



Please read this document to ensure correct installation and maintenance. Performance and warranty can only be upheld upon adherence to our recommendations.

INKOMA Screw Jacks are precision engineered, ready lubricated, quality controlled and inspected.

In case of fault, failure or damage, please inform us immediately.

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1 Maintenance of Screw Jack Type HSG

HSG 0 to HSG 500 are supplied grease filled as standard. Oil lubrication is available upon request.

Leaving equipment idle for long periods (longer than six months) may lead to a deterioration on the seals resulting in leakage. We therefore recommend that the input shaft be turned regularly. If the Screw Jack is not installed immediately, store it in its installation position in a dry area.

Screw Jack with safety nut and bellows: Please remove the bellows to carry out periodic checks on the control gap of the safety nut.

1.1 Grease Lubrication

The Screw Jacks are ready greased (Klüber Microlube GB 0). Replace the grease every 700 operating hours or 18 months, whichever comes first. Topping up should not be necessary.

| | HSG-0 | HSG-1 | HSG-2 | HSG-3 | HSG-4 | HSG-5 | HSG-200 | HSG-300 | HSG-400 | HSG-500 |
|-------------|-------|-------|-------|-------|-------|-------|---------|---------|---------|---------|
| Amount [kg] | 0,06 | 0,1 | 0,12 | 0,2 | 0,45 | 0,8 | 0,9 | - | - | - |

Table1 Required quantity of grease for Screw Jacks Type HSG 0 – HSG 500



1.2 _Oil Lubrication

Synthetic gear oil to ISO VG 460 DIN 51 519 specification (Klübersynth GH 6-460) is used.

As the efficiency of the worm geared drive is dependent on the quality of the oil, we recommend that either the original specification or a direct equivalent is used when replacing the oil. It is vital that high standards of cleanliness be maintained (use a filter or a fine sieve).

During operation oil is deposited inside the gear housing. After commissioning the oil level should be re-checked at **standstill** and replenished if necessary. The correct oil filling is when the level is in the upper third of the sight glass.

During the running-in period metal particles are deposited in the oil. The oil should initially be changed after 50 operating hours. Further oil changes, depending on the load, should be at 1000 operating hour intervals or after 2 years at the latest.

Oil should be drained when the gearbox is warm. Flush with a clean, thin flushing oil before refilling.

NOTE:

Klübersynth GH-6 oils do not mix with Mineral Oils and synthetic hydro-carbons. We therefore recommend that the gearbox be flushed out with the same oil with which it will be refilled.

During operation oil is deposited inside the gear housing. **Please refer to us for the correct amount of oil required.**

Check the level at standstill and top up if necessary. The correct oil filling is when the level is in the upper third of the sight glass.

1.3 Lubrication of Trapezoidal Spindles

The spindle should be generously greased. Dependent on the application and whether protection is fitted, the spindle should be regularly cleaned and re-greased. In this case **Klueber Microlube GB-0, Klueberplex GE 11-680** (or equivalent specification) can be used.

1.4 Lubrication of Ball-Screw Spindles (KGS)

The Ball-Screw should be cleaned at regular intervals. Lubrication is via the Ball Nut and may be with grease or oil.

1.4.1 Grease Lubrication (KGS)

For grease lubrication, Mineral Oils Grade K2K, DIN 51825 are recommended. If the load is in excess of 10% of the dynamic load capacity of the spindle, greased with EP additives (KP2K, DIN 51825) should be used. For high speeds (nominal velocity $n \cdot d > 50000$) Grade K1K or KP1K should be selected. Speeds below 2000 $n \cdot d$ require Consistency Class 3 (K3K or KP3K, DIN 51825). The frequency of re-lubrication depends on the ambient conditions. Generally, re-lubrication should be every 200-600 operating hours. As a guide the amount of grease is 1 cm³ per nut for 1 cm of spindle diameter. Only greases having the same specification should be used.

1.4.2 Oil Lubrication (KGS)

Lubricating Oils Class CL to DIN 51517 Part 2 are suitable. At operating temperature the oil should have a viscosity of 68-100 mm²/s. For high speeds (speeds of $n \cdot d > 50000$) select oils having a Viscosity Class of ISO VG 46-22. For speeds below 2000 $n \cdot d$ use oils having Viscosity Class ISO VG 150-460. For oil bath lubrication the spindle should be 0.5 -1 mm below the oil surface. Oil feed for oil circulation should be 3-8 cm³/h per ball circuit.



2 Ball-Screw Spindles (KGS)

Screw Jacks with ball-screw spindles must be installed avoiding radial or eccentric loads on the spindle. Ball-screws are **only suitable** for the transmission of **axial forces**. Limit switches should be provided to prevent overrunning of the lift range and consequent damage to the spindle. The nut must not be installed without the use of a guide bush over the spindle end. Do not apply any force. Do not remove the guide sleeve until the nut is completely engaged with the spindle. Spindles must be supported so that no bending is possible. Spindle should not lie directly on the nut.

The guide tubes, located on the outside of the nut, must not be damaged. Disassembly of the guide tubes can only be carried out at the factory. Ball-screws are sensitive to dirt and damage. Protect spindles from dirt contamination. Remove contamination with petrol, thin oil or flushing media. **Do not use white spirit or other paint solvents - these will damage the spindle!**

Ball-screws must be precisely aligned with their guides.

Ball-screws are normally supplied with the nut assembled. Should dismounting be necessary, please seek advice from us.

To maintain effective operation, the ball-screw must be adequately lubrication (same lubrication as for ball bearings).

Do **not** use greases with MoS₂ (Molybdenum Di-Sulphide) or graphite additives. Normally lubricants can be selected which correspond to those for other machine functions. Life time lubrication of the nut is not possible since there will always be some loss of lubricant (for lubrication see 1.4).

NOTE:

- **Do not disassemble the guide tube mechanism.**
- **Do not replace missing balls with new ones. The entire set must be replaced.**

3 Spindle Protection

Bellows and spiral protective sleeves prevent dirt contamination of the spindle.

Bellows

Check bellows regularly for cracks. Replace if necessary. For high lift speeds, provision for 'breathing' bellows will be made during manufacture.

Spiral Sleeves

Effective protection is only guaranteed if the sleeves are lubricated.

Assembly

- Spiral sleeves are supplied compressed along their length and secured with ties.
- Slide spiral sleeve over spindle in the secured state.
- **The ties must only be removed when the sleeve has been installed and placed under end pressure.**
Please take care when releasing the ties.
- Spiral sleeves must not be unwound
- Spiral sleeves will require approx 20 movements to achieve normal operation.
- **Before commissioning oil lightly !**



4 Ambient Temperature

Screw Jacks Type HSG are designed for operation between +75°C and -15°C. Outside this range, special seals and lubricants are necessary.

5 Installation

To prevent leakage due to pressure build-up inside the gearbox, oil lubricated Screw Jacks are supplied with a combined breather and filler plug. This will be plugged for transit purposes. Before commissioning and for long term storage the solid plug must be replaced with the combined filler and breather plug.

Screw Jacks should be mounted to a solid base or flanged directly onto the machine. For operating safety and quiet running the shaft should be very carefully aligned. To compensate for any misalignment, we recommend the use of flexible couplings (e.g. INKOMA ELAFLEX). Do not fit the coupling by driving, it is a light interference fit. To prevent damage to the worm and bearing assembly the coupling should be press fitted onto the supported shaft. If a press is not available a suitable clamp should be used.

Additionally, parallel guidance of the spindle must be carefully monitored in both axes to avoid side loads. Ensure that no eccentric or radial load is present. Misalignment of the spindle results in excessive wear of the thread flanks and in a shortened life.

NOTE:

The spindle must be free from dust and dirt before installation/commissioning.

Trapezoidal spindles must be generously greased (see 1.3 for grease specification).

Ball-screws are lubricated by the nut (see also 1.4).

6 Commissioning

All Screw Jacks are test run. Following installation each spindle should be run unloaded for the full stroke, up and down. Any noise may be due to stiffness. Further runs should be made during which the load is increased gradually to the nominal capacity. If intermittent noise is heard, the alignment should be thoroughly checked.

7 Spare parts

When ordering spares, please provide the size, design, stroke length and any special details of the Screw Jack. Repairs require special tools. We recommend a return to our factory should repairs be necessary.

We reserve the right to make technical changes to the design!