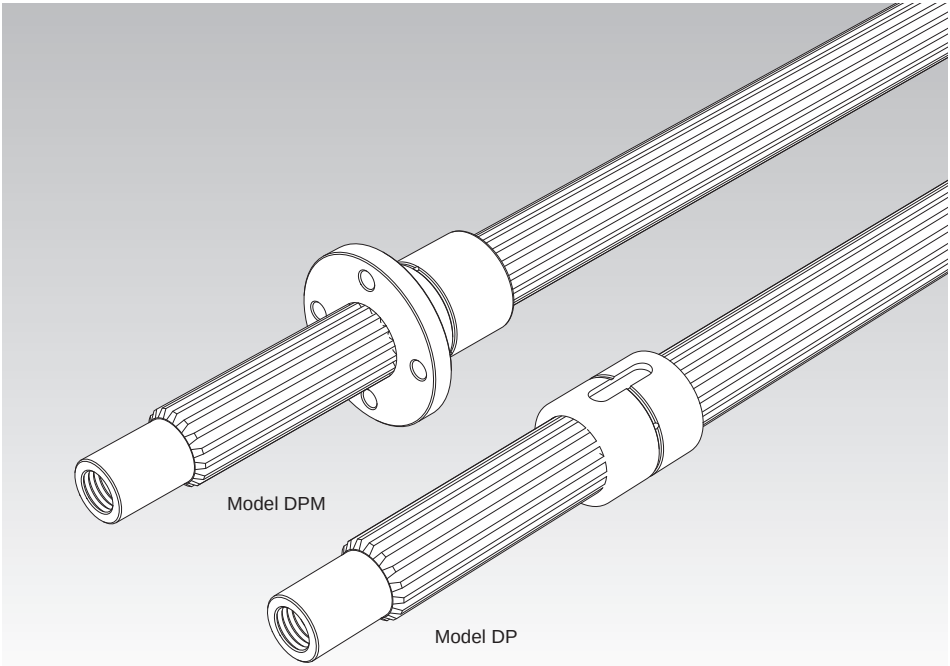
Features of the Spline Nut



Structure and Features

Spline Nut models DPM and DP are low price bearings that are made of a special alloy (see **A14-3**) formed by die casting and use highly accurate spline shafts as the core. Unlike conventional machined spline nuts, the sliding surface of these models maintains a chill layer formed in the rolling process, thus achieving high wear resistance.
The surface of the spline shafts to be used in combination with the nuts is hardened through rolling and is mirror-finished. Accordingly, smooth sliding motion is achieved.
The specially designed teeth of the spline have large contact areas, as well as concentricity, which enable the shaft to automatically establish the center as a torque is applied. Therefore, the teeth demonstrate stable performance in transmitting a torque.

Features of the Special Rolled Shafts

Dedicated rolled shafts with standardized lengths are available for the Spline Nut.

[Increased Wear Resistance]
The shaft teeth are formed by cold gear rolling, and the surface of the tooth surface is hardened to over 250 HV and mirror-finished. As a result, the shafts are highly wear resistant and achieve significantly smooth motion when used in combination with nuts.

[Improved Mechanical Properties]
Inside the teeth of the rolled shaft, a fiber flow occurs along the contour of the tooth surface of the shaft, making the structure around the teeth roots dense. As a result, the fatigue strength is increased.

[Additional Machining of the Shaft End Support]
Since each shaft is rolled, additional machining of the support bearing of the shaft end can easily be performed by lathing or milling.

High Strength Zinc Alloy

The high strength zinc alloy used in the spline nuts is a material that is highly resistant to seizure and wear and has a high load carrying capacity. Information on mechanical properties, physical properties, and wear resistance is presented below.
∗The figures shown are target values—these figures are not guaranteed.

[Mechanical Properties]

Table1

Item	Description
Tensile strength	275 to 314 N/mm^2
Tensile yield strength (0.2%)	216 to 245 N/mm^2
Compressive strength	539 to 686 N/mm^2
Compressive yield strength (0.2%)	294 to 343 N/mm^2
Fatigue strength	132 N/mm^2×10^7 (Schenk bending test)
Charpy impact	0.098 to 0.49 N-m/mm^2
Elongation	1 to 5 %
Hardness	120 to 145 HV

[Physical Properties]

Table2

Item	Description
Specific gravity	6.8
Specific heat	460 J/ (kg•K)
Melting point	390 ℃
Thermal expansion coefficient	24×10^{-6}

[Wear Resistance]

Table3 [Test conditions: Amsler wear-tester]

Item	Description
Test piece rotational speed	185 min^{-1}
Load	392 N
Lubricant	Dynamo oil

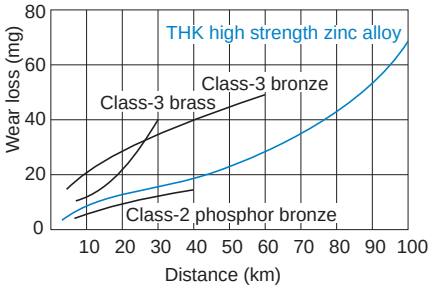


Fig.1 Wear Resistance of the High Strength Zinc Alloy

Clearance in the Rotation Direction

Clearance in the rotational direction: $\alpha \leqq 20'$ MAX