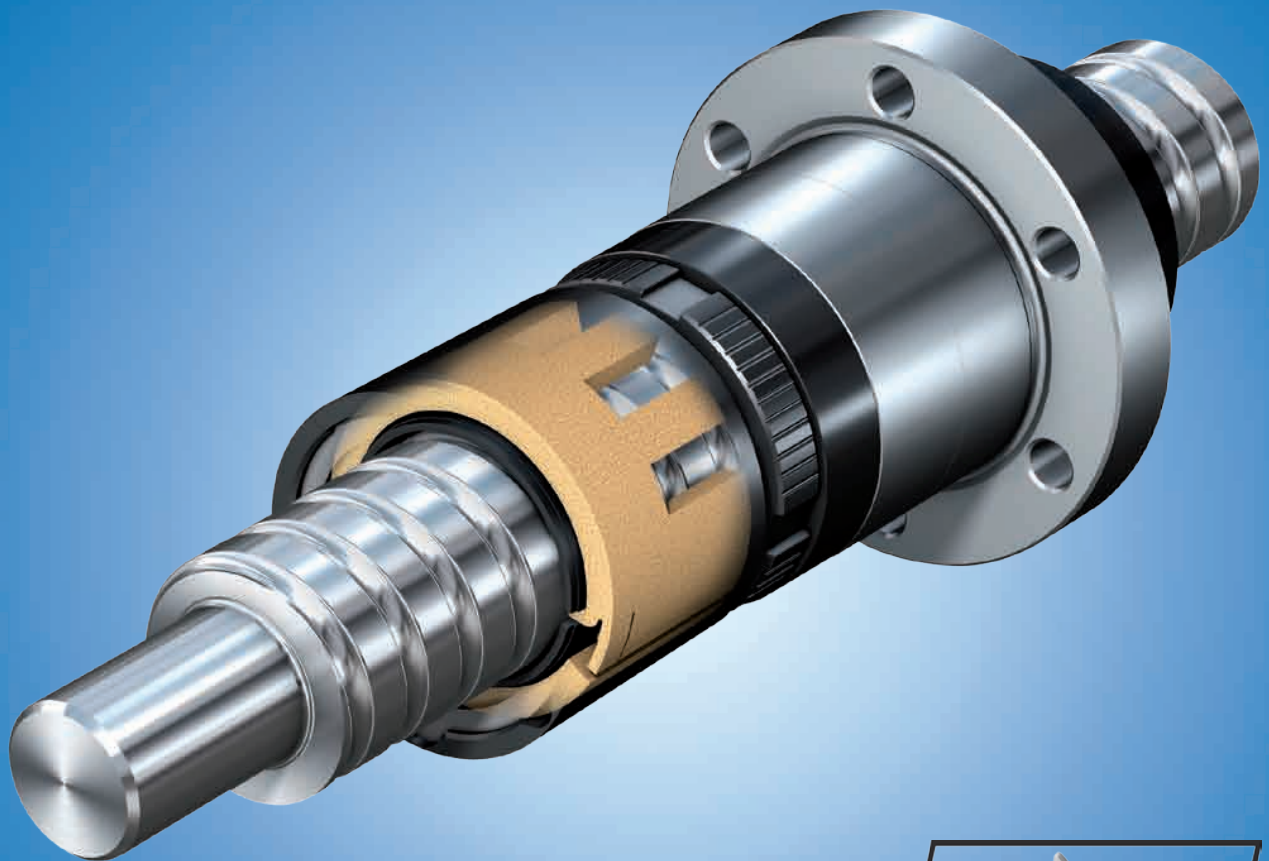


Lubed for Life: Ball Screw Assembly with Front Lube Unit

The Drive & Control Company



An innovation with lifelong benefits

Lubrication is an essential precondition for smooth and reliable operation of ball screw assemblies. Conventionally, the lubricant is applied either manually or through a central lubrication system. Relubrication is therefore time-consuming and cost-intensive.

By introducing its pre-lubricated ball nut in the year 2000, Rexroth already extended the relubrication interval to 50 million revolutions. Its latest innovation, the Rexroth Front Lube Unit (VSE), eliminates the need to relubricate ball screws operated under normal conditions. Following intensive development work and thorough testing under realistic conditions, the Front Lube Unit enables you to achieve lifelong lubrication of Rexroth Ball Screw Assemblies.

Ecologically sound

The Front Lube Unit ideally combines eco-friendliness with cost-efficiency. It minimizes oil consumption and keeps the surroundings clean, thus helping to conserve resources.

Operating principle of the Front Lube Unit

Used in combination with a pre-lubricated ball nut, the Front Lube Unit ensures optimal lubrication of the ball screw assembly. From its built-in oil reservoir, the Front Lube Unit delivers the precise amount of oil required to replenish the depleted reserves of oil in the soap matrix of the grease inside the ball nut. The oil is applied directly to the screw thread via the low-friction point-contact zone of the open-pored foam. This optimized delivery minimizes lubricant consumption and allows you to achieve lifelong lubrication.



Standard component – amazing performance

Equipped with Rexroth's efficient, series-made Front Lube Unit, a ball screw assembly can attain an exceptionally long travel life without relubrication. A comparison with the linear travel life of Ball Rail Systems makes this clear. Size 15 to 45 Ball Rail Systems achieve a travel life of 10,000 km. Ball Screw Assemblies with high leads can achieve 9,600 or 12,000 km when fitted with a Front Lube Unit. It should be remembered here that, for the same linear distance traveled, the balls of a Ball Screw Assembly actually travel 3 to 24 times farther than those of a Ball Rail System because of their spiraling motion around the screw.

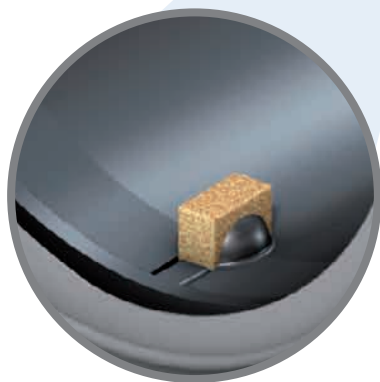


Sleeve nut to fasten the Front Lube Unit

Open-pored foam

Housing of the Front Lube Unit

Seal

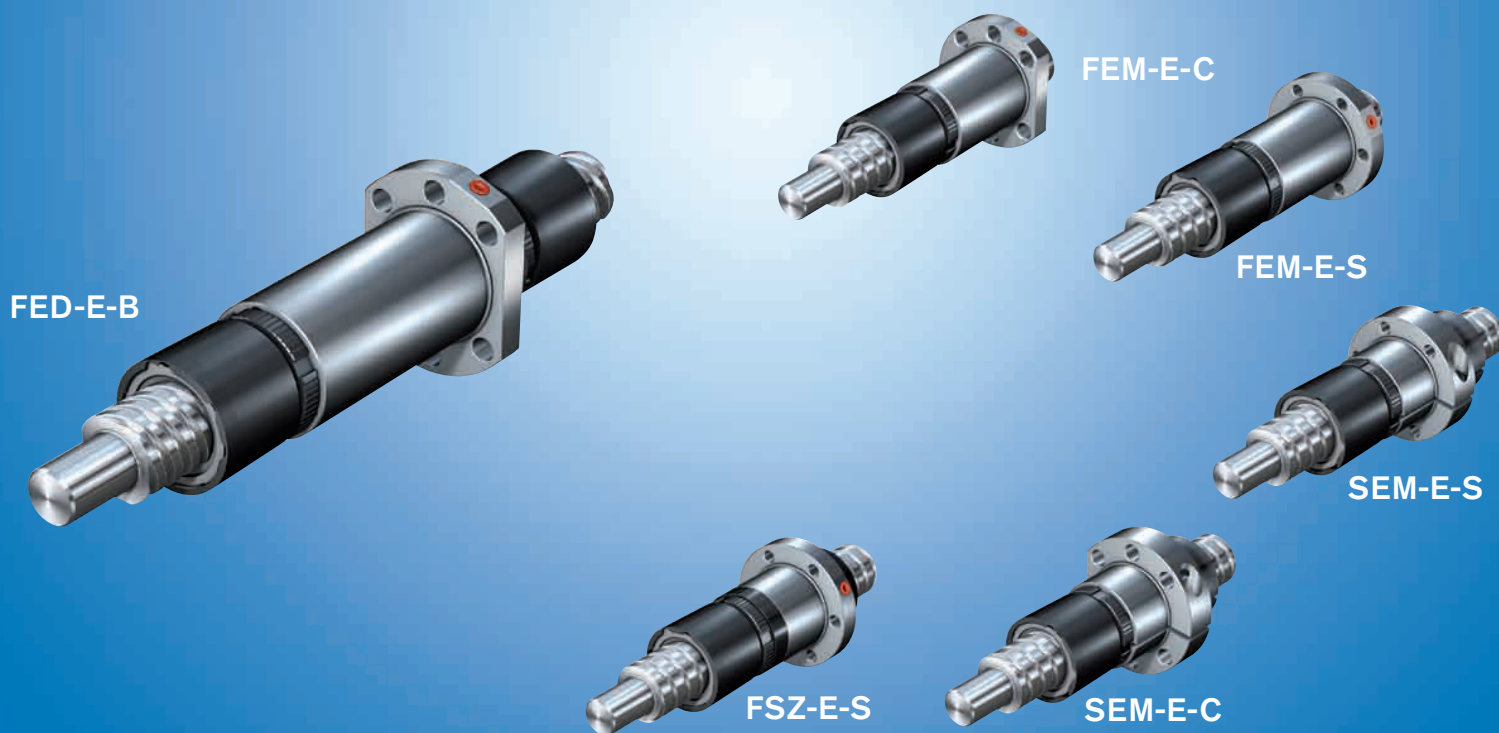


Contact zone of the open-pored foam

Screw (max. load up to 0.15 C)	
Lead in mm	Linear travel in km
5	1,500
10	3,000
20	6,000
32	9,600
40	12,000

The Front Lube Unit – for a broad variety of applications

The Front Lube Unit is delivered ready-mounted to the Ball Screw Assembly. Unlike alternative solutions, the Rexroth Front Lube Unit attaches to the end of the ball nut, thus saving space. For single-start nuts it can be installed either on the flange side or on the opposite side, allowing easy integration into existing constructions. Installed at both ends of the ball nut, the Front Lube Unit also meets the lubrication needs of high-capacity 2-start nuts (FED-E-B). The Front Lube Unit can be used in both horizontal and vertical installations. It is available for all ball nut designs in diameters 20 to 40 and is suitable for all normal conditions of use, except for wet or dusty environments.



The Front Lube Unit is ideal for use in the following areas:

- Automation and handling
- Packaging technology
- Measuring machines

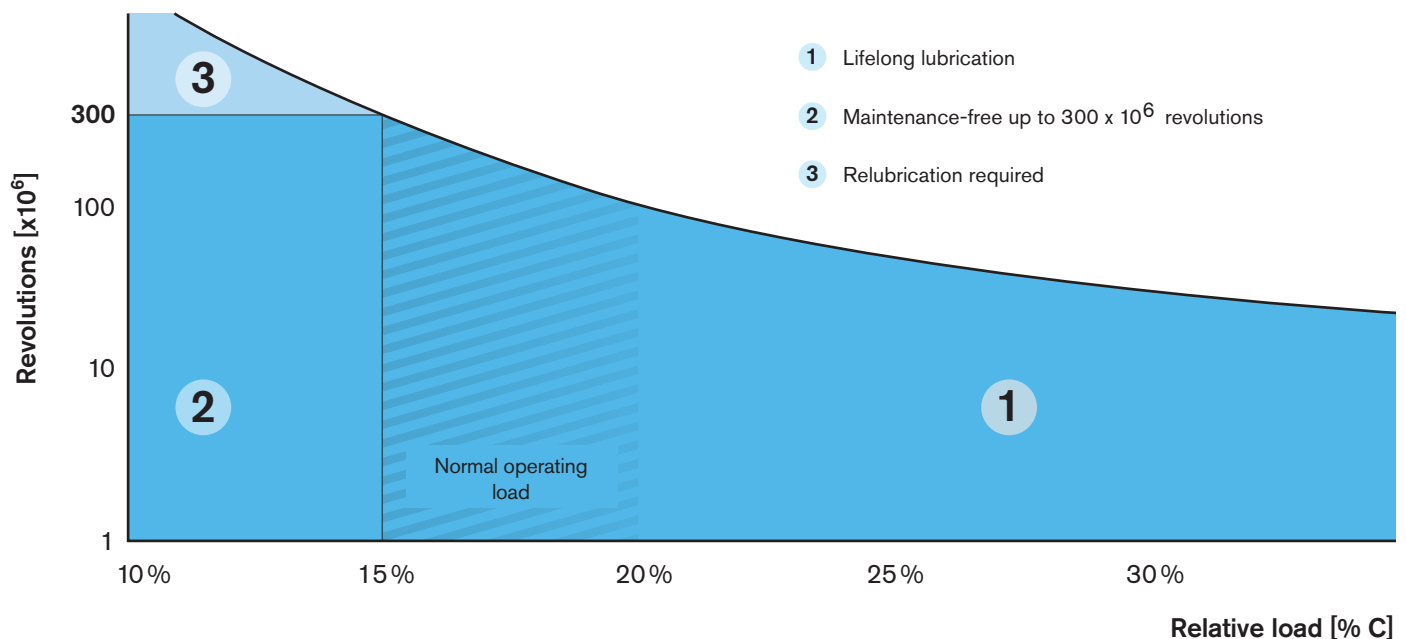
- Assembly technology
- Electrical engineering
- Medical technology
- Transport systems
- Conveyors

- Dispensing and process control technology
- General industrial applications



The Front Lube Unit – for reliable lifelong lubrication

Ball Screw Assemblies are selected and sized according to the same nominal life calculations as rotary ball bearings. The effective life of the Rexroth Front Lube Unit matches the service life curve of the Ball Screw Assembly. When operated within the recommended load limits, a Ball Screw Assembly equipped with a Front Lube Unit will require no relubrication, thanks to the optimal delivery of lubricant. Based on our extensive tests, the lubrication performance of the Front Lube Unit can now be reliably predicted for the first time. With a Front Lube Unit from Rexroth, a Ball Screw Assembly can run trouble-free for five years or 300 million revolutions without any relubrication.



Results confirmed by our extensive tests:

1 For axial loads of 15-35% of the dynamic load rating C, the ball nut will be lubed for life.

2 For axial loads of < 15% of the dynamic load rating C, the ball screw assembly will require no maintenance for up to 300 million revolutions.

3 After 300 million revolutions, the ball nut should be relubricated as usual. The Front Lube Unit does not have to be removed from the ball nut.

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