MOTOR-LESS SINGLE AXIS ACTUATOR

LBAS | LGXS | LBAR

SINGLE-AXIS ROBOTS

ABAS | AGXS | ABAR

With or without motor, 2 types can be selected.
There are abundant lead variations and specifications suitable for the customer's needs can be selected.

Products have passed strict evaluation criteria unique to "YAMAHA", a vehicle equipment manufacturer, that protects peoples lives. Yamaha designs products with high longevity so that people are able to use them for a long time.

Intuitive/Durability/Economy
Robonity series

Single-axis robots

Single-axis robots "Robonity series" have been developed as more affordable single-axis robots by revising the controller design for a more affordable system with reliability.

Motor-less actuator

Wide range of selection for transfer and positioning applications
Wide variety of ball screw lead and stroke length to choose from

Slider type

Basic model [P.64]

Integrated guide rail and frame design. High moment rigidity in a compact design.

ABAS

ABAS04
ABAS05
ABAS08
LBAS12

LBAS

LBAS04
LBAS05
LBAS08
LBAS12

Advanced model [P.65]

Ground ball screw is standard. High precision model with high reliability and durability.

AGXS

AGXS05
AGXS05L
AGXS07
AGXS10
AGXS12
AGXS16
AGXS20

LGXS

LGXS05
LGXS05L
LGXS07
LGXS10
LGXS12
LGXS16
LGXS20

Rod type [P.66]

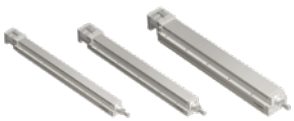
High rigidity structure that follows the slider type. Compatible with a long stroke of up to 800 mm.

ABAR

ABAR04
ABAR05
ABAR08

LBAR

LBAR04
LBAR05
LBAR08



Robot positioner

EP-01 series

EP-01-A10

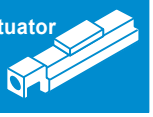
EP-01-A30

- Same price as parallel I/O and industrial Ethernet
- Absolute battery function
- Support software is provided free of charge.
- Industry-leading compactness

Slider type

Basic model

Motor-less single axis actuator
LBAS



Single-axis robots
ABAS

Maximum payload	Up to 115 kg
Maximum speed	300 to 1,800 mm/sec
Stroke	50 to 1,250 mm

High Rigidity | **Compact** | **Low Cost**

POINT 1

Compact and high rigidity

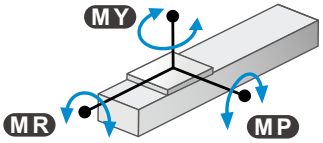
Even though the product is more compact than the conventional product, it achieves a higher rigidity.

	Conventional product T6L	LBAS05/ABAS05
MY	35	59
MP	40	63
MR	50	103

(N・m)

	Conventional product T9H	LBAS08/ABAS08
MY	86	221
MP	133	309
MR	117	343

(N・m)

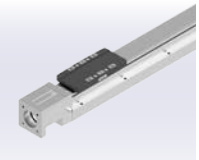


POINT 2

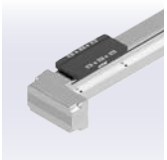
Overall length can be shortened by motor bending specifications.

Motor bending specifications can also be selected, expanding the range of design.

Straight type



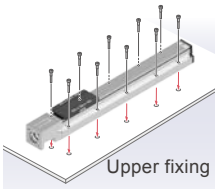
Bending type

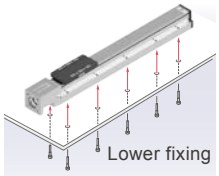


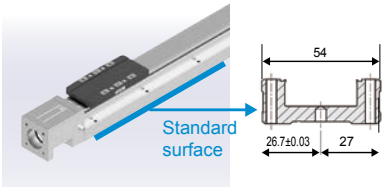
POINT 3

First-class usability even at a low cost.

Reference surfaces are provided on the sides of the main body and knock holes are provided on the bottom to reduce design and assembly man-hours.





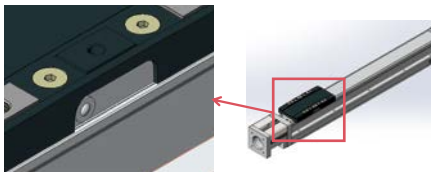


Installation is possible from either the top or bottom without removing any exterior parts.

POINT 4

Easy Maintenance

Greasing work that tends to be troublesome,such as opening the covers, can be performed easily.



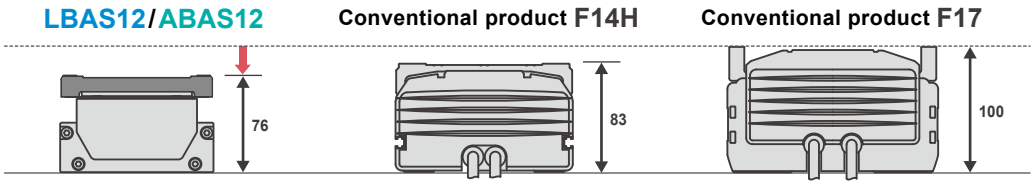
Grease nipple on the slider side surface

POINT 5

Suitable for the X-axis of Cartesian robots! Slim type “LBAS12/ABAS12” is added to the lineup.

The slim type structure achieves a low center of gravity, making it suitable for the X-axis of Cartesian robots.

The overall height can be suppressed, contributing to equipment downsizing.

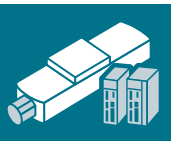


With the same frame width, the product can be used for both 200W and 400W motors, making it suitable for a wide range of situations.

Advanced model

Motor-less single axis actuator
LGXS

Single-axis robots
AGXS



Maximum payload	Up to 160 kg
Maximum speed	300 to 2,400 mm/sec
Stroke	50 to 1,450 mm

High Precision Accuracy Class C5

High Durability

Clean room specification as a standard feature

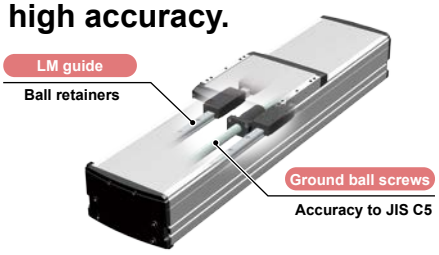
POINT 1

High quality model with high accuracy.

Adopted ground ball screws

Ball screw : Accuracy class C5

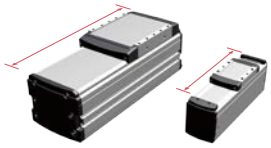
Positioning repeatability: +/-5 μm



POINT 2

Overall length for effective stroke is the shortest class in the industry.

Overall length for the effective stroke is the shortest in class for the industry.



POINT 3

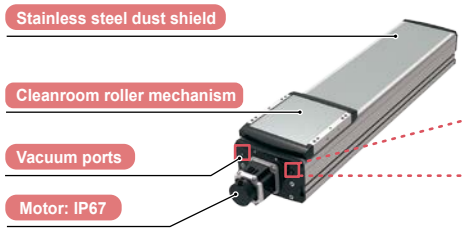
This product can used in a wide range of situations.

Dust-proof stainless steel sheet is used on the top surface of the main body.

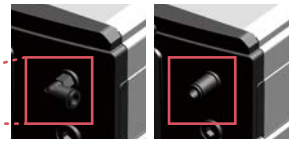
Products can be used in a clean environment by attaching a pipe joint and suctioning.

Air purging can also be used as anti-contamination measures.

Of course, the product can be used as it is without attaching any joint.



■ Simply attach vacuum fitting



One standard product can be used in a wide range of applications.

POINT 4

High acceleration/deceleration models are added to the lineup.

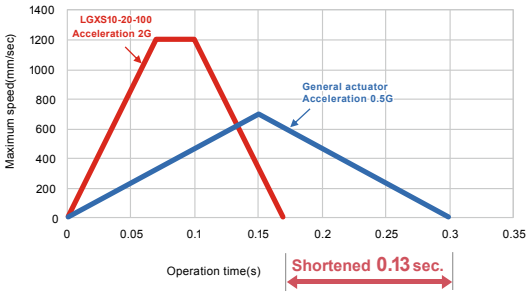
With the recent improvements in KAIZEN awareness, we have received many requests from manufacturing sites.
“We need a faster single-axis robot to further improve productivity! Of course, we want to use this robot for an extended period of time with confidence.”
To respond to such a request, “High agility mode” has been added to the Advanced model lineup of the Robonity series.

1. The robot operation time can be shortened.
2. Therefore, the product manufacturing time can be shortened.
3. That is, the daily production quantity can be increased and more production can be performed in the same time.

Large difference! Effect of acceleration/deceleration!

Comparison of movement time when the payload is 1kg.

For LGXS10-20-100 Comparison of high acceleration/deceleration operation tact time



Production volume is increased only by increasing the acceleration/deceleration of the single-axis robot!

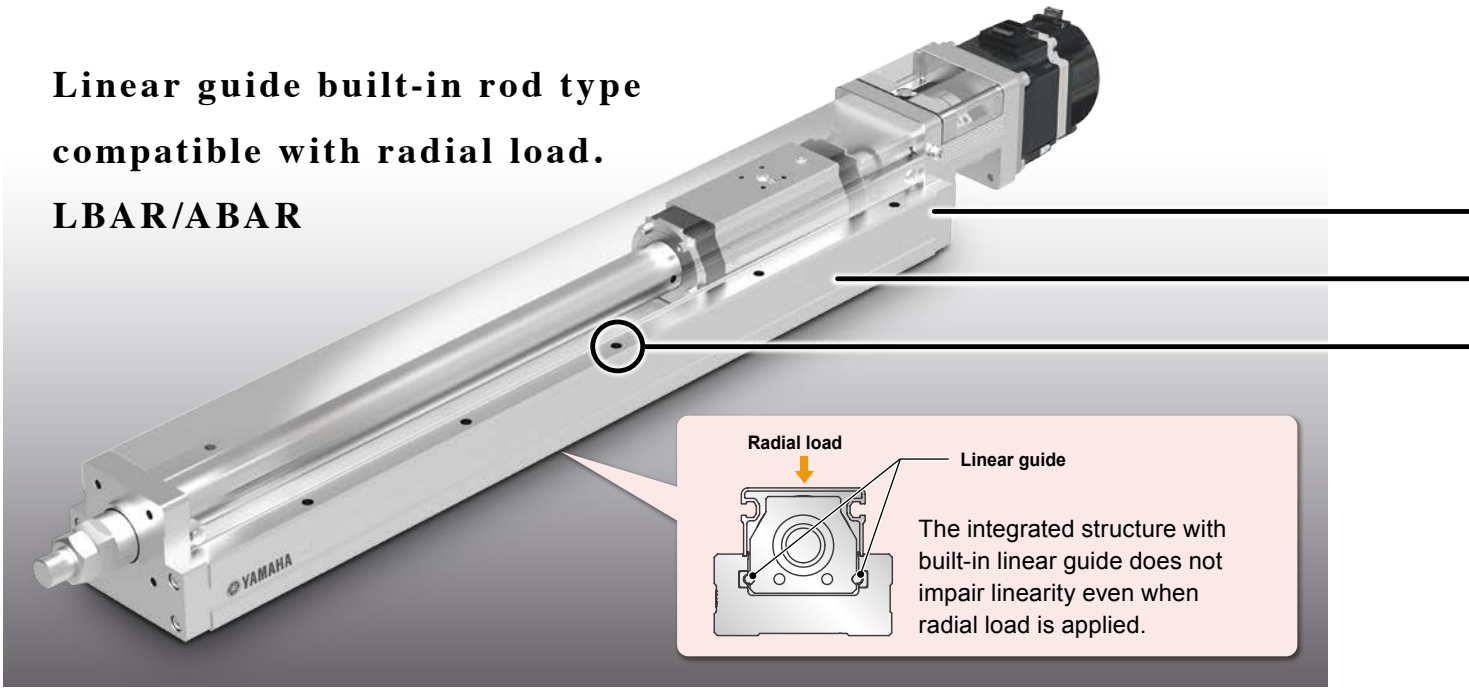
Rod type

Motor-less single axis actuator
LBAR

Single-axis robots
ABAR

Maximum payload	Up to 80 kg
Maximum speed	Up to 1200 mm/sec
Stroke	50 to 800 mm

High Rigidity | **Compact** | **Long stroke**



POINT 1

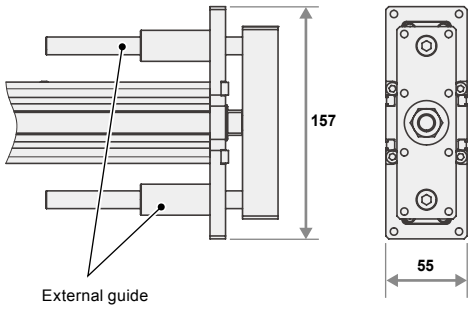
No external guide is needed.

External guide is not needed since the linear guide is built-in.

* An external guide may be recommended when a certain stroke is exceeded.

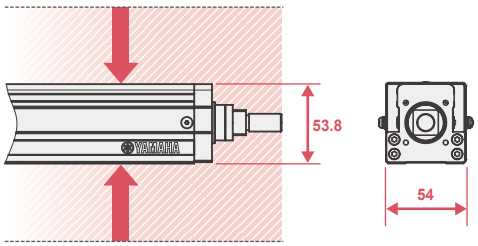
Conventional product
TRANSERVO series
SRD05

External guide is needed.



Robonity series
LBAR05/ABAR05

Linear guide is built-in.



Width size
Reduced approx.
65%
when compared to conventional products.

Contributes to equipment downsizing!

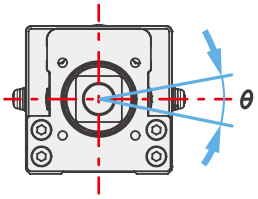
POINT 2

Rod non-rotation accuracy ±0°

The built-in linear guide suppresses rattling in the rotation direction.

The working accuracy of the tool attached to the tip of the rod is maintained.

Conventional product SRD05	LBAR05/ABAR05
±0.05°	±0°



POINT 3

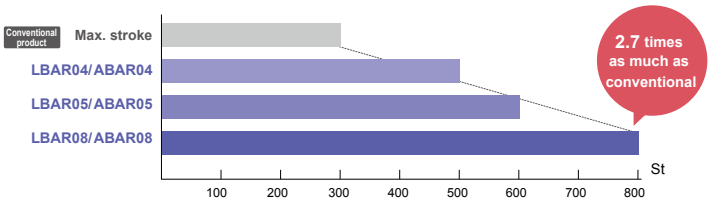
Compatible with a long stroke.

Compatible with a long stroke of up to 800 mm.

The corresponding stroke has doubled when compared to the conventional product with the same size.

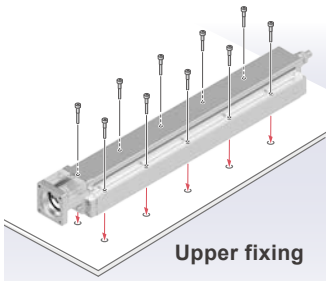
This product can be used in a wide range of situations.

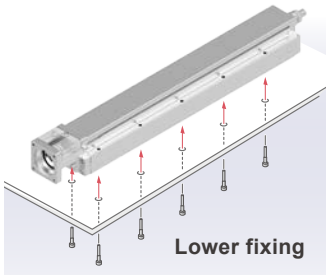
Conventional product SRD05	LBAR04/ABAR04	LBAR05/ABAR05	LBAR08/ABAR08
Max. 300St	Max. 500St	Max. 600St	Max. 800St

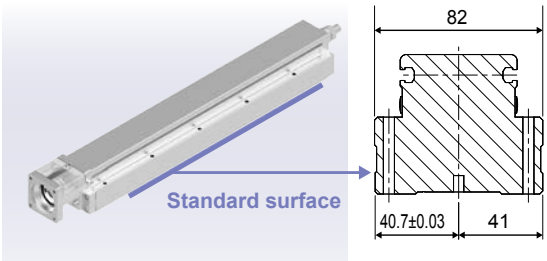


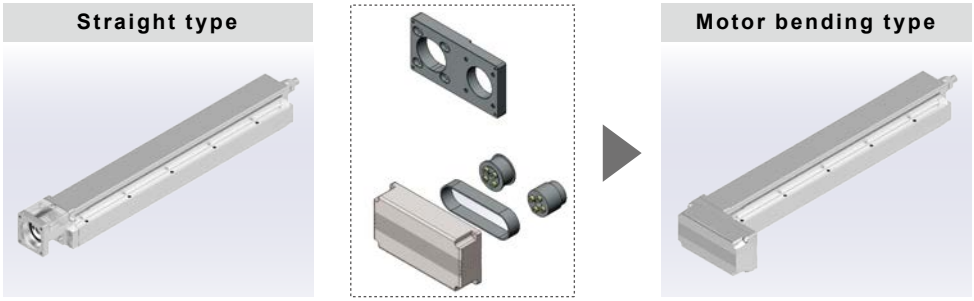
POINT 4

Easy installation and specification change









Ease of use is also inherited from the slider type!

Robonity Single-axis robots Features

POINT 1

Low cost high performance line-up

▶ Easy operation and aordable system with Industrial Ethernet

Robot positioner "EP-01" is a newly designed positioner for a better Ethernet platform and the cost performance. As a result the price of Ethernet is now offered at the same price level as parallel I/O (NPN). While achieving a lower cost design, "EP-01" positioner has expanded features such as standard Ethernet, feedback pulse output, direct value control function, and real-time output.

Robot positioner

EP-01 series

EP-01-A10 EP-01-A30

[Supported field networks]

EtherNet/IP™ PROFINET® EtherCAT®

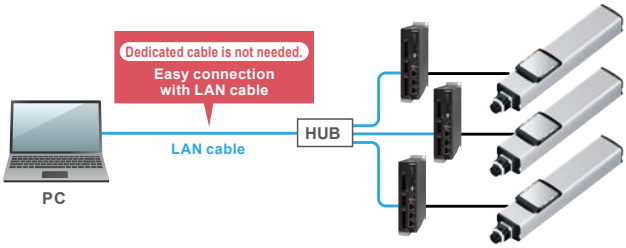
Parallel I/O and industrial Ethernet are the same price!

POINT 2

User friendly setup

▶ The hassle of startup is reduced.

Ethernet port is standard on a controller and dedicated PC programming cable is no longer required. Startup procedure is reduced and simplified.



POINT 3

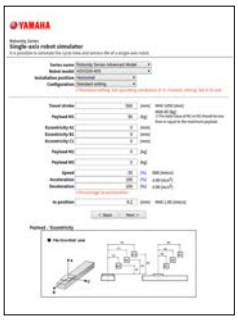
Easy model selection

▶ Simple cycle time and service life calculation.

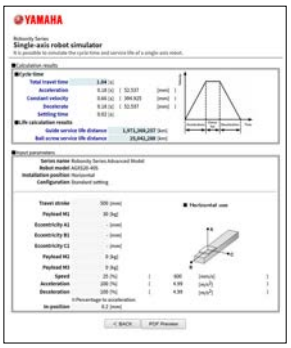
The service life and cycle time can be calculated at the same time by simply entering the required information at the website.
The result can be conveniently saved as PDF file.

Easy to save

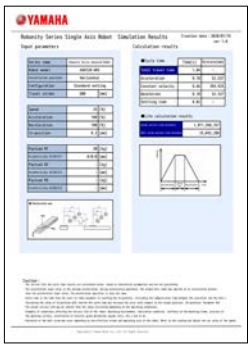
Entry screen



Results



PDF



POINT 4

For stable and constant operation

▶ Contribution to early recovery from line stop

The cause that took a long time to recover can be solved.

Battery-less absolute method	Calendar function	Absolute battery is installed on the cable section.
Because the single-axis controller supports the battery-less absolute method, the battery replacement is not needed.	The controller has clock function internally and histories like alarm are recorded chronologically. Such information is retained for over one year without power and no need for resetting at system startup after long holidays.	Position data will be retained even when replacing a absolute controller.

POINT 5

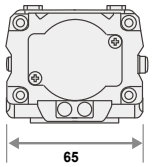
Space efficient compact design.

▶ Industry-leading compact design

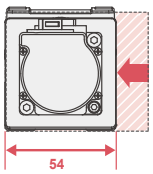
Compact design for machine size reduction.

Basic model (ABAS)

Conventional model
T6L



ABAS05

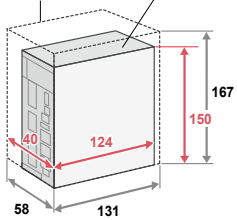


Width
Reduced approx. 17% compared to the conventional model.

Robot positioner EP-01

Conventional model
TS-X

EP-01



Capacity
Reduced approx. 37% compared to the conventional model.

POINT 6

To meet a wide range of needs

▶ Used for a wider range of applications with expanded functions and new functions.

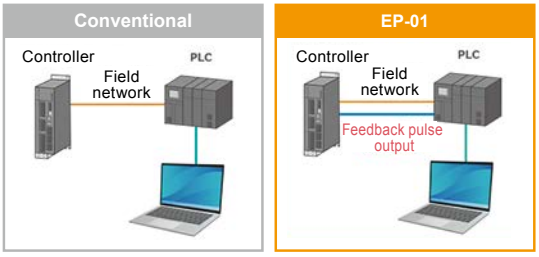
Acceleration and deceleration designation type was added to the positioning operation command from the PLC.

Direct value position designation	Position data	Speed	Acceleration	Deceleration
Data designation type 1	○			
Data designation type 2	○	○		
Data designation type 3	○	○	○	○

When the custom setting is selected, the speed and acceleration can be designated to (mm/s) and (m/s^2) from the PLC!

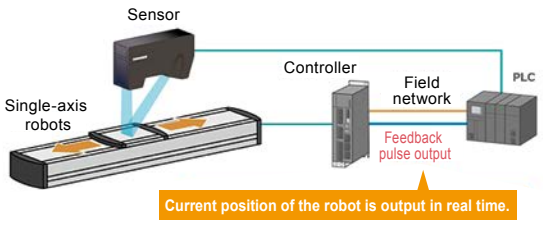
Feedback pulse function has been added to enable use in conjunction with external devices.

Feedback pulse output



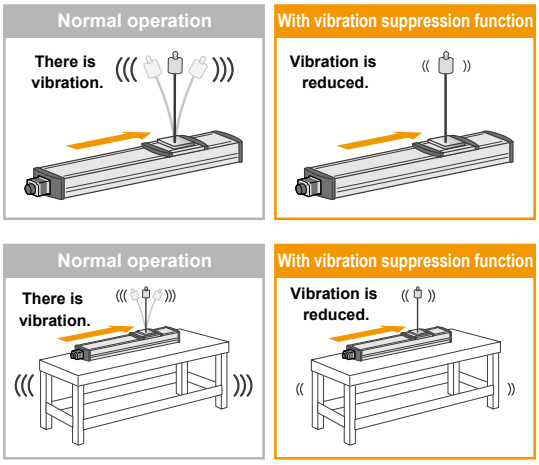
Exact current location is understood without communication delay

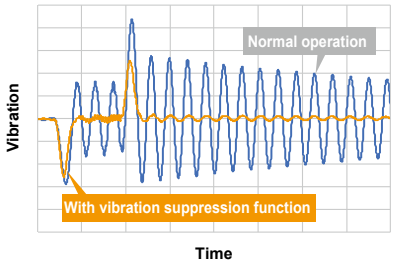
Usage example of feedback pulse output



Speed ripple can be corrected.

New vibration suppression function has been added to achieve vibration suppression!





It can be adjusted according to the number of vibrations that need to be suppressed, such as tool vibrations and installation base vibrations!

Robonity Motor-less single axis actuator Features

Wide range of selection for transfer and positioning application
Wide variety of ball screw lead and stroke length to choose from

POINT 1

Supports major brands and standards ▶ Build a system with motor/driver of your choice

In addition to the conventional servomotors, stepping motors are also newly supported and actuators can be used in accordance with customers' needs.

LBAS Supported motor manufacturers

[Servo motor]

Yasukawa Electric
Mitsubishi Electric
KEYENCE
OMRON
SANYO DENKI
TAMAGAWA SEIKI
DELTA ELECTRONICS
Panasonic
FANUC
Siemens AG
Rockwell Automation, Inc.
Schneider Electric SA
KINGSERVO Hoof automation CO., LTD.
Beckhoff Automation GmbH & Co. KG

[Stepping motor]

Oriental Motor

[NEMA standards]

NEMA17 NEMA23

LGXS Supported motor manufacturers

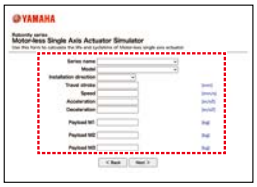
[Servo motor]

Yasukawa Electric
Mitsubishi Electric
KEYENCE
OMRON
Panasonic

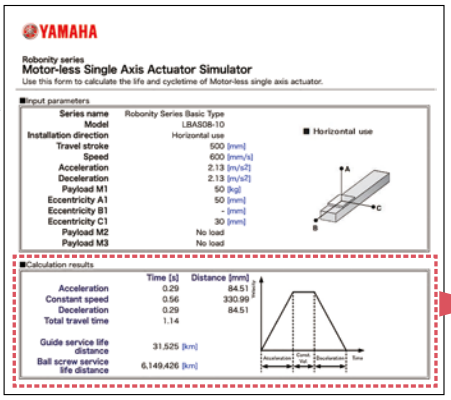
POINT 2

Easy selection ▶ Easy simulation of cycle time and service life of motorless single axis actuator.

Simulator on web site will provide cycle time and service life of ball screw or guide.
Selection of most suitable model with confidence.



Just enter simple parameters ...



Easy Automatic calculation

- Acceleration/deceleration time
- Uniform velocity time
- Total movement time
- Uniform velocity distance
- Life distance of guide
- Life distance of ball screw

Access the website below.

YAMAHA

https://robot.yamaha-motor.co.jp/robot/member/motorless_eng/motorless.php

* These contents are not available on smartphones.

POINT 3

Most suitable specification from wide range of selection.

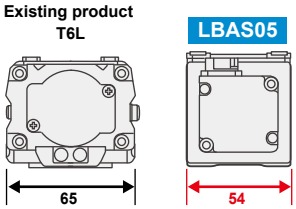
Many selection of leads, stroke length, and size to choose from.

POINT 4

Long stroke

Strong length from 50 mm to 1450 mm to choose from.

POINT 5

Compact

Space efficient compact design (20% less than current model).