

Driven nut FAR-B-S





The requirement for higher dynamics and long strokes have led to the development of systems where the nut is driven instead of the screw.

Since the screw does not rotate, the attainable rotary speed is no longer limited by the critical screw speed. Even with stationary screws, the natural frequency must still be considered but resonance is far less critical than in systems with driven screws. This is because of the significantly lower energy introduced by the driven nut. The systems can theoretically be operated up to the maximum rotary speed as determined by the characteristic speed.

The end fixity for the screw can be of a simpler and therefore more economical design. Since the screw is stationary, it can be tensioned with relatively little effort. This makes it possible to compensate for length variations due to temperature fluctuations. Thermal influences can also be compensated for by using a hollow screw with a cooling system.

The FAR-B-S Unit consists of

1. Flange single nut
2. Angular contact thrust ball bearing
3. Slotted nut NMZ

FAR-B-S

Features

Integral Mounting Holes

Lock Nut

Nut

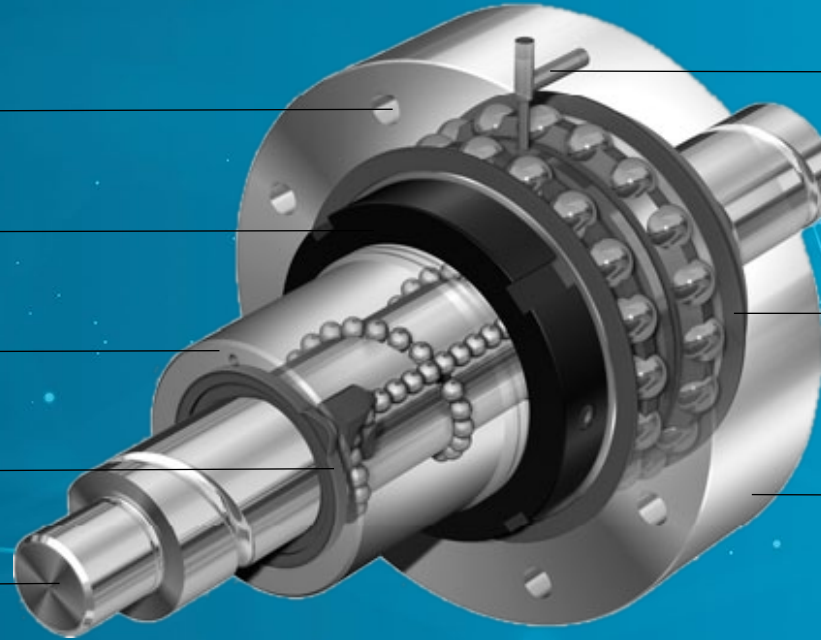
Seal

Screw with optional
liquid cooling

Lube Hole for
Bearing and Nut

Integral Seals

Angular Contact Bearing



FAR-B-S

Sizes



32 x 10R x 3.969 - 5

32 x 20R x 3.969 - 3

32 x 32R x 3.969 - 3

40 x 10R x 6 - 5

40 x 20R x 6 - 3

40 x 40R x 6 - 3

50 x 10R x 6 - 6

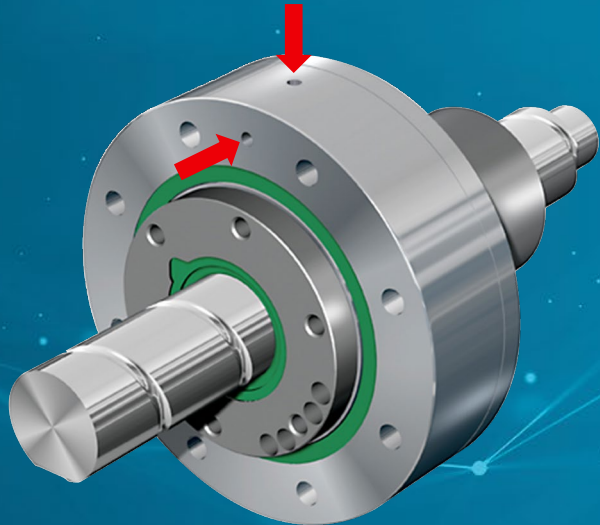
50 x 20R x 6.5 - 5

50 x 40R x 6.5 - 3

63 x 10R x 6 - 6

63 x 20R x 6.5 - 5

63 x 40R x 6.5 - 3



The Driven Nut can be lubricated with **NLGI Class 2** grease using a grease gun via the outer ring of the axial thrust bearing.

The nut has to be stationary during the lubrication process!

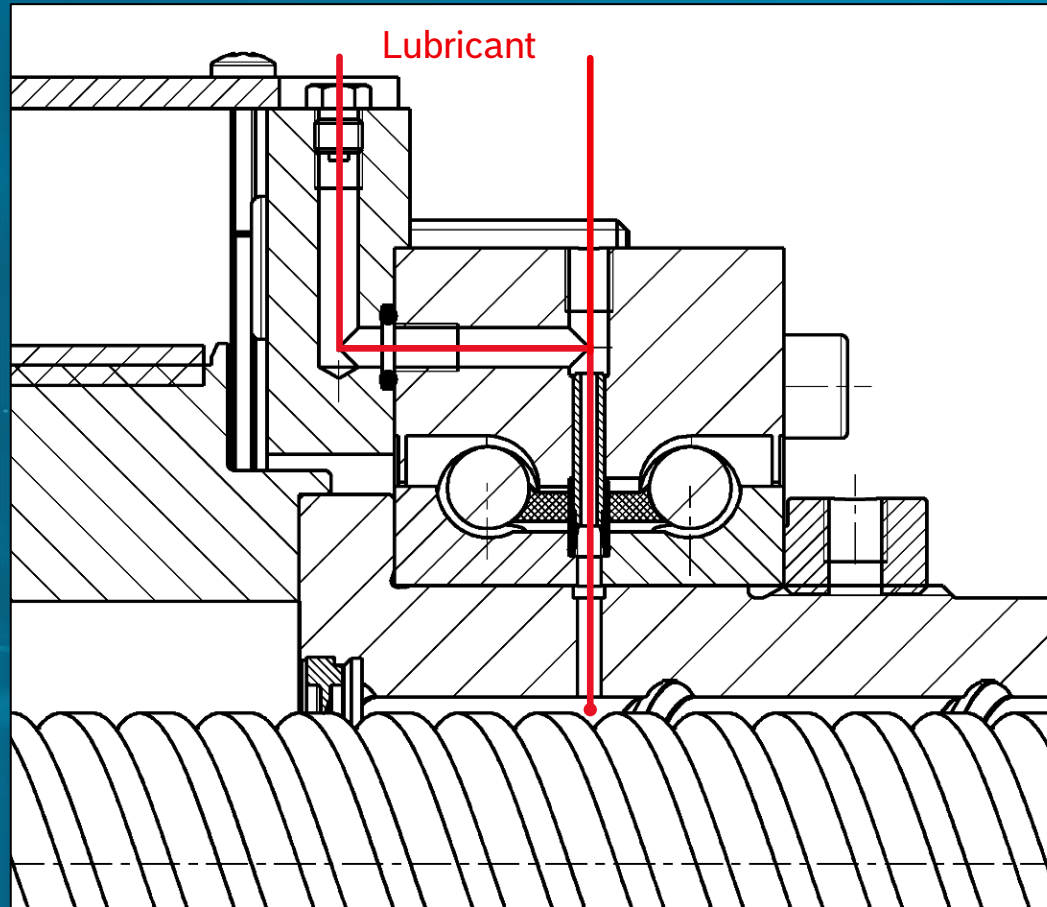
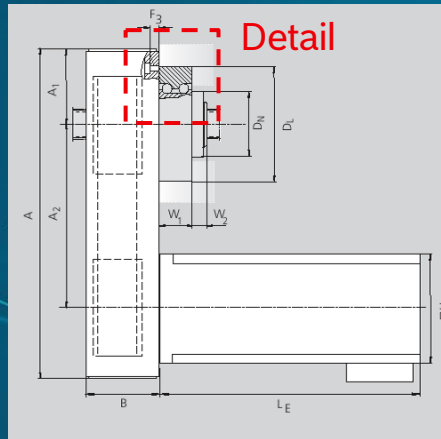
The nut can be positioned anywhere on the spindle during lubrication. This provides a very simple solution to the problem of the rotating lube port on the nut itself.

Two lube ports (M6) exist for radial or axial access.

Both ports are locked with a set screw on delivery.

FAR-B-S

Lubrication



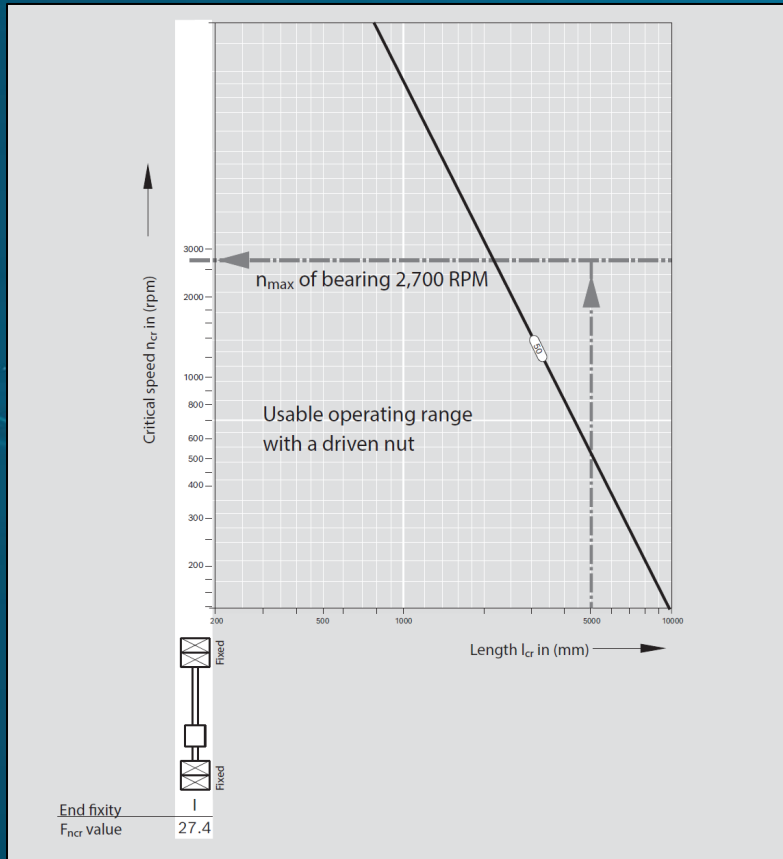
Recommended lubricants

Dynalub 510

Tribol GR 100-2 PD

Elkalub GLS 135 / N2

Critical Speed



Critical speed with driven nut

In the case of systems with a driven nut and a stationary screw, self-excitation of the screw is omitted completely with a suitable design.

The only other things that excite vibrations are the manufacturing precision of the rotating nut or of the machine's construction.

Since FAR-B-S drive units only use nuts that have been manufactured with a high degree of axial and radial run-out accuracy, this means that it is possible to rule out any negative effect on the overall system.

This means that the bending-critical speed no longer represents a limitation.

The maximum speed of the bearings that are used and, to a lesser extent, the high maximum permissible rotary speed ($d_0 \times n$ Wert) of the nut that is used, are still a limitation.

Note:

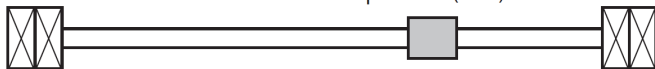
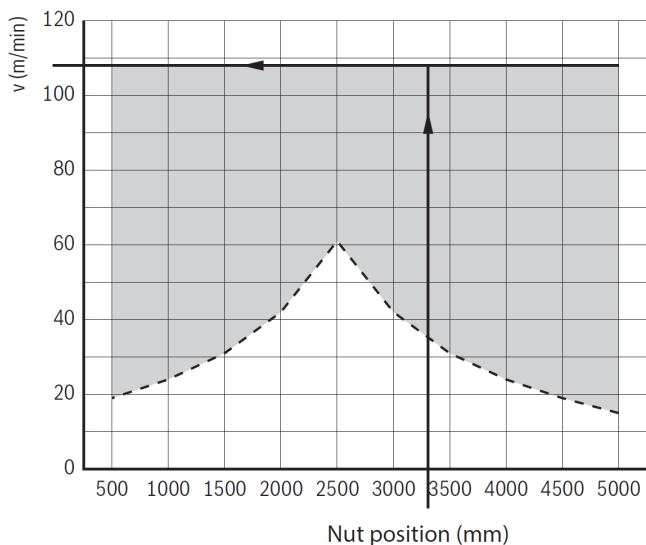
Applies to fixed-fixed bearing only

Permissible Speed

Driven nut

Max. permissible linear speed

Size 50x40Rx6.5 with fixed-fixed bearing with driven nut



- Improved performance with driven nut
- Driven Screw

Driven nut

With the driven nut (diagram at the bottom for end fixity I “fixed-fixed”), however, the permissible travel speed of the driven nut is 108 m/min regardless of the nut position across the entire stroke.

In the case of end fixity II “fixed-floating”, the floating bearing (axial displacement possible) can be designed such that it is possible to achieve a tangential gradient of the bending line (bending angle at journal area = 0).

In this case, you can also consider a floating bearing end like this as being a fixed bearing for the calculation.

FAR-B-S

Permissible Speed

FAR-B-S size $d_0 \times P \times D_w - i$	Speed $n_{\max}$ (rpm)	Speed $v_{\max\text{FAR}}$ (m/min)
32 x 10R x 3.969 - 5	3,000	30
32 x 20R x 3.969 - 3	3,000	60
32 x 32R x 3.969 - 3	3,000	96
40 x 10R x 6 - 5	2,800	28
40 x 20R x 6 - 3	2,800	56
40 x 40R x 6 - 3	2,800	112
50 x 10R x 6 - 6	2,700	27
50 x 20R x 6.5 - 5	2,700	54
50 x 40R x 6.5 - 3	2,700	108
63 x 10R x 6 - 6	2,300	23
63 x 20R x 6.5 - 5	2,300	46
63 x 40R x 6.5 - 3	2,300	92

Permissible RPM and travel speeds of FAR-B-S drive units.

End fixity I fixed-fixed bearing and

End fixity II fixed-floating bearing