

TW Series Ball Screws for Twin-Drive Systems

TW Series ball screws deliver the ideal functionality for twin-drive systems and easily realize the high rigidity, accuracy and responsiveness of twin-drive tables.



New!



■ Features

1. High rigidity and long operating lifetime

Twin-driving ensures high rigidity and long-life operation.

2. High accuracy

Highly accurate positioning is achieved by specially controlled lead accuracy and preload torque and forced cooling using a hollow shaft ball screw.

3. High responsiveness

Screw shaft inertia is reduced by up to 50% for quick response to positioning commands.

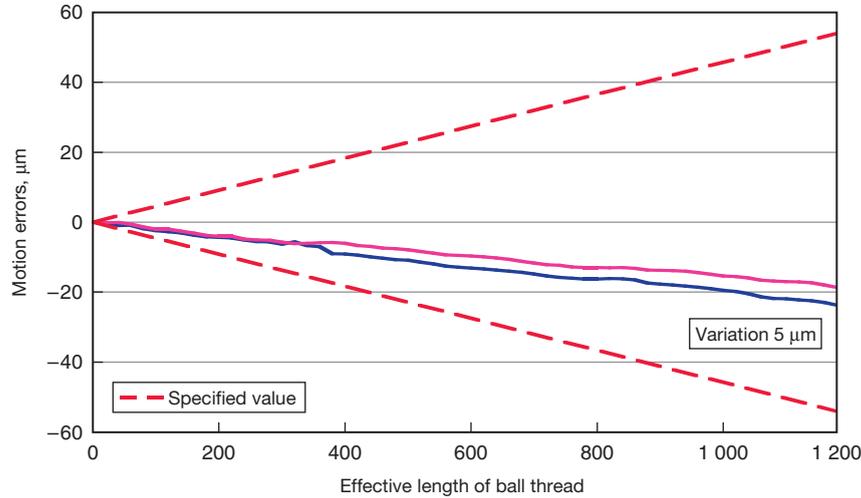
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Variation in lead accuracy and torque

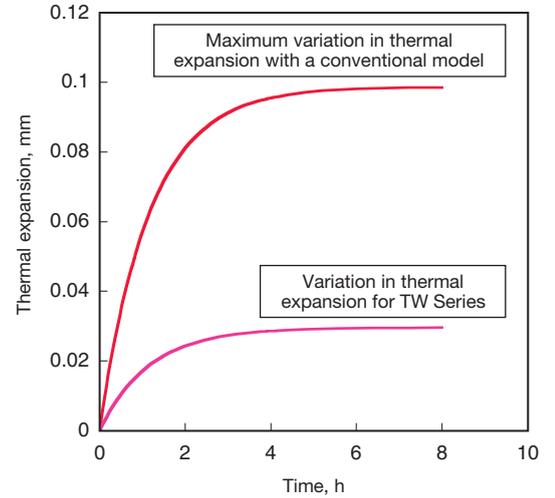
Specification of variation in lead accuracy and preload torque between a pair of ball screws, which consists of a unit of TW Series ball screws for twin drive systems, is significantly reduced, resulting in dramatically improved travel accuracy and ball screw operating lifetime.

Graph 1 shows measured variation in lead accuracy while Graph 2 displays an example of variation in thermal expansion between the two ball screws. Figure 1 is a schematic diagram comparing travel accuracy between the TW Series and a conventional model.

Graph 1 Example of measured variation in lead accuracy of the TW Series



Graph 2 Variation in ball screw thermal expansion



High functionality

Twin-drive systems provide the following advantages even if they make the shaft diameter small.

- High rigidity and long lifetime
Twin-drive systems are superior to single-drive systems in system rigidity, supporting the design of long-life feeding mechanisms.
- High responsiveness to positioning commands
Twin-drive systems permit the use of screw shaft diameters that are one size smaller, thereby reducing screw shaft inertia by up to 50%, offering high responsiveness to positioning commands.

Improved high-speed capability and noise level

Twin-drive systems allow the use of smaller screw shaft diameters, resulting in no increase in the level of noise.

A new, smoother ball circulation method using a ball scooping mechanism in the direction of screw spiral significantly improves high-speed capability and noise level compared with the conventional return tube ball circulation method, offering high-speed feeding of up to 120 m/min (shaft diameter 40 × lead 30: 4 000 min⁻¹).

Specifications

Circulation method	New circulation method, tube type, deflector type
Shaft diameter	∅32 to 63 mm
Lead	10 to 30 mm
Accuracy grade	JIS C5

Optional specifications

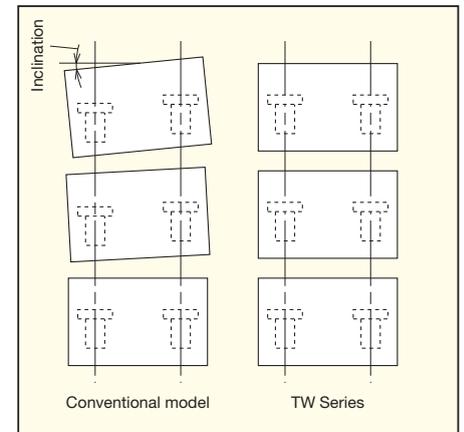
Accuracy grade: JIS C3

Hollow shaft ball screw: Provides high accuracy through the use of forced cooling.

Ball screw specifications and other conditions

- Shaft diameter: 40
- Lead: 20
- Torque: 51–106 N·cm
- Stroke: 1 000 mm
- Maximum rotational speed: 3 000 min⁻¹
- Average rotational speed: 230 min⁻¹

Figure 1 Schematic diagram of travel accuracy



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