More precision

△ alpha series

We have added advanced positioning precision and high rigidity to the pneumatic actuator.

The Koganei Alpha Series further enhances the drive module concept, supporting superior applications and labor savings in FA line design and manufacturing with higher performance.

Systematic Handling Module

The handling module has mounting, turning, linear motion, positioning error correction, and gripping functions, which serve to shorten the design time regarding the material handling process, to reduce costs, and to deliver performance for the early set-up of automated lines.

Standardized modules

The handling operation is classified, standardized, and modularized into 7 functions.

As a result, designers can immediately complete the handling unit by combining modules organized by functions.

Mounting module

Shift module

Compliance module

Reversing module

Parallel clamping module

Turning module
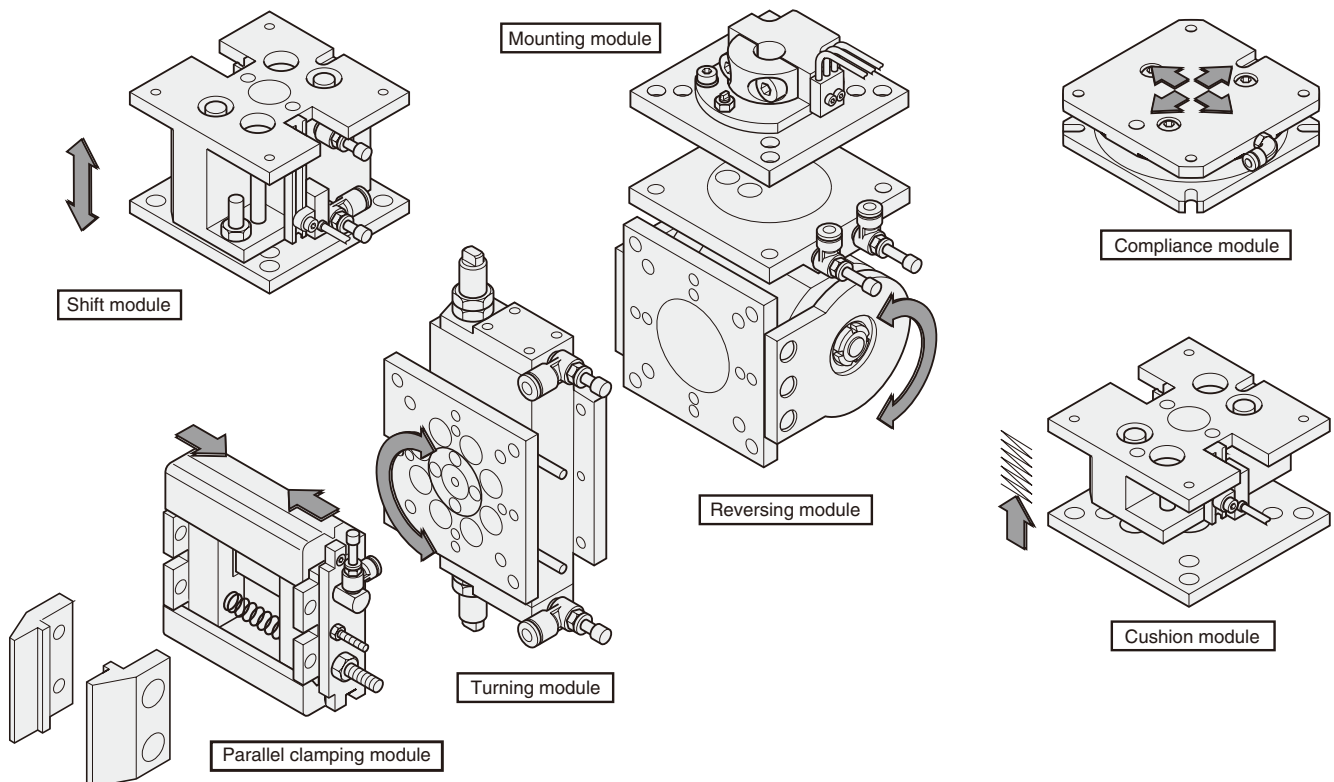
Cushion module

Assure high accuracy

High machining and assembly precision of the module ensure high accuracy in single-unit use or combination use.

Repeatability in each module	
Turning module	±0.03°
Reversing module	±0.03°
Shift module	±0.05mm [±0.0020in.]
Cushion module	±0.05mm [±0.0020in.]
Compliance module	±0.02mm [±0.0008in.]
Parallel clamping module	±0.01mm [±0.0004in.]

● Tolerance of the contact surface parallelism between mounting surface and mounted surface
＝S : 0.04,　M : 0.05,　L : 0.06
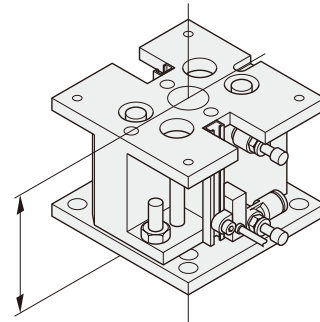
● Tolerance of the coaxiality with the hypothetical center, as restricted by the locating pin＝S : ϕ 0.04,　M : ϕ 0.05,　L : ϕ 0.06

Commonality of mounting pitch

● **Full choice mounting method**

The Systematic Handling Module is a standard module that provides handling operations in the precision assembly field by 7 classified functions, for a complete series. Moreover, the module uses the full choice mounting method that makes any combinations possible while keeping the excellent positioning accuracy.

Features

① Common mounting dimensions for each size
② Bottom surfaces can be used to mount the same size or one smaller sized module.
③ To ensure accurate positioning of the handling modules, there are dowel pin holes on contacted surface of each modules, and locating pins are available (2 locating pins supplied with each module, with the exception of the parallel clamping module).
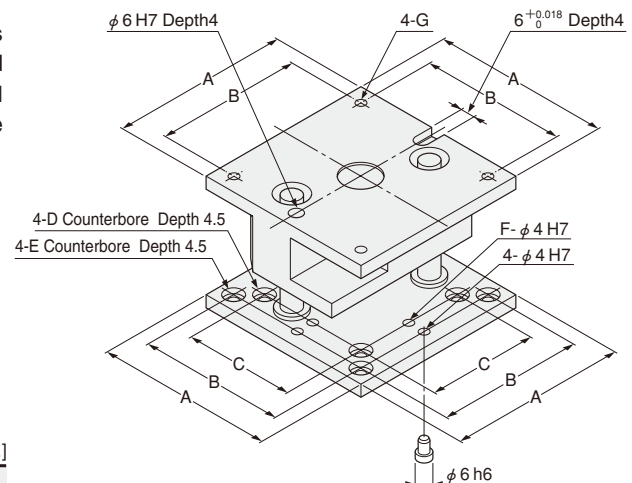
mm [in.]

	A	B	C	D	E	F	G
S size	60 [2.362]	50 [1.969]	—	—	M4	—	M4
M size	80 [3.150]	65 [2.559]	50 [1.969]	M4	M4	4 [0.157]	M5
L size	100 [3.937]	85 [3.346]	65 [2.559]	M4	M5	4 [0.157]	M5

Optimum load mass

For the Systematic Handling Module, use the load masses shown below as a guide.

　S size············250g [8.82oz.]
　M size············500g [17.64oz.]
　L size··········1000g [35.27oz.]

●To calculate the maximum load mass, use the formula below.

Robot load capacity	−	Hypothetical mass with all connected modules	−	Load ratio	=	Load mass
S size : 3kg [6.6lb.] **M** size: 6kg [13.2lb.] **L** size : 9kg [19.8lb.]		**S** size : 1.5kg [3.3lb.] **M** size: 3kg [6.6lb.] **L** size : 5kg [11.0lb.]				**S** size : 250g [8.82oz.] **M** size : 500g [17.64oz.] **L** size : 1000g [35.27oz.]

The leading runner on the automated line, the Handling Module
This will be the STANDARD from now on.

Mounting function	**Rotating function**		**Linear function**

Mounting modules	**Turning modules**	**Reversing modules**	**Shift modules**

Mounting modules

SHM11S
S size
(Mounting dimensions: □50mm [1.969in.])
◆Connected shaft diameter:
φ10 [0.394in.], φ13 [0.512in.], φ20 [0.787in.]

SHM11M ※1
M size
(Mounting dimensions: □65mm [2.559in.])
◆Connected shaft diameter:
φ10 [0.394in.], φ13 [0.512in.], φ20 [0.787in.]

SHM11L ※2
L size
(Mounting dimensions: □85mm [3.346in.])
◆Connected shaft diameter:
φ10 [0.394in.], φ13 [0.512in.], φ20 [0.787in.]

Turning modules

SHM21S
S size
(Mounting dimensions: □50mm [1.969in.])
◆Turning angle:
90°, 180°

SHM21M ※1
M size
(Mounting dimensions: □65mm [2.559in.])
◆Turning angle:
90°, 180°

SHM21L ※2
L size
(Mounting dimensions: □85mm [3.346in.])
◆Turning angle:
90°, 180°

Reversing modules

SHM31S
S size
(Mounting dimensions: □50mm [1.969in.])
◆Reversing angle range:
0°～180°

SHM31M ※1
M size
(Mounting dimensions: □65mm [2.559in.])
◆Reversing angle range:
0°～180°

SHM31L ※2
L size
(Mounting dimensions: □85mm [3.346in.])
◆Reversing angle range:
0°～180°

Shift modules

SHM41S
S size
(Mounting dimensions: □50mm [1.969in.])
◆Stroke:
10mm [0.394in.]
20mm [0.787in.]

SHM41M ※1
M size
(Mounting dimensions: □65mm [2.559in.])
◆Stroke:
15mm [0.591in.]
30mm [1.181in.]

SHM41L ※2
L size
(Mounting dimensions: □85mm [3.346in.])
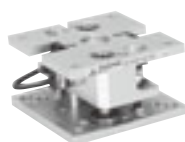◆Stroke:
20mm [0.787in.]
40mm [1.575in.]

※1：In addition to M size, S size mountings are also possible.
※2：In addition to L size, M size mountings are also possible.

Systematic HandlingModule

Positioning error correction function

Gripping function

Cushion modules

SHM 51S
S size
(Mounting dimensions: □50mm [1.969in.])
◆Stroke:
   5mm [0.197in.]
   10mm [0.394in.]

SHM 51M ※1
M size
(Mounting dimensions: □65mm [2.559in.])
◆Stroke:
   8mm [0.315in.]
   15mm [0.591in.]

SHM 51L ※2
L size
(Mounting dimensions: □85mm [3.346in.])
◆Stroke:
   10mm [0.394in.]
   20mm [0.787in.]

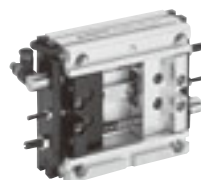### Compliance modules

SHM 61S, 62S
S size
(Mounting dimensions: □50mm [1.969in.])

SHM 61M, 62M
M size
(Mounting dimensions: □65mm [2.559in.])

SHM 61L, 62L
L size
(Mounting dimensions: □85mm [3.346in.])

Parallel clamping modules

SHM 71S
S size
(Mounting dimensions: □50mm [1.969in.])
◆Gripping width:
   42mm [1.65in.]

SHM 71M
M size
(Mounting dimensions: □65mm [2.559in.])
◆Gripping width:
   57mm [2.24in.]

SHM 71L
L size
(Mounting dimensions: □85mm [3.346in.])
◆Gripping width:
   73mm [2.87in.]

Parallel clamping long modules

SHM 72S
S size
(Mounting dimensions: □50mm [1.969in.])
◆Gripping width:
   140, 240, 340mm
   [5.51, 9.45, 13.39in.]

SHM 72M
M size
(Mounting dimensions: □65mm [2.559in.])
◆Gripping width:
   176, 276, 376mm
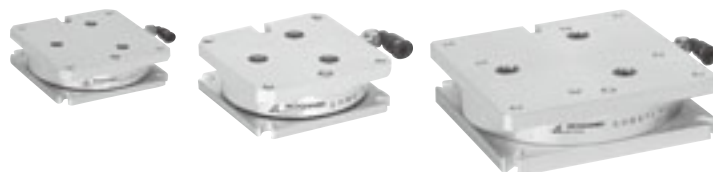   [6.93, 10.87, 14.80in.]

SHM 72L
L size
(Mounting dimensions: □85mm [3.346in.])
◆Gripping width:
   318, 418, 518mm
   [12.52, 16.46, 20.39in.]

● **SHM62 is NZ specification.**
For details, see p.1521.
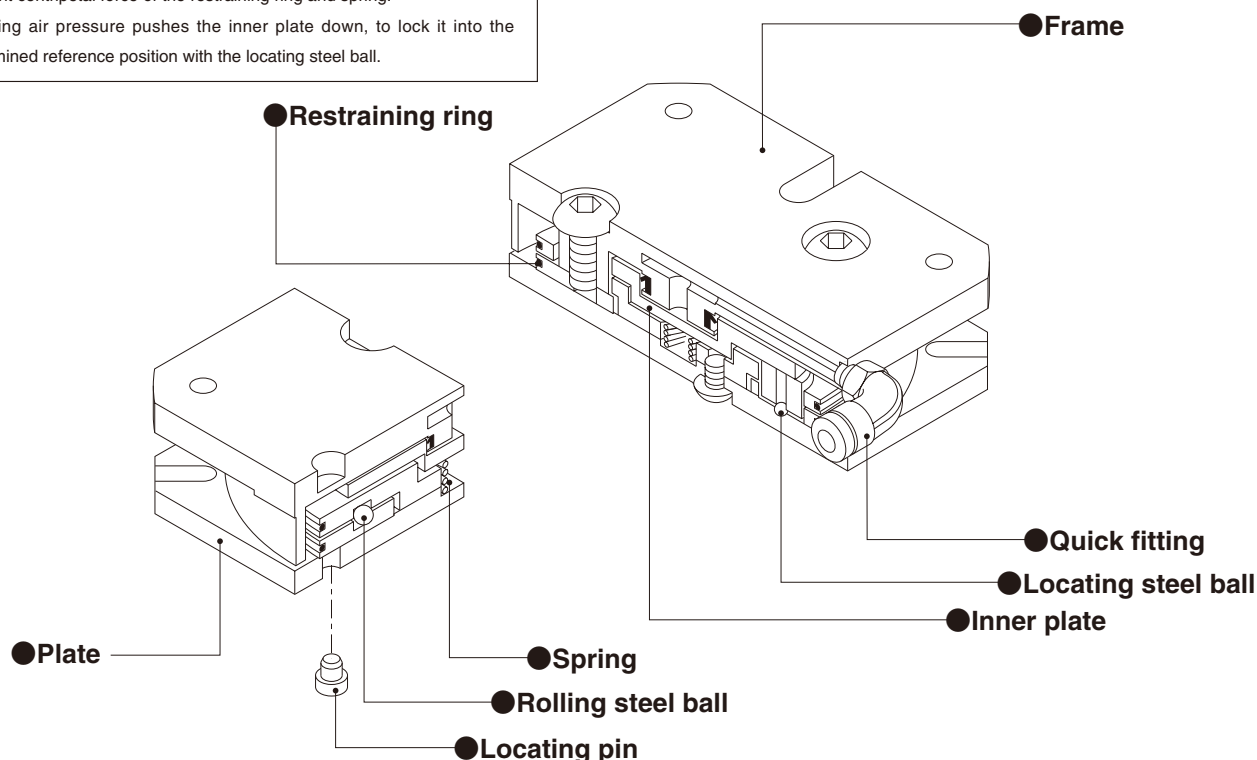
SYSTEMATIC HANDLING MODULES SHM SERIES

COMPLIANCE MODULES

Positioning error correction module with excellent response and repeatability.
Comes mounted with a locking mechanism.

Operation principles

1. The frame and plate enclose rolling steel balls, which move freely under the light centripetal force of the restraining ring and spring.
2. Applying air pressure pushes the inner plate down, to lock it into the determined reference position with the locating steel ball.

● **Restraining ring**

● **Frame**

● **Quick fitting**

● **Locating steel ball**

● **Inner plate**

● **Plate**

● **Spring**

● **Rolling steel ball**

● **Locating pin**
(Apply locking adhesive and insert it into the required hole.)

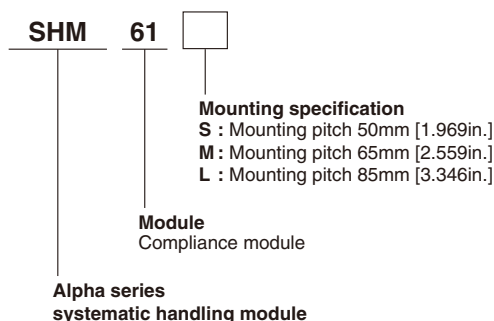Note: Since loosening the connection screws will go out of the assembly precision, do not disassemble.

Specifications

Item	Model	SHM61S	SHM61M	SHM61L
Mounting specification	Mounting surface	S	M	L
	Mounted surface	S	M	L
Media		Air		
Operating pressure range MPa [psi.]		0.2～0.6 [29～87]		
Proof pressure MPa [psi.]		1 [145]		
Operating temperature range ℃ [℉]		0～60 [32～140]		
Operation type and mechanism		Horizontal passive type, with locking mechanism[Note]		
Lubrication		Not required		
Load mass kg [lb.]		1.5 [3.3]	3 [6.6]	4.5 [9.9]
Movement range	X・Y mm [in.]	±1.0 [±0.039]		
	Z mm [in.]	−0.5 [−0.020]		
	θ	±2.5°		
	α	±0.6°		
Centripetal force N [lbf.]		5 [1.1]		
Repeatability when locked mm [in.]		±0.02 [±0.0008]		
Mass g [oz.]		200 [7.1]	420 [14.8]	600 [21.2]

Note: Applying air pressure brings it into a locked state.

Order Codes

SHM 61 ▢

Mounting specification
S : Mounting pitch 50mm [1.969in.]
M : Mounting pitch 65mm [2.559in.]
L : Mounting pitch 85mm [3.346in.]

Module
Compliance module
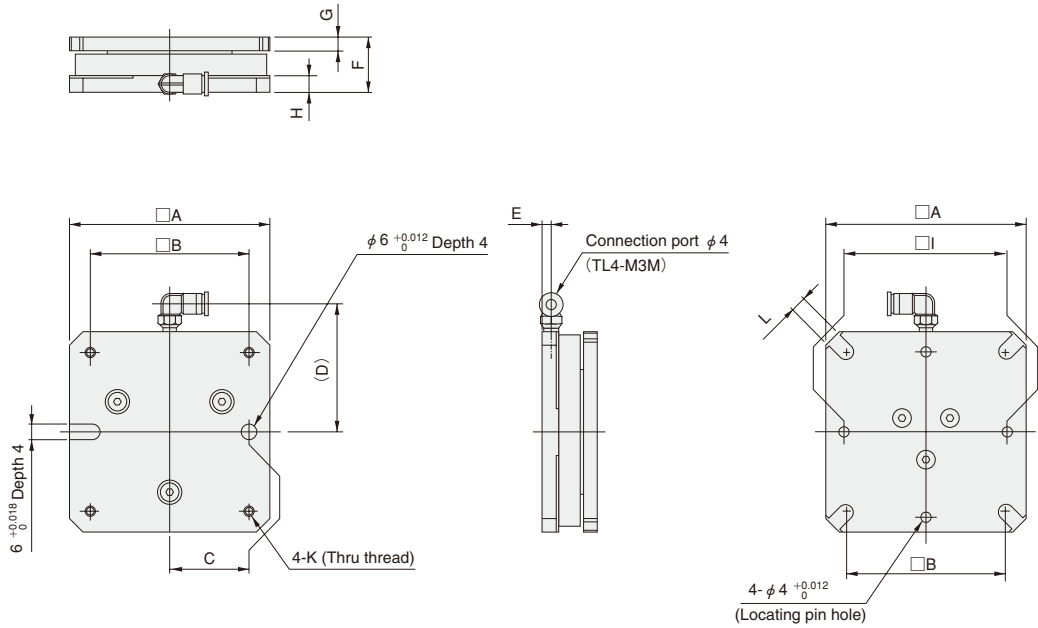
Alpha series systematic handling module

※ Two locating pins are included.
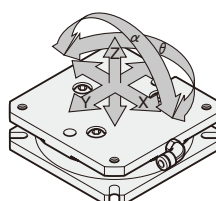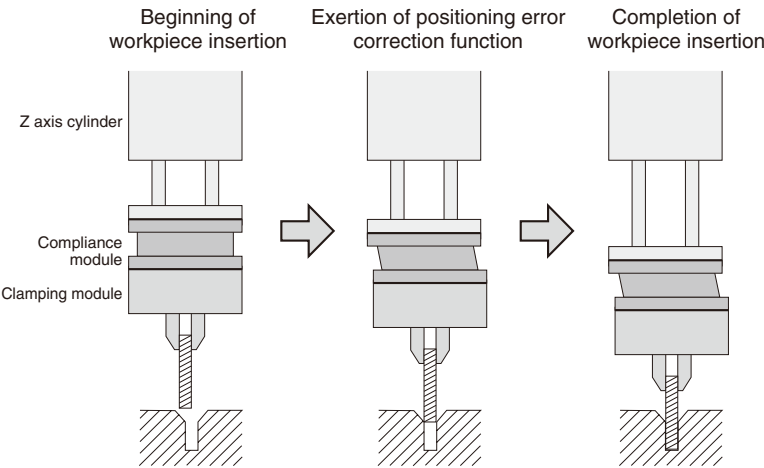
Explanation of term

Centripetal force: The compliance module uses a restraining ring to keep its center with a force of 5N [1.1lbf.]. This force is called "centripetal force."

Dimensions of SHM61S, M, L (mm)

$\phi 6 \, ^{+0.012}_{0}$ Depth 4

$6 \, ^{+0.018}_{0}$ Depth 4

4-K (Thru thread)

E

Connection port $\phi 4$
(TL4-M3M)

□A

□I

L

4-$\phi 4 \, ^{+0.012}_{0}$
(Locating pin hole)

□B

G

F

H

□A

□B

(D)

C

Remarks: 1. Tolerance of the contact surface parallelism between mounting surface and mounted surface ＝S：0.04, M：0.05, L：0.06
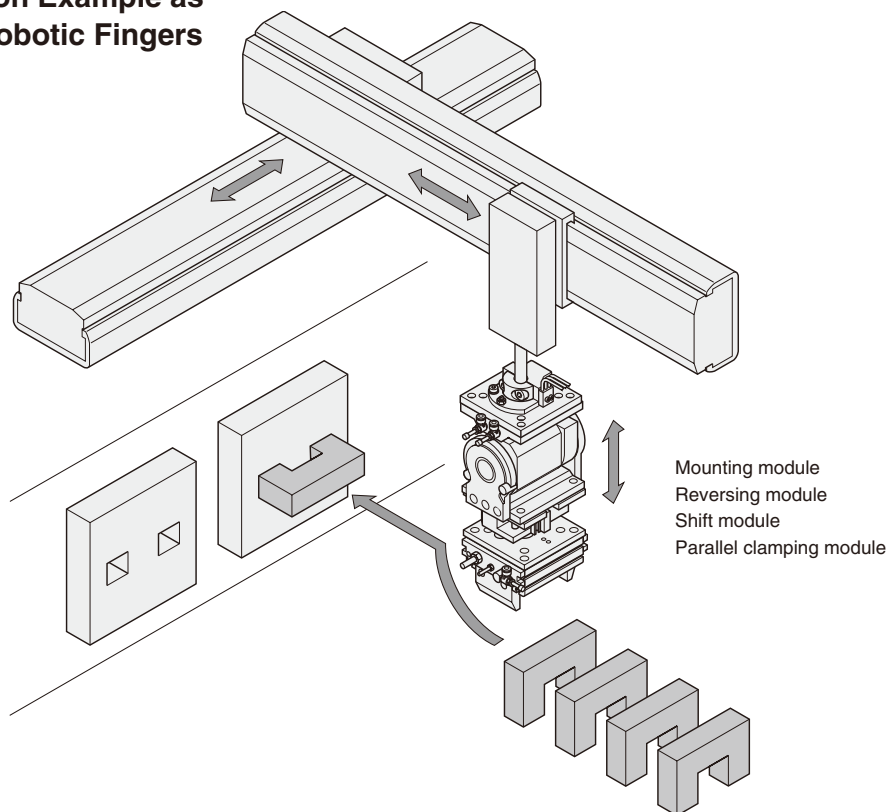2. Coaxiality tolerance with the hypothetical center, as restricted by the locating pin ＝ S：ϕ 0.04, M：ϕ 0.05, L：ϕ 0.06

Model \ Code	A	B	C	D	E	F	G	H	I	K	L
SHM61S	60	50	25.0	42	3	20	4	5.5	50±0.03	M4	4.5
SHM61M	80	65	32.5	52	3	23	5	6.0	65±0.03	M4	4.5
SHM61L	100	85	42.5	62	3.5	28	7	7.0	85±0.05	M5	5.5

Application Example

Beginning of workpiece insertion

Exertion of positioning error correction function

Completion of workpiece insertion

Z axis cylinder

Compliance module

Clamping module

SYSTEMATIC HANDLING MODULES SHM SERIES

1520

Either single use or various combinations are possible.

● **Application Example as Robotic Fingers**

Mounting module
Reversing module
Shift module
Parallel clamping module

● **Application Example for Conveyer Line**

Parallel clamping module

Shift module

Turning module (180°)

Reversing module
Parallel clamping module