

SCREW JACKS

Operating Instructions

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1. Health and Safety

These operating instructions contain the information necessary for the daily work of the operator responsible for the handling and usage of the equipment.

The operating instructions must be available to the persons involved in the operation of the equipment.

It is important that:

- The operating instructions and other applicable documents are retained throughout the lifetime of the equipment.
- The operating instructions and other applicable document are included as part of the equipment.
- The operating instructions are passed on to all other users of the equipment.
- The operating instructions are updated following any additions or changes to the equipment.
- The operating instructions describe the methods required in the use of the equipment.

1.1. Notice about safety

Before you start to use the equipment, or to perform maintenance or servicing of the equipment, please read the relevant parts of these instructions.

Pay attention to all the Danger, Prohibition, Edict, and Note textboxes mentioned in this manual.

Serious damage to persons and machinery can occur if this information is not observed.

The machinery is intended for use by an authorised operator.

Consider all electrical equipment to be live.

Consider all the hoses and pipes to be pressurised.

During servicing and maintenance of the equipment / machine, ensure that the source of power to the electricity, pneumatics (air) and hydraulic is broken before any maintenance is performed. The machine must be vented and the safety switch should be locked.

Servicing and maintenance should only be performed by qualified service personnel.

Follow the instructions in terms of the maximum loads, and see the decal on the equipment for the technical data.

1.2. Warning devices

Annual checks of warning devices and protective devices must be implemented to maintain control of their function and status.

1.3. Warnings and cautions

The Danger, Prohibition, Edict and Note textboxes contain information that is of importance in this manual:

(see the pictures below).

	DANGER! Ignoring this information will result in immediate danger to life!!
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	PROHIBITION! Prohibited act associated with death or serious injury!
---	--

	EDICT! Correct use of personal protective equipment or other aids.
---	--

	NOTE! Information that requires extra attention!
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2. Safety of the Machinery

The machine is labelled with a CE mark, see 2.4, which means that it has been designed, constructed and described in accordance with the EU Machinery Directive 2006/42/EC.

2.1. When rebuilding the machine

If the machine is rebuilt or supplemented with other parts that are not approved by the manufacturer, the CE mark does not apply for the parts that have changed the machine's functions. Warning labels and the CE mark must be clearly visible on the machine. If the warning label for a machinery part is replaced, then the new warning label should be installed in the same place as before.

Damaged decals and CE marks must be replaced immediately.

If the machine is rebuilt or parts are added, it is very important that these instructions are immediately completed / adjusted with the necessary illustrations, photographs and texts.

2.2. Personnel requirements

To avoid damage or injuries, the operator and operating personnel must be specifically instructed or trained according to the manufacturer's instructions. Operators and operating staff may only handle those parts that they have been instructed or trained to use.

All controls and keys shall be operated by hand and should never be activated by means of another kind, unless it is otherwise provided.

2.3. Manufacturer

This machine is manufactured by:
Swedrive AB
341 51 Lagan
SWEDEN

2.4. Mark

This machine is supplied with the following mark:



Type of mark

The serial number is given in the "No" field.
This matches the Swedrive order number and
must always be given in matters relating to the gear.

3. Noise

This machine features a continuous A-weighted sound pressure level that is below 70 dB (A).

4. Safety Instructions

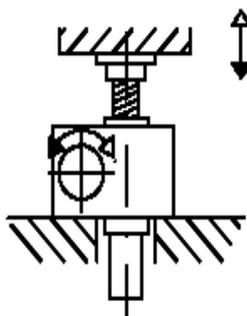
- The machine may only be used by trained personnel and when the user has read and understood the contents of the current operating instructions.
- The machine may only be used for its predetermined purposes and only with the installed protection devices. All applicable safety regulations must be observed.
- Daily maintenance work must be performed by trained personnel.
- Electrical work must only be performed by trained personnel.
- Work on live electrical parts is not permitted.
- Rebuilds, repairs and modifications to the machine may only be performed under the applicable safety regulations.
- When repairs are performed, it is only permitted to use the original spare parts.

5. Screw Jack Description and Maintenance Instructions

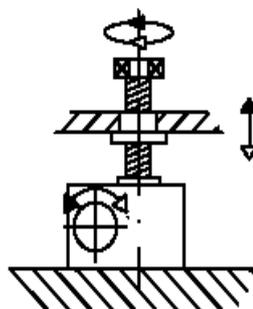
5.1. Product description

The screw jack Type A (trapezoidal spindle) and Type AK (ball spindle) consist of a gearbox (worm gear) that transfers the rotational motion to an axial motion. The gearbox's worm gear is fitted with an internal nut which, when rotated, causes the spindle to move axially when it is screwed into the load. The axial load that rotates the worm wheel is affected by the axial bearings, with one for each load direction. In the construction of the Type AL and Type AKL screw jack, the spindle is fastening to the jack's worm wheel. By rotating the spindle and fastening the external nut into the load, it is then possible to move the external nut axially.

Type A, AK
Axial moving spindle



Type AL, AKL
Rotating spindle with a nut



5.2. Usage

Screw jacks are intended to use force in order to move loads horizontally (push / pull) or vertically (raise / lower). Only the axial forces should affect the jack. Therefore, the load must be steered so that no radial forces will affect the spindle (see Section 2 of the Installation Instructions).

If there is a risk of personal injury or if unwanted damage to the machinery could occur, the jack must be fitted with a special safety nut. In this way, if the trapezoid in the worm gear is worn out, the safety nut will catch the load. For the maximum wear, see the description in Section 5.7 Maintenance!

Other uses of the screw jack than those described above may only be done with the permission of the manufacturer.

Warning! If the jack is assembled in such a way that people are at risk of coming into contact with the spindle when it is in motion, the builder of the machine is responsible for ensuring that the spindle is touch-protected. Spindle protection can be fitted according to special orders.

Use a screw jack of the right size – if in doubt, check the specifications in our screw jack catalogue or contact Swedrive.



WARNING:

The screw jack alone is not a safety device. In cases where there is a risk of personal injury, the screw jack should be supplemented with an alternative safety system.

5.3. Handling

When unpacking and installing the screw jack, the weight of the screw jack and the motor must be taken into consideration. See the screw jack catalogue for information about the weights.

5.4. Storage

The screw jack must be stored in a way that will prevent exposure to rain, high temperatures, ozone or solar radiation which can cause premature aging of the rubber components. The relative humidity should be kept below 50% to minimise condensation on the jack. The long spindles must be stored so that they do not become crooked due to their own weight. If a prolonged storage time or storage in difficult conditions is necessary, please contact Swedrive for further information.

5.5. Installation instructions

1. The mounting plane of the screw jack, and the pendulum cradle if it is used, must be stable, flat and clean so no stresses are built into the gear house during the assembly. If the pendulum cradle is not used, ensure that the mounting plane is at an absolute right angle to the direction of the spindle.



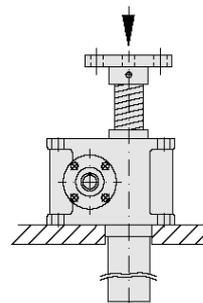
2. The spindle forces must be free from any side forces. Side loads must be controlled with a guidance system, or similar, so that only the pull or push loads will affect the spindle.



3. If possible, mount the jacks so that the force is directed against the mounting plane.
4. When combining multiple screw jacks with a drive motor, gearboxes and intermediate axles, these must be carefully aligned.
5. If the jack (or jacks) is correctly mounted, you will be able to rotate the incoming shaft by hand when the jack is unloaded.
6. Make sure that the spindle is not screwed fully into the closed position, as this may result in damage. Approximately 5 mm of the spindle thread should be visible outside the jack. Also, check that the length is sufficient for the given the stroke length, so that the spindle is not threaded out of the worm wheel but is fully engaged. This applies only to the Type A screw jack, as Type AK is provided with anti-slip protection. However, please note that this should not be used as a mechanical stop. This protection can also be mounted by a special order.
7. Be sure to protect the rotating parts from accidental access.



8. If a sensor is used, think about the consequences of a malfunction / voltage loss!
9. If the jack is mounted in a humid environment and powered by an electrical motor, on the electric motor ensure that the lowest of the drain plugs is opened.



5.6. Commissioning

1. Do not operate the screw jack unless all limit sensors or possibly safety devices are installed and working properly.
2. If an electric motor is used, it should be installed and commissioned according to its operating instructions.
Check that the actual voltage matches the specified voltage.
The staff member who connects the electricity should have the necessary skills and qualifications.



WARNING!

The staff member who connects the electricity should have the necessary skills and qualifications.

3. Prior to start up, check that there is sufficient lubricant in the screw jack. If a vent plug is used, check that it is “sitting at the top” of the gear casing. For the type and amount of lubricant, see Section 5.8 Lubricant.
4. Check that the spindle is well lubricated with the correct type of lubricant.
5. If permitted, it is advantageous to charge the screw jack with only half the load from the start. After a number of runs, you can increase this to the full load. If abnormally high temperatures occur, investigate the cause and be aware of the risk of fire!
6. Make sure that the screw jack never runs into the external or internal mechanical stops.



NOTE!

Never run the screw jack into the external or internal mechanical stops. This could serious damage the screw jack.

5.7. Maintenance

Keep the spindle free of dust and dirt. The power can be supplied to the jack with different types of spindle protection that prevent contamination. See the Swedrive screw jack catalogue for further information.

Regularly check that the spindle has a thin layer of grease. Inadequate lubrication will shorten the lifespan of the spindle and significantly increase the power requirements.

The jacks spindle is lubricated by accessing the spindle and apply lubricant to the spindle.

On jack design AL / AKL the spindle can be lubricated through the lubrication nipple located on the rotary nut.

For jacks with trapezoidal spindle, such as Type A and Type AL, the maximum wear of the nut thread is 1/4 of the single-threaded and 1/8 the double-threaded pitch.

When servicing the screw jack, the power source must be switched off.



WARNING!

When servicing the screw jack, the power source must be disconnected.

5.8. Lubricant

Gear case:

The machine plate specify the type of lubricant to be used in the screw jack gear cases.

The screw jack gear has a one-time lubrication on delivery and the lubricant does not need to be replaced during normal operations.

For special screw jacks (those where the "TYPE" on the machine plate begins with 9), contact Swedrive for further information.

Lubrication quantity:

Screw jack size	5	15	25	50	150	250
Quantity(Liters)	0.13	0.35	0.35	0.50	1.5	3.0

Ball screw:

Ball screws should be lubricated with grease of a good quality, for example:

Shell Gadus S2 V100 2((Shell Alvania RL2))
FUCHS Cassida Grease EPS 2 (Livsmedel)
SKF LGEP 2

Trapezoidal spindle:

The trapezoidal spindle should be greased with: Klüber Duotempi PMY45



NOTE:

**Never mix a synthetic lubricant with a mineral oil based lubricant.
Refill only with the type of lubricant specified on the plate!**

Use only the specified grease on the trapezoidal spindle.