CAD drawing data catalog is available.

KOGANEI

ACTUATORS GENERAL CATALOG

alpha series

YZ MODULES

CONTENTS

Plus precision

alpha series

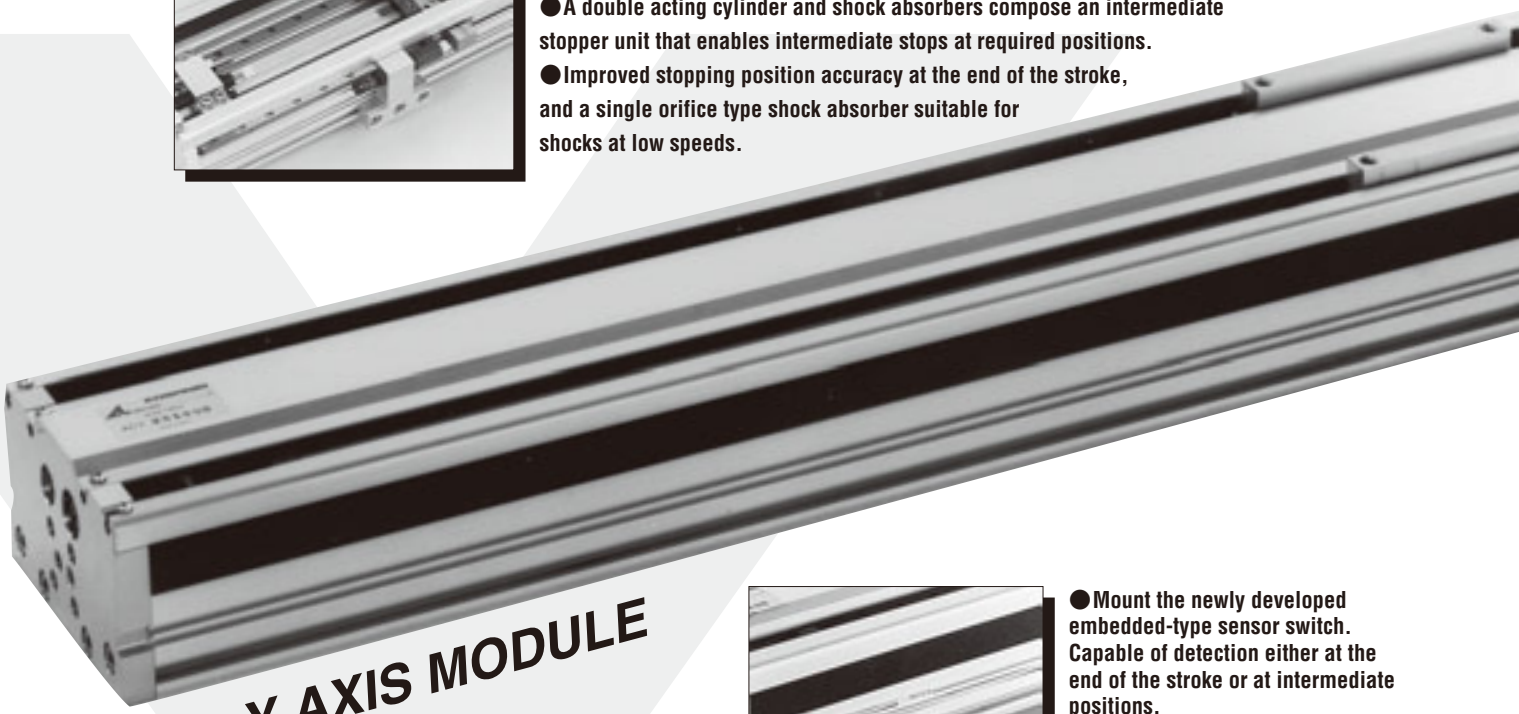
YZ modules

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.

The YZ module easily upgrades the Y, Z axis system, even incorporating handling operations in a single system. With the objectives of high rigidity and advanced performance, 2 linear guide mechanisms on each of the 2 axes respond to heavy loads and high precision. Moreover, new technologies, such as a newly developed intermediate stopper unit mounted on the double acting cylinder, a compact embedded sensor switch, and shortened design hours and manufacturing times for automated systems in the Y, Z axis movement, demonstrate the unit's total cost performance.

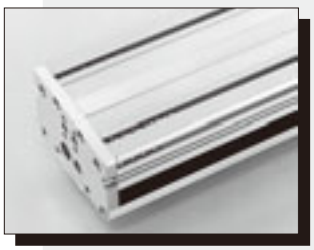
Intermediate stops possible!

- A double acting cylinder and shock absorbers compose an intermediate stopper unit that enables intermediate stops at required positions.
- Improved stopping position accuracy at the end of the stroke, and a single orifice type shock absorber suitable for shocks at low speeds.



Y AXIS MODULE

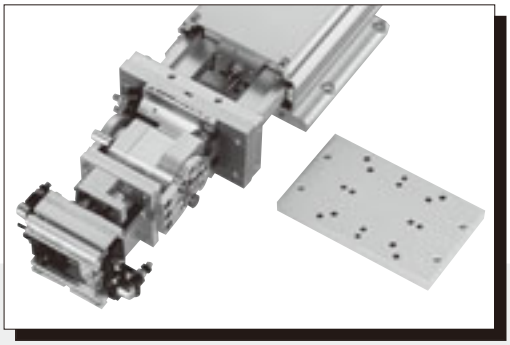
- Mount the newly developed embedded-type sensor switch. Capable of detection either at the end of the stroke or at intermediate positions.
- Space-saving design integrates wiring and piping into a single plane.



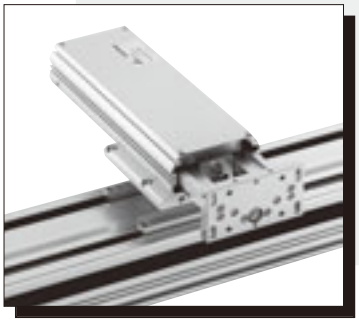
- T-slots with built-in square nuts are arranged in 2 rows along the bottom of the body, and in 1 row along each side, to increase flexibility and ease of mounting.

- Use a rodless cylinder with field-proven high reliability and ease of control.
- Two linear guides assure rigidity and linearity and respond to heavy loads.

Alpha series YZ modules
Achieve a heavier load capacity, and high-precision system,
Achieve total upgrade performance as a system



●Handling modules in S, M, L sizes can be attached to the end plate.

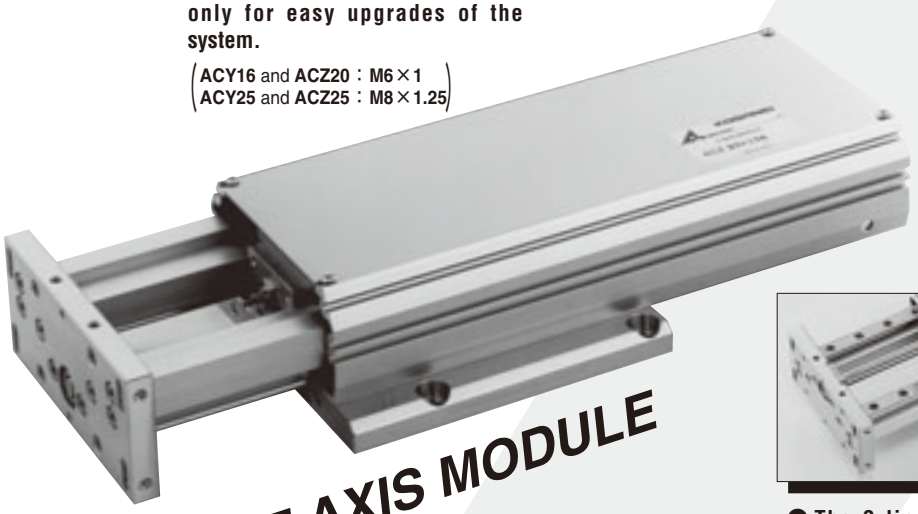


●The mounting method uses bolts only for easy upgrades of the system.

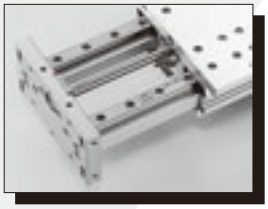
(**ACY16** and **ACZ20**：**M6**×1
ACY25 and **ACZ25**：**M8**×1.25)

●A cover enclosing the body provides clean exterior and safety.
●A newly developed sensor switch can be mounted in any location along the groove, for detection either at the end of the stroke or at intermediate positions.
●A magnet for sensor switch is standard equipment for the cylinder body.

※Up to a total of 5 sensor switches can be mounted, 3 for piston position detection and 2 for stopper unit position detection. For details, see p.1049.

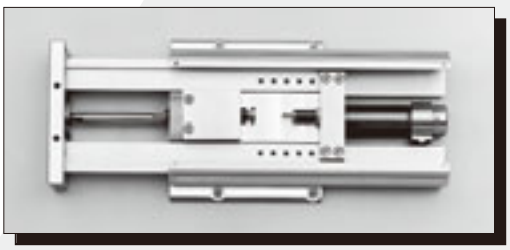


Z AXIS MODULE



● The 2 linear guides respond to the heavy load and high accuracy that cannot be achieved by the shaft type guides.

●Intermediate stopper unit (ϕ 10 [0.394in.] cylinder is built in) automatically switches between 2 descent positions (extended side).
●Stopper bolt adjusts stroke range of 20mm [0.787in.] or less.



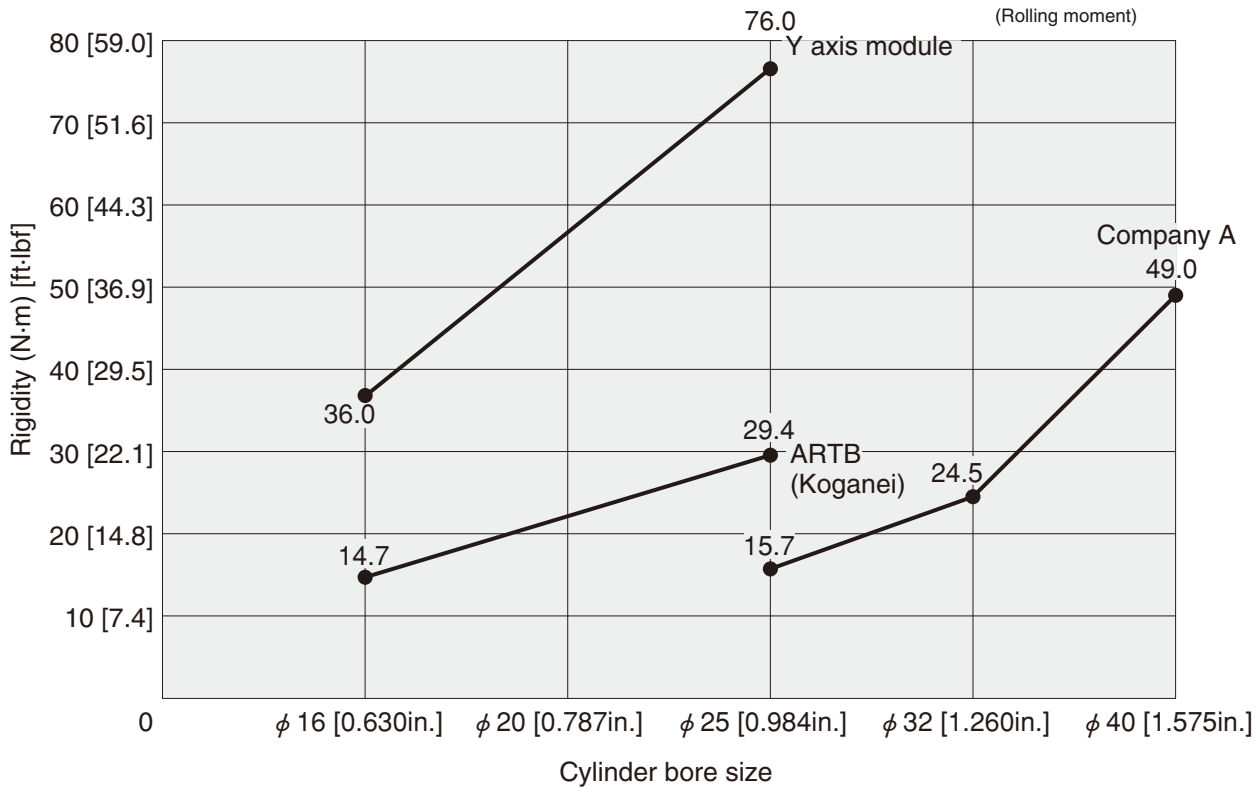
●Two shock absorbers also used as stopper bolts to improve stopping position accuracy at the end of the stroke are standard equipment.

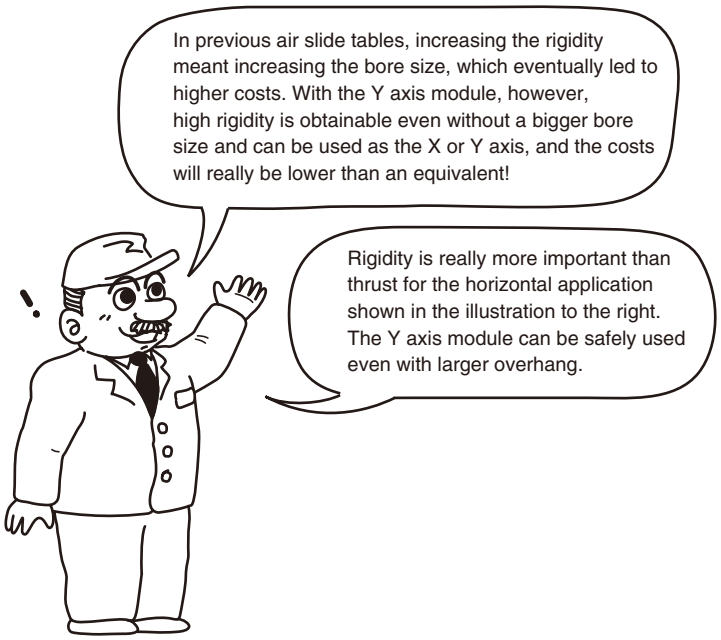
●End keep mechanism for prevention of unintended falls is optional.

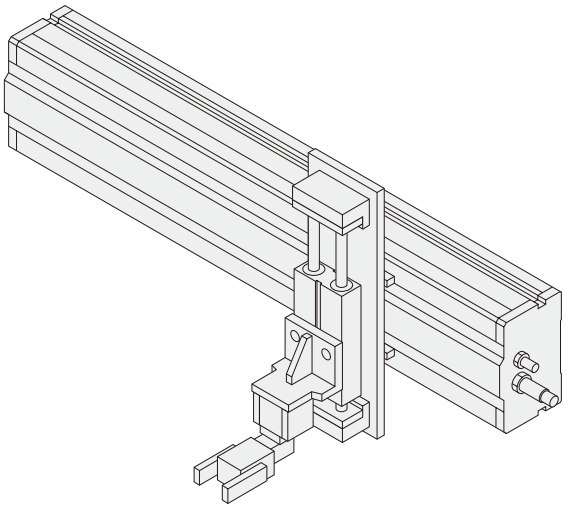
Benefits of the Y axis module (ACY)

First and foremost, high rigidity!!

Cylinder thrust and rigidity comparison graph





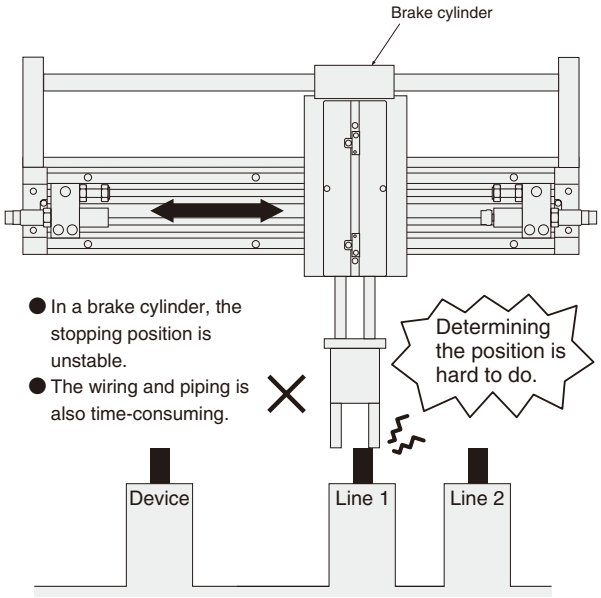


Application examples of the Y axis module

- Uses 2 linear guides that assure rigidity and linearity, and that respond to heavy load and high accuracy needs.
- An intermediate stopper unit is built in, and moving the shock absorber improves intermediate stopping accuracy.
- The compact, embedded-type sensor switch is capable of detection at the end of the stroke and intermediate positions.

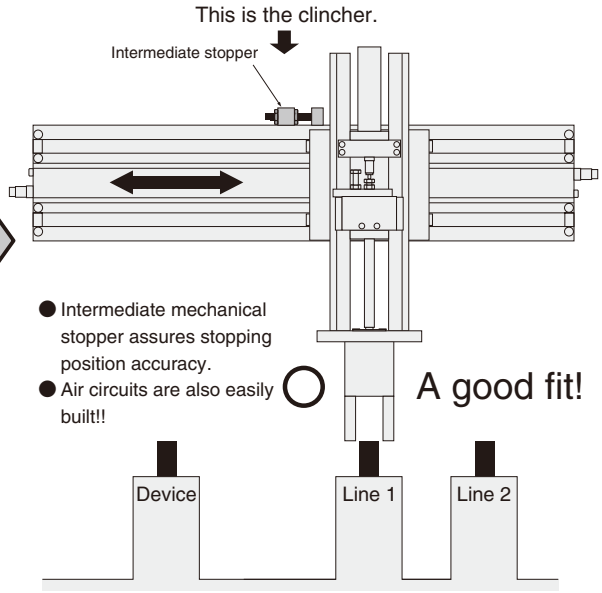
◆ **Intermediate stopping with air slide tables**

Previously...



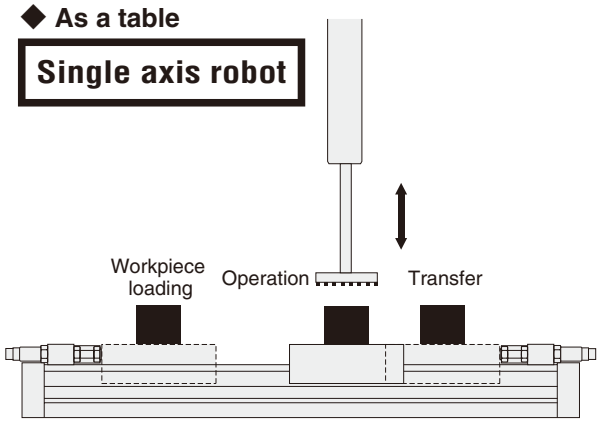
◆ **Intermediate stopping with air slide tables**

With the Y axis module...



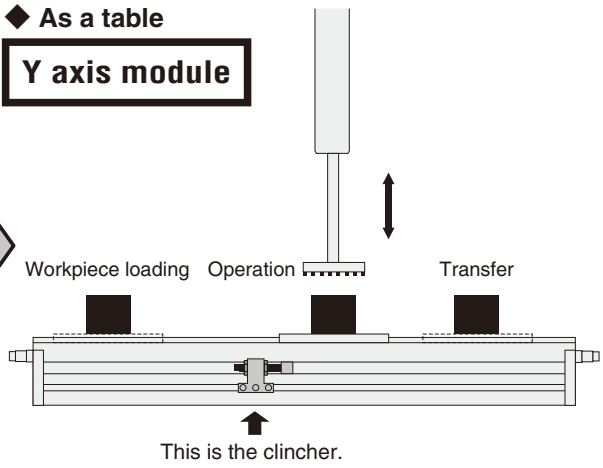
◆ **As a table**

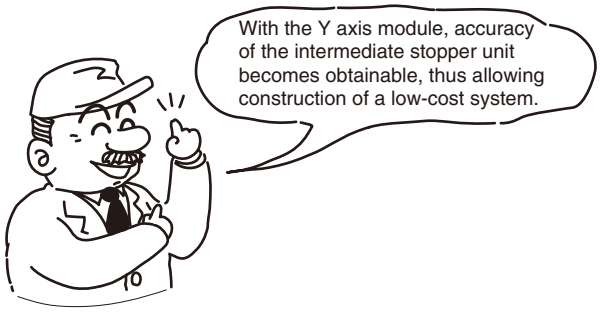
Single axis robot



◆ **As a table**

Y axis module



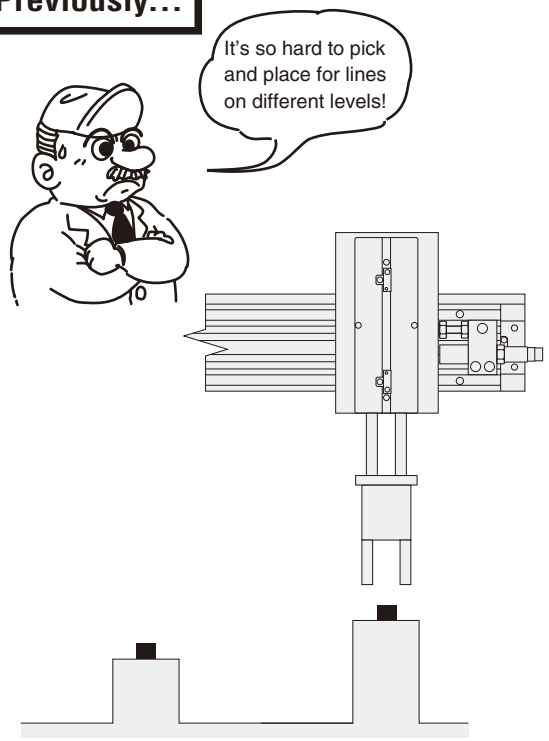


Application examples of the Z axis module

- Uses 2 linear guides that assure rigidity and linearity, and that respond to heavy load and high accuracy needs.
- Capable of responding to 2 handling units. Moreover, its ability to reduce vibrations of workpieces mounting portions can shorten cycle time.
- An intermediate stopper unit is built in, making it possible to automatically switch between 2 descent positions (extended side).
- The handling module can be mounted if an optional plate is attached on the end plate portion. A locating pin is used to slide the plate with high accuracy, for fine positioning adjustment.

◆ **As a Z-axis for pick-and-place**

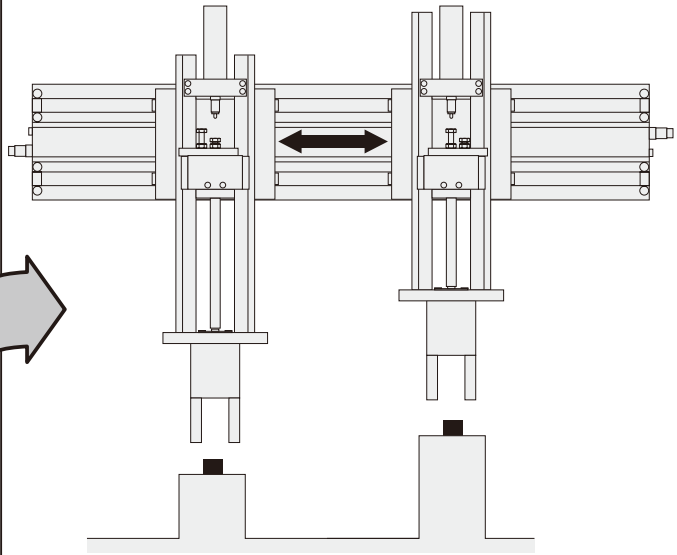
Previously...



◆ **As a Z-axis for pick-and-place**

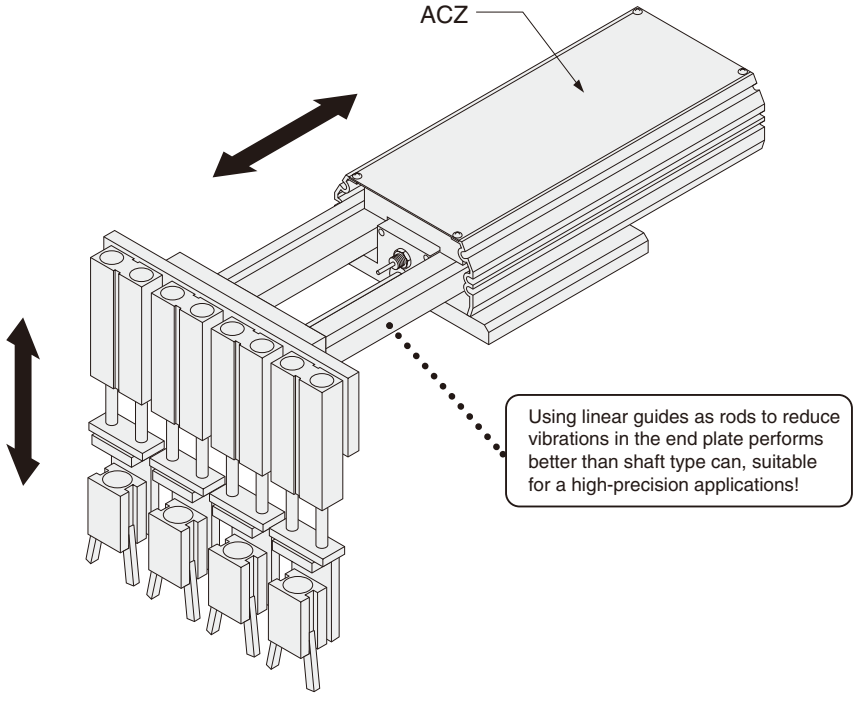
With the Z axis module...

- A single Z-axis module is enough to respond to pick-and-place on different levels by switching the strokes.



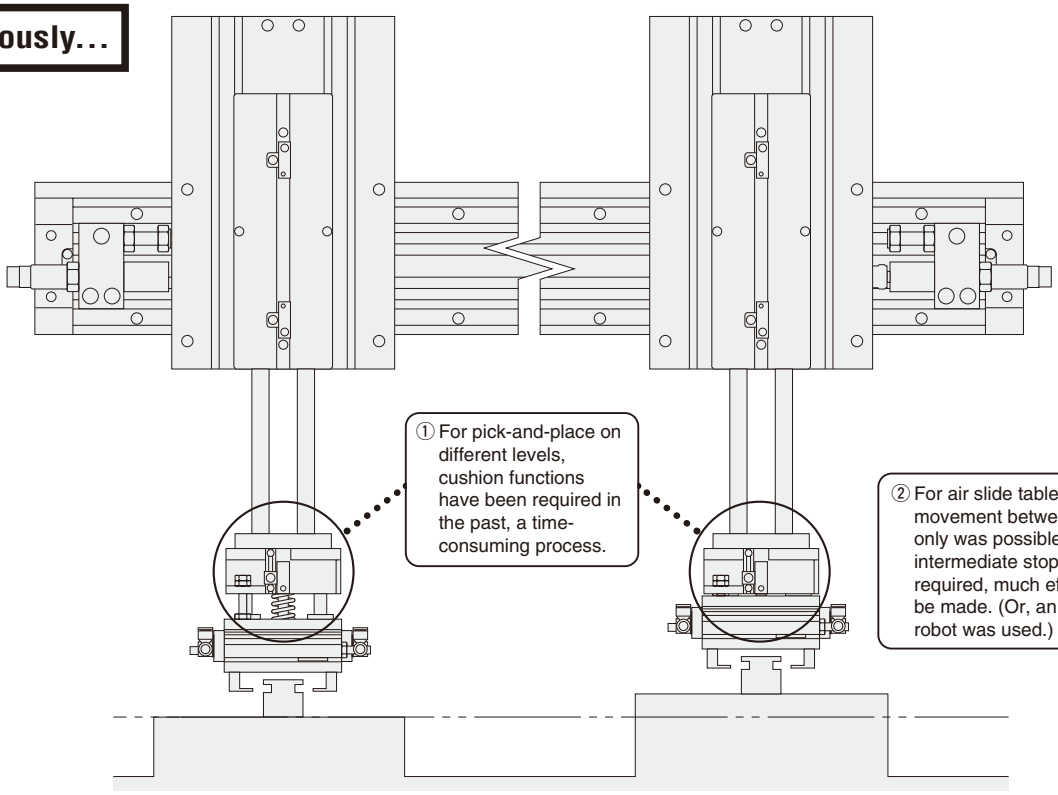
◆ **As a single item**

Pick-and-place in combination with other actuators

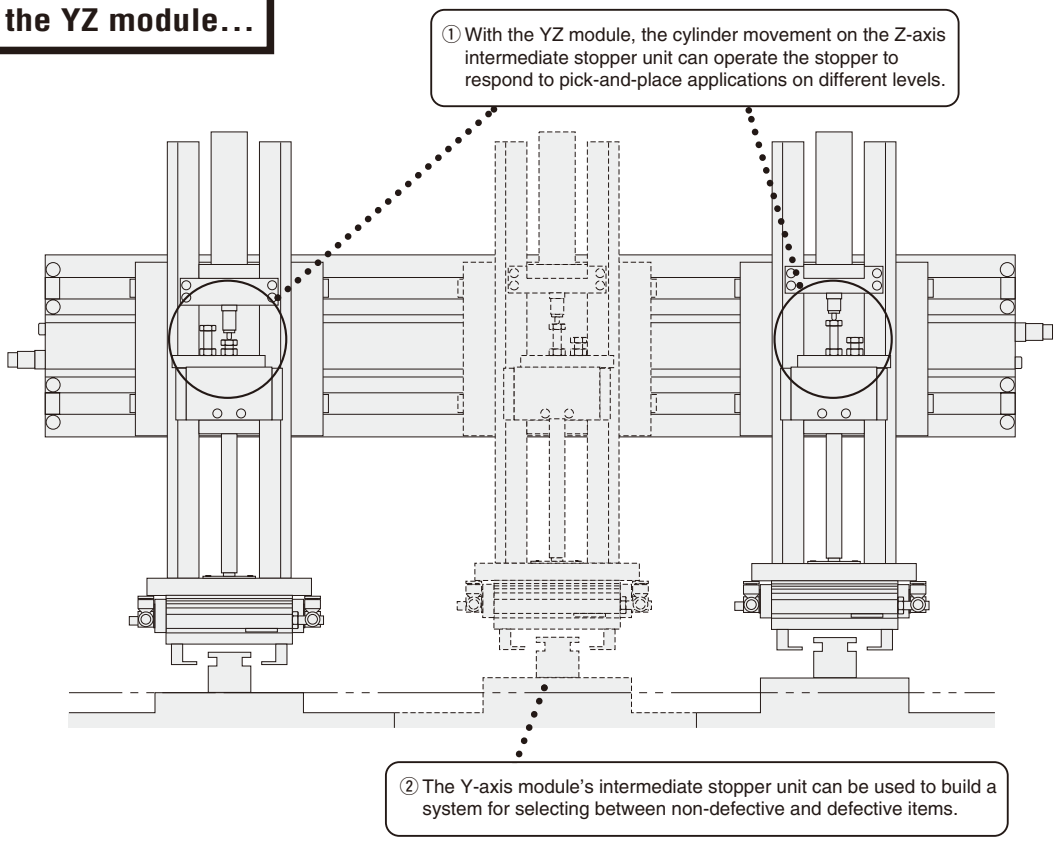


● The system, including everything as a Y-, Z-axis drive module with the handling function, can be constructed in a short time.

Previously...



With the YZ module...



YZ MODULES

ACY Specifications

Specifications

Item \ Model		ACY16	ACY25
Bore size	mm [in.]	16 [0.630]	25 [0.984]
Operation type		Double acting type	
Media		Air	
Operating pressure range	MPa [psi.]	0.15～0.8 [22～116]	
Proof pressure	MPa [psi.]	1.2 [174]	
Operating temperature range	°C [°F]	0～60 [32～140]	
Operating speed range	mm/s [in./sec.]	200～1000 [7.9～39.4]	
Cushion		With shock absorber (on both sides)	
Lubrication	Cylinder portion	Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)	
	Guide portion	Required (Lithium soap-based grease) Note1	
Repeatability	mm [in.]	±0.02 [±0.0008] (Repeatability for intermediate stopping ±0.02 [±0.0008])	
Traveling parallelism	mm [in.]	0.1/300 [0.004/11.81]	
Stroke adjusting range	mm [in.]	Possible from 0 to specified strokes.	
Intermediate stopping mechanism		Available as an option (Full stroke adjustment)	
Mountable Z axis module model		**ACZ20**	**ACZ25**
Maximum load capacity Note2	N [lbf.]	196.1 [44.1]	392.2 [88.2]
Port size		Rc1/8	

Notes: 1. Apply grease on the raceway surface of the track rail every 6 months or every 300km [186mi.] of traveling distance.
2. For the relationship between the mass and piston speeds, see the shock absorber performance graph on p.1039.

Intermediate Stopper Unit Cylinder Portion Specifications

Item \ Model		ST-ACY16	ST-ACY25
Applicable cylinder model		**ACY16**	**ACY25**
Bore size	mm [in.]	10 [0.394]	16 [0.630]
Stroke	mm [in.]	20 [0.787]	25 [0.984]
Operation type		Double acting type	
Media		Air	
Operating pressure range	MPa [psi.]	0.3～0.7 [44～102]	0.2～0.7 [29～102]
Proof pressure	MPa [psi.]	1.05 [152]	
Operating temperature range	°C [°F]	0～60 [32～140]	
Operating speed range	mm/s [in./sec.]	50～500 [2.0～19.7]	
Cushion		Rubber bumper	
Lubrication		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)	
Port size		M5×0.8	
Installable sensor switch model		CS5T, CS11T, ZC130, ZC153	

Shock Absorber Specifications

Item \ Model		KSH6×10C	KSH8×10C
Applicable cylinder model		**ACY16**	**ACY25**
Maximum absorption	J [ft·lbf]	2.9 [2.14]	5.9 [4.35]
Absorbing stroke	mm [in.]	10 [0.394]	
Maximum impact speed	mm/s [in./sec.]	1000 [39.4]	
Maximum operating frequency	cycle/min	30	
Spring return force (When retracted)	N [lbf.]	9.2 [2.07]	15.7 [3.53]
Angle variation		3° or less	
Operating temperature range	°C [°F]	0～60 [32～140]	

Note: Shock absorbers for the intermediate stopper's shock absorber unit are the shock absorbers shown above with stopper nuts (-S) added.

Bore Size and Stroke

mm

Bore size	Standard strokes	Maximum available stroke
16	200, 300, 400, 500, 600	1000
25		

Mass

kg [lb.]

Model	Basic mass					Additional mass of option		
	Stroke mm					Intermediate stopper unit Note	Shock absorber unit	Sensor switch for module body
	200	300	400	500	600			ZE101, ZE102, ZE135, ZE155
ACY16	5.9 [13.0]	6.7 [14.8]	7.4 [16.3]	8.3 [18.3]	9.1 [20.1]	0.71 [1.57]	0.18 [0.40]	0.015 [0.033] (For a lead wire of 1000mm [39in.])
ACY25	10.7 [23.6]	11.9 [26.2]	13.0 [28.7]	14.3 [31.5]	15.6 [34.4]	1.47 [3.24]	0.43 [0.95]	0.035 [0.077] (For a lead wire of 3000mm [118in.])

Note: Additional mass of intermediate stopper unit includes the sensor switch mass.

Order Codes

ACY **16×200** - ( ) - ( ) ( ) ( ) - ( ) ( ) ( )

ACY — Alpha series Y axis module

16×200 — Bore size×Stroke

( ) — **Intermediate stopper unit**
Blank : No stopper unit
ST1 : With stopper unit (with 1 shock absorber unit)
ST2 : With stopper unit (with 2 shock absorber units)

The intermediate stopper unit at shipping is installed on the right side as viewed from the connection port of the Y axis module.

( ) — **Sensor switch for module**
Blank : No sensor switch

ZE101 : Reed switch type	without indicator lamp	horizontal lead wire	DC5～28V AC85～115V
ZE102 : Reed switch type	with indicator lamp	horizontal lead wire	DC5～28V AC85～115V
ZE135 : Solid state type	with indicator lamp	horizontal lead wire	DC10～28V
ZE155 : Solid state type	with indicator lamp	horizontal lead wire	DC4.5～28V

● For details of sensor switches, see p.1544.

( ) — **Lead wire length**
A : 1000mm [39in.]
B : 3000mm [118in.]

( ) — **Number of sensor switches**
1 : With 1 sensor switch
2 : With 2 sensor switches
3 : With 3 sensor switches
4 : With 4 sensor switches
5 : With 5 sensor switches

( ) — **Sensor switch for intermediate stopper**
Blank : No sensor switch

CS5T : Reed switch type	without indicator lamp	DC5～28V AC85～115V
CS11T : Reed switch type	with indicator lamp	DC10～28V
ZC130 : Solid state type	with indicator lamp	DC10～28V
ZC153 : Solid state type	with indicator lamp	DC4.5～28V

※ When selecting an intermediate stopper unit as an option, the actual stroke is shortened.
For details, see the dimensions on p.1040～1041.

( ) — **Lead wire length**
A : 1000mm [39in.]
B : 3000mm [118in.]

( ) — **Number of sensor switches**
1 : With 1 sensor switch
2 : With 2 sensor switches

●Order codes for options only

Intermediate stopper unit

ST-ACY ( )

Bore size
16 : For ϕ 16 [0.630in.]
25 : For ϕ 25 [0.984in.]

Cylinder basic type

Shock absorber unit for intermediate stopper unit

K-ACY ( )

Bore size
16 : For ϕ 16 [0.630in.]
25 : For ϕ 25 [0.984in.]

Cylinder basic type

Sensor switch (with holder) for intermediate stopper unit

( ) ( ) **ACY**

Cylinder basic type

Lead wire length
A : 1000mm [39in.]
B : 3000mm [118in.]

Sensor switch
CS5T
CS11T
ZC130
ZC153

Sensor holder for intermediate stopper unit only

C1-ACY

Cylinder basic type

※ Sensor holders for the intermediate stopper are the same regardless of bore sizes. (The sensor holder for the Knock cylinder is used.)

Sensor switch for slide table only

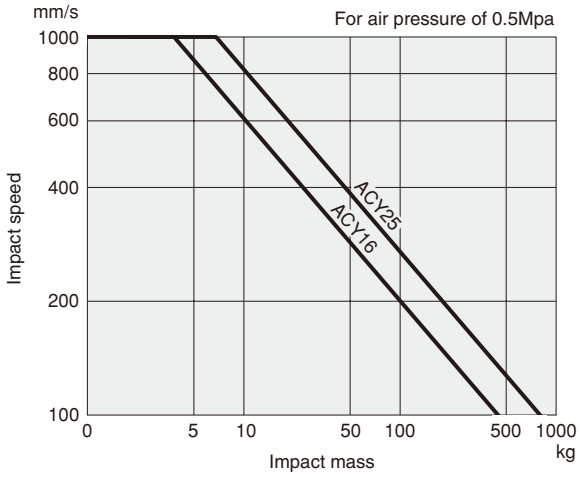
( ) ( ) **-ACY**

Cylinder basic type

Lead wire length
A : 1000mm [39in.]
B : 3000mm [118in.]

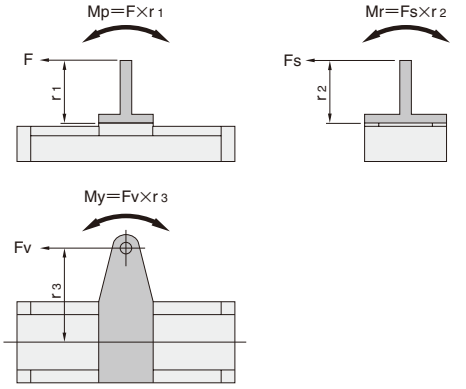
Sensor switch
ZE101
ZE102
ZE135
ZE155

Shock Absorber Performance Graph

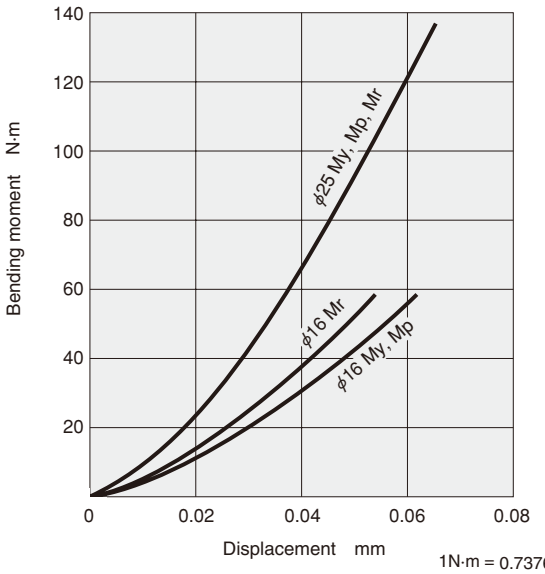


1mm/s = 0.0394in./sec.
1kg = 2.205lb.

Allowable Bending Moment and Displacement



● Bending moment and displacement



1N·m = 0.7376ft·lbf
1mm = 0.0394in.

● Allowable Bending Moment

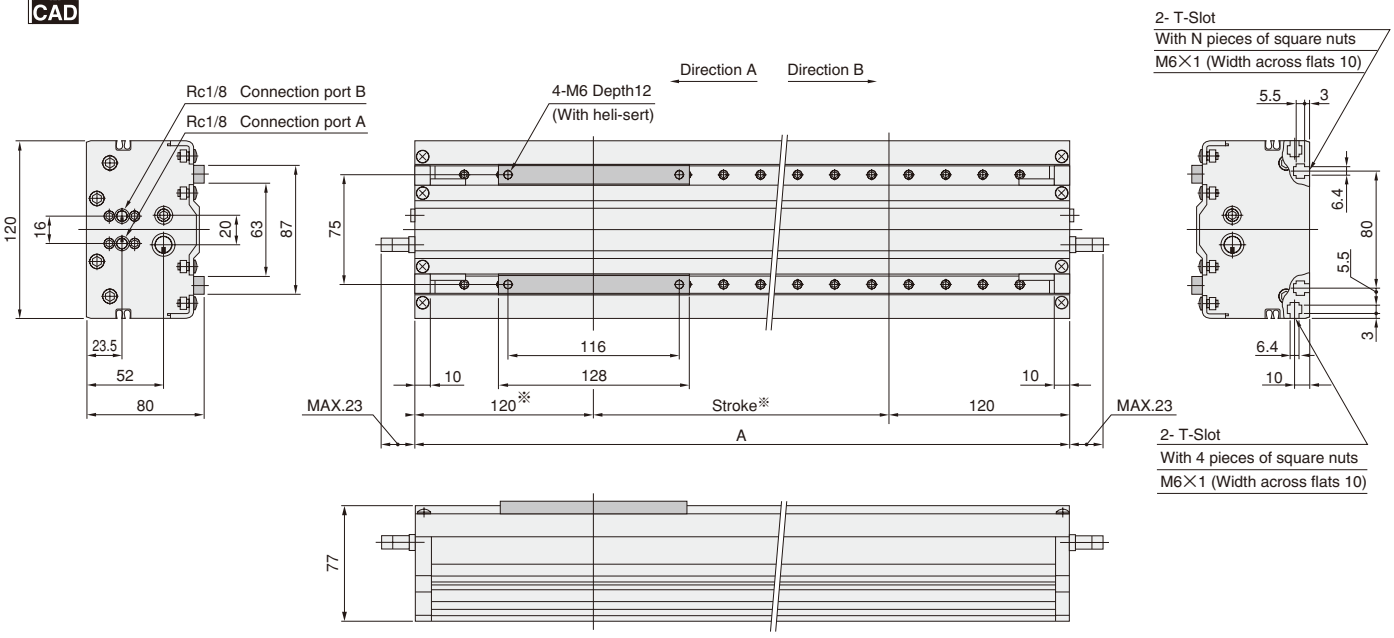
N·m [ft·lbf]

Bore mm [in.] \ Direction of moment	Pitching (Mp)	Yawing (My)	Rolling (Mr)
16 [0.630]	28 [20.7]	32 [23.6]	36 [26.6]
25 [0.984]	70 [51.6]	79 [58.3]	76 [56.1]

Dimensions of ACY16 (mm)

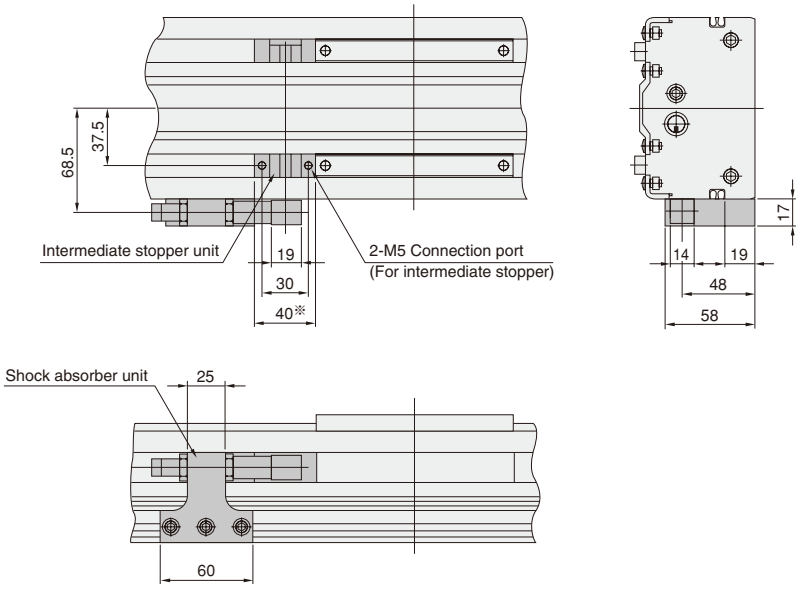
● ϕ 16 [0.630in.] ●Double acting type ●Maximum load capacity 196.1N [44.1lbf.]

CAD ACY16



Code / Stroke	A	N
200	440	4
300	540	4
400	640	6
500	740	6
600	840	8

■Intermediate Stopper Unit: -ST□

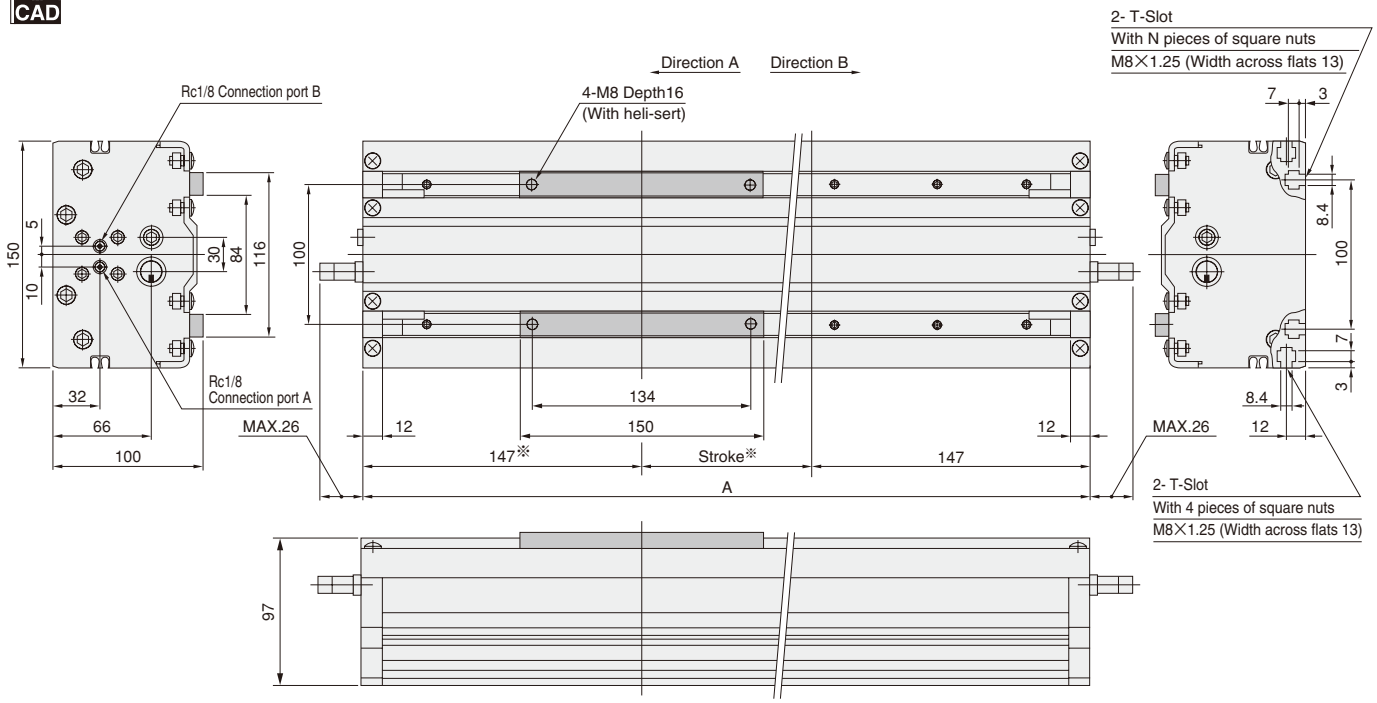


※ Even with the intermediate stopper unit mounted, the total length (dimension A) remains the same as in the above table. Consequently, the stroke is shortened by the length of the intermediate stopper unit.
(Example) For a 200mm stroke with an intermediate stopper unit,
Stroke＝440－(120＋120＋40)
Stroke＝160 is the actual stroke.

Dimensions of ACY25 (mm)

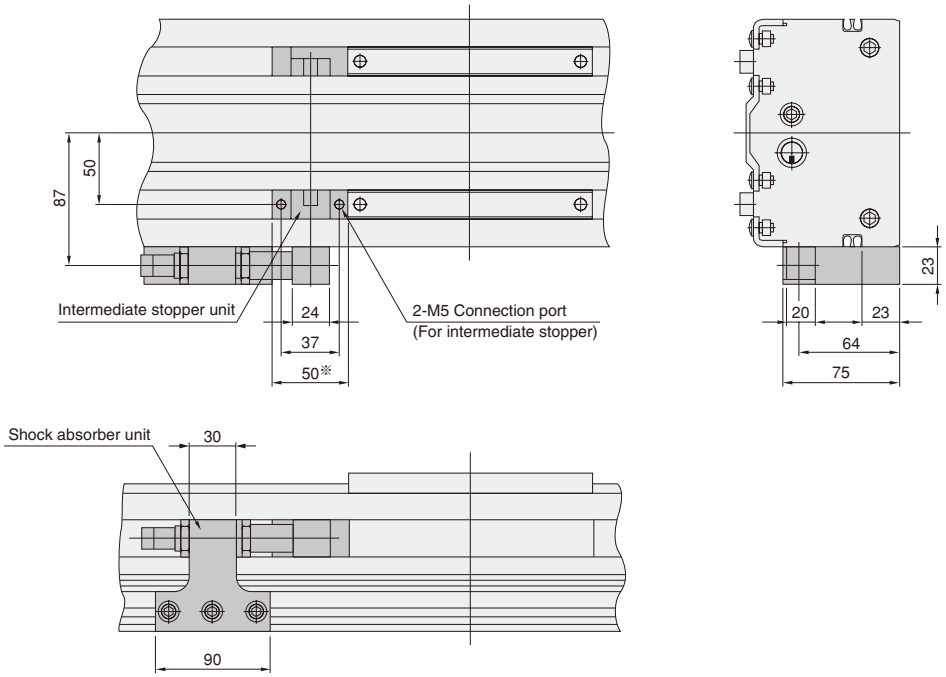
● ϕ 25 [0.984in.] ●Double acting type ●Maximum load capacity 392.2N [88.2lbf.]

CAD ACY25



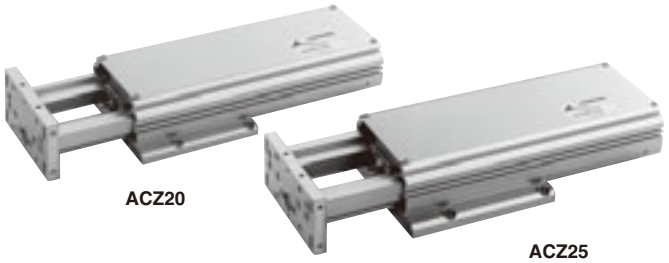
Code / Stroke	A	N
200	494	4
300	594	4
400	694	6
500	794	6
600	894	8

■Intermediate Stopper Unit: -ST□



※ Even with the intermediate stopper unit mounted, the total length (dimension A) remains the same as in the above table. Consequently, the stroke is shortened by the length of the intermediate stopper unit.
(Example) For a 200mm stroke with an intermediate stopper unit,
Stroke＝494－(147＋147＋50)
Stroke＝150 is the actual stroke.

ACZ Specifications


ACZ20

ACZ25

Specifications

Item	Model		ACZ20	ACZ25
Bore size		mm [in.]	20 [0.787]	25 [0.984]
Operation type			Double acting type	
Media			Air	
Operating pressure range		MPa [psi.]	0.2～0.7 [29～102]	
Proof pressure		MPa [psi.]	1.05 [152]	
Operating temperature range		°C [°F]	0～60 [32～140]	
Operating speed range		mm/s [in./sec.]	150～500 [5.9～19.7]	
Cushion			With shock absorber	
Lubrication	Cylinder portion		Not required (If lubrication is required, use Turbine Oil Class 1 [ISO VG32] or equivalent.)	
	Guide portion		Required (Lithium soap-based grease) Note1	
Repeatability		mm [in.]	±0.02 [±0.0008]	
Traveling parallelism		mm [in.]	0.1/100 [0.004/3.94]	
End plate perpendicularity		mm [in.]	0.1 [0.004]	
Stroke adjusting range		mm [in.]	−50～+0 [−1.97～+0]	
Fall prevention mechanism			Option (Head side lock only)	
	Maximum holding force	N [lbf.]	194.2 [43.7]	303 [68.1]
	Backlash (at end keep)	mm [in.]	1.4 [0.055] or less	1.4 [0.055] or less
Intermediate stopping mechanism			Option (Two-staged switching on the end of the extended side, with a difference of 20mm or less between the first stage and the second stage) Note2	
Mountable handling module size			S, M	S, M, L
Maximum load capacity Note3		N {[lbf.]	58.8 [13.2]	98.1 [22.1]
Port size			M5×0.8	Rc1/8

Notes: 1. Apply grease on the raceway surface of the track rail every 6 months or every 300km [186mi.] of traveling distance.
2. Consult us when a stopping position difference of more than 20mm [0.787in.] is required.
3. For the relationship between the mass and piston speeds, see the shock absorber performance graph on p.1044.

mm [in.]

	Push side stroke adjusting range		
	Adjusting range using stopper bolt		Adjusting range using shock absorber mount
With stopper unit	Stopper bolt A ℓ=25	+ 0 [+0] −10 [−0.39]	+ 0 [+0] −50 [−1.97] (Settings available with 10mm [0.39in.] pitch)
	Stopper bolt B ℓ=35	−10 [−0.39] −20 [−0.79]	
Without stopper unit	Stopper bolt A ℓ=25	+ 0 [+0] −10 [−0.39]	

mm [in.]

	Pull side stroke adjusting range
With end keep	Prohibited
Without end keep	+ 0 [+0] −15 [−0.59]

Shock Absorber Specifications

Item	Model	KSHA6×8-E	KSHA7×8-G
Applicable cylinder model		ACZ20	ACZ25
Maximum absorption	J [ft·lbf]	2.0 [1.5]	3.9 [2.9]
Absorbing stroke	mm [in.]	8 [0.315]	
Maximum impact speed	mm/s [in./sec.]	1000 [39.4]	
Maximum operating frequency	cycle/min	30	
Spring return force (When retracted)	N [lbf.]	9.8 [2.2]	
Angle variation		3° or less	
Operating temperature range	°C [°F]	0～60 [32～120]	

Bore Size and Stroke

mm

Bore size	Standard strokes	Maximum available stroke
20	50, 100, 150, 200	500
25		

Mass

kg [lb.]

Model	Basic mass				Additional mass of option				
	Stroke mm				Intermediate stopper unit	Plate for handling module			Sensor switches
	50	100	150	200		S	M	L	ZE101, ZE102, ZE135, ZE155
ACZ20	2.00 [4.41]	2.30 [5.07]	2.60 [5.73]	2.90 [6.39]	0.12 [0.26]	0.2 [0.44]	0.25 [0.55]	—	0.015 [0.033] (For a lead wire of 1000mm [39in.])
ACZK20	2.05 [4.52]	2.35 [5.18]	2.65 [5.84]	2.95 [6.50]					
ACZ25	3.03 [6.68]	3.47 [7.65]	3.91 [8.62]	4.35 [9.59]	0.12 [0.26]	—	0.3 [0.66]	0.4 [0.88]	0.035 [0.077] (For a lead wire of 3000mm [118in.])
ACZK25	3.08 [6.79]	3.52 [7.76]	3.96 [8.73]	4.40 [9.70]					

Order Codes

ACZ ☐ **20×200** - ☐ - ☐ - ☐ ☐ ☐

Alpha series Z axis module

End keep mechanism
Blank : No end keep
K : With end keep

Bore size×Stroke

Plate for handling module
Blank : No plate
S : S size
(Available in ϕ20 [0.787in.] only)
M : M size
L : L size
(Available in ϕ25 [0.984in.] only)

Intermediate stopper unit
Blank : No stopper unit
ST : With stopper unit

Sensor switch
Blank : No sensor switch

ZE101 :	Reed switch type	without indicator lamp	horizontal lead wire DC5～28V AC85～115V
ZE102 :	Reed switch type	with indicator lamp	horizontal lead wire DC5～28V AC85～115V
ZE135 :	Solid state type	with indicator lamp	horizontal lead wire DC10～28V
ZE155 :	Solid state type	with indicator lamp	horizontal lead wire DC4.5～28V

Lead wire length
A : 1000mm [39in.]
B : 3000mm [118in.]

Number of sensor switches
1 : With 1 sensor switch
2 : With 2 sensor switches
3 : With 3 sensor switches
4 : With 4 sensor switches
5 : With 5 sensor switches

● For details of sensor switches, see p.1544.

●Order codes for options only

Plate for handling module

☐ **-ACZ** ☐

Bore size
20 : For ϕ20 [0.787in.]
25 : For ϕ25 [0.984in.]

Cylinder basic type

S : S size (Available in ϕ20 [0.787in.] only)
M : M size
L : L size (Available in ϕ25 [0.984in.] only)

Intermediate stopper unit

ST-ACZ ☐

Bore size
20 : For ϕ20 [0.787in.]
25 : For ϕ25 [0.984in.]

Cylinder basic type

Shock absorber

KSHA ☐

6×8-E : For ϕ20 [0.787in.]
7×8-G : For ϕ25 [0.984in.]

Shock absorber model

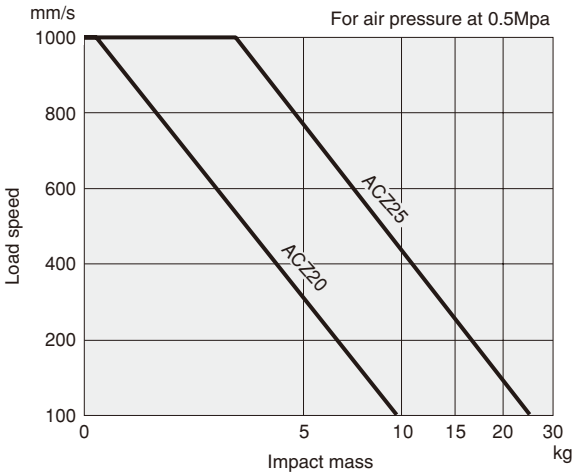
Sensor switch

☐ ☐ **-ACZ**

Lead wire length
A : 1000mm [39in.]
B : 3000mm [118in.]

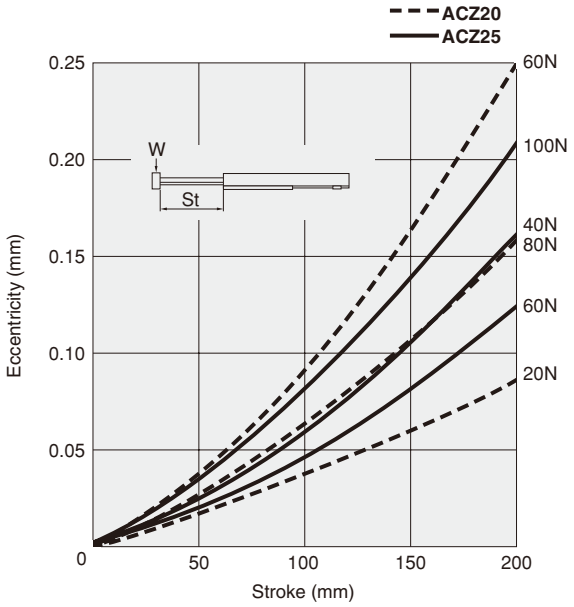
Sensor switch
ZE101
ZE102
ZE135
ZE155

Shock Absorber Performance Graph (For vertical use)



1mm/s = 0.0394in./sec.
1kg = 2.205lb.

Maximum Eccentricity at Plate End

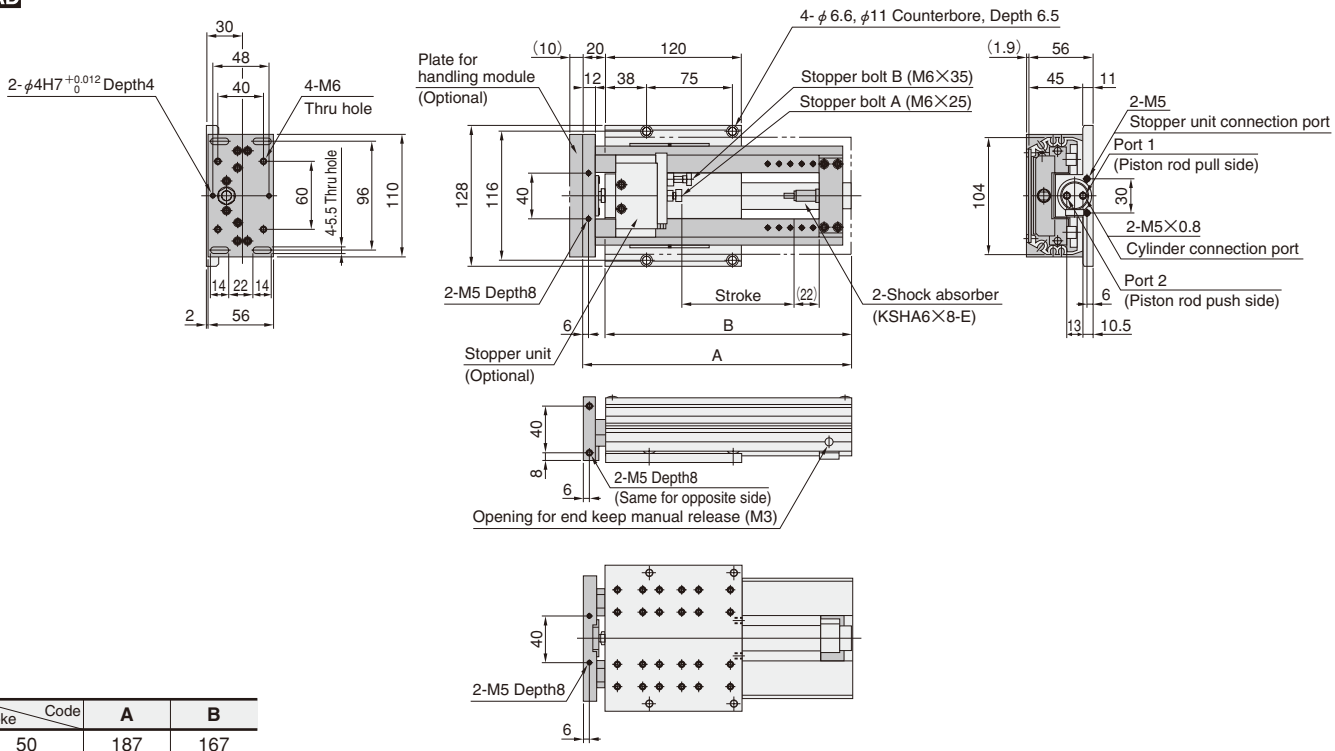


1mm = 0.0394in.
1N = 0.2248lbf.

Dimensions of ACZ20 (mm)

● ϕ 20 [0.787in.] ●Double acting type ●Maximum load capacity 58.8N [13.2lbf.]

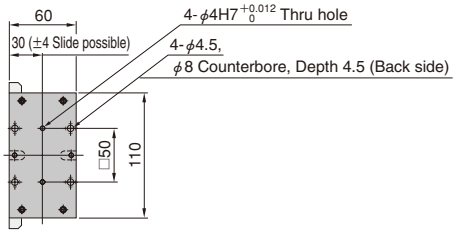
CAD ACZ20



Code / Stroke	A	B
50	187	167
100	237	217
150	287	267
200	337	317

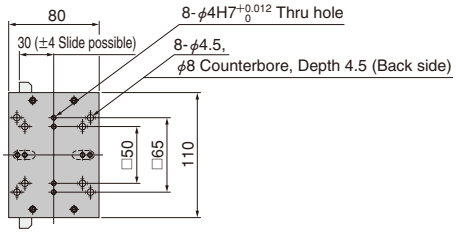
■ Plate for Handling Module: -S

S size (Thickness 10mm [0.394in.])

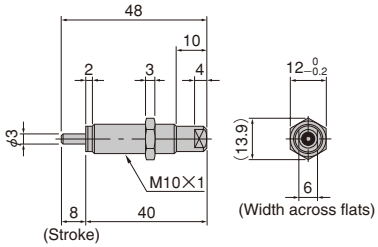


■ Plate for Handling Module: -M

M size (Thickness 10mm [0.394in.])



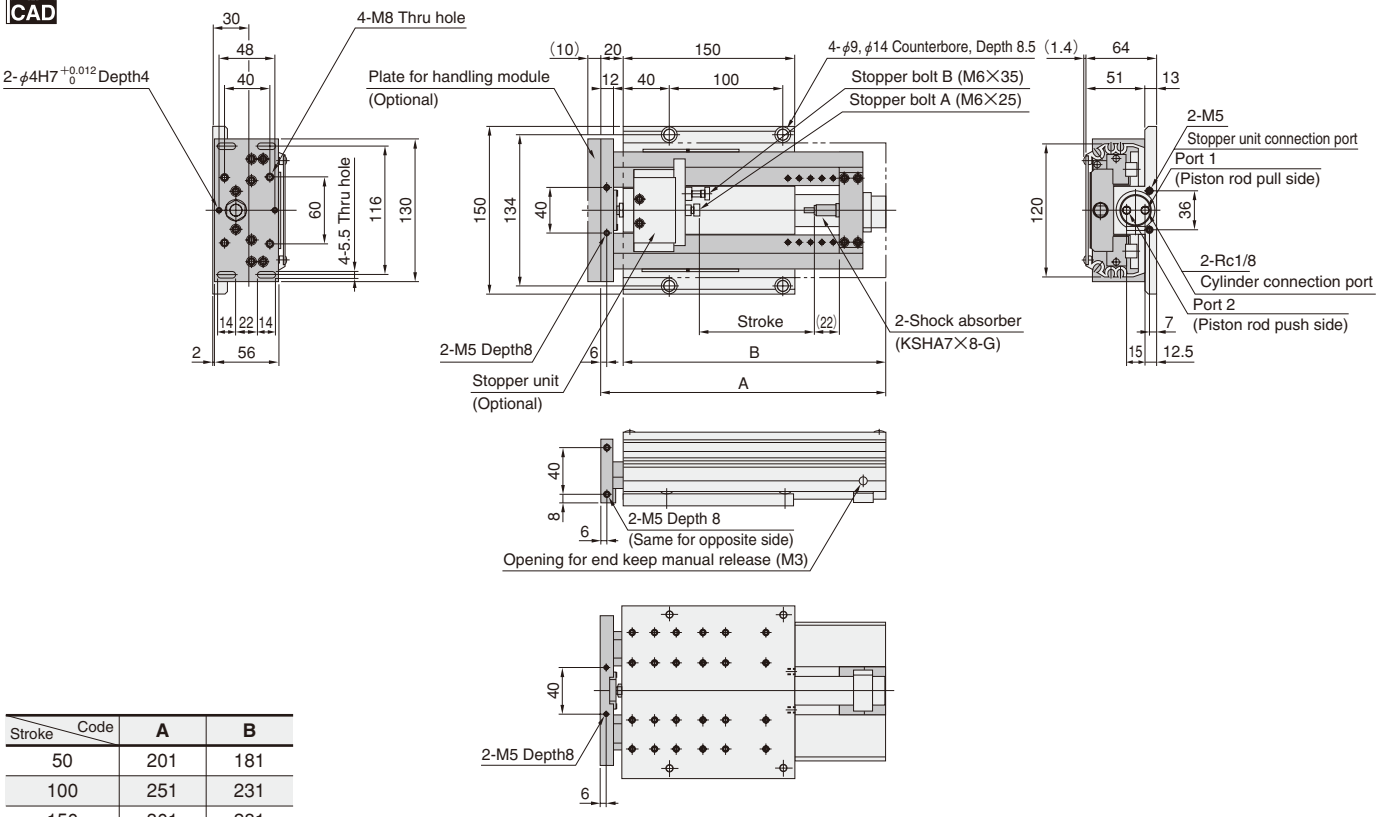
■ Shock Absorber: KSHA6×8-E



Dimensions of ACZ25 (mm)

● ϕ 25 [0.984in.] ●Double acting type ●Maximum load capacity 98.1N [22.1lbf.]

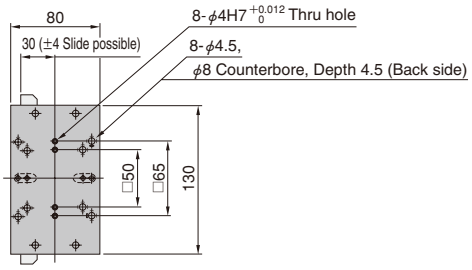
CAD ACZ25



Code / Stroke	A	B
50	201	181
100	251	231
150	301	281
200	351	331

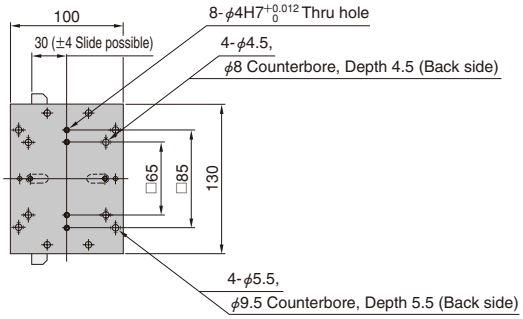
■ Plate for Handling Module: -M

M size (Thickness 10mm [0.394in.])

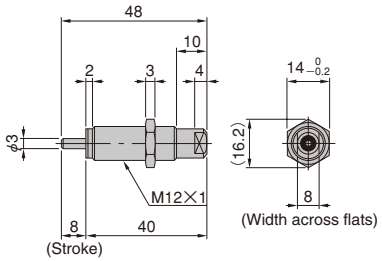


■ Plate for Handling Module: -L

L size (Thickness 10mm [0.394in.])



■ Shock Absorber: KSHA7×8-G



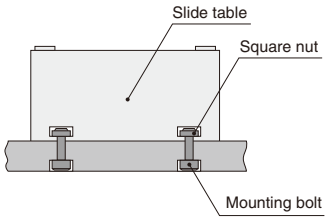
YZ MODULES

Mounting

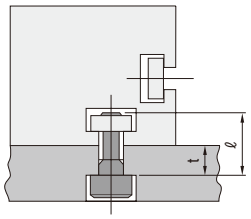
ACY body mounting

1. For mounting the ACY body, use the square nuts in the 2 rows of T-slots on the bottom. Any mounting direction is allowed.

2. Avoid mounting that uses the square nuts on the body's side.



3. For the screw length of the mounting bolts used with the square nuts, we recommend the dimensions shown below.



Screw length ℓ mm [in.]

Position \ Model	ACY16	ACY25
Bottom	M6 t+9 [0.35]	M8 t+10 [0.39]
Side	M6 t+9 [0.35]	M8 t+10 [0.39]

4. Tighten the mounting bolt to the torque shown below.

Tightening torque N·m [ft·lbf]

Position \ Model	ACY16	ACY25
Bottom	9 [6.6] (M6)	22 [16.2] (M8)
Side	9 [6.6] (M6)	22 [16.2] (M8)

ACZ body mounting

The mounting dimensions are designed for simple mounting that uses the bolts only.

ACY16 and ACZ20: M6×1

ACY25 and ACZ25: M8×1.25

Intermediate stopper unit

1. The intermediate stopper unit can be mounted on the table in the left, right, up, or down directions, as shown in the diagrams below.

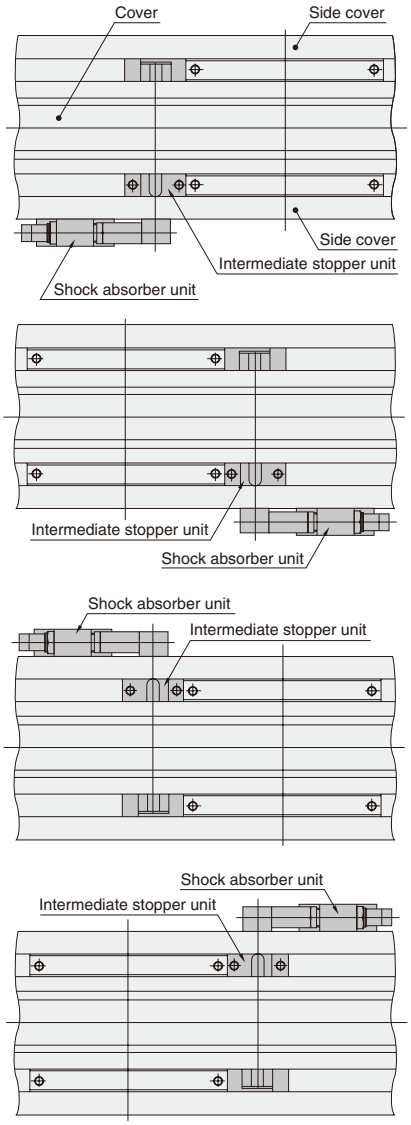


Figure 1

2. To remove the intermediate stopper unit in order to change its direction, remove the cover and side cover, loosen the hexagon socket head bolts at 3 locations on the intermediate stopper unit body, as shown in **Figure 1**, and then remove the unit.

3. To mount the shock absorber in the opposite side on the table, first it is necessary to move the long nut inside the T-slot that is used to install the unit to the T-slot on the other side. In this case, the long nut can be moved by loosening the hexagon socket head bolts in 2 locations on the side plate positioned opposite the connection port (**Figure 2**) and then removing the side plate.

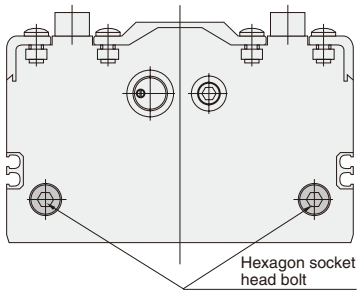


Figure 2

To move the table over the shock absorber unit after stopping at an intermediate position by operating the intermediate stopper unit, first reverse the direction of the supplying air to move the table backward in a moment, then retract the stopper on the intermediate stopper unit and again reverse the direction of the supplying air to move the table forward. (It is important to follow the steps shown in **Figure 3**.)

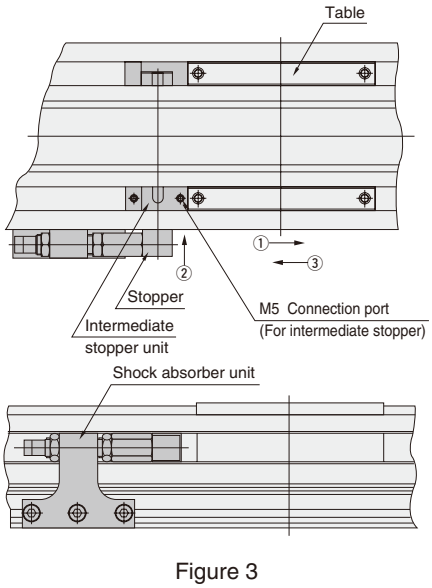
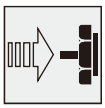


Figure 3



Shock absorber

Adjustment

1. Set the white mark of the shock absorption adjusting knob between 2 and 3 on the scale.
2. When the shock is too great at the end of the stroke, turn the adjusting knob toward 6 on the scale. Moreover, when the shock from impact is too great and/or the rod stops before the end of the stroke, turn the adjusting knob toward 0 on the scale.
3. After completing adjustment, always tighten the lock screw to secure the adjusting knob in place.

End keep cylinder

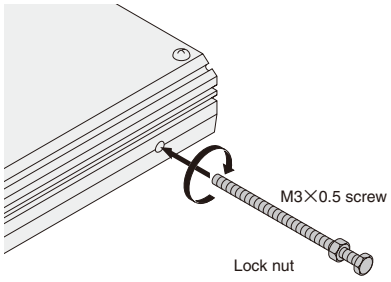
Control circuit

1. For control of the end keep cylinder **ACZK**, we recommend the use of 2-position, 4-, 5-port valves. Avoid the use of control circuit with ABR connection (exhaust center) 3-position valves that exhaust air from 2 delivery ports.
2. Always use meter-out control for speed control. Meter-in control may result in failure of the locking mechanism to release.
3. Always set the air pressure to 0.2～0.7MPa [29～102psi.].

Cautions: 1. It is dangerous to supply air to a connection port on a side with a locking mechanism while the cylinder has already been exhausted, because the piston rod may suddenly extend (or retract). In addition, since the lock piston could also cause galling of the lock piston and piston rod, resulting in defective operation. Always supply air to the connection port opposite the one adjacent to the locking mechanism to ensure applying back pressure.
2. When restarting operations after air has been exhausted from the cylinder due to completion of operations or to an emergency stop, always start by supplying air to a connection port opposite the one adjacent to the locking mechanism.
3. Connect the valve port A (NC) to the push side connection port.

Manual operation of locking mechanism

While the locking mechanism is normally released automatically through cylinder operations, it can also be released manually. For manual release, insert an M3×0.5 screw that has 55mm [2.17in.] screw length into the opening for end keep manual release, thread it in about 3 turns into the internal lock piston, and then pull up the screw. To maintain the manual override for adjustment, etc., thread the locknut onto the screw and, with the locking mechanism in a released state, tighten the locknut against the cylinder.



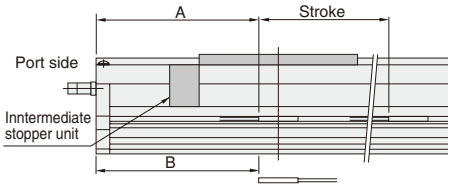
Cautions: 1. It is dangerous to release the lock when load (weight) is present on the piston rod, because it may cause the unintended piston rod's extension (or retraction). In this case, always supply air to the connection port opposite the one adjacent to the locking mechanism before releasing the locking mechanism.
2. If the locking mechanism cannot easily be released even with manual override, it could be the result of galling of the lock piston and piston rod. In this case, supply air to the connection port opposite the one adjacent to the locking mechanism before releasing the locking mechanism.
3. Water, oil, dust, etc., intruding through the opening for manual override may cause defective locks or other erratic operation. If using in locations subject to dripping water, dripping oil, etc., or large amounts of dust, use a cover to protect the unit.

Sensor switch

Mounting location of end of stroke detection sensor switch

When the sensor switch is mounted in the locations shown below (the figures in the tables are reference values), the magnet comes to the maximum sensing location of the sensor switch at the end of the stroke.

●ACY16, 25

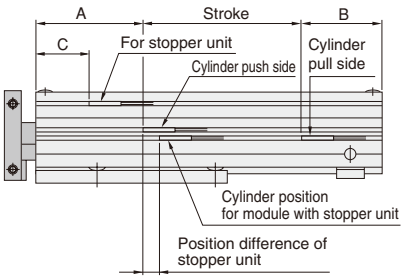


(When the sensor switch lead wire drawn out to the right.)

mm [in.]

Sensor switch	Without intermediate stopper				With intermediate stopper on the port side			
	ACY16		ACY25		ACY16		ACY25	
	A	B	A	B	A	B	A	B
ZE135, ZE155	111 [4.37]	114 [4.49]	138 [5.43]	141 [5.55]	151 [5.94]	154 [6.06]	188 [7.40]	191 [7.52]
ZE101, ZE102	108 [4.25]	110 [4.33]	135 [5.31]	137 [5.39]	148 [5.83]	150 [5.91]	185 [7.28]	187 [7.36]

●ACZ20, 25

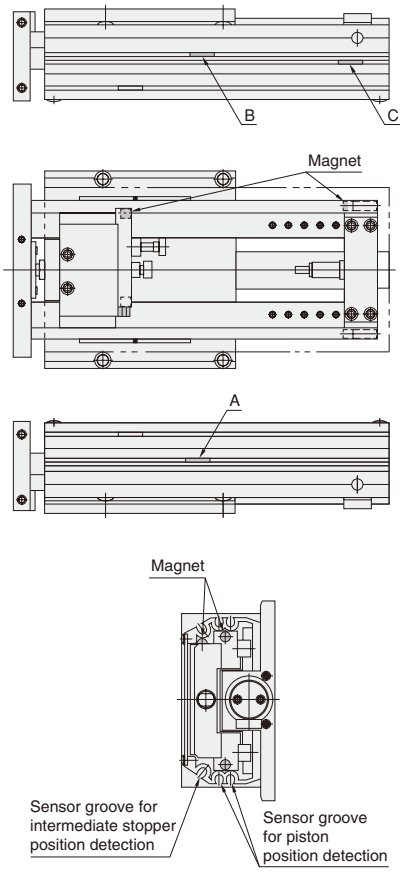


mm [in.]

Sensor switch	ACZ20			ACZ25		
	A	B	C	A	B	C
ZE135, ZE155	85 [3.35]	32 [1.26]	46 [1.81]	88 [3.46]	43 [1.69]	46 [1.81]
ZE101, ZE102	81 [3.19]	36 [1.42]	42 [1.65]	84 [3.31]	47 [1.85]	42 [1.65]

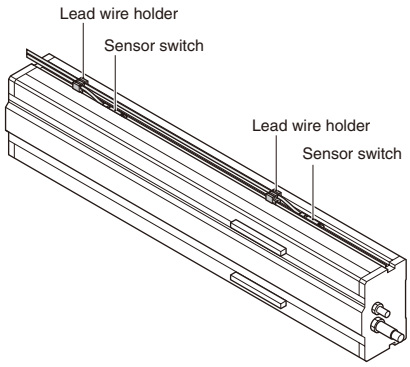
Mounting location

Piston position detection sensor switches A, B, and C can be mounted on either the left or right side. Care should be taken, however, when the staged stroke difference with an intermediate stopper unit is 10mm or less, there is a possibility of 2 piston position detection sensor switches on the push side turned on at the same time.
In that case, confirm the location of the above switches and the intermediate stopper position detection sensor switch.



Lead wire holder

ACY comes with 2 lead wire holders. Use them to protect the sensor switch lead wires, as shown in the illustration below.



General precautions

Piping

Always thoroughly blow off (use compressed air) the tubing before connecting it to the cylinder. Entering chips, sealing tape, rust, etc., generated during piping work could result in air leaks or other defective operation.

Atmosphere

1. If using in locations subject to dripping water, dripping oil, etc., or to large amounts of dust, use a cover to protect the unit.
2. The product cannot be used when the media or ambient atmosphere contains any of the substances listed below.
   Organic solvents, phosphate ester type hydraulic oil, sulphur dioxide, chlorine gas, or acids, etc.

Lubrication

The guide portion requires lubrication. Apply lithium soap-based grease on the raceway surface of the track rail in the guide portion every 6 months or every 300km [186mi.] of traveling distance. The cylinder portion can be used without lubrication. If lubrication is required, use Turbine Oil Class 1 (ISO VG32) or equivalent. Avoid using spindle oil or machine oil.

Media

1. Use air for the media. For the use of any other media, consult us.
2. Air used for the cylinder should be clean air that contains no deteriorated compressor oil, etc. Install an air filter (filtration of a minimum 40 μm) near the cylinder or valve to remove collected liquid or dust. In addition, drain the air filter periodically.