

Q : What is the advantage of Lead Screws compared to Ball screws?

Lead Screws do not have Balls inside the Nut unlike Ball Screws. Shaft and Nut of Lead Screw are contacted at flank surface each other. So the efficiency is much lower than Ball Screws, which means that Lead Screws have high friction coefficient. This is the bad point of Lead Screws.

Why are Lead Screws used for wide range of machines? The reasons are as follows.

1) Reasonable price compared to Ball Screws

Generally, Precision Lead Screws are less expensive than Precision Ball Screws, even though Precision Lead Screws are processed by groove grinding. For the usage of low accuracy application, they can be produced by turning process only. In this case, Lead Screws would be much less expensive than Ball Screws. In addition, for bulk order, it is possible to save more cost with Rolled process of Screw Shaft.

2) No restriction on Nut configuration

Since there is no Ball re-circulation part on Lead Screws, Nut configuration is not restricted. The pictures below are the example of special Nut configuration in accordance with customer's design.



3) Ultra small pitch

There is no need to create re-circulation part and Balls like Ball Screws, ultra small Pitch would be available. For example, 0.1mm Pitch would be available on 3mm diameter of Shaft. On the other hand, 0.5mm Pitch should be the smallest on 3mm Ball Screw.

4) No Nut falling by weight

If Ball Screws are not pre-loaded and put in vertical position, the Nut will move due to its own weight. But it will not happen on Lead Screws because of high friction on the flank surface contact. This can be utilized as brake function when vertical use.