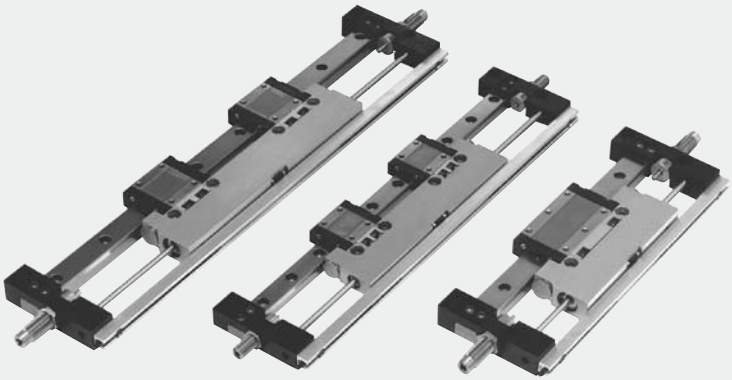
PICO SLIDER

PICO SLIDER®

PSL Series

Registration of Utility Model
Registration of a Design



INDEX★

Overview ····448
Explanation, Example of Use, Installation Method ···449
Model Code No. ····450
Specifications, Guide to be used, Product Mass, Theoretical Thrust···451
Spare Parts Code ····452
Structure and Principal Components ····453
Main Body and Load Bolt Mounting ····454, 455
Number of Guide Tables and Pitch ····456, 457
Method of Shock Absorber Transfer ····458
Accuracy ····459
Note for Safe Use ····460, 461
Theoretical Deflection of Guide Table by Moment ··462, 463
Allowable Mounted Load Mass, Load and Moment··464～467
Dimensions ····468～472
Piping Port Position, Directions of Movement ····473
Switch Rail Installation Dimensions ····474
Switch Installation ····475
Custom Made ····476

PICO SLIDER

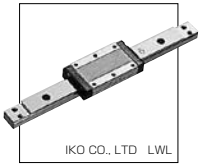
PSL Series

Linear Guide + Air Cylinder

Suprisingly Thin 13㎜(PSL8), 16㎜(PSL12)

Running Parallelism 0.004㎜(PSL12–40), Mounting Parallelism 0.02㎜

Linear Bearing



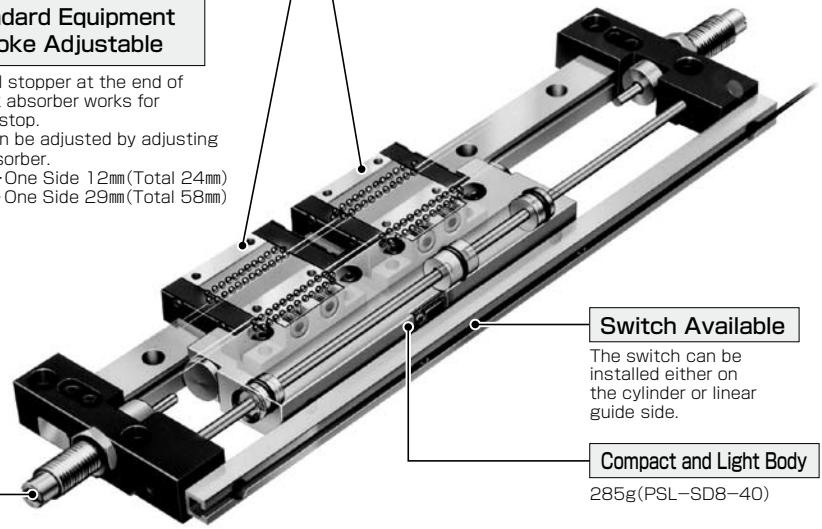
High Accuracy, High Rigidity
Linear Guide is built-in.

Direct Mounting of Works on the Linear Guide

PICO SLIDER. unlike conventional table type actuators. can have works directly on it. Thearefore, you can take advantage of all the high-accuracy and high- rigidity features of the linear guide.

Shock Absorber is Standard Equipment Stroke Adjustable

The metal stopper at the end of the shock absorber works for accurate stop.
Stroke can be adjusted by adjusting shock absorber.
PSL8·····One Side 12㎜(Total 24㎜)
PSL12···One Side 29㎜(Total 58㎜)



Switch Available

The switch can be installed either on the cylinder or linear guide side.

Compact and Light Body

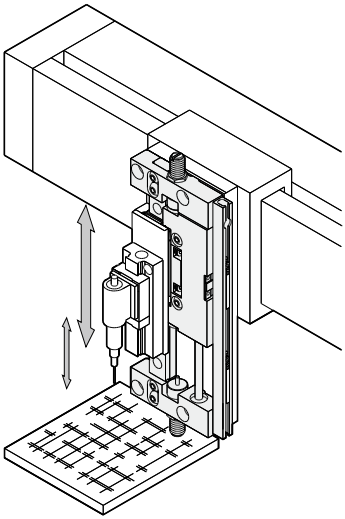
285g(PSL–SD8–40)

Summary of the Pico Slider PSL Series

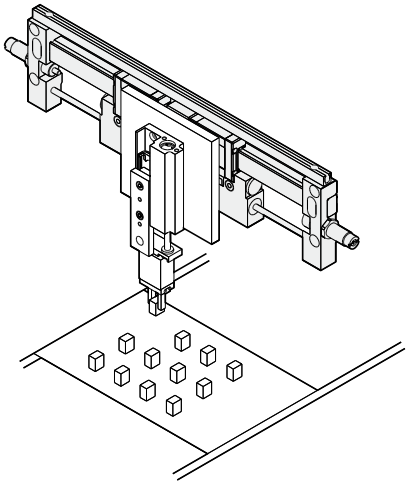
The PSL series are long -stroke Pica Tables. Like the Pica Tables, the PSL series are super-slim actuators with air-cylinder, shock absorbers, and switch built -in within the height of the linear guides, thus giving the linear guide's high accuracy, high rigididty, and outstanding mounting accuracy.

■Application Examples : PICO SLIDER

Dispenser Actuation

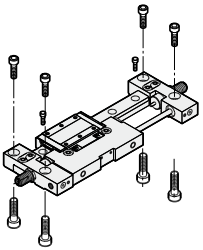


Accurate Pick and Place



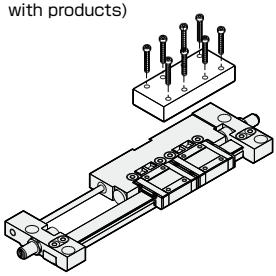
■MAIN BODY INSTALLATION

(Bolt as shown in the figure are not supplied with products)



■MOUNTING

(Bolt as shown in the figure are not supplied with products)



Over Hung Type
PPU Series
309 Page

φ16, φ25
PSU Series
479 Page

Long Stroke Type
PRD Series
611 Page

Custom Made
Grease Converted Product
476 Page

Model Code Example

PSLS-SD12-100-QD-RD-RB12LA

Series Name●

Magnet and Switch Rail●

No Code	None
S	Magnet and Switch Rail

A magnet and switch rail is required when mounting switches.
The installation position depends on the symbol at the end of the model code.

Mounting●

SD	Basic

Bore Size●

8	φ 8
12	φ12

With Shock Absorber●
(Shock absorber is converted to new type)
☞Page 452, 466

●Cable Length

No Code	1m
LA	3m

●Number of Switches

1	1
2	2

●Switch

No Code	None			
RB1	Straight	DC12~24V	2 Wires Reed Rwitch	With Indicator Light
RC1	Angle			
RB2	Straight	DC12~24V	2 Wires Reed Rwitch	Without Indicator Light
RC2	Angle			
RB4	Straight	DC12~24V	2 Wires Solid State Switch	With Indicator Light
RC4	Angle			
RB5	Straight	DC5~24V	3 Wires Solid State Switch	With Indicator Light
RC5	Angle			

Direction of cable outlet

RB····Straight Outlet Cable　RC····Angle outlet cable



For details ☞Page 1066, 1067

Stroke●

Bore Size	Standard Stroke(mm)					
	40	60	80	100	125	150
φ 8	●	●	●	●	—	—
φ12	●	●	●	●	●	●

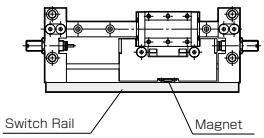
Stroke Adjuster

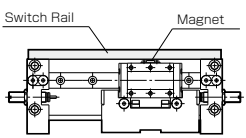
Stroke can be adjusted by shock absorber installed as standard.
PSL8·····One Side 12㎜(Total 24㎜)
PSL12···One Side 29㎜(Total 58㎜)

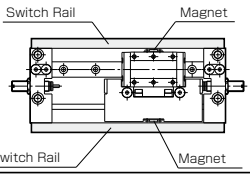
Note: The number of guide tables and guide table pitch depend on Swtich rail the stroke.
☞Page 456, 457

Installation Positions of Magnet and Switch Rail●

No Code	Body Side	RD	Guide Table Side	RH	Body and Guide Table Side







SPECIFICATIONS

Bore Size	φ8㎜	φ12㎜
Rod Diameter	φ4㎜	φ 4㎜
Maximum Load Mass	2kg	4kg
Port Size	M5×0.8	
Guide Mechanism	Precision Linear Ball Bearing	
Type of Operation	Double Acting	
Fluid	Air	
Maximum Operating Pressure	0.7MPa	
Minimum Operating Pressure	0.25MPa	0.2MPa
Pressure	1.05MPa	
Operating Temperature	5～60℃	
Operating Speed	50～500㎜/s	
Lubrication	Not required	
Cushioning	Shock Absorber with Metal Stopper	
Stroke Adjust	One Side12㎜(Total 24㎜)	One Side29㎜(Total 58㎜)

THE TYPE OF LINEAR GUIDE

Model	Stroke	Type
PSL 8	40	IKO LWL12 long
	60, 80, 100	IKO LWL12×2
PSL12	40	IKO LWL15
	60	IKO LWL15 long
	80, 100, 125, 150	IKO LWL15×2

Pre-load:Zero or slightly pre-loaded

Product Mass

●Mass of Cylinder

UNIT: g

Model	Stroke (mm)					
	40	60	80	100	125	150
PSL 8	285	340	380	425	—	—
PSL12	435	540	620	695	775	860

●Mass of Magnet, Switch Rail

Unit: g

Model	Magnet	Switch Rail
PSL 8	2	(70+2×Stroke)×0.076
PSL12		(72+2×Stroke)×0.076

●Mass of Switch

Unit: g

Type	Mass
RB1, RB2, RB4, RB5	15
RC1, RC2, RC4, RC5	
RB1LA, RB2LA, RB4LA, RB5LA	35
RC1LA, RC2LA, RC4LA, RC5LA	

METHOD TO CALCULATE THE MASS

Ex. PSLS–SD12–100–QD–RD–RB12LA

Basic Mass……695g
Magnet……2g
Switch Rail……20.7g
Switch……35×2=70g

695+2+20.7+35×2=787.7g

THEORETICAL THRUST

Unit: N

Bore Size (㎜)	Operating Pressure MPa					
	0.2	0.3	0.4	0.5	0.6	0.7
φ 8	7.4	12	15	19	23	26
φ12	20	31	40	50	60	70

OPTIONAL PARTS CODES

Name	Switch Fixture
PARTS CODE Note	BE(PSL) Screw, Nut
PARTS CODE Note	
Content	

Reed Switch(2 Wires, with Indicator Light)

Straight Outlet Cable	Angle Outlet Cable
RB1(PSL) Cable Length:1m	RC1(PSL) Cable Length:1m
RB1LA(PSL) Cable Length:3m	RC1LA(PSL) Cable Length:3m
 with fixture	 with fixture

Reed Switch(2 Wires, without Indicator Light)

Straight Outlet Cable	Angle Outlet Cable
RB2(PSL) Cable Length:1m	RC2(PSL) Cable Length:1m
RB2LA(PSL) Cable Length:3m	RC2LA(PSL) Cable Length:3m
 with fixture	 with fixture

●RB,RC Switch

Conventional RG1,RG2 switches can be replaced to RB,RC switch

Comparison with old type

Old type	Equivalent Current Type
RG1	RB1, RC1
	RB2, RC2
RG2	RB4, RC4
	RB5, RC5

Solid State Switch(2 Wires, with Indicator Light)

Straight Outlet Cable	Angle Outlet Cable
RB4(PSL) Cable Length:1m	RC4(PSL) Cable Length:1m
RB4LA(PSL) Cable Length:3m	RC4LA(PSL) Cable Length:3m
 with fixture	 with fixture

Solid State Switch(3 Wires, with Indicator Light)

Straight Outlet Cable	Angle Outlet Cable
RB5(PSL) Cable Length:1m	RC5(PSL) Cable Length:1m
RB5LA(PSL) Cable Length:3m	RC5LA(PSL) Cable Length:3m
 with fixture	 with fixture

Magnet

RK(PSL)
Before mounting, apply anaerodic adhesive to the screws.
 with mounting screws

Switch Rail

RJ(PSL□−(Stroke))
Fill in □ as bore size Example : For PSL8 with 40 stroke, RJ(PSL8−40)
 with fixing bolts

Shock Absorber

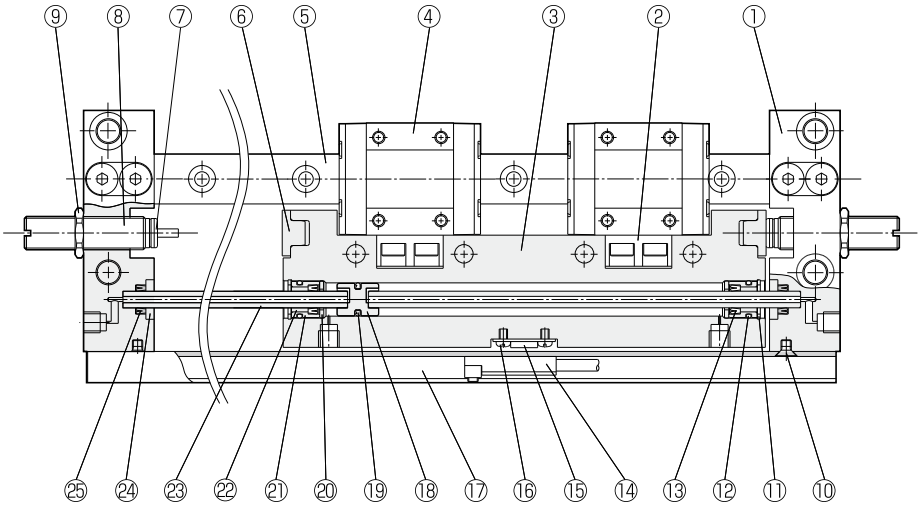
ABK8 For PSL8	ABK10 For PSL12
M8×0.75  with nut	M10×1  with nut

●Shock Absorber is converted to new type.
●It can be replaced to conventional shock absorber.
●Length of ABK10 is 8mm longer than ABS10.

Lock Nut For Shock Absorber

NTS(M8) For PSL8(M8×0.75)
NTS(M10) For PSL12(M10×1)


STRUCTURE AND PRINCIPAL COMPONENTS



These components can not be disassembled.

⚠ Attension

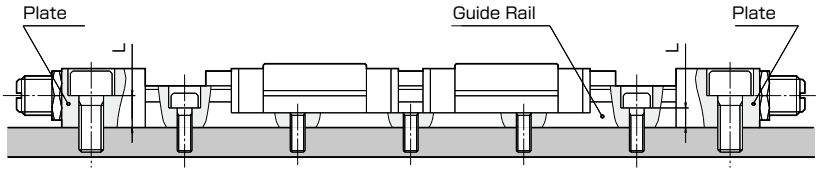
Disassembling spoils an original function.

PRINCIPAL COMPONENTS

No.	Name	Material	Remarks	No.	Name	Material	Remarks
1	Plate	Aluminum Alloy	Alumite Treatment	14	Switch	————	
2	Link	Aluminum Alloy	Alumite Treatment	15	Magnet	Magnetic Material	
3	Body	Aluminum Alloy	Alumite Treatment	16	Cross Recessed Screw	Stainless Steel	For fixing the Magnet
4	Guide Table	Stainless Steel		17	Switch Rail	Aluminum Alloy	
5	Guide Rail	Stainless Steel		18	Piston	Synthetic Resin	
6	Stopper Support	Carbon Steel(Heat Treatment)	Electroless Nickel Plating	19	Piston Seal	NBR	
7	Metal Stopper	Carbon Steel	Heat Treatment (Nitriding)	20	Rod Seal Retainer	Stainless Steel	
8	Shock Absorber	φ8 Copper Alloy, φ12 Carbon Steel	Electroless Nickel Plating	21	Rod Cover	Aluminum Alloy	Alumite Treatment
9	Fixing Nut	Steel	Electroless Nickel Plating	22	Bushing	PTFE · Steel	
10	Cross Recessed Screw	Steel	For Fixing The Switch Rail	23	Rod	Stainless Steel	Hard Chromium Plated
11	Retaining Ring	Carbon Steel	Nickel Plating	24	Toothed Washer	Carbon Steel	
12	O-ring	NBR		25	Packing	NBR	
13	Rod Seal	NBR					

BODY INSTALLATION

Top Mounting(Thru Hole used)

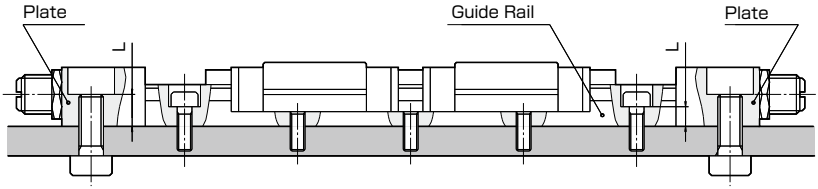


Model	Installed on	Bolt Size	Thru hole length L(㎜)	Fastening Torque N·m
PSL 8	Plate	M5	6.6	5.1
	Guide Rail	M3	4	1.1
PSL12	Plate	M5	9.6	5.1
	Guide Rail	M3	6.5	1.1

⚠ Attension

●Use all holes on the plates and guide rails to fix the Pica Slider. If the Pica Slider is fixed through holes on the plates or guide rails only, or if not all holes of the plates and guide rails are used to fix the slider, the actuator may be damaged due to lack of rigidity.

Bottom Mounting(Plate Tap)



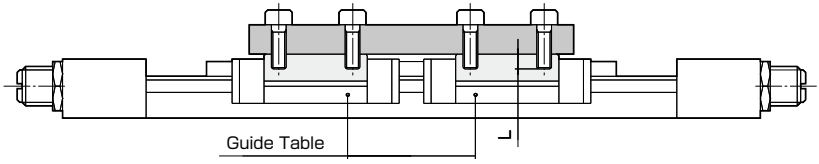
Model	Installed on	Bolt Size	Thru hole length L(㎜)	Fastening Torque N·m
PSL 8	Plate	M6×1	6.6	8.6
	Guide Rail	M3	4	1.1
PSL12	Plate	M6×1	9.6	8.6
	Guide Rail	M3	6.5	1.1

⚠ Attension

●Use all holes on the plates and guide rails to fix the Pica Slider. If the Pica Slider is fixed through holes on the plates or guide rails only, or if not all holes of the plates and guide rails are used to fix the slider, the actuator may be damaged due to lack of rigidity.

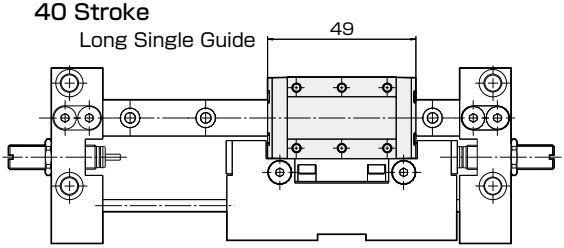
MOUNTING ON TABLE

Guide Table(Tap)

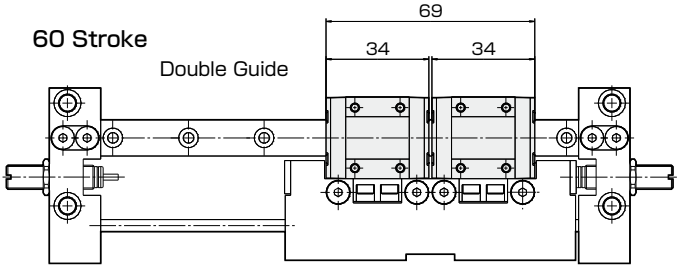


Model	Installed on	Bolt Size	Screw Length L(㎜)	Fastening Torque N·m
PSL 8	Guide Table	M3x0.5	3	1.1
PSL12			4	

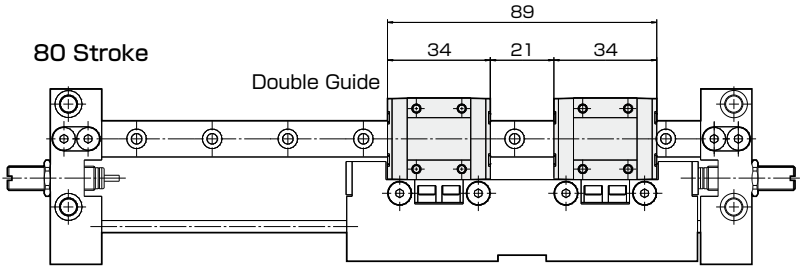
40 Stroke
Long Single Guide



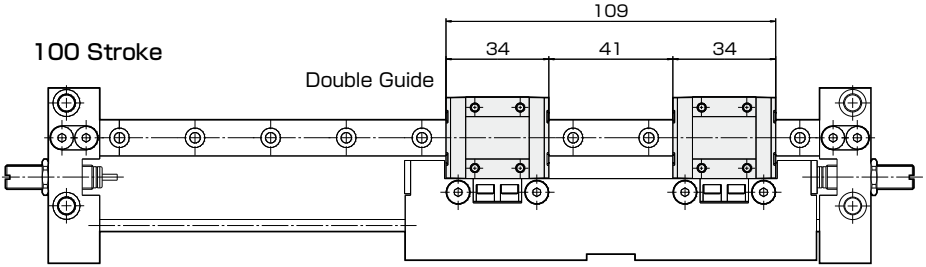
60 Stroke
Double Guide



80 Stroke
Double Guide

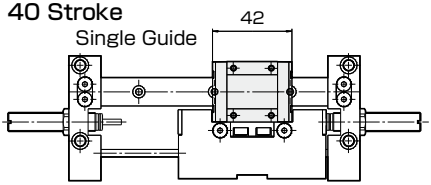


100 Stroke
Double Guide

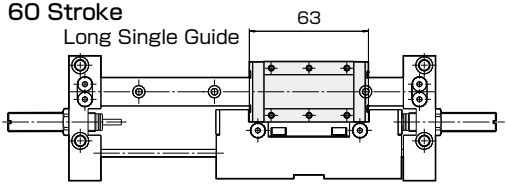


PSL12 NUMBER OF GUIDE TABLES AND PITCHES

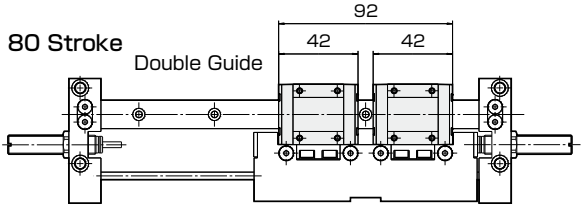
40 Stroke
Single Guide



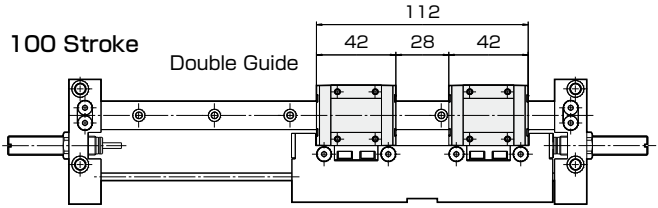
60 Stroke
Long Single Guide



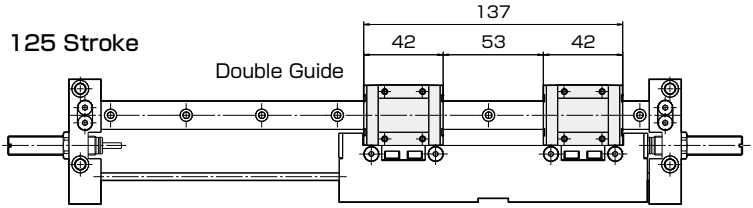
80 Stroke
Double Guide



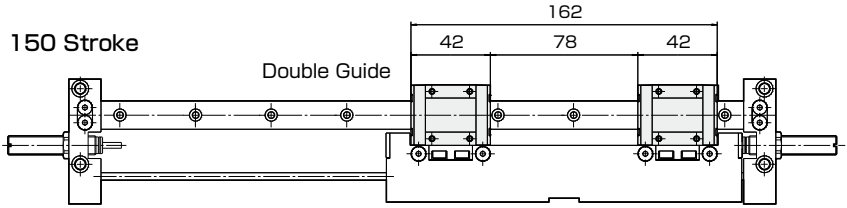
100 Stroke
Double Guide

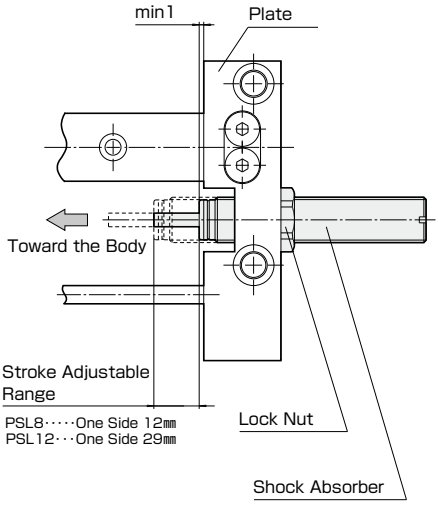


125 Stroke
Double Guide



150 Stroke
Double Guide





●Adjustment

You can adjust the stroke by moving the shock absorbers foward the body.

1. Turn the shock absorber with a blade screwdiver until the desired stroke is reached.
2. Tighten the nut to lock the shock absorbers.

●Replacement

To replace the shock absorber, proceed as follows:

1. Turn the shock absorber with a blade screwdriver until it comes off the body.
2. Insert the replacement shock absorver from inside of the body by turning it.
3. When the shock absorer is properly positioned, tighten the nut to lock the shock absorber.

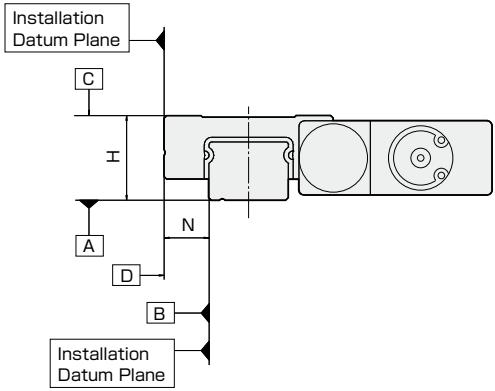
Note: The maximum torque for tightening the nuts is
ABK 8: 3.9N·m
ABK10: 7.8N·m

⚠ Warning

Metal Stopper Tip of Shock Absorber is needed to be protruded more than 1mm from Datum Plane of plate. If it is less than 1mm, body contacts to plate and it causes defect.

ACCURACY

■Bearing Accuracy



Unit: mm

Model / Parmeter / Stroke	PSL 8				PSL12					
	40	60	80	100	40	60	80	100	125	150
Height H Tolerance	±0.020									
Difference of Pair Heights H	0.015									
Width N Tolerance	±0.025									
Difference of Pair Widths N	0.020									
Running Parallelism of Surface C with respect to Surface A	0.004	0.004	0.005	0.005	0.004	0.005	0.005	0.005	0.006	0.007
Running Parallelism of Surface D with respect to Surface B										

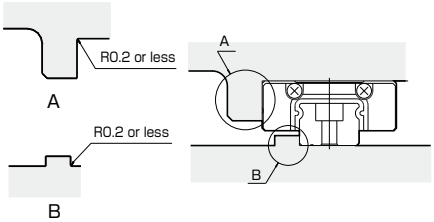
- The installation datum plane and installation surface are finished by precision- grinding. Therefore. if the mating component are accurately machined and PICO SLIDER is correctlly installed, accurate liner motion
- However, avoid fixing only the guide rail, be sure to fix the plate as well.
- From of installation datum plane of other side is recommended to be made an escape.

⚠ Warning

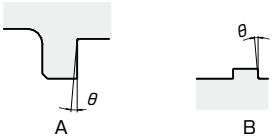
Mounting Surface Accuracy

①Top of guide table of PICO SLIDER, bottom of guide rail are precision-ground. Ensure that the mating mounting surface of a machine, equipment, jig, etc. is a flat surface machined to high precision without unevenness or projections and mounting is correct in order to achieve stable, high-accuracy linear motion.
Low mounting surface accuracy or incorrect mounting may cause looseness, increase the rolling resistance or adversely affect the service life.
Mounting Datum Plane of Guide Table and Guide Rail ☞ page 459

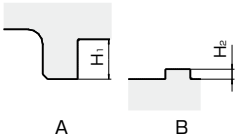
②It is recommended to provide a recess in the corner of a mating mounting surface of guide table, guide rail but a curve as shown in the figure below can be made for use.
A larger corner profile than the chamfer dimension of guide table or guide rail may cause inaccurate contact with the abutting surface.



③Ensure that there is no squareness error between guide table or guide rail mounting surface and the abutting surface.
Inadequate squareness may cause inaccurate contact with the abutting surface.



④When designing the abutting surface, pay attention to the height and thickness of the abutting surface. Inadequate thickness may lead to poor accuracy due to insufficient rigidity against transverse load or positioning with a lateral pressing bolt.



Recommended Dimensions of Abutting Surface Unit: mm

Model	H_1	H_2
PSL 8	3	2.5
PSL12	4	3

Rigidity of Mounting (Securing Part)

Insufficient rigidity of the securing method and mounting of the product may hinder realization of the high rigidity and high accuracy of PICO TABLE LONG. When designing, give sufficient consideration to the rigidity of equipment such as the mounting base.

Connection with Load

For connection with any load that has an external supporting mechanism, ensure sufficient centering.
Direct loading within the allowable range for operation is possible but insufficient centering of connection with load that has an external supporting mechanism may adversely affect operation, service life, etc. A longer stroke means a larger displacement of the axis. Consider a method of connection that tolerates the displacement.

Load Center of Gravity

Bring the load center of gravity as close to the body center as possible. The load center of gravity distant from the body center may generate a large moment of force, adversely affecting the service life and rigidity. Ensure that the load and the moment are within the allowable ranges for operation.

Stroke Adjustment

Stop the motion by bringing the stopper to hit against the dust cover on the end of the body. Removal of the stopper or inappropriate stopper adjustment may cause the dust cover to come in contact with the plate on both ends, leading to failure.
Adjustment method ☞ page 403, 429

Linear Guide Lubrication

Lubricant is enclosed in the guide table in advance but the performance will be deteriorated by a long operating time, operating conditions, environment, etc. Regular lubrication is necessary.
Using without lubrication may accelerate wear of the rolling part or cause earlier end of the service life.
The timing of regreasing depends on the operating conditions and environment. As a rule, regrease at intervals of travel of 100 km or one month.
After wiping the old grease off, supply lithium soap-based grease through the oil hole in the guide table.
Supplying a different type of grease may cause malfunction or failure due to lubrication performance degradation or chemical change.
Turbine oil can be applied or drop-fed for use.
Do not use spindle oil or machine oil because they adversely affect the packing.

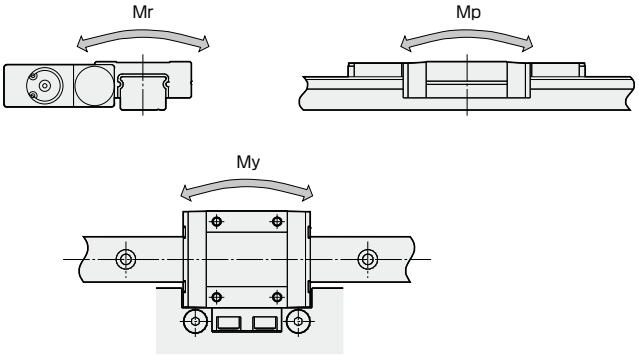
Rolling Feel in Linear Guide

When table is moved by hand, rolling of balls inside the linear guide may cause slight feel of operation discontinuity or difference in the rolling resistance between products. This is due to preload (preload condition) of the linear guide and does not affect the performance.

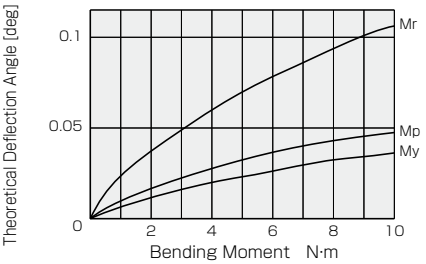
Magnetization of Table, Rail

Guide table and guide rail are made of martensitic stainless steel and may be magnetized if a magnet or other magnetized object is brought in contact. If the sucked object is subsequently removed, guide table and guide rail remains magnetized.
Note that, when a switch is used, this magnetization may cause faulty operation of the switch.

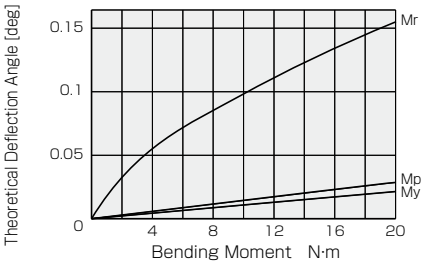
THEORETICAL DEFLECTION OF GUIDE TABLE BY MOMENT



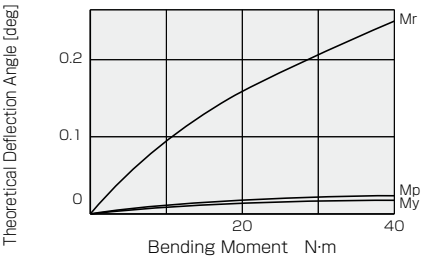
PSL8−40



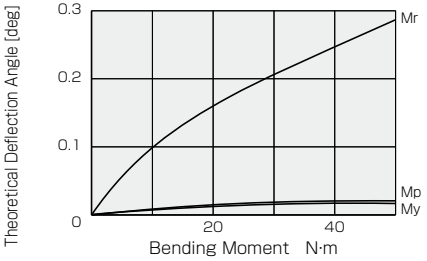
PSL8−60(two guide tables are used.)



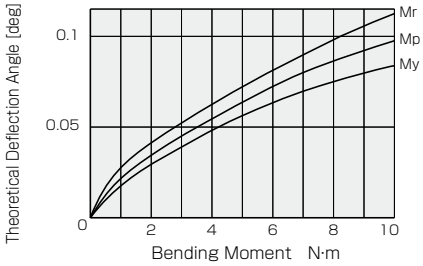
PSL8−80(two guide tables are used.)



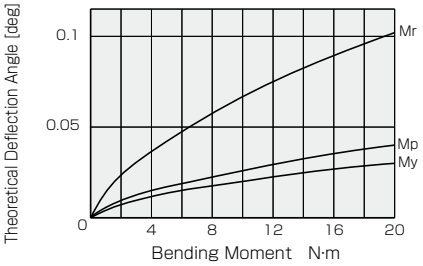
PSL8−100(two guide tables are used.)



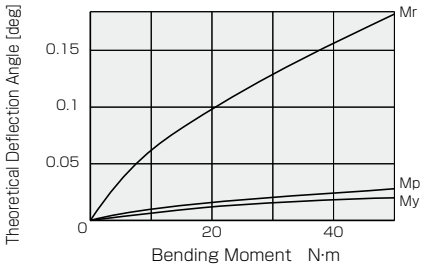
PSL12−40



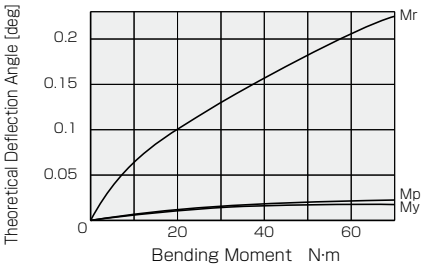
PSL12−60



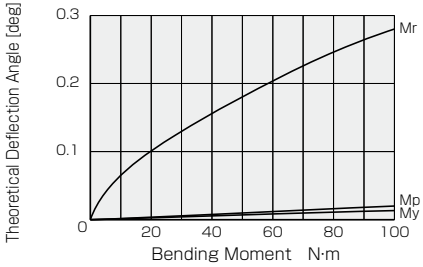
PSL12−80(two guide tables are used.)



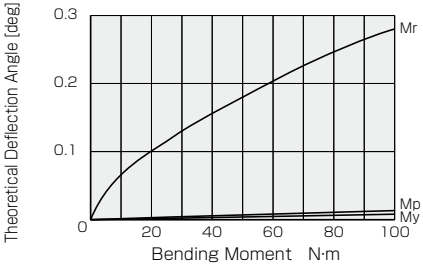
PSL12−100(two guide tables are used.)



PSL12−125(two guide tables are used.)



PSL12−150(two guide tables are used.)



ALLOWABLE MOUNTED LOAD MASS, ALLOWABLE LOAD FORCE AND ALLOWABLE MOMENT

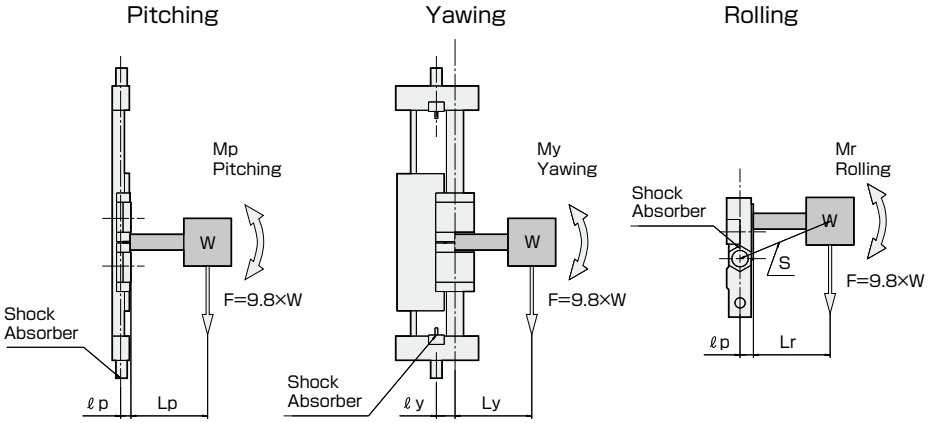
⚠ Caution

Before using this unit, check that the applied load is within the allowable load. Using out of allowable limit may cause bad influence for movement, accuracy and life. At the worst, the actuators would be broken.

Types of Load	Situation of Actuator	Situation of Load	Item to be confirmed
Mounted Load(W)	Operating	Continuously Acting	Allowable Mounted Load Mass, Allowable Mounted Load Moment, Allowable Inertia Mass
External Force	Stopping	Temporarily Acting	Basic Static-load Rating, Allowable Static Moment

■Direction of Moment and Guide Center Line and Shock Absorber

The moment directions are classified into three types in accordance with the mounting condition of a load to the actuator.



Position of Shock Absorber Unit: m

Model	Distance between guide center line and shock absorber	
	ℓp	ℓy
PSL 8	0.0065	0.013
PSL12	0.0080	0.016

W(kg)·····Mounted load mass
F(N)·····Gravity applied on load
Lp,Ly,Lr(m)·····Distance between guide center line and center of gravity of mounted load
ℓp, ℓy(m)·····Distance between guide center line and shock absorber
S(m)·····Distance between center of gravity of mounted load and shock absorber

■Allowable Mounted Load Mass, Allowable Mounted Load Moment, Allowable Inertia Mass

When the actuator is operated with mounted load, confirm that the following four values are within the allowable range.

①Allowable Load Mass Unit: kg

Model	PSL 8	PSL12
Allowable Load Mass	2.0	4.0

②Allowable Mounted load Moment

There is the formula below to calculate three moments by the gravity. Please confirm they are within the allowable moments in the table bellow.

(Mounted load moment)
=(Gravity applied on load:F)×(Distance between guide center line and center of gravity of mounted load:L)
=9.8×(Mounted load mass:W)×(Distance between guide center line and center of gravity of mounted load:L)
(Gravity applied on load: F)=9.8×(Mounted load mass: W)

Pitching···Mp(N·m)=9.8×W(kg)×Lp(m)
Yawning···My(N·m)=9.8×W(kg)×Ly(m)
Rolling···Mr(N·m)=9.8×W(kg)×Lr(m)

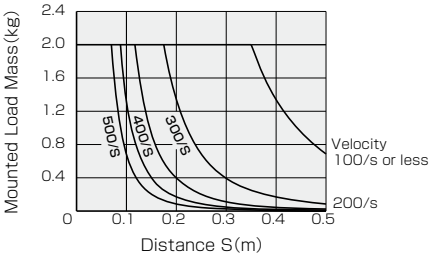
Allowable Mounted Load Moment Unit: N·m

Model	Stroke (mm)	Allowable Mounted Load Moment		
		Mp	My	Mr
PSL 8	40	2.8	3.1	3.3
	60	5.9	6.7	3.6
	80	10.4	11.8	
	100			
PSL12	40	2.4	2.8	4.7
	60	6.5	7.3	7.3
	80	15.1	17.0	7.5
	100	21.9	24.7	
	125			
	150			

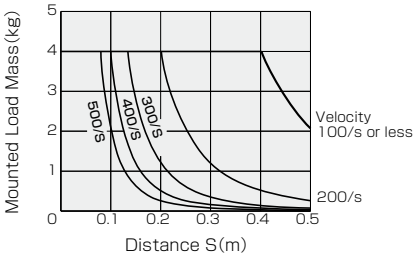
③Allowable Inertia Mass

When a actuator stops at the end of its stroke, a force is generated due to the inertia of the load. The value of this force depends on various conditions like the shape of load, mounting ways and operating pressure. Therefore, it is very difficult to formulate the allowable value.
The graphs below show theoretically relation between "the velocity at the stroke end", "mounted load mass" and "the distance between the center of the gravity of load and shock absorber". These graphs can be used as reference to the allowable values of the load.
S: The distance between the center of the gravity of load and shock absorber. Please refer to the figures of rolling in the previous page.

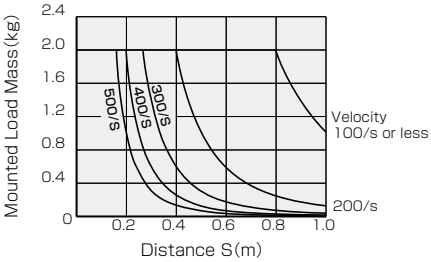
PSL8−40



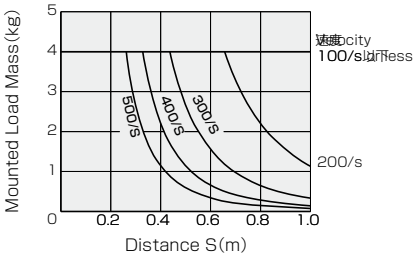
PSL12−40



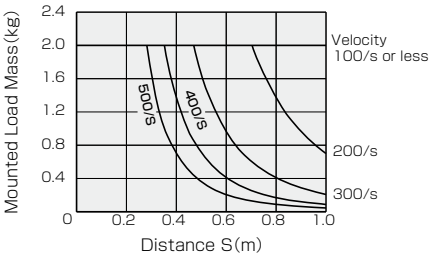
PSL8−60



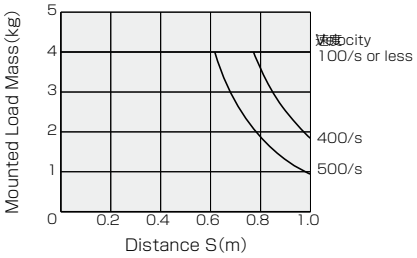
PSL12−60



PSL8−80、100



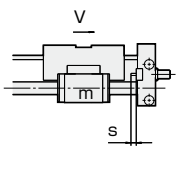
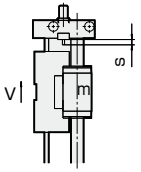
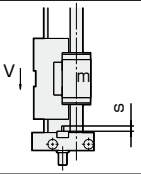
PSL12−80、100、125、150



Note: When a metal stopper is used externally for stopping, it may generate extremely large impact force.
As a rule, consider 1/5 to 1/10 of the values in the graph above as the mounted load mass.

④Shock Absorber Collision Energy

The energy that the shock absorber of the stopper must absorb consists of three element: kinetic energy, energy of cylinder thrust and energy due to gravity.
The collision energy is the total of three.
See the shock absorber specifications and energy absorption graphs below. Use the product within the shock absorber specifications.

	Horizontal Use	Vertical Upward Use	Vertical Downward Use
Usage Condition Example			
Collision Energy E	$E=1/2(mV^2)+Fs$	$E=1/2(mV^2)+Fs-mgs$	$E=1/2(mV^2)+Fs+mgs$

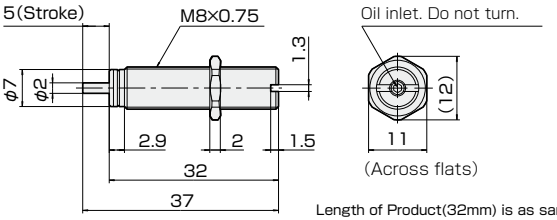
E : Collision Energy(J)
m: Colliding Mass(kg)
V : Collision Velocity(m/s)
F : Cylinder Thrust(N)
s : Shock Absorber Stroke(m)
g : Gravity Acceleration(9.8m/s^2)

SHOCK ABSORBER SPECIFICATIONS

Model	ABK8	ABK10
Max Energy Absorption	0.68J	3J
Stroke	5㎜	10㎜
Energy Absorption Per Minute	22.8J/min	60.8J/min
Max. Collision Velocity	1m/s	1m/s
Usage Frequency	60c.p.m. or less	
Operating Temperature Range	−5～70℃	
Piston Rod Return Force	4.9N	
Applicable Model	PSL8	PSL12

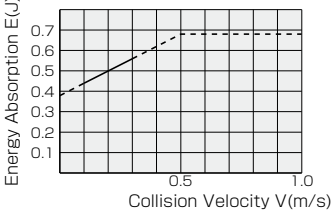
Shock absorber is changed to new type.
It can be installed to the product with convertional absorber.

MODEL: ABK8／PSL8

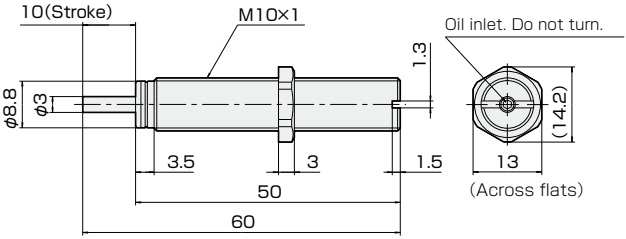


Length of Product(32mm) is as same as conventional product(ABS8).

Energy Absorption Graph

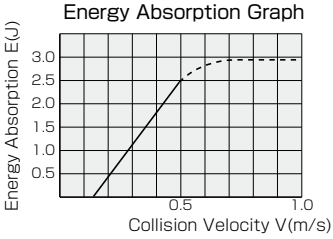


MODEL: ABK10／PSL12



Length of Product(50mm) is 8mm longer than conventional product(ABS10).

Energy Absorption Graph



■Allowable Load and Allowable Moment for External Force (Motionless)

In the case that an external force is applied temporarily when the actuator stops at the stroke end or so, confirm that the following two values are within allowable range.

①External Force Value (Basic Static Load Rating)
②External Moment (Static Moment Rating)

Note: The arm length of a moment shall be length from the guide center and the point where an external force is applied.

If a guide table receives an excessive load or a large impact, permanent deformation is locally generated between the ball and the ball rolling surface. This deformation will prevent the actuator from smooth operation when it develops more than the allowable limit. The basic static load rating C_0, the static moment rating Mp_0, My_0 and Mr_0 mean such a static load and static moment of constant direction and the total of the permanent deformation values at the ball rolling surface is 0.0001 times of the ball diameter on the contact surface receiving the maximum stress.
The static moment applied to the table is limited under C_0, Mp_0, My_0 and Mr_0 with corsidering about static safty factor, fs.

$C_0 \geqq f_s \cdot P$

Co: basic static load rating N
P : static load N
fs : static safety factor

$Mp_0 \geqq f_s \cdot Mp_1$
$My_0 \geqq f_s \cdot My_1$
$Mr_0 \geqq f_s \cdot Mr_1$

Mp_0、My_0、Mr_0: Static moment rating N·m
Mp_1、My_1、Mr_1: Static moment N·m
fs: Static safety factor

STATIC SAFETY FACTOR fs

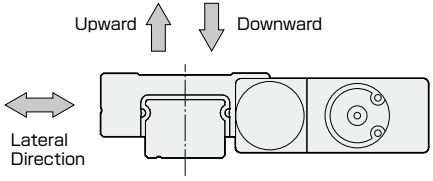
Load Conditions	Lower Limit of Fs
Impact with Light Load	1.0～1.3
Impact with Heavy Load	2.0～3.0

BASIC STATIC LOAD RATING, STATIC MOMENT RATING

Model	Stroke (mm)	Type of Linear Bearing	Basic Static Load Rating N	Static Moment Rating N·m		
				Mp_0	My_0	Mr_0
PSL8	40	Long Guide Table 1pc	6370	35.3	42.2	42.2
	60	Guide Table 2pcs	7350	80.4	96.0	49.0
	80			142	167	
	100			206	245	
PSL12	40	Guide Table 1pc	5880	25.5	30.4	49.0
	60	Long Guide Table 1pc	11080	83.3	99.0	92.9
	80	Guide Table 2pcs	11760	196	225	98.0
	100			284	343	
	125			412	485	
	150			559	647	

Note1. C_0, Mp_0, My_0, Mr_0 of PSL8−60, 80, 100, PSL12−80, 100, 125, 150 are value of Guide Table 2pcs.
Note2. Theoretical Deflection of Guide Table by Moment ☞Page 462, 463
Note3. Number of Guide Tables and Pitch ☞Page 456, 457

Loading Direction and Rated Load

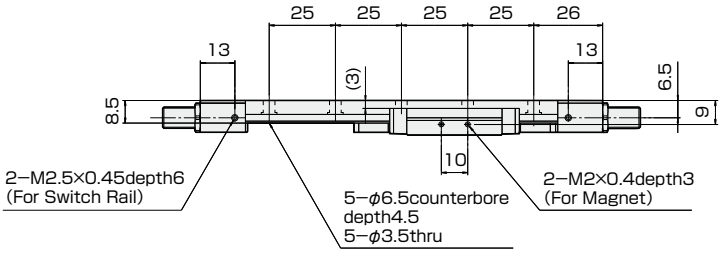


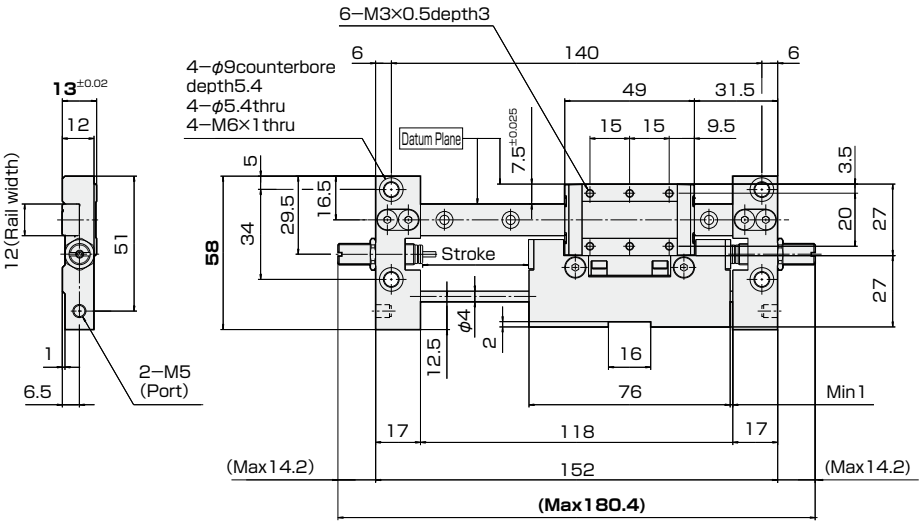
Load Direction \ Load Rating	Basic Static Load Rating
Downward	C_0
Upward	C_0
Lateral direction	$1.19C_0$

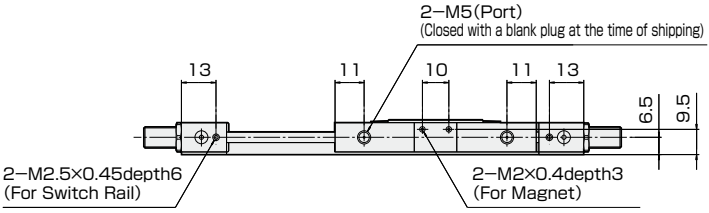
DIMENSIONS(mm) PSL8−40

PSL−SD8−40−QD

Bore Size | Stroke | With Shock Absorber
Stroke Adjustment Range···Single Side−12㎜(Total−24㎜)







●Dimensions for Switch Rail(PSLS) and Magnet Installion ☞Page 474
●Dlimension of Shock Absorber ☞Page 466

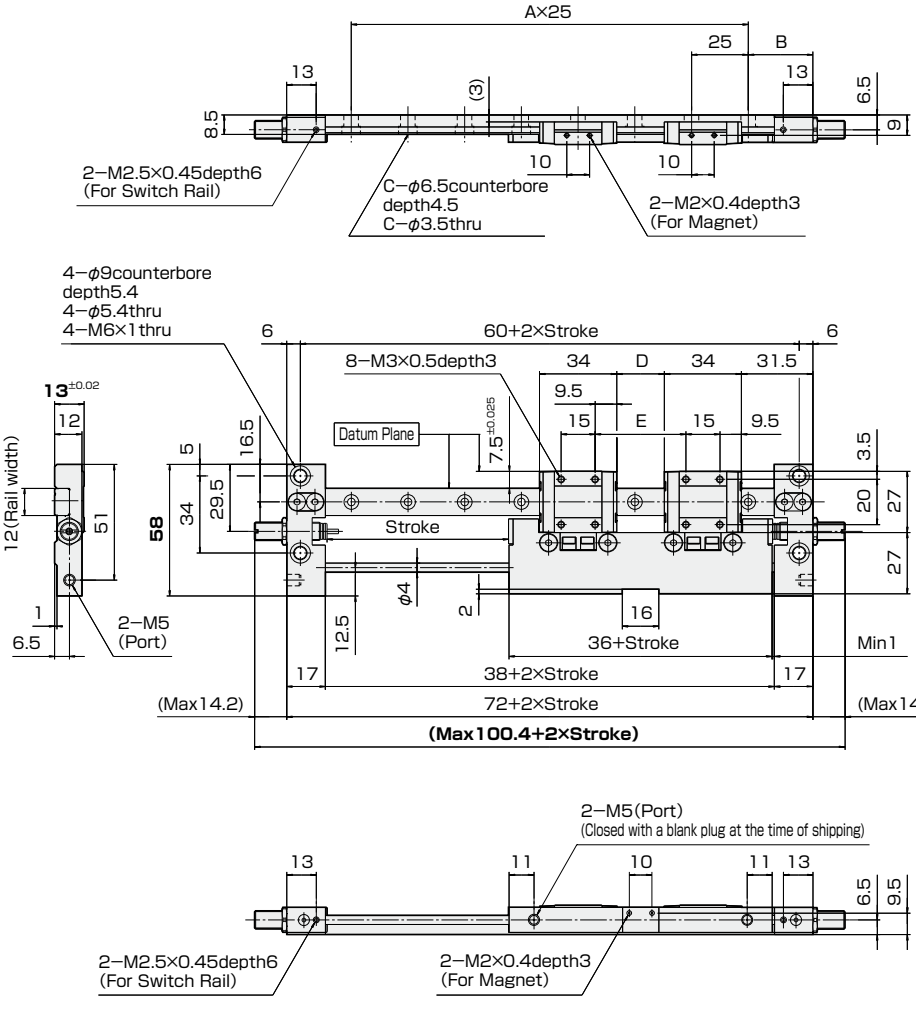
DIMENSIONS(mm) PSL8−60, 80, 100

PSL−SD8− 60 / 80 / 100 −QD

Stroke

Bore Size

With Shock Absorber
Stroke Adjustment Range···Single Side−12㎜(Total−24㎜)



Model	A	B	C	D	E
PSL-SD8-60-QD	6	21	7	1	20
PSL-SD8-80-QD	7	28.5	8	21	40
PSL-SD8-100-QD	9	23.5	10	41	60

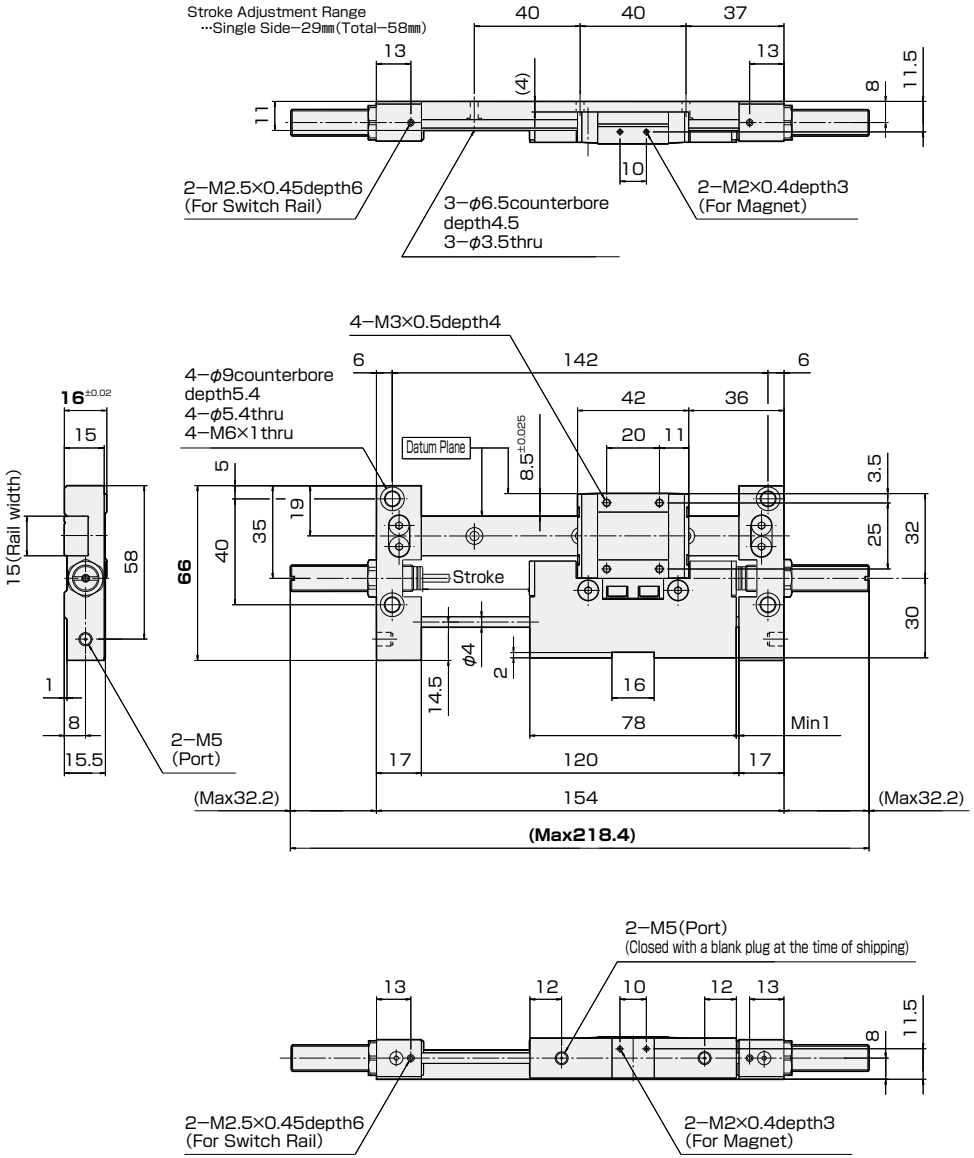
●Dimensions for Switch Rail(PSLS) and Magnet Installion ☞Page 474
●Dlimension of Shock Absorber ☞Page 466

DIMENSIONS(mm) PSL12−40

PSL−SD12−40−QD

Bore Size / Stroke / With Shock Absorber

Stroke Adjustment Range
···Single Side−29㎜(Total−58㎜)

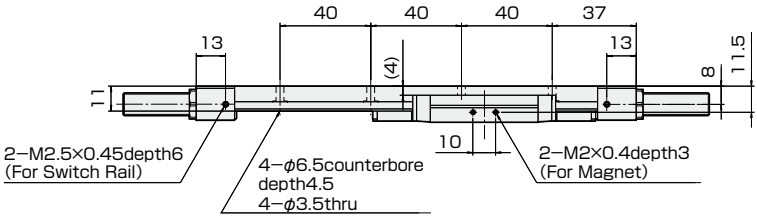


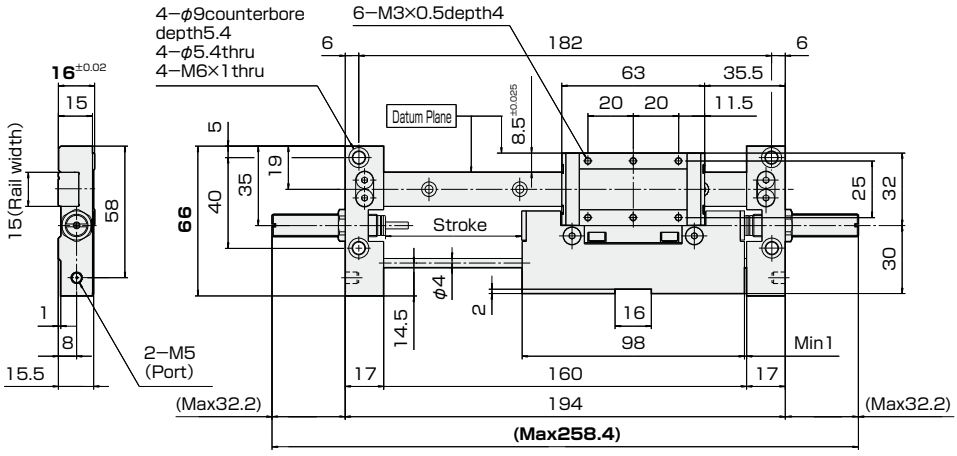
●Dimensions for Switch Rail(PSLS) and Magnet Installion ☞Page 474
●Dlimension of Shock Absorber ☞Page 466

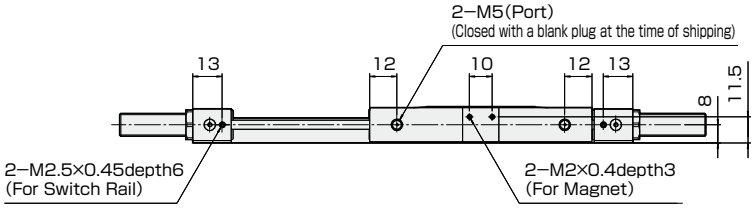
DIMENSIONS(mm) PSL12−60

PSL−SD12−60−QD

Bore Size
Stroke
With Shock Absorber
Stroke Adjustment Range···Single Side−29㎜(Total−58㎜)





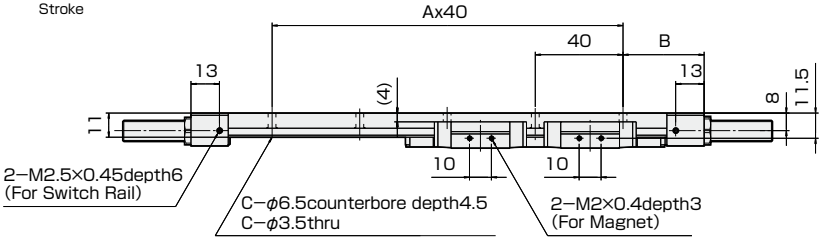


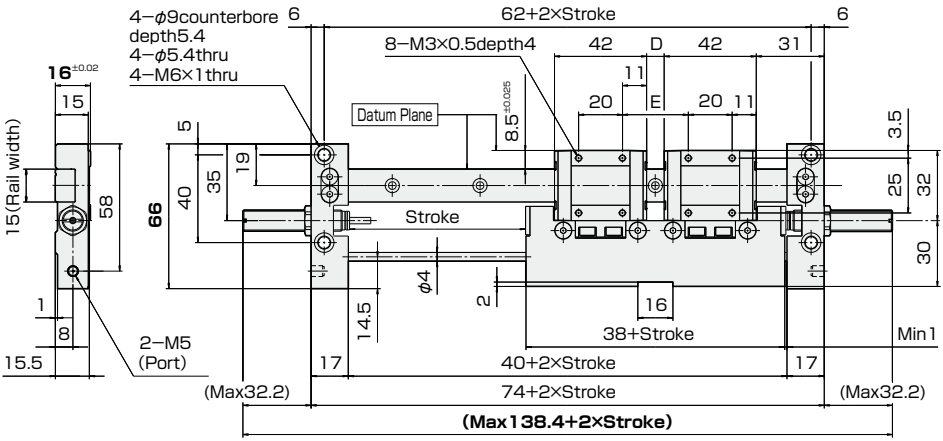
●Dimensions for Switch Rail(PSLS) and Magnet Installion ☞Page 474
●Dlimension of Shock Absorber ☞Page 466

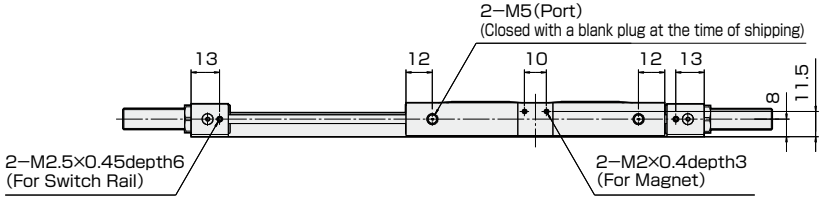
DIMENSIONS(mm) PSL12–80, 100, 125, 150

PSL–SD12– 80–QD
100
125
150

Bore Size
Stroke
With Shock Absorber
Stroke Adjustment Range···Single Side–29㎜(Total–58㎜)





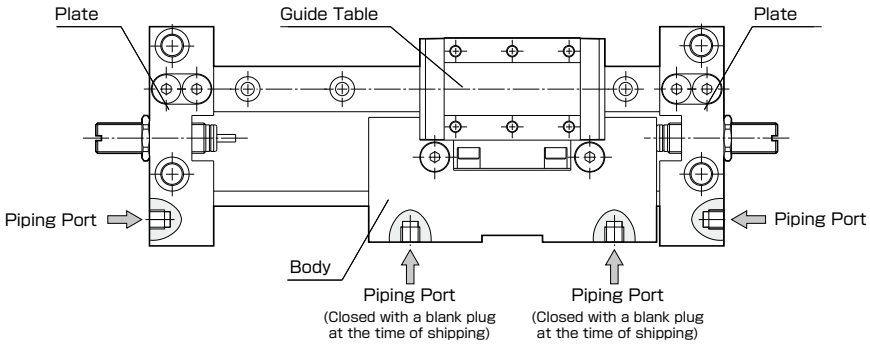


Model	A	B	C	D	E
PSL-SD12-80-QD	4	37	5	8	30
PSL-SD12-100-QD	5	37	6	28	50
PSL-SD12-125-QD	7	22	8	53	75
PSL-SD12-150-QD	8	27	9	78	100

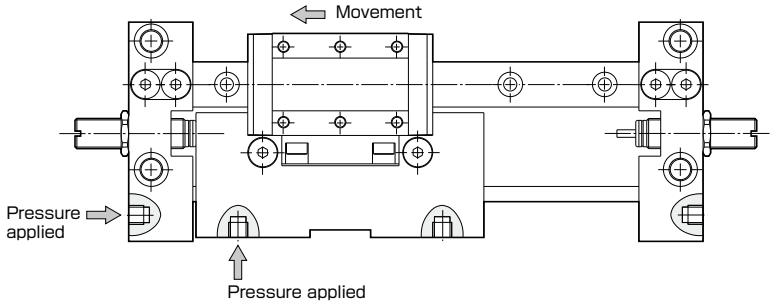
●Dimensions for Switch Rail(PSLS) and Magnet Installion ☞Page 474
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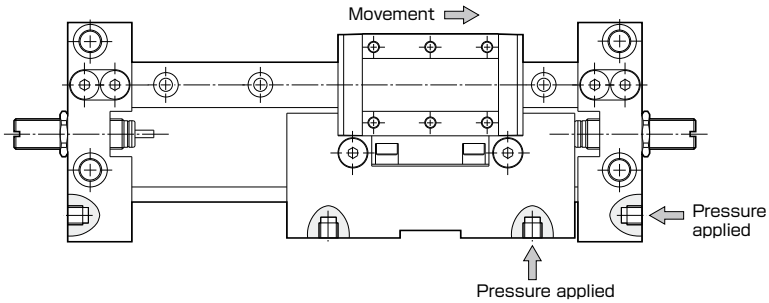
PIPING PORT POSITION

- The plate and body have piping ports.
- The piping ports on the body are closed with blank plugs when the product is shipped.
- Replace the blank plugs position according to application.
- when replacing the blank plugs, perform adequate flushing and reliable sealing.
- Note that when you use the piping ports on the body side, you can install the magnet and switch only on the guide table side.



DIRECTIONS OF MOVEMENT

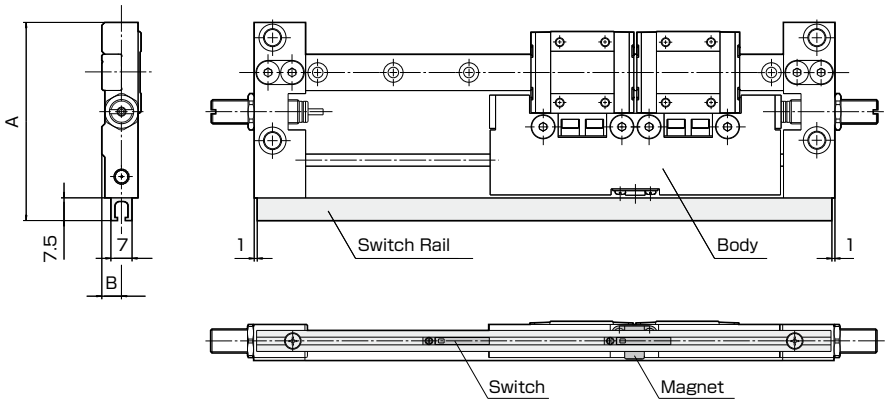




DIMENSIONS FOR SWITCH RAIL AND MAGNET INSTALLION

●Standard Type

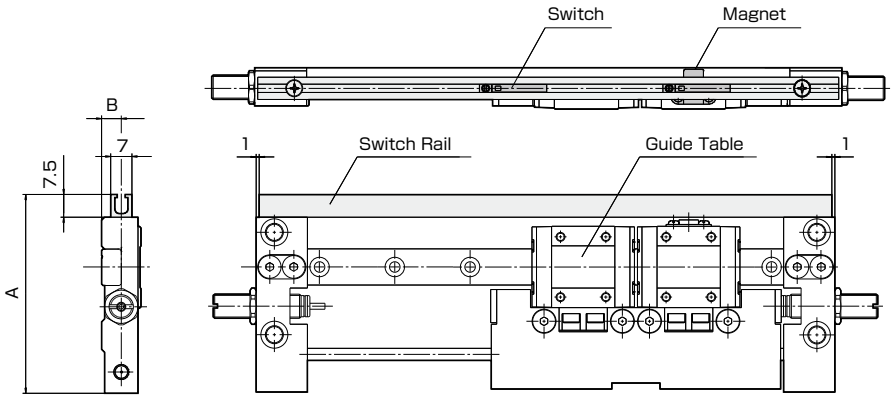
The switch rail. magnet, and switch are mouted on the body side at the time of sipping.



Code / Model	A	B
PSL 8	65.5	6.5
PSL12	73.5	8

●RD Type

The switch rail. magnet, and switch are mounted on the guide table side at the time of shipping,
(For a type eqipped with two guide tables. the magnet is mounted on the right guide table.)



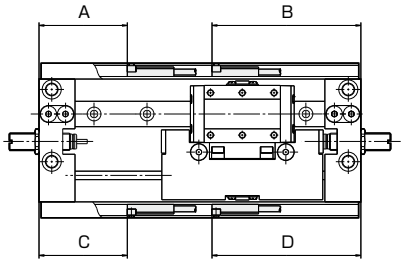
Code / Model	A	B
PSL 8	65.5	6.5
PSL12	73.5	8

●RH Type

For the dimenions. see the above two drawings.
The switch rail. magnet. and switch are mounted on the body and guide table sides at the time of shipping,
(For a typeequipped with two guide tables. the magnet is mounted on the right guide table.)

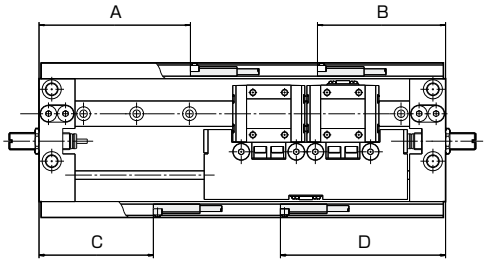
INSTALLATION OF SWITCH

■Switch Setting Position



RB(RC)1, 2 Switch

Model	Stroke	Setting position (mm)			
		A	B	C	D
PSL 8	40	44	68	44	68
	60	71.5	60.5	54	78
	80	91.5	60.5	64	88
	100	111.5	60.5	74	98
PSL12	40	45	69	45	69
	60	55	79	55	79
	80	90	64	65	89
	100	110	64	75	99
	125	135	64	87.5	111.5
	150	160	64	100	124



RB(RC)4, 5 Switch

Model	Stroke	Setting position (mm)			
		A	B	C	D
PSL 8	40	46	66	46	66
	60	73.5	58.5	56	76
	80	93.5	58.5	66	86
	100	113.5	58.5	76	96
PSL12	40	47	67	47	67
	60	57	77	57	77
	80	92	62	67	87
	100	112	62	77	97
	125	137	62	89.5	109.5
	150	162	62	102	122

Note: When the stoke is shortened. be careful of the switch orientation and the number of swtiches mounted.

●Stroke of about 35 to 25mm
The switches can be mounted at positions only where they face each other.



●Stroke of about 25mm or less
Only one switch can be mounted decause of on hold distance distinguished when they are activated.

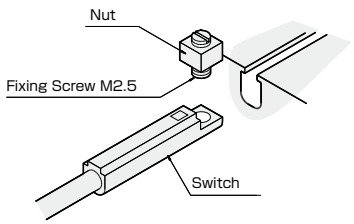
Hysteresis, On Hold Distance Unit: mm

Model	RB(RC)1, 2		RB(RC)4, 5	
	On Hold Distance(ℓ)	Hysteresis(c)	On Hold Distance(ℓ)	Hysteresis(c)
PSL 8	6	1	2.5	1
PSL12	6	1	2.5	1

Explanation of hysteresis and on hold distance. ☞Switch Catalogue

■Installataion of Switch

Assemble the fixing screw with a nut to the switch.
Insert the switch into the groove.
After setting the position, fasten the screw by a screwdriver.
Fastening torgue of fixing screw must be 0.1 N·m.



Costom Made

■To Change Grease

●Change the grease of bearing part to the other grease.
●There is a case might not be handled depends on kind of grease or request.
●Cylinder grease at the cylinder part can not be exchanged to assure operation performance of product.
●Grease of purchased item can not be exchanged.

Please ask us for more detailed infomation.

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