

Lead Screws with Plastic Nuts

Resin Lead Screws

●Features

- The Shaft is manufactured from SUS304(or SUS303), which gives excellent corrosion resistance.
- Wide range of combination of Shaft dia. and Lead are available.
- MRH incorporates a lubricating agent so it can be used without oiling. It is possible to obtain smooth movement with lubricant.
- Uses the same gothic arc grooves as Ball Screws, ensuring smooth transmission.
- MRH is standard in stock, but Nut material can be changed to order, based on the environmental condition.
- Selecting backlash free type, Axial play can be 0.

●Type

Standard products in stock

MRH-A,B series : KSS products

A Polyamide type Resin with good sliding properties is employed in the standard MRH Nut material. And because a lubricating agent is incorporated in the material, it can be used without oiling. Additionally, other Nut materials are available as options.



Customized products

MRH-BP2 series : KSS products

A Polyamide type Resin with good sliding properties is employed. Backlash free construction made possible with Double Nuts and a Spring in between.



Customized products

R-MSS(Y) series : NTN Engineering plastics Corp. products

Corresponding to a wide range of environment and having corrosion resistance, heat resistance. High lead types(3 times as dia.) are available.



●Combination of Shaft nominal dia. & Lead

Unit:mm

Lead \ Shaft dia.	1	2	5	6	8	9	10	12	15	18	20	24	30	36
4	D109	D109												
6	D109	D105 D106 D109		D105 D106		D105 D106 D109				D109				
8	D109	D105 D106 D109	D105 D106		D105 D106			D105 D106 D109				D109		
10		D105 D106 D109		D105 D106			D105 D106		D105 D106 D109		D105 D106		D109	
12		D105 D106 D109		D105 D106			D105 D106			D109	D105 D106		D105 D106	D109

Note1)The numbers in each cell show pages in the catalogue. D105 and D109 are for back lash type, D106 is for backlash free type.

●Specifications

Accuracy grade and Axial play

Accuracy grade of KSS Resin Lead Screws is based on JIS Ct10. Tolerance on specified travel is calculated by following formula. Axial play is 0.05 to 0.10mm(except Backlash free type).

$$\text{Tolerance on specified travel } ep: ep = \pm \frac{\ell u}{300} \times 0.21 \text{ (mm)}$$

ℓu : Useful travel(mm)

Material

Parts	Material
Shaft	SUS304 or SUS303
Nut	MC nylon (MC703HL) Quadrant Polypenco Japan Ltd.

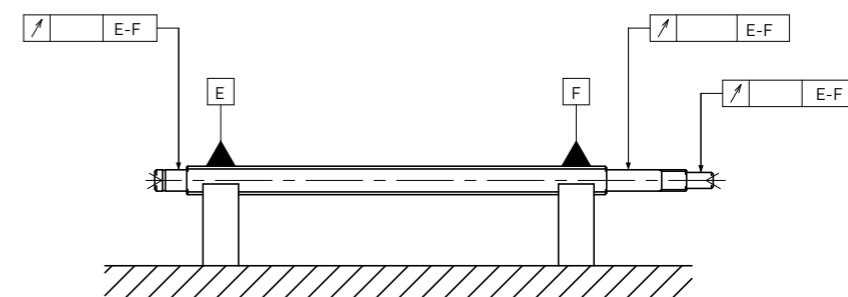
Note 1)Please refer to p-D104 for Nut material suitable for special environment.

Note 2)If material other than the table is requested, please inquire KSS

Description of Run-out and location tolerance

Description of Run-out and location tolerance for KSS Resin Lead Screws is as follows.

Each part of Run-out tolerance is based on JIS Ct10 of Ball Screws.



● **Technical Data**

Thread groove profile

The thread grooves are of a gothic arc design. This is basically the same as those used in our Ball Screws.

Mechanical efficiency

Mechanical efficiency of KSS Resin Lead Screws η (%) can be calculated by the following formula.
The expected "Mechanical efficiency" calculated from measurements is 20%-50%.
Generally, as the Lead increases, "Mechanical efficiency" tends to be high. Please use this number as a reference.

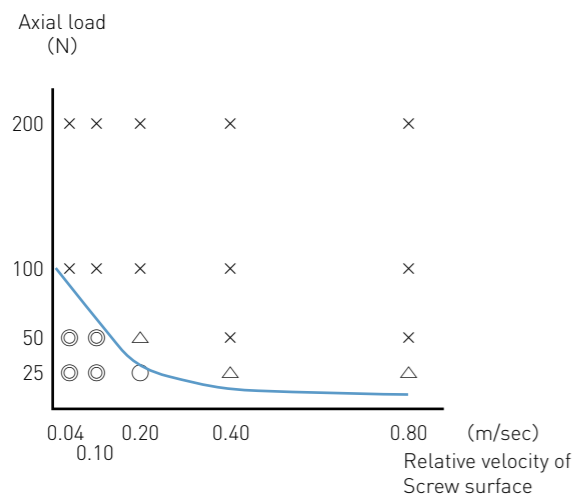
$$\eta = \frac{F_a \times \ell}{T \times 2\pi} \times 100 \quad (\%)$$

F_a : Axial load (N)
 ℓ : Screw Lead (m)
 T : Rotational torque (Nm)

FV value limits on use and endurance data

- FV value limits on use
For KSS Resin Lead Screws, the product of Axial Load and relative velocity of Screw surface is defined as FV, and this definition is reference to check if it is usable or not. Fig. D-11 is maximum FV which can be operated without lubricants in case of using Nut material MRH (Material : MC703HL). Please use it as one of the reference. It is expected to improve operational condition by applying lubricants.

Fig. D-11 : FV value limits

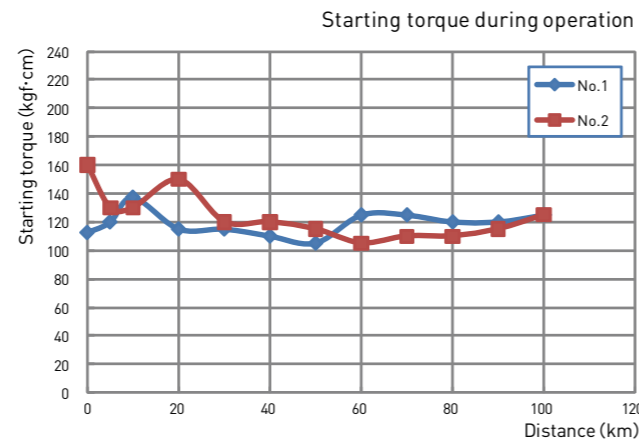


Model : MRH0805 / Lubricant : None
 Evaluation :
 ◎ Stable operational conditions were maintained for the long term.
 ○ Operation were good, but some wears were seen on the Nuts.
 △ Operations became difficult in a relatively short time.
 × Operations became difficult in the short time.

In case of $FV < 5$ (N·m/s), stable operations were maintained.
 Operations under $FV > 10$ (N·m/s), maintaining stability was difficult.
 Axial Load should be treated more carefully as to upper limits rather than relative speed.

• Endurance test data of Preloaded products (BP2 type)

Model : $\phi 10$ mm, Lead = 6mm
 Load : None
 Speed : 1000rpm
 Travel : 400mm (2-way)
 Lubricant : None
 Result : After running 100km, operation were good.
 Starting Torque monitor : see Diagram right



● **Special products**

Regarding KSS Resin Lead Screws, the standard material of Nut is MC nylon (MC703HL), but we also provide with the following Nut materials.
 Please inquire KSS if Trapezoidal thread and ACME thread are needed.
 In case of bulk order, it is possible to save the price to select material which is manufactured by injection molding.

Table D-12 : Product performance comparison

Product	MRH	MRS	MRE	MRZ
Classification	Standard	Customized		
Operating environment	Standard environment			Special environment
Nut appearance				
Material	Polyamide type			Polyether ether ketone type
Features	Balanced performance			Flame resistance, heat/water resistance
Other	Good sliding properties	—	Good electrical conductivity	Food hygiene, chemical resistance
Mechanical strength	○	○	○	◎
Heat resistance	○	○	○	◎
Wear resistance	◎	◎	◎	○
Chemical resistance	○	○	○	◎
Machinability	◎	◎	◎	○

◎ superior
 ○ usable
 △ relatively inferior
 ▲ Inferior

Fig. D-13 : Evaluation each material

