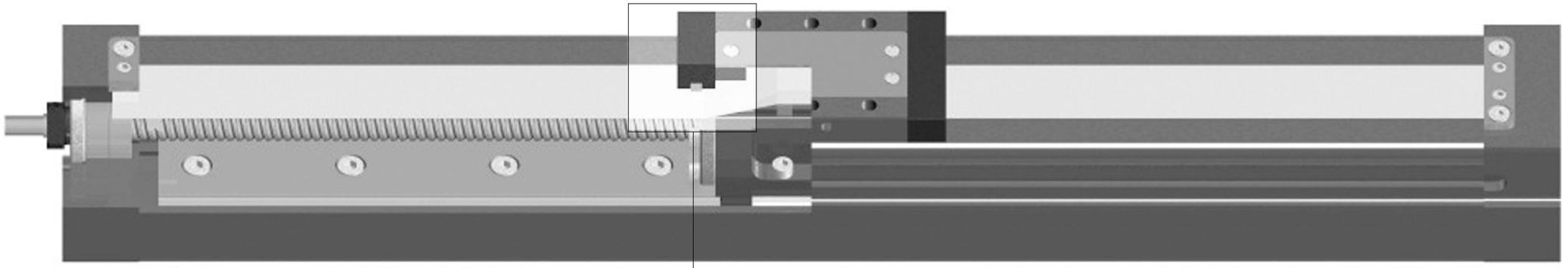
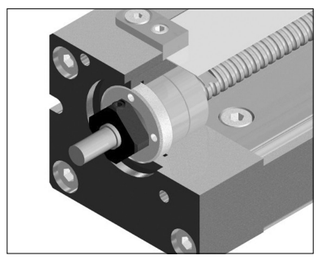
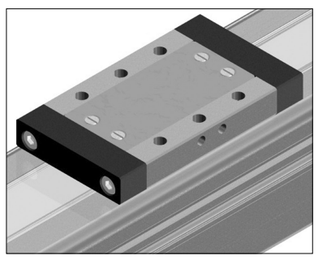
LM Guide attached ball screw driving linear module

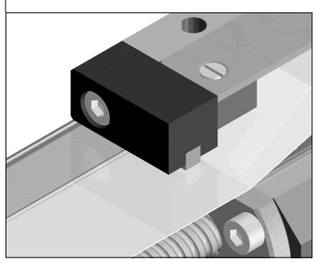




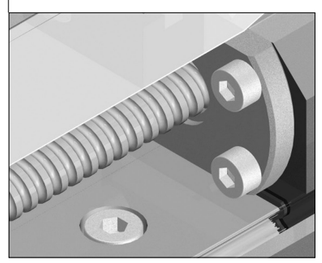
Possible to demonstrate system using various axis combination, and comfortable maintenance
Long lifespan guaranteed by application of strong wearing-resistant aluminum material



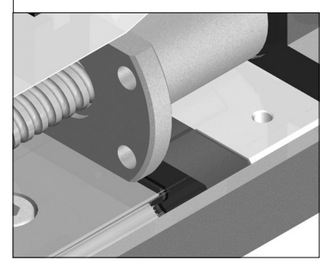
Production of any slider dimension available along with customer request, and comfortable for various jig attachment



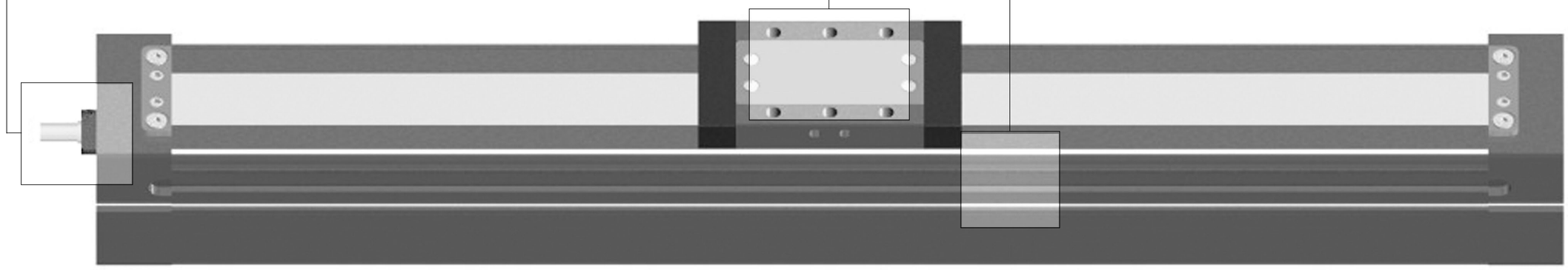
In order to prevent internal dust generation, belt is built-in and stainless steel cover is equipped.



Possible to respond customer requirements along the purposes by using various ball screw specification



High strength and high precision LM guide applied



Features

- Combination of LM guide and ball screw driving unit
- Compact design with high strength structure
- Designed for various combinations, comfortable for multi-shaft combination
- Easy maintenance
- Responding to various customer requirements such as mounting, accessory formation, etc.

Order type

QS – 47 – 200 – L05 – 5

1 2 3 4 5

1 TYPE

2 Type number
47

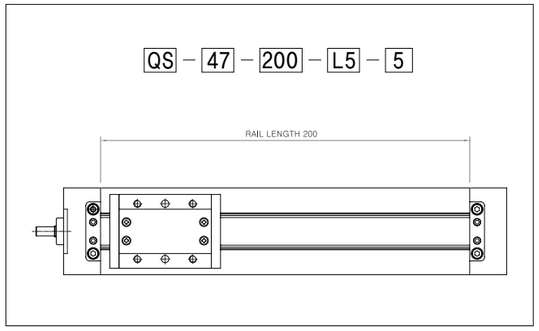
3 Rail length(mm)

4 Ball screw type

Index	
Type	Ball Screw
L5	8×5
L8	8×8

5 Quantity

▶ Ordering of Module



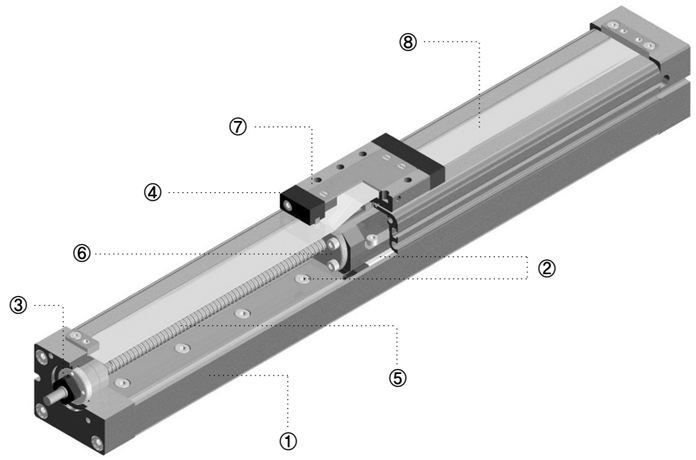
▶ Accessory

☐ Motor (Name of company :)
(Model name :)
(Power : 〈kw〉)

☐ Reducer
☐Pulley Reducer
☐Others(Name of company :)
(Model name :)
(Reduction gear ratio :)

☐ MSK (Sensor Bracket)
☐Photo Sensor
☐Proximity Sensor

☐ Urethane stopper



▶ Specification of Components

No	Component name		Material	No	Component name	Material
1	Rail		Aluminum alloy	5	Ball screw	Cr-Mo steel
2	Product No.	LM GUIDE		6	Ball screw nut	
	47	No.12W / 1RAIL 1BLOCK				
3	Lock nut			7	Slider	Aluminum alloy
4	Support unit			8	COVER	Stainless

▶ Performance sheet

Repeating accuracy	±0.02mm
Pitch accuracy	±0.05mm/±300mm
Straightness of rail	0.35mm/m
Parallelism between shafts	±0.02mm/m
Tolerance of length	±0.5mm

▶ Formula

• Driving torque

$$T_d = \frac{F \times P \times S \times \mu}{2000 \times \pi \times \varepsilon}$$

$$P_m = \frac{T_d \times n}{9550}$$

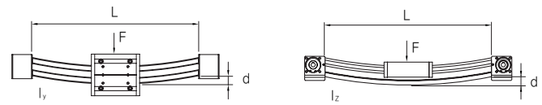
F : Applied load(N)
P : pitch(mm)
S : Safety coefficient
n : Screw rotation number per min, (min^{-1})
μ : Frictional coefficient
ε : Screw efficiency ~ 0.9
T_d : Driving torque (Nm)
P_m : Motor power (kw)

• Ball screw allowable rotation number

$$N = \lambda \times \frac{D}{L} \times 10^7$$

N : allowable rotation number
L : Distance between attachments
D : Screw shaft sectional area
λ : 15.1

▶ Max. deflection of rail



*Formula for deflection of rail is the same to the whole dimension.

$$d = \frac{F \times L^3}{192 \times E \times I}$$

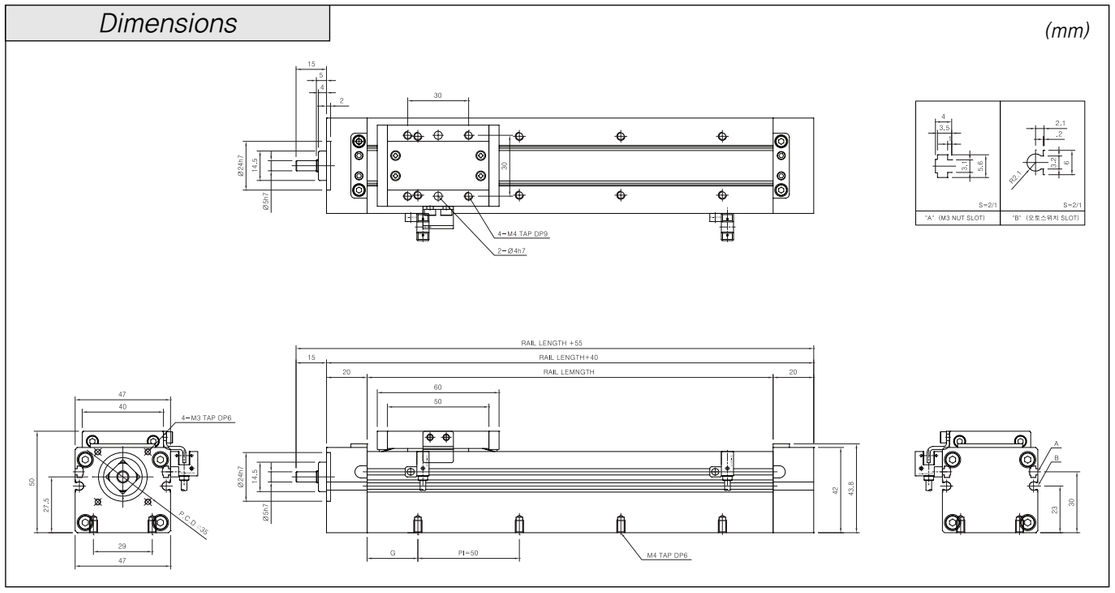
E : Young's modulus, aluminum – 70,000N/mm^2
d : deflection [mm]
F : load [N]
L : free length [mm]
I : 2'nd moment of area [mm^4]

▶ Ball screw loading capacity (Table 1)

Ball screw (Rolled)	Force / Torques	Fx (N)
0805	STATIC	3,000
	DYNAMIC	1,850
0808	STATIC	3,800
	DYNAMIC	2,200

Dimensions

(mm)

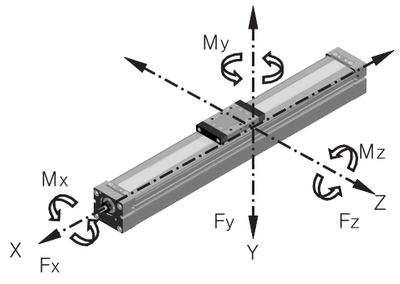


▶ Technical data

- Ball screw · Ø8×L5
  Ø8×L8
- 2'nd moment of area · I_y=9.6×10^5㎟^{4}
  I_z=14.4×10^5㎟^{4}
- No-load torque · 0.25Nm
- Weights

  Basic weight with zero stroke · · · · · · · · · · · · · 1.4kg
  Weight/100㎜ stroke · · · · · · · · · · · · · · · · · · · 0.3kg

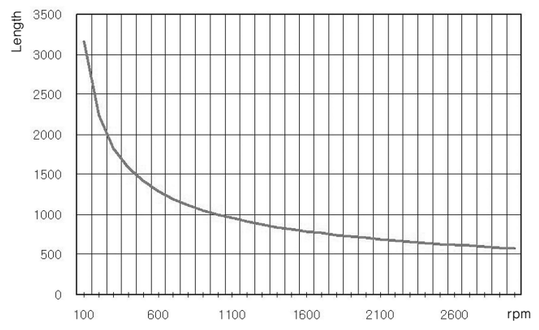
▶ Forces and moments



Slider Type	Forces/ Torques	Fx (N)	Fy (N)	Fz (N)	Mx (Nm)	My (Nm)	Mz (Nm)
QS47	STATIC	표1	6,080	6,080	48	17	19
	DYNAMIC		4,020	4,020	29	10	11

▶ Ball screw allowable rotation number graph

- Ø08×05(08)



* If rotation speed increases, ball screw may cause resonance owing to original frequency of screw axis, which causes disability of motion, so that it should be set to utilize under resonance point (risky speed).