

Load Pin KAL and KAL-E

Original of
Mounting Instructions
Instructions for Use



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1. Safety instructions

The load pin types KAL and KAL-E (with integrated amplifier) are state of the art and designed and manufactured according to common safety rules. Load pins should be used in machines and installations for load measuring or monitoring.

Load pins comply with the following rules:

- machine directive 98/37/EG
- low-voltage directives 73/23/EWG
- directives 89/336/EWG

and harmonized technical standards:

EN 60439-1 EN 60204-1 EN 292-2, EN 61010-1

Improper mounting or use may cause:

- threat to life and limb of humans
- damages to installations or other material assets
- disturbances of function or quality of the installation

Persons that are involved in mounting and using load pins must :

- be qualified for this job
- follow this manual
- check the system regularly , especially on cabling damages and malfunction

2. Symbols used in this manual

The following symbols are used in these operating instructions:



DANGER! Alerts to dangerous situation for life and assets



NOTE! Indicates very useful information and tips..

3. Specified use

Load pins KAL or KAL-E are made to measure tension or pressure force in machines or installations. Together with their connected electronic evaluation devices they must be calibrated when mounted in the machine or installation. These systems may be used only for the specified use and when in proper condition. A different use than described before is defined as not specified use. The manufacturer is not liable for damages resulting from unspecified or improper use. Nevertheless failures or malfunctions may occur. If failures influence safety they have to be fixed immediately or the machine has to be put out of operation.



Attention! A damaged machine or installation may not be used. If necessary it has to be disconnected from power mains. And protected from moisture and dirt.

The operating conditions specified in the operating instructions of the equipment manufacturers must be strictly observed.



Attention! Load pins may not be used as the only safety device in machines and installations. Exceptions are permitted if the complete overload protection system is realized redundantly.



Note! Load pins used in applications critical to safety as e.g. load monitoring for hoisting equipment for nuclear material should be certified by an approved authority according to EN 10204 – 3.1C

As precision transducers, the measuring axes require careful handling during transport, mounting and measuring operation. The limits for the permissible mechanical, thermal and electrical stresses are listed in the data sheets. Unconditional compliance with these limits must be observed at all times. Dropping a measuring axis can permanently damage it!

4. Transport and mounting instructions for load pins

Always keep in mind that load pins are measuring devices and therefore sensitive to shock, thermal or electrical loads. Dropping a load pin may damage it.

Load pins may be loaded only with static or quasi static forces in radial direction. Loads at an angle, axial loads, bending or torsion may lead to distortion of measurement and therefore may affect the safety of the complete system. If these disturbing loads are applied in a great amount or over a long time the load pin may be damaged or even break.



Attention! It is strictly forbidden to strike in the load pin with a hammer or a similar tool.

Load pins should be inserted with manual force or at higher diameters with insertion equipment using dedicated threaded holes. Clean the holes and apply lubrication to the pin before insertion. Check toleranced dimensions and possibly rework the holes at welded constructions if the insertion is too difficult.

A.S.T. delivers standard keeping plates as anti-rotation and retaining device together with the load pin.

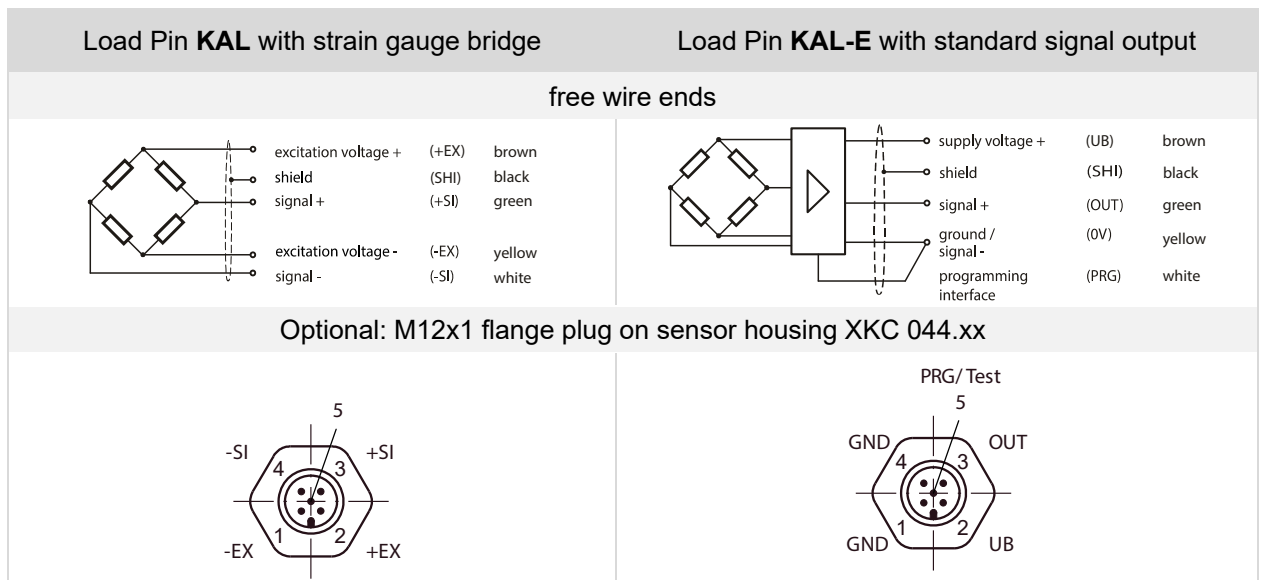


Attention! Use only keeping plates according to DIN 15 058. If the load pin diameter exceeds 100mm two plates have to be installed. Special rules apply on ships.

Check the rotational direction of the load pin before fastening the keeping plate (see drawing). The deviation of real load and marked load direction should be less than 2 degrees. KAL-E with integrated amplifier (4..20mA) should be loaded in positive load direction only. A possible loading to the opposite direction may not exceed 10 percent of the rated load.

5. Elektrische Installation

The measuring axes must be wired or connected according to the specifications of the supplied wiring and connection diagram.



Note! Make sure that the load pin cable is not installed along power cables or strong electrical fields



Attention! If electrical welding (MMA) is carried out within the installation disconnect the load pin wires from the electronics.

When mounting outside of dry interior rooms, make sure that the measuring axes and their strain gauge amplifiers are installed in such a way that sockets as well as the entry points of cables into a housing, especially with PG glands, point downwards. This avoids that liquids can run over the cables into the inside of the device. If such an installation is not possible, the cable must be laid in such a way that a drip-catching loop is formed.

6. Commissioning



Attention! Check the instructions of the manufacturer of the machine or installation regarding the load pins before you start.

These instructions and the instructions of the plant manufacturer must be read and understood before starting work.

All entries must be made in accordance with the actual condition of the mechanical engineering system. In case of wrong inputs, the machine-building system does not work properly and cannot protect the operator and the working equipment from the consequences of dangerous situations.

Before starting the adjustment of the system, it is necessary to check the load pins and the connecting cables.

Adjustment and adjustment of the system may only be carried out by authorized specialists. Improper adjustment can lead to incorrect measured value display or to malfunctions. In this case, any warranty claim will be voided.

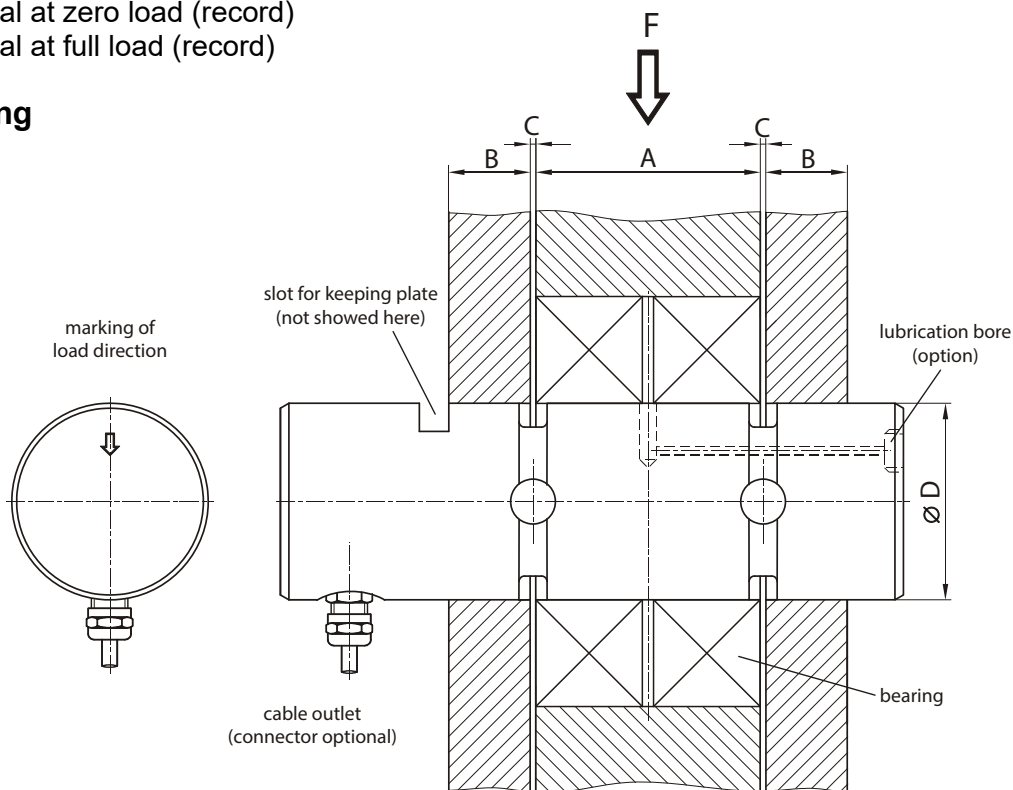
Since even minor damage can impair the effectiveness of the system or even disable the system, the operator must check the condition and completeness of the system before daily operation.

7. Yearly inspection

Check regularly:

- the mechanical fixture of the load pin (keeper plate, possible rotation, mechanical tear and wear)
- lubrication
- cabling
- signal at zero load (record)
- signal at full load (record)

8. Drawing



The diameter D as the most important design parameter is determined by the nominal force F . It ranges from 25mm for 10kN to 200mm for a nominal force of 1000kN. On request, even higher forces and pin diameters up to 250mm are possible.

The dimensions for sizes A , B and C are also determined by the nominal force, but can be adapted to an existing design within certain limits.