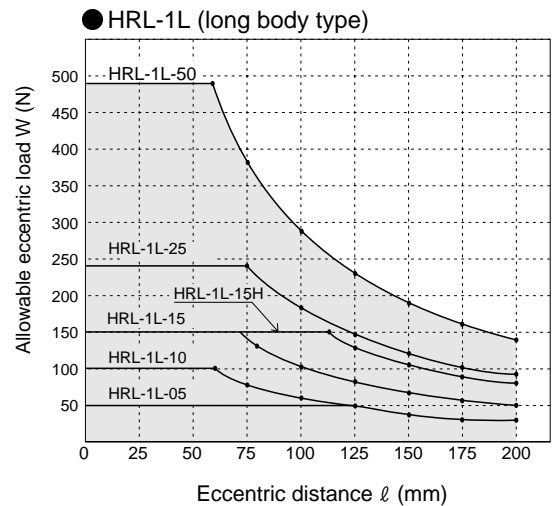
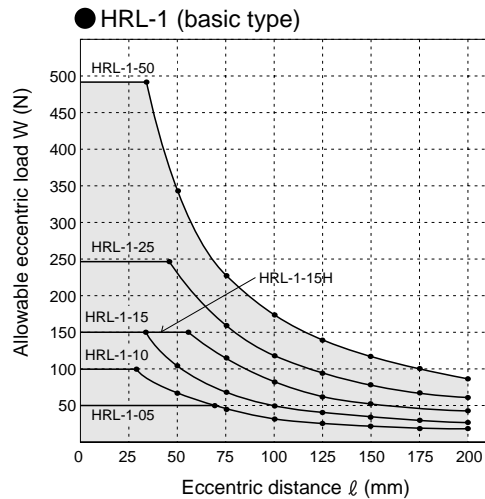
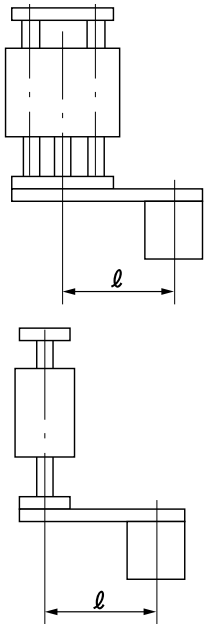


Cylinder is used for Z axis

### A HRL type allowable load

● Use HRL with the following allowable eccentric load or less.

HRL-1\*-05/10/15/15H/25/50



### B LCY type allowable load

Allowable load (1) Calculate all load (W) and moment (M1, M2, M3) per load.

(2) Divide each load by maximum value as shown below diagram to find load-moment ratio, and check if total is 1.0 or less.

Formula

$$\frac{W}{W_{\max}} + \frac{M_1}{M_{1\max}} + \frac{M_2}{M_{2\max}} + \frac{M_3}{M_{3\max}} \leq 1.0$$

Allowable load

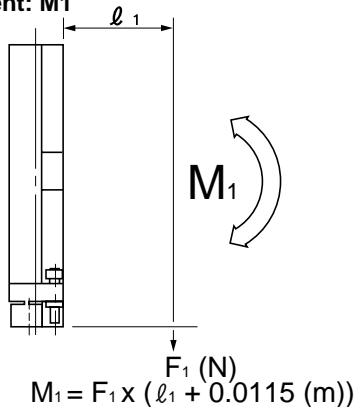
M1 (N·m) = 1.17

M2 (N·m) = 1.17

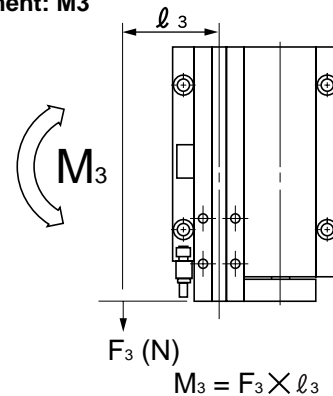
M3 (N·m) = 0.58

W (N) = 29.4

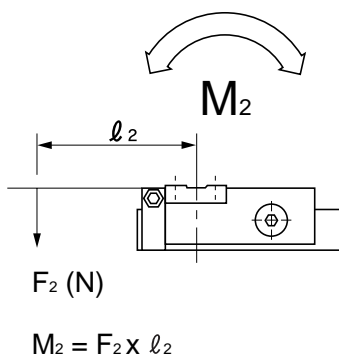
● Bending moment: M1



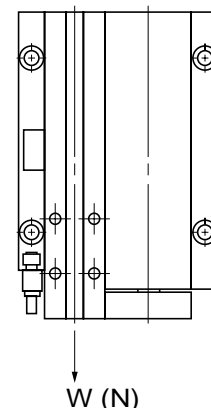
● Twist moment: M3



● Radial moment: M2



● Vertical load: W



RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2*-HC
CKH2
CKLB2
NCK/SCK/FCK
FJ
FK

Ending

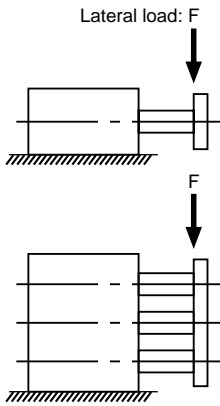
New handling system  
Modular unit

Cylinder is used for Z axis

### C STL type allowable lateral load/allowable torque/revolvable angle tolerance

#### ● Allowable lateral load

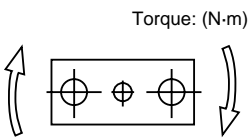
Unit: N



Bore size mm	Model no.	Stroke length (mm)						
		50	75	100	125	150	175	200
φ16	STL-B-16	34	25	19	16	13	11	10
φ25	STL-B-25	68	50	39	32	27	23	20
φ32	STL-B-32	100	76	62	51	44	38	34
φ50	STL-B-50	161	126	103	87	75	66	58

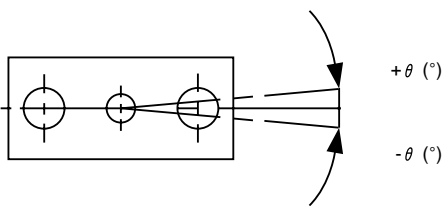
#### ● Allowable torque

Unit: N·m



Bore size mm	Model no.	Stroke length (mm)						
		50	75	100	125	150	175	200
φ16	STL-B-16	0.39	0.29	0.22	0.18	0.15	0.13	0.12
φ25	STL-B-25	1.07	0.79	0.61	0.50	0.43	0.36	0.32
φ32	STL-B-32	2.03	1.54	1.26	1.03	0.89	0.77	0.69
φ50	STL-B-50	4.43	3.47	2.83	2.39	2.06	1.82	1.60

#### ● Revolvable angle tolerance

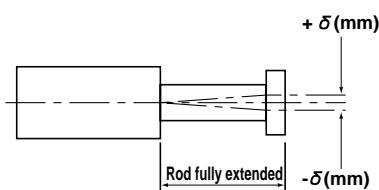


Bore size mm	Revolvable angle tolerance $\theta$ (°)
φ16	±0.06
φ25	±0.08
φ32	±0.04
φ50	±0.03

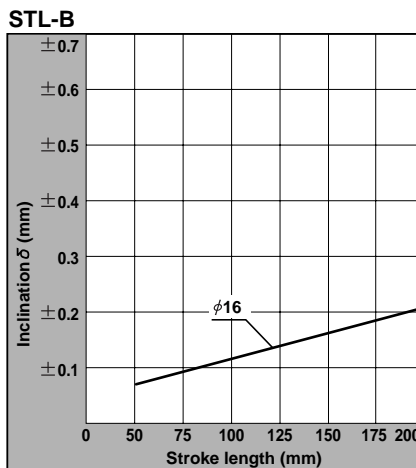
(PULL for default) Note: Excluding deflection of guide rod

#### ● Deflection

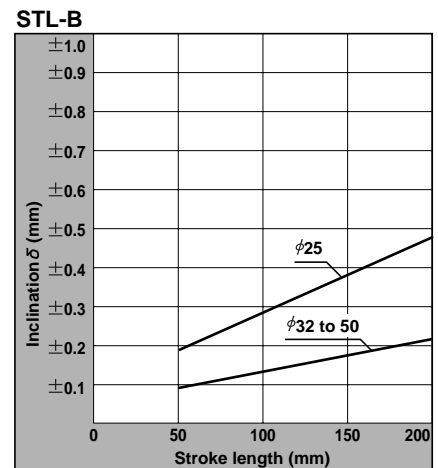
(Excluding deflection of guide rod)



#### ● φ16 ball bearing



#### ● φ25, φ32 to φ50 ball bearing

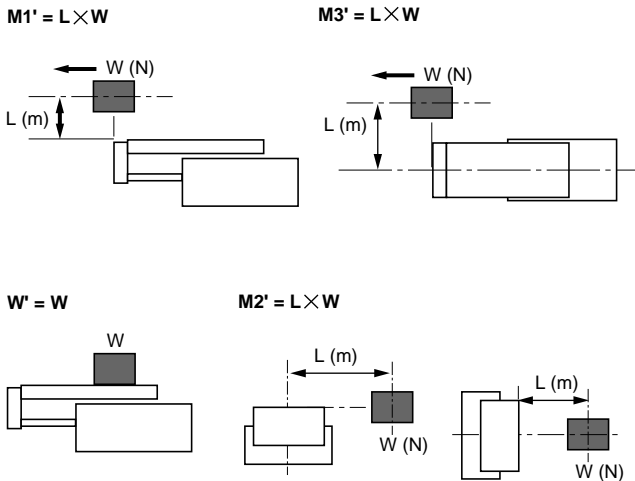




**D** Allowable load of LCS type

**STEP-1**

① Find load and impact moment generated at stroke end per direction.



Find rough value of G coefficient according to (Table 1)

(Table 1)  $V_a$  (average speed) =  $\frac{\text{Moving distance}}{\text{Moving time}}$  (m/s)

$V_a$ Average speed (m/s)	$V_m$ Speed at stroke end (m/s)	G coefficient
to 0.07	to 0.1	5
to 0.2	to 0.3	14
to 0.27	to 0.4	19
to 0.35	to 0.5	24

G coefficient =

$M1' \times G$  =  (N-m)

$M2'$  =  (N-m)

$M3' \times G$  =  (N-m)

$W'$  =  (N)

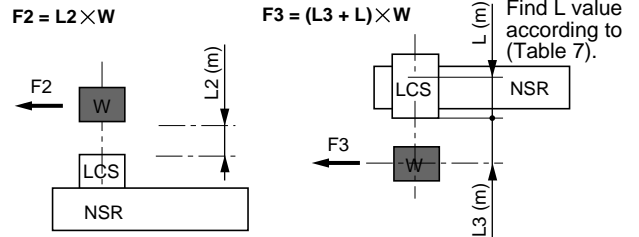
$E' = \frac{1}{2} \times m \times V_m^2$  =  (J)

( $m \doteq \frac{W}{9.8}$ )

(Table 3) Static load allowable value

Bore size	Stroke length (mm)	Vertical load $W_{max}$ (N)	Bending moment $M1'_{max}$ (N-m)	Radial moment $M2'_{max}$ (N-m)	Oscillating moment $M3'_{max}$ (N-m)
$\phi 12$	0 to 50	220.8	5.68	9.76	5.68
	75 to 100		22.2		22.2
$\phi 16$	0 to 50	380.8	17.82	19.2	17.82
	75 to 125		37.28		37.28
$\phi 20$	0 to 50	548.8	31.14	37.6	31.14
	75 to 150		56.24		56.24
$\phi 25$	0 to 50	961.5	65.11	116.25	65.11
	75 to 150		127.5		127.5

② Calculate the load applied to LCS at the X axis stopping acceleration when using as NHS.



Find rough value of G coefficient according to (Table 2)

(Table 2)  $V_{ax}$  (average speed) =  $\frac{\text{Moving distance}}{\text{Moving time}}$  (m/s)

$V_{ax}$ N axis (NSR) average speed (m/s)	$V_m$ Speed at stroke end (m/s)	G coefficient
to 0.3	to 0.65	9
to 0.6	to 1.00	15
to 0.9	to 1.30	23

G coefficient =

$F2 \times Gx$  =  (N-m)

$F3 \times Gx$  =  (N-m)

③ Temporarily select a bore size that satisfies the following conditional expression:

$M'T = \frac{M1' \times G}{M1'_{max.}} + \frac{M2'}{M2'_{max.}} + \frac{M3' \times G}{M3'_{max.}} + \frac{W'}{W'_{max.}} < 1$

$M'TX = \frac{F2 \times Gx}{M2'_{max.}} + \frac{F3 \times Gx}{M3'_{max.}} < 1$

$E' < E_{max.}$

$M't, M'tx$  : Composite moment (should be smaller than 1)

G : G coefficient

$W'_{max.}$  : Max. allowable of  $W'$  (from table 3)

$M1'_{max.}$  : Max. allowable of  $M1'$  (from table 3)

$M2'_{max.}$  : Max. allowable of  $M2'$  (from table 3)

$M3'_{max.}$  : Max. allowable of  $M3'$  (from table 3)

$E_{max}$  : Max. allowable of  $E_0$  (from table 4)

(Table 4) Allowable energy absorption of LCS ( $E_0$ )

Bore size	With shock absorber type stopper (J)
$\phi 12$	2.1
$\phi 16$	5.4
$\phi 20$	9.7
$\phi 25$	9.7

RRC  
GRC  
RV3\*  
**NHS**  
HR  
LN  
FH100  
HAP  
BSA2  
BHA/BHG  
LHA  
LHAG  
HKP  
HLA/HLB  
HLAG/HLBG  
HEP  
HCP  
HMF  
HMFB  
HFP  
HLC  
HGP  
FH500  
HBL  
HDL  
HMD  
HJL  
BHE  
CKG  
CK  
CKA  
CKS  
CKF  
CKJ  
CKL2  
CKL2\*-HC  
CKH2  
CKLB2  
NCK/SCK/FCK  
FJ  
FK  
Ending

New handling system  
Modular unit

## STEP-2

Next, increase accuracy of load factor, performing thrust, speed at stroke end and composite moment.

● Find load factor.

$$\alpha = \frac{F_0}{F} \times 100 (\%)$$

$\alpha$  : Load factor

**F<sub>0</sub>** : Required force to move a workpiece (N)

**F** : Cylinder theoretical thrust (N) (Table 5)

At horizontal operation	At vertical operation
F <sub>0</sub> = FW	F <sub>0</sub> = W+FW
FW: W x 0.2 note (N)	
W: Load (N)	

Note: Coefficient of friction

(Table 5) Theoretical thrust table

(Unit: N)

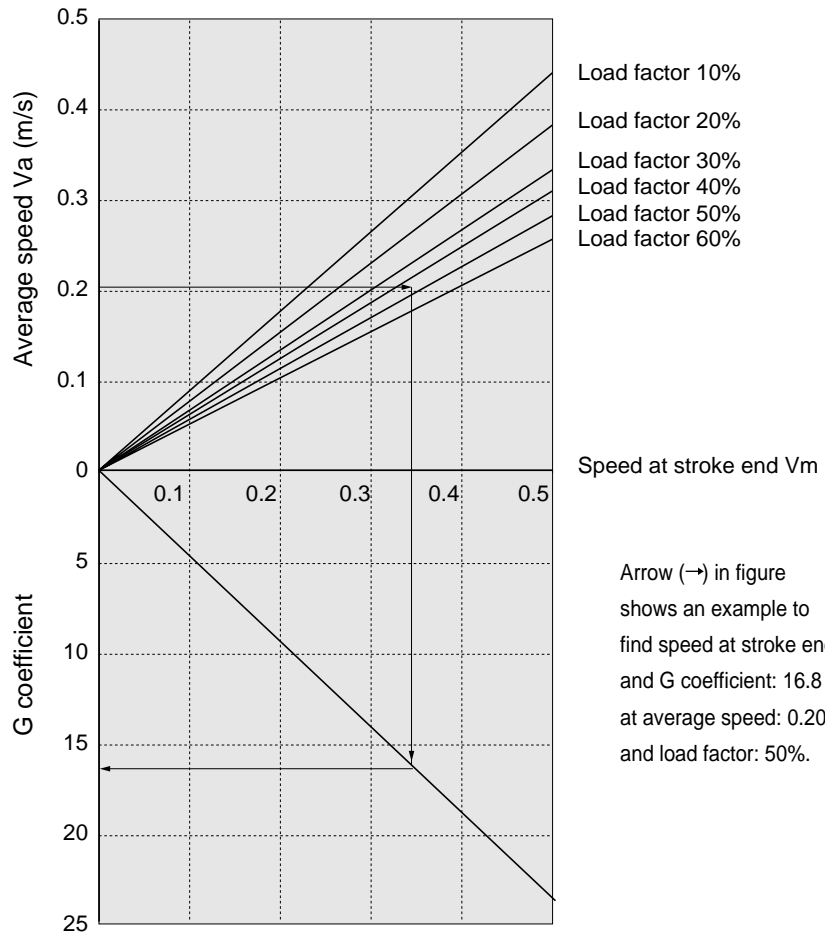
Bore size (mm)	Operating direction	Working pressure MPa				
		0.3	0.4	0.5	0.6	0.7
φ 12	PUSH	65	86	108	130	152
	PULL	48	65	81	97	114
φ 16	PUSH	115	154	193	231	270
	PULL	99	132	165	199	232
φ 20	PUSH	181	241	301	362	422
	PULL	152	202	253	304	354
φ 25	PUSH	282	377	481	565	660
	PULL	237	316	396	475	554

(Table 6) Reference of load factor

Working pressure MPa	Load factor (%)
0.2 to 0.3	$\alpha \leq 40$
0.3 to 0.6	$\alpha \leq 50$
0.6 to 0.7	$\alpha \leq 60$

## STEP-3

Find speed at stroke end (V<sub>m</sub>) and G coefficient according to average speed (V<sub>a</sub>) and load factor found at STEP-2.



G coefficient =

RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HEP
HCP
HMF
HMFb
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2*-HC
CKH2
CKLB2
NCK/SCK/FCK
FJ
FK
Ending

New handling system  
Modular unit

### STEP-4

Check composite moment ( $M_T$ ) according to G coefficient speed at stroke end ( $V_m$ ) found at STEP-3.

$$M1' \times G = \boxed{\phantom{000}} \text{ (N}\cdot\text{m)}$$

$$M2' = \boxed{\phantom{000}} \text{ (N}\cdot\text{m)}$$

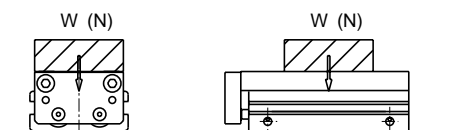
$$M3' \times G = \boxed{\phantom{000}} \text{ (N}\cdot\text{m)}$$

$$W' = \boxed{\phantom{000}} \text{ (N)}$$

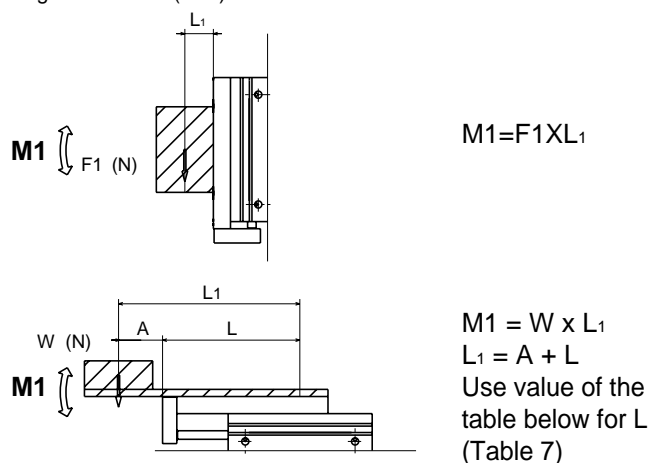
$$M'_T = \frac{M1' \times G}{M1'_{max.}} + \frac{M2'}{M2'_{max.}} + \frac{M3' \times G}{M3'_{max.}} + \frac{W'}{W'_{max.}} = \boxed{\phantom{000}}$$

Check composite moment  $M_T$  at travelling. (Note that this value differs from the one found at STEP-1.)

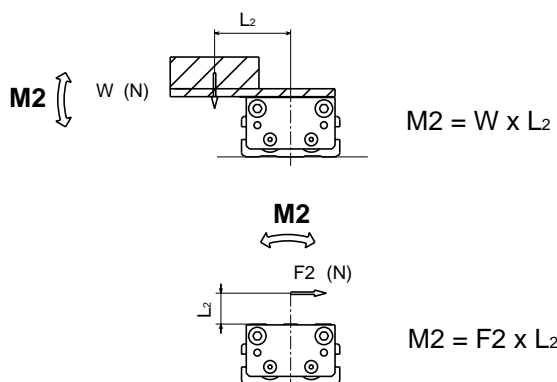
● Vertical load: W (N)



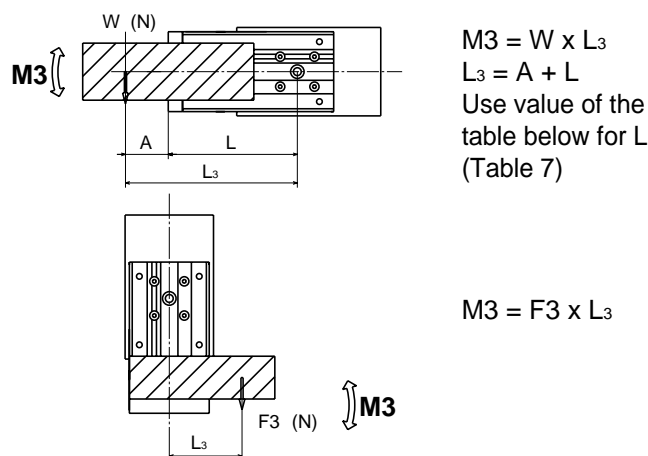
● Bending moment: M1 (N/m)



● Radial moment: M2 (N·m)



● Twist moment: M3 (N·m)



(Table 7) Value of L

Unit (m)

Bore size	Stroke length						
	30	40	50	75	100	125	150
φ 12	0.070	0.080	0.090	0.117	0.142	-	-
φ 16	0.071	0.081	0.091	0.124	0.149	0.174	-
φ 20	0.081	0.091	0.101	0.131	0.156	0.181	0.206
φ 25	0.085	0.095	0.105	0.140	0.165	0.190	0.215

$$M1=M1 = \boxed{\phantom{000}} \text{ (N·m)}$$

$$M2=M2 = \boxed{\phantom{000}} \text{ (N·m)}$$

$$M3=M3 = \boxed{\phantom{000}} \text{ (N·m)}$$

$$W=W = \boxed{\phantom{000}} \text{ (N)}$$

$$M_T = \frac{M1 \times G}{M1_{max}} + \frac{M2}{M2_{max}} + \frac{M3 \times G}{M3_{max}} + \frac{W}{W_{max}} = \boxed{\phantom{000}}$$

$M_T$  : Composite moment

$W_{max}$  : Max. allowable of W (from table 8)

$W1_{max}$  : Max. allowable of M1 (from table 8)

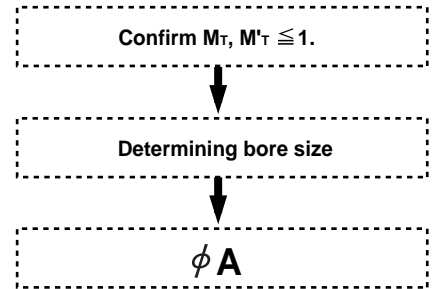
$W2_{max}$  : Max. allowable of M2 (from table 8)

$W3_{max}$  : Max. allowable of M3 (from table 8)

$E_{max}$  : Max. allowable of  $E_0$  (from table 4)

**(Table 8) Allowable traveling load value**

Bore size	Stroke length (mm)	Vertical load $W_{max}$ (N)	Bending moment $M1_{max}$ (N·m)	Radial moment $M2_{max}$ (N·m)	Oscillating moment $M3_{max}$ (N·m)
$\phi 12$	0 to 50	27.60	0.71	1.22	0.71
	75 to 100		2.22		2.22
$\phi 16$	0 to 50	47.60	1.98	2.40	1.98
	75 to 125		4.66		4.66
$\phi 20$	0 to 50	68.60	3.46	4.70	3.46
	75 to 150		7.03		7.03
$\phi 25$	0 to 50	128.20	7.66	15.50	7.66
	75 to 150		17.00		17.00

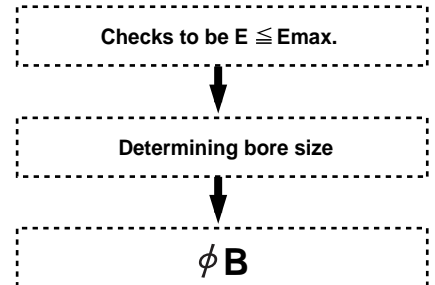


### STEP-5

Allowable energy absorption confirmation

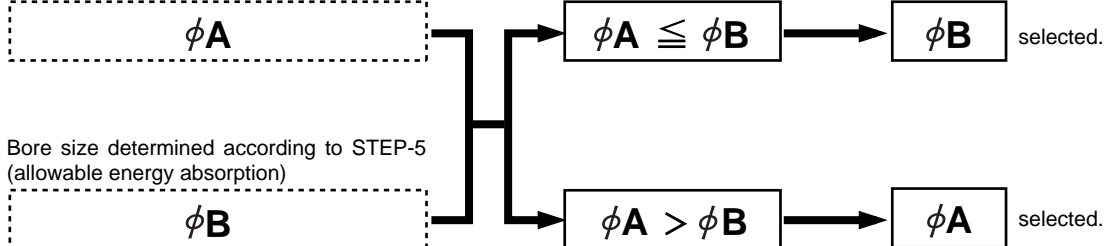
$$E = \frac{1}{2} \times m \times V_m^2$$

$E$  : Kinetic energy at workpiece terminal (J)  
 $m$  : Load weight (kg) ( $m \doteq \frac{W(N)}{9.8}$ )  
 $V_m$  : Speed at stroke end (m/s)  
 $E_{max}$  : Max. allowable of  $E_0$  (from table 4)



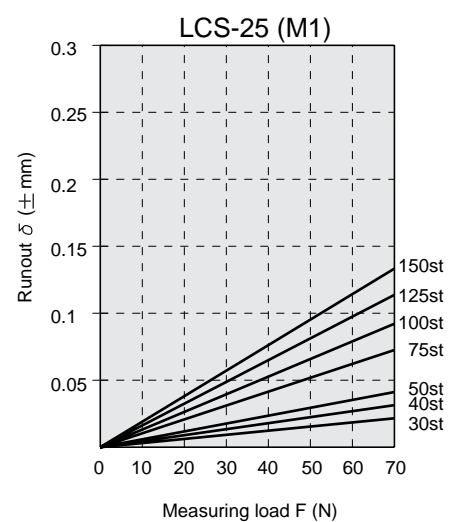
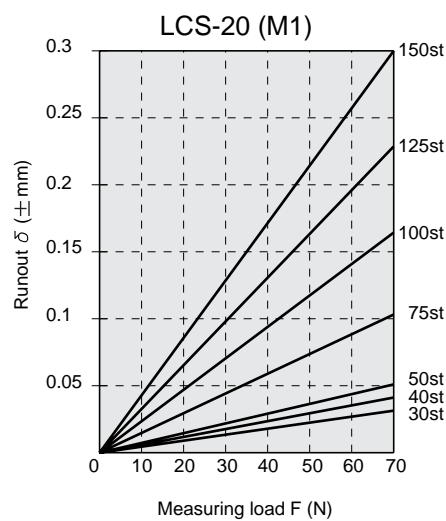
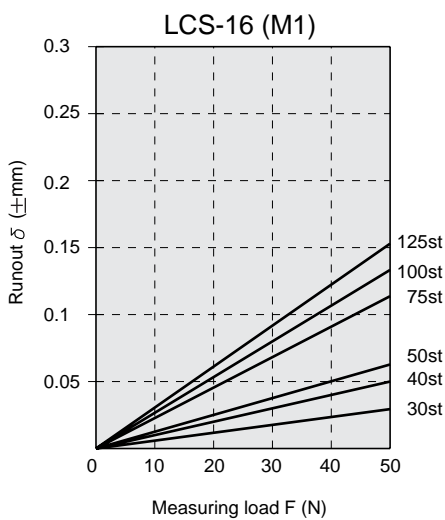
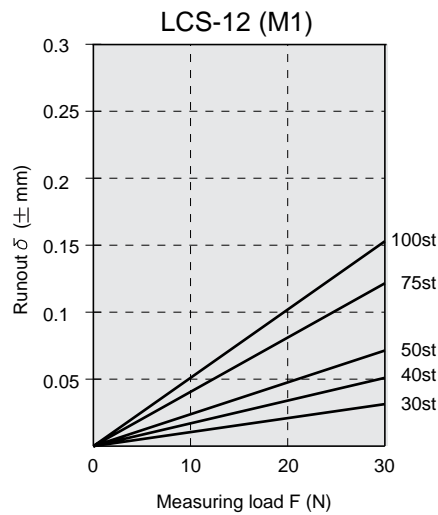
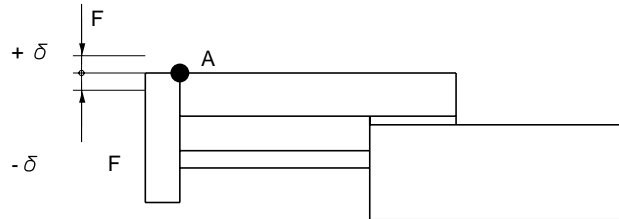
### STEP-6

Bore size determined according to STEP-4 (load conditions)



Bore size determined according to STEP-5 (allowable energy absorption)

### Displacement at point A



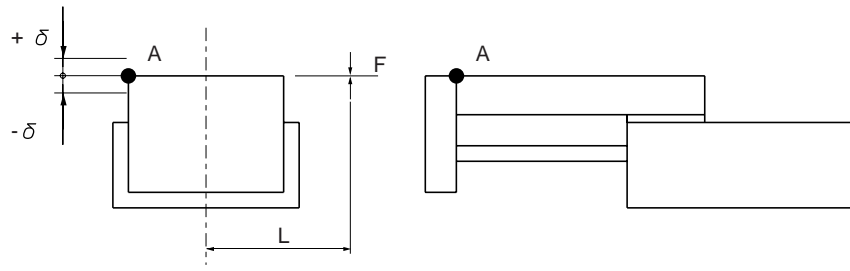
RRC
GRC
RV3*
<b>NHS</b>
HR
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK

Ending

New handling system  
Modular unit

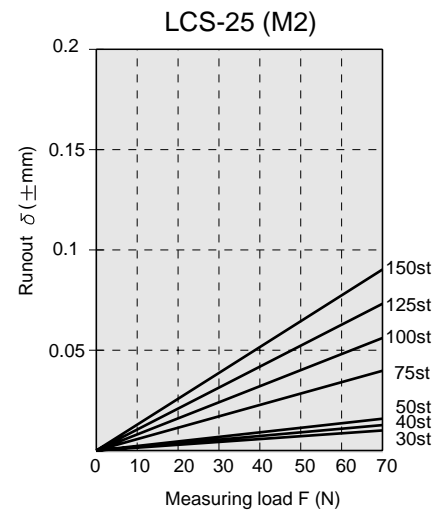
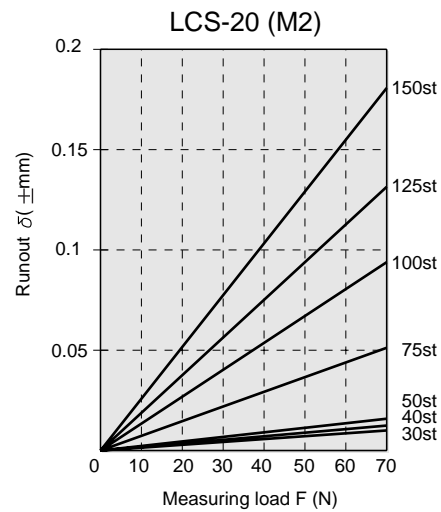
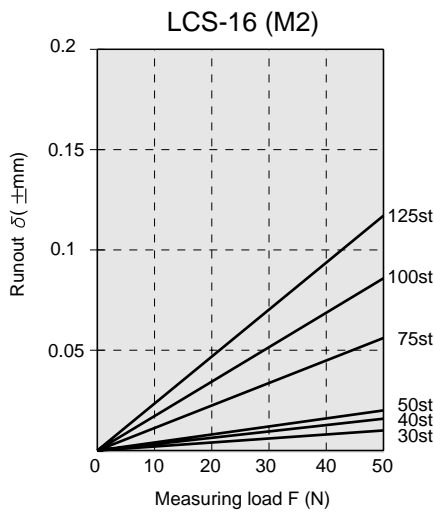
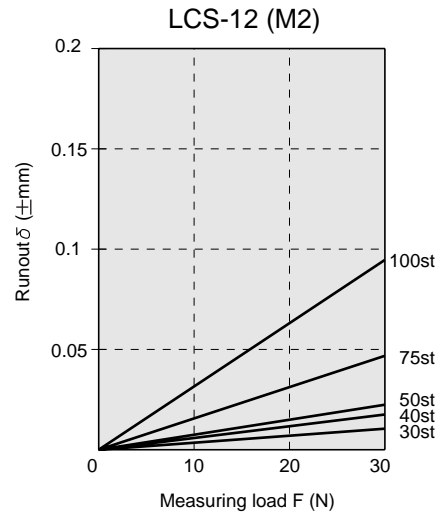
### Displacement at point A

RRC
GRC
RV3*
<b>NHS</b>
<b>HR</b>
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 -*HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

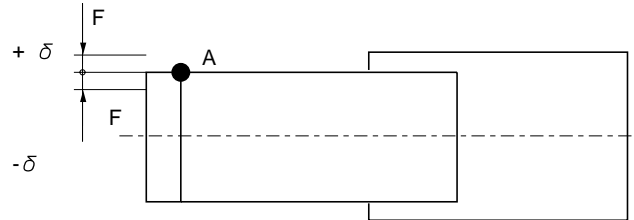


Value of L

- $\phi 12$ : L = 90
- $\phi 16$ : L = 100
- $\phi 20$ : L = 100
- $\phi 25$ : L = 100

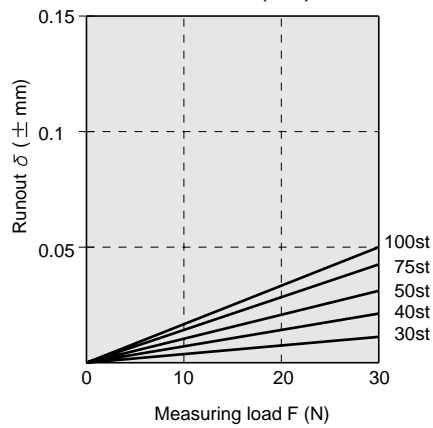


## Displacement at point A

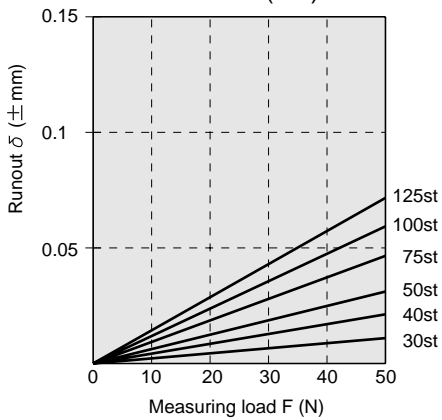


RRC
GRC
RV3*
<b>NHS</b>
<b>HR</b>
LN
FH100
HAP
BSA2
BHA/ BHG
LHA
LHAG
HKP
HLA/ HLB
HLAG/ HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HLB
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2 *-HC
CKH2
CKLB2
NCK/ SCK/FCK
FJ
FK
Ending

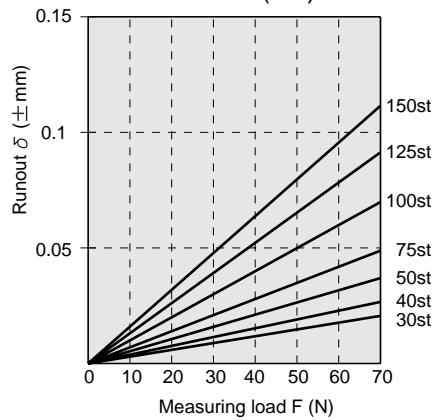
LCS-12 (M3)



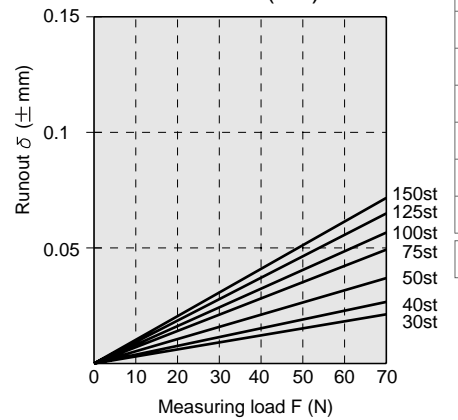
LCS-16 (M3)



LCS-20 (M3)



LCS-25 (M3)

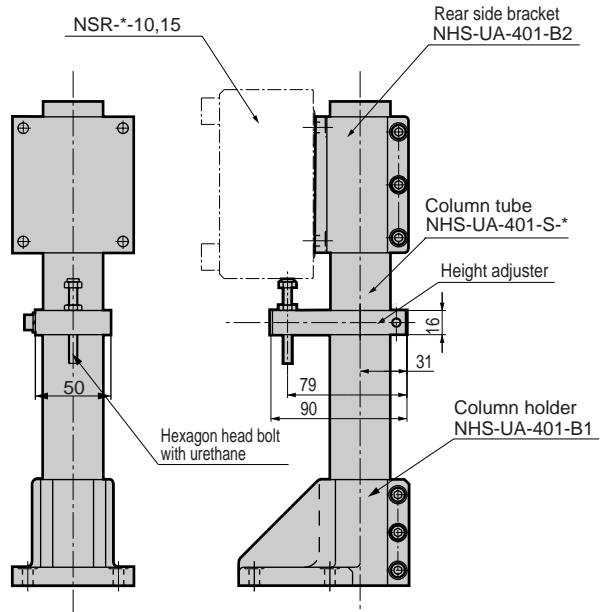


New handling system  
Modular unit

## Accessory frame combination dimensions

NHS-\*-10\*\*, 15\*\*dedicated

● NHS-UA-401- length  
 300, 400, 500, 600



● With height adjuster

● Attachment

Bolt set for NHS installation

Hexagon socket head cap bolt M6×20: 4 pcs.

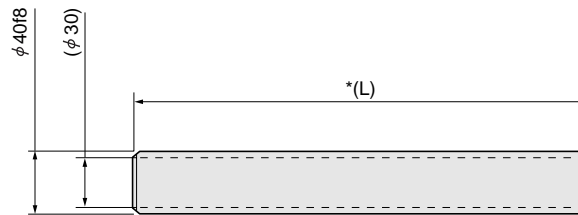
Spring retainer nominal 6 : 4 pcs.

Plane washer nominal 6 : 4 pcs.

● Provide with 1 pc./1 set for combined model no.

## Column tube

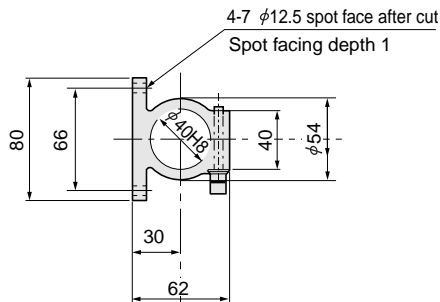
● NHS-UA-401-S- length  
 300, 400, 500, 600



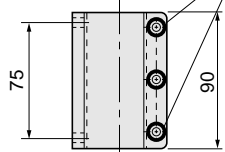
Material: Steel pipe

## Rear side bracket

● NHS-UA-401-B2



M6 hexagon socket head cap bolt



● Attachment

Bolt set for NHS installation

Hexagon socket head cap bolt M6 x 20: 4 pcs.

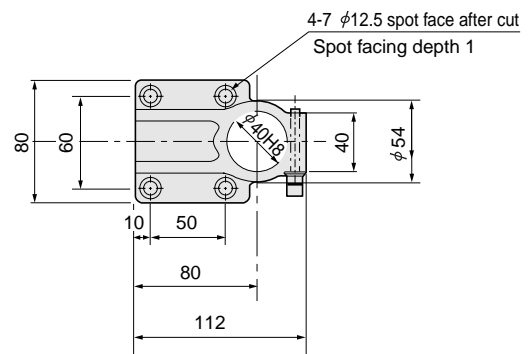
Spring retainer nominal 6 : 4 pcs.

Plane washer nominal 6 : 4 pcs.

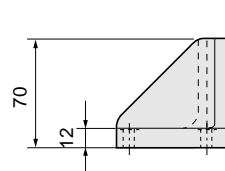
Material: Aluminum alloy casting

## Column holder

● NHS-UA-401-B1



M6 hexagon socket head cap bolt



Material: Iron casting

RRC
GRC
RV3*
NHS
HR
LN
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HEP
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJL
BHE
CKG
CK
CKA
CKS
CKF
CKJ
CKL2
CKL2-*-HC
CKH2
CKLB2
NCK/SCK/FCK
FJ
FK
Ending