

TONGIL INDUSTRIES CO.,LTD.

BALL SCREW DIVISION

T Series (Tube)

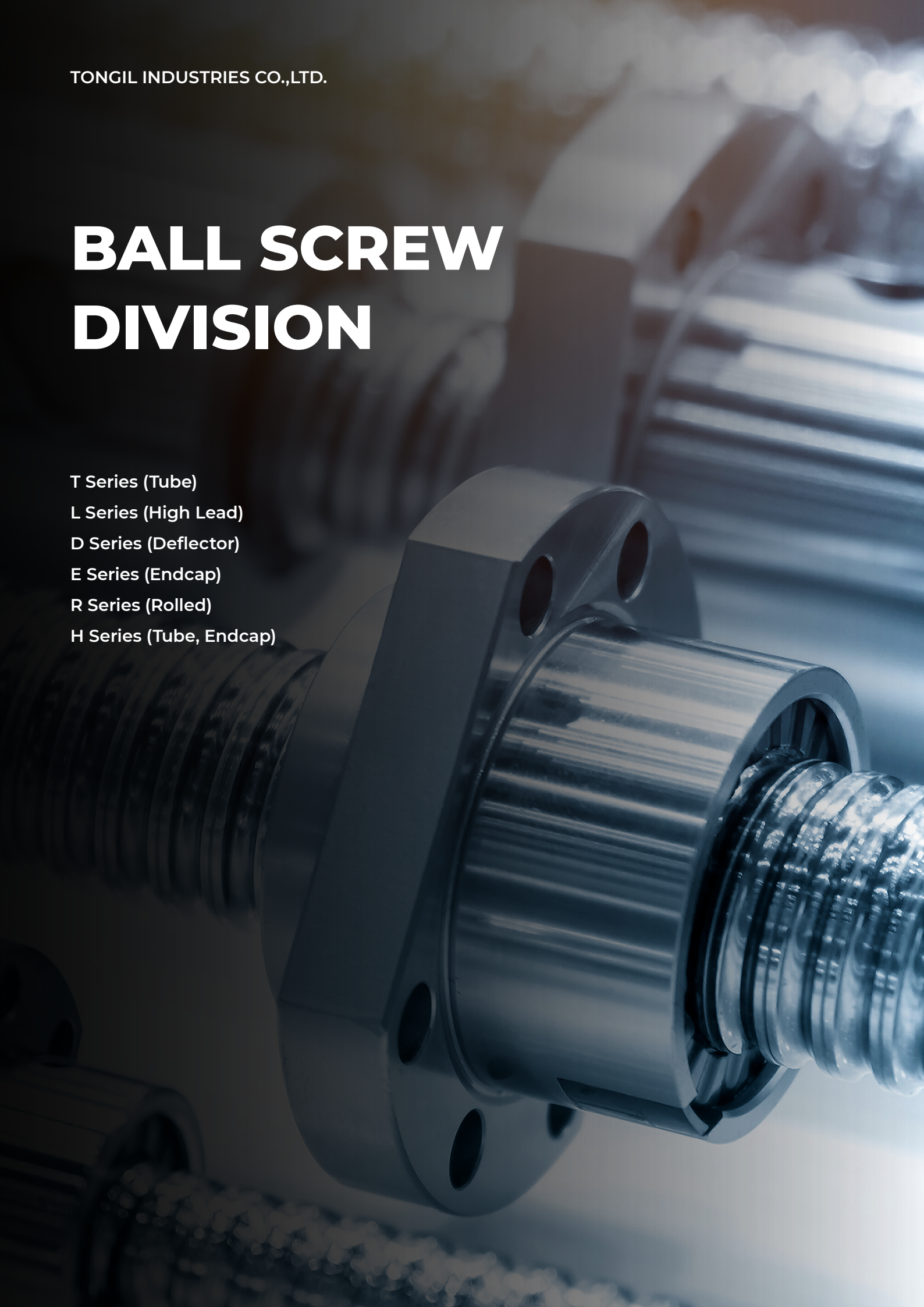
L Series (High Lead)

D Series (Deflector)

E Series (Endcap)

R Series (Rolled)

H Series (Tube, Endcap)

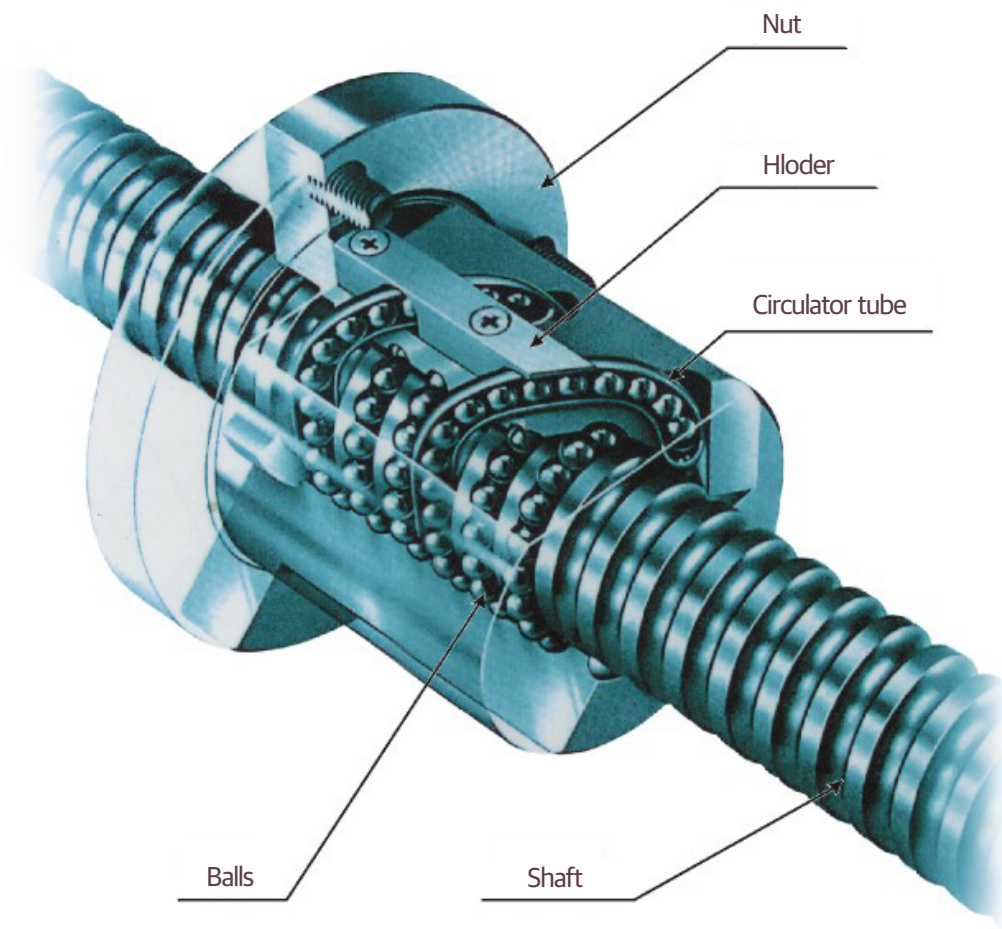


High-Precision Ball Screw

Features

- High transfer efficiency
- Long service life, Easy maintenance
- High rigidity with preload

Construction



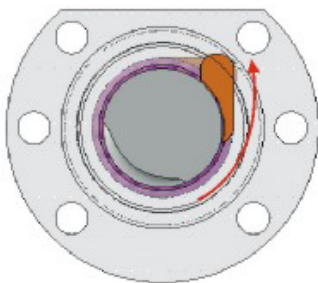
High-speed Low-Noise Ball Screw

Features

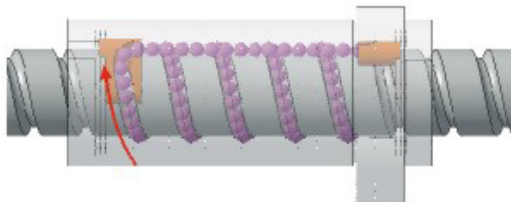
- Low noise and good sound quality achieved improved ball circulation structure.(Structure to reduce ball impulsive sound)
- Noise reduction achieved by change of material.
(Adoption of material with low impulsive sound)
- Higher precision of ball track shape.
(Improvement in track shape and surface roughness)



Construction



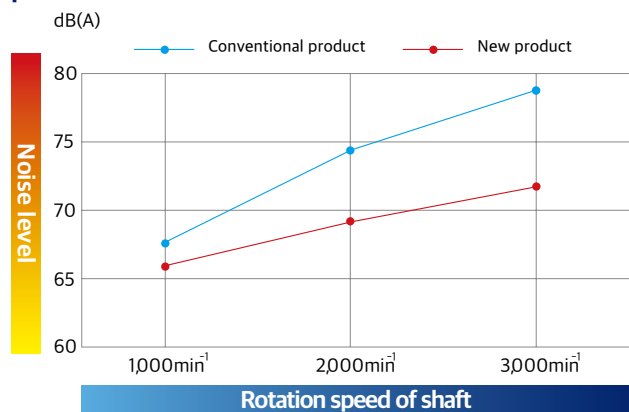
Tangential Direction Circulation



Lead Angle Direction Circulation

Performance

Noise comparison between conventional and new products



Shaft diameter	Ø40mm
Lead	16mm
Diameter of steel ball	6.35mm
Lubricant	Multemp SRL
Number of turns	5.7巻x1列
Noise rating	1000mm between sample and microphone : 1,000mm

As the speed increases, the noise reduction becomes more obvious

High speed · Heavy load Ball Screw

Features

- **High Load, Long Service Life**

Has optimum design with high-load conditions (ball retainer, ball contact angle, radius curvature, number of turns) to extend rated service life by twofold to threefold.

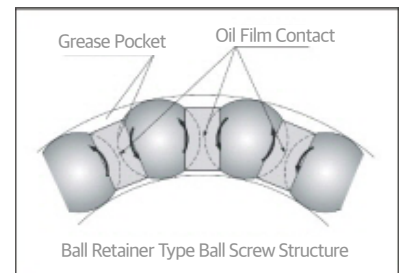
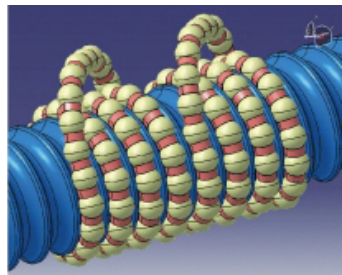
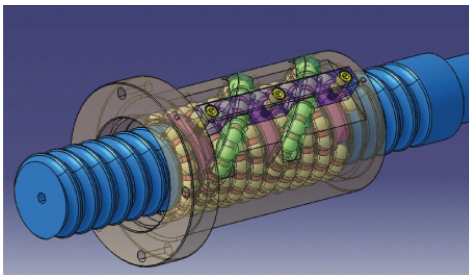
- **High-Speed Compatibility**

Ball circulation components designed for high-load conditions.

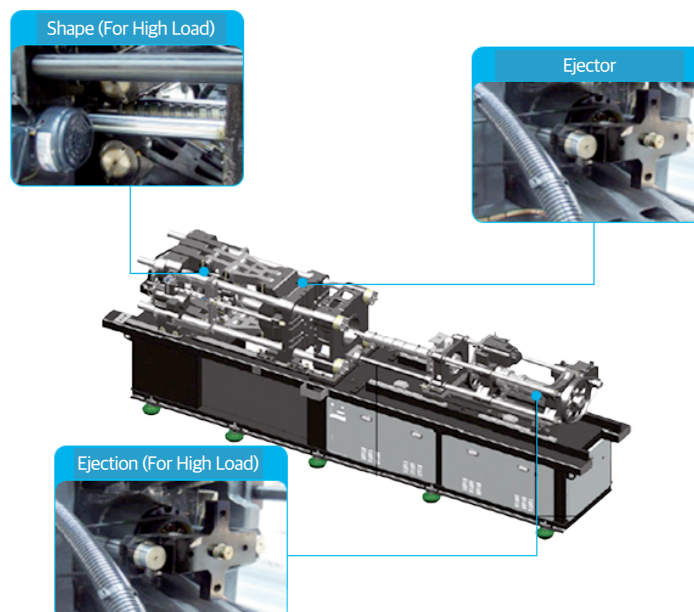
- **Lubricity**

Applied with retainer to prevent contact between balls and ensure low friction and low torque. This eliminates the need for lubrication for a long time.

Construction



Mounting Recommended

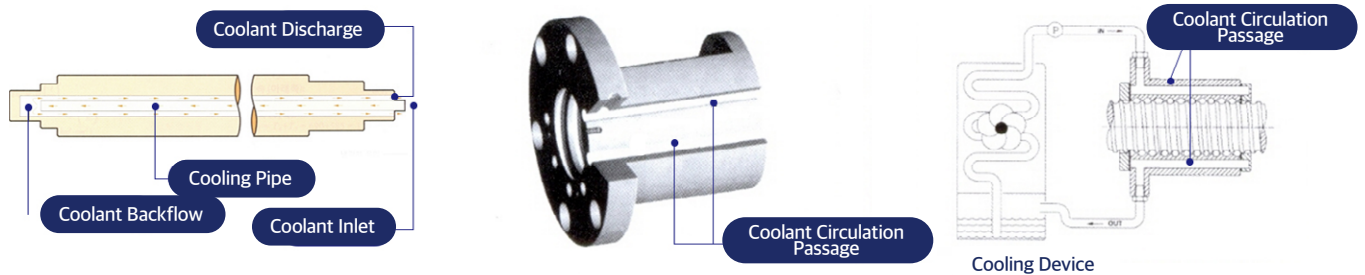


Cooling Ball Screw

Features

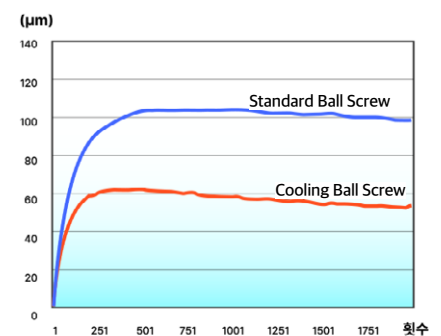
- Shaft and nut applied with a cooling circulation channel to introduce coolant and control temperature.
- Suitable for high-speed rotation by controlling temperature rise.
- Minimum thermal displacement of ball screw to extend durability and service life.

Construction



Ball Screw Cooling Test

Test Conditions	
Spec	YEF4010-R670-C3-1091
Shaft Diameter	ø 40
Lead	10
Torque	3.5~4 kgf-cm
Number of Effective Turns	5
Maximum Speed	30m/min
Weight	150kg



Thermal Displacement Data

T Series (Tube)

Broadly Applicable Standard Mass-Production Series

1) TF Type (Tubular Single Nut with One-Side Flange)

A basic-type single nut is available in two options of round type (Type A) and concave type (Type B). When installing the nut, select the type suitable for the installation space.

① TSF Type (No Preload) : Has a slight axial clearance.

② YTF Type (Oversized Ball Preload) : Insert a steel ball slightly larger than the screw shaft and nut grooves to apply preload. The ratio of load ball to spacer ball is 1:1. This type is suitable for light preload.

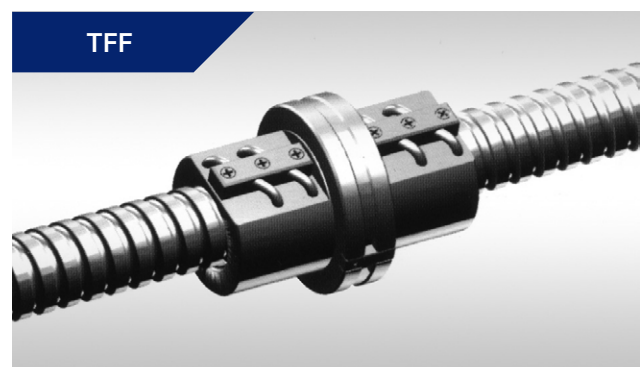
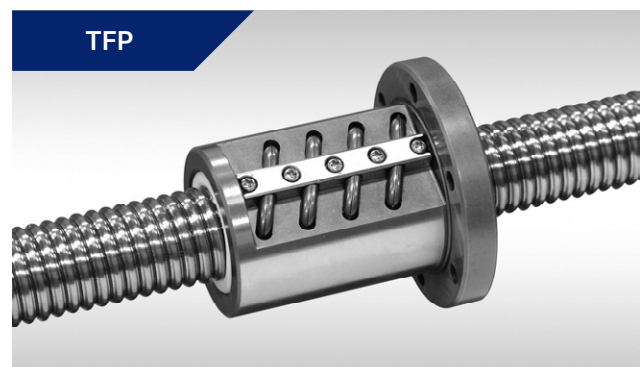
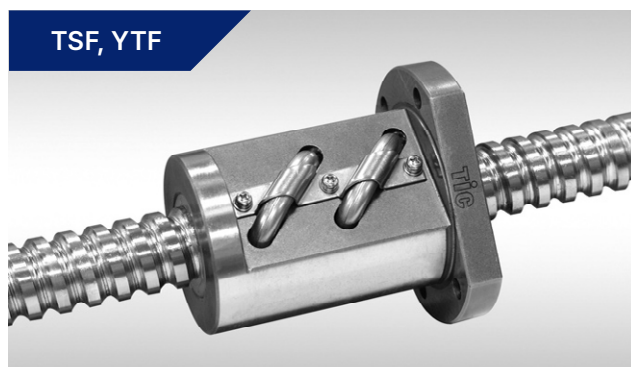
③ TFP Type (Integral Preload) : Shift the lead at the center of nut by the amount required for preload. It has an appearance of integral nut but it uses the same preload method to double nuts. This type is suitable for light to medium preload.

2) TFN Type (Tubular Double Nut with One-Side Flange)

Insert a spacer between two nuts with a thickness corresponding to the preload amount to apply preload. This type is suitable for light to medium preload.

3) TFF Type (Tubular Double Nut with Butt Weld Flange)

Insert a spacer between two nut flanges with a thickness corresponding to the preload amount to apply preload. This type is suitable for light to medium preload.



D Series (Deflector)

Compact Nut with Ball Circulating Inside Nut

1) DF Type (Deflector Single Nut with One-Side Flange)

A basic-type single nut is available in two options of round type (Type A) and concave type (Type B).

① DSF Type (No Preload) : Has a slight axial clearance.

② DFP Type (Integral Preload) : Shift the lead at the center of nut by the amount required for preload. It has an appearance of integral nut but it uses the same preload method to double nuts. This type is suitable for light to medium preload.

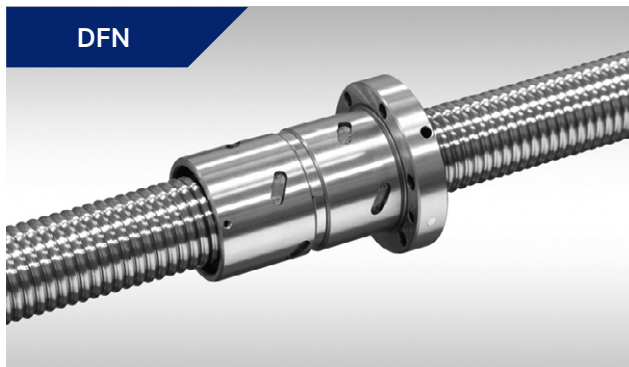
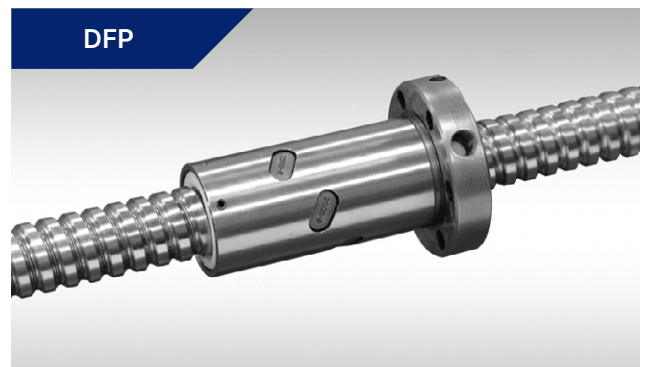
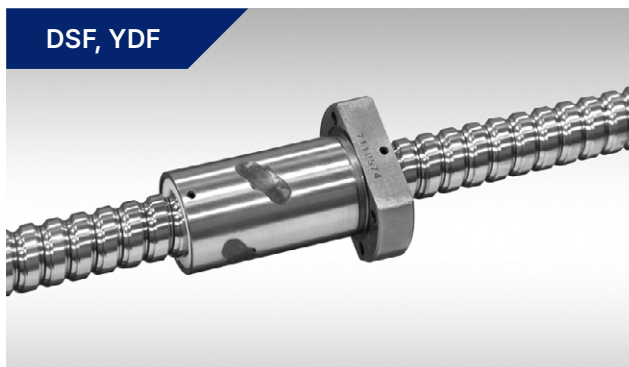
③ YDF Type (Over Size Preload) : Insert a ball larger than the screw shaft and nut grooves to apply preload.

2) DFN Type (Deflector Double Nut with One-Side Flange)

Insert a spacer between two nuts with a thickness corresponding to the preload amount to apply preload. This type is suitable for light to medium preload.

3) DFF Type (Deflector Double Nut with Butt Weld Flange)

Insert a spacer between two nut flanges with a thickness corresponding to the preload amount to apply preload. This type is suitable for light to medium preload.



L Series (High Lead)

Large Lead for Precise Positioning in High-Speed Feed

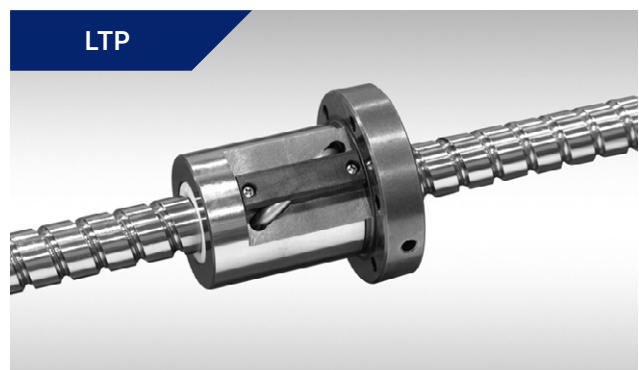
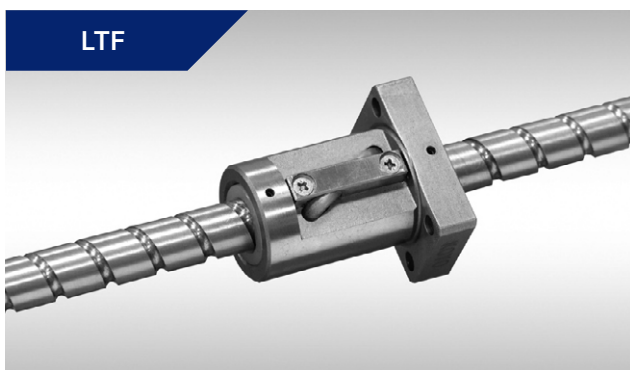
1) LTF Type (Tubular Single Nut with One-Side Flange)

① LTF Type (No Preload)

Has a slight axial clearance.

② LTP Type (Oversize Ball Preload)

Insert a steel ball slightly larger than the screw shaft and nut grooves to apply preload.



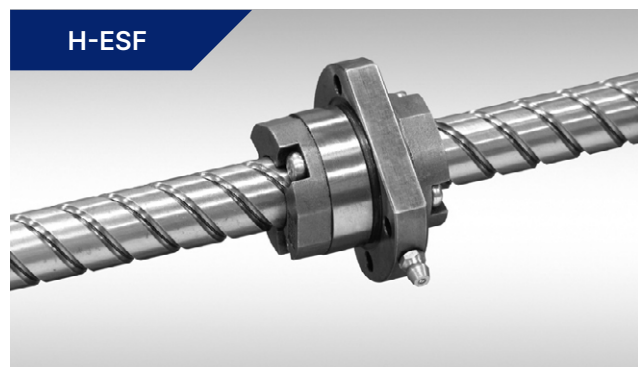
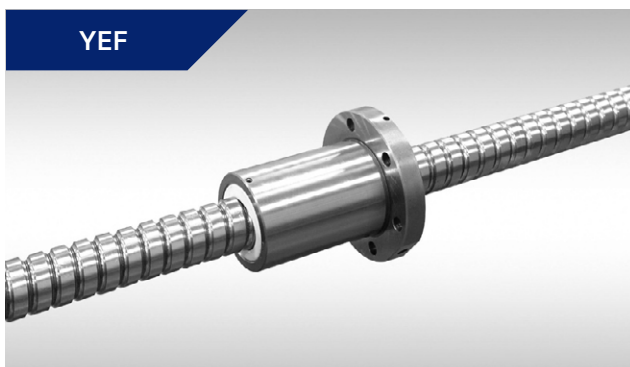
E Series (Endcap)

1) YEF Type Low-Noise High-Speed Ball Screw (Oversize Ball Preload)

Insert a steel ball slightly larger than the screw shaft and nut grooves to apply preload.

2) H-END CAP Type Low-Noise High-Speed Ball Screw

This type is suitable for high-speed feed, and its design shows excellent quality against jamming and noise.



R Series (Rolled)

1) TBSF Type Rolled Ball Screw (Built-In Tubular Flange Nut)

In a built-in tubular ball screw, tube is fully inserted inside the outer diameter of the nut and completely sealed with adhesive.

2) TNSF Type Rolled Ball Screw (Compact Outside Flange Nut)

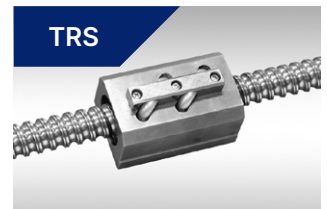
In a small-type ball screw, tube and holder protrude from the nut.

3) TMS Type Rolled Ball Screw (Triangular Threaded Nut)

This type is assembled directly by using a triangular thread on the nut's outer diameter without flange.

4) TRS Type Rolled Ball Screw (Angular Nut)

This angular nut has attachment screw holes for compact attachment on the machine body without a housing.



H Series (Tube, Endcap)

1) HLFR Type (Heavy Load Tube Retainer Nut)

This ball screw is designed to withstand heavy loads. The ball circulates based on tube retainer, and it has a protruding tube.

2) H-END CAP Type Low-Noise High-Speed Ball Screw

This ball screw is designed to withstand heavy loads. The ball circulates using an END CAP retainer mechanism.

