Product Series
Mounts

KALLER®
The Safer Choice

Gas Spring Mounting Guidelines

Edition 2.2016

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Mounting Guidelines

KALLER gas springs are engineered for use in modern day, metal stamping dies and plastic moulding tools. Over the years, KALLER has developed a wide range of mounting methods for the gas springs. The following is intended as a reminder of the correct procedure when using these various mounting methods.

Mounting method overview

Generally speaking, KALLER gas spring cylinders are machined with two external grooves. The C-groove being located towards the cylinder opening and a U-groove or second C-groove located just above its base. These grooves allow various flange mounts to be attached. It is then the flange mount that is clamped to the tool using mounting screws of a suitable length, property class and torque setting (see next page for more details). Only use mounts manufactured or approved by KALLER.

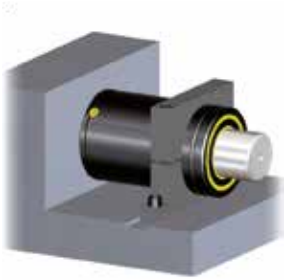
Drop-In
The gas spring is dropped into a flat bottomed pocket within the die.

Base mount
The gas spring's base threaded holes are used to mount the gas spring directly to the tool or indirectly via a base mounting plate.

Foot mount
A flange mount is used to clamp the base of the gas spring to the tool using the gas spring's lower U or C groove.

Top mount
A flange mount is first attached to the gas spring's upper C-groove before being mounted into a hole in the die.

Thread mount
A section of the gas spring's cylinder, which has an external thread (either cylinder body or base stud), is used to install the gas spring in the die. In some cases with an additional lock nut or flange mount.



Body mount
The body mounts are attached to the gas spring to allow it to be installed in any orientation within the die, from vertically upright through to vertically upside down.

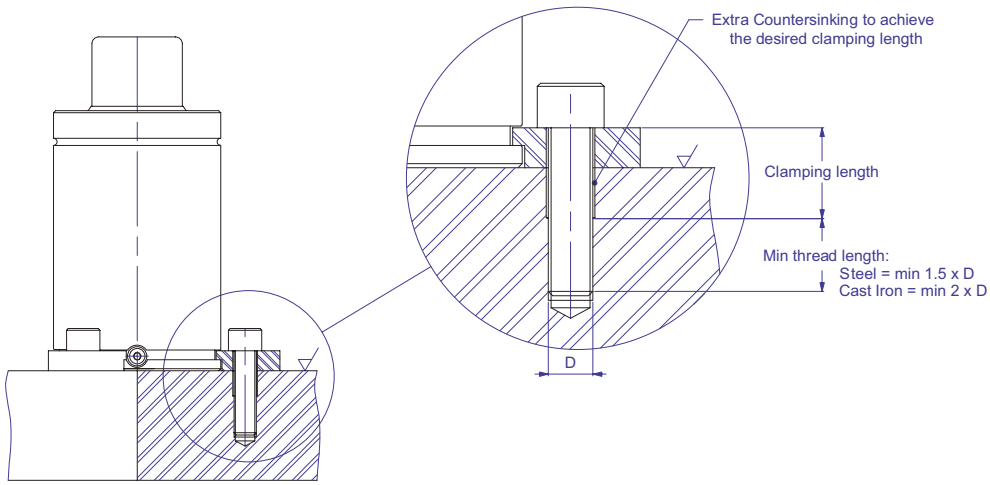
Mounting screws

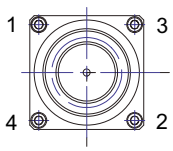
When mounting the gas spring directly to the tool or via a flange mount, it is important to observe the following recommendations in order to prevent the gas spring or its mounting accessories from working loose into the tool.

Recommendations:
Screws should have a free length (clamping length) of 2 to 4 times their thread diameter and a thread depth of at least 1.5 times their thread diameter in steel and 2 times their thread diameter in cast iron If the free length cannot be achieved in any other way, the screw holes should be countersunk (see below). Please note that the specifications in automative standards may differ. Always use a torque wrench to apply the appropriate torque for the class of screws used.

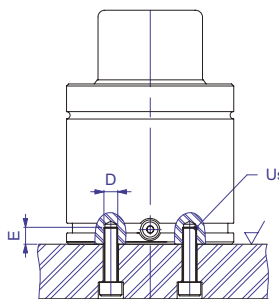
Thread	**Torque (for screw class 8.8 according to ISO 898-1)**
M6	10 Nm
M8	24 Nm
M10	45 Nm
M12	80 Nm
M16	160-200 Nm

For all types of flange mounting using mounting screws:





When tightening the mounting screws in the tool, apply an evenly cross like pattern according to the picture (1-2-3-4). Otherwise there is a risk for the mount to tilt.



For example: X 2400

For those gas springs whose thread depth (E) is less than 1 times its thread size (D) we recommend the following:
- select a screw length to engage all available thread depth
- use a thread locking compound (middle strength or higher)
- ensure the correct screw torque setting is applied

Mounting method: Drop-In

For stroke lengths < 25 mm: base threaded holes are optional for stroke lengths up to and including 25 mm.

For stroke lengths > 25 mm: base threaded holes should always be used for longer stroke lengths to prevent possible side loads and/or gas spring movement within the pocket.

Gas spring orientations: only vertically upright installations are recommended (see ***Warning!***).

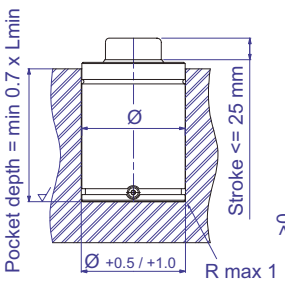
Hole depth: min 70% of the spring's Lmin length to ensure sufficient support and reduce the risk of side loading.

Hole diameter: +0.5 to +1.0 mm greater than the gas spring's cylinder diameter.

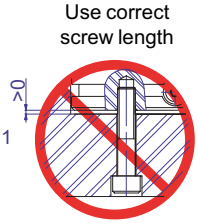
Hole drainage: recommended wherever drawing fluids and/or liquid coolants are used in the die.

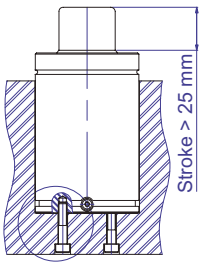
Link systems: Not recommended for stroke lengths < 25 mm.

Warning! Never drop a gas spring into a pocket upside down as this may lead to excessive wear on the outside of the tube.



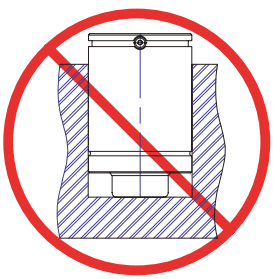
Always observe pocket dimension recommendations



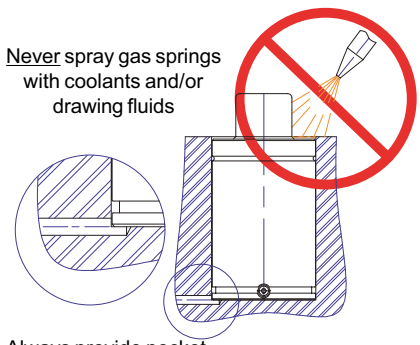


Use Drop-In and Base Thread: B together for longer stroke lengths

Never mount a gas spring in a pocket that does not fully support its base



Never mount a gas spring in a pocket upside down



Always provide pocket drainage if coolants are used in the die

Mounting method: Base Mount (B, MP, NMP)

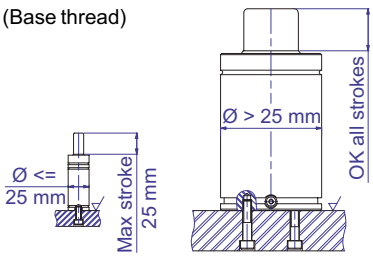
Stroke length suitabilty:
For cylinder diameters < Ø25 = Max stroke 25 mm
For cylinder diameters > Ø25 = OK for all stroke lengths

Gas spring orientations: Vertically upright - OK for all stroke lengths
Vertically upside down - OK up to stroke 125 mm*

Link systems: this mounting method is very suitable for gas link systems

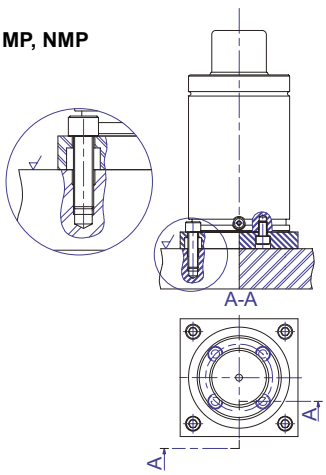
*For thread depths less than 1 times its thread size use a screw length that engages all thread depth, use a thread locking compound (middle strength or higher) and apply correct screw torque setting

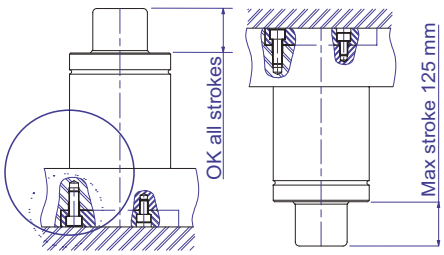
For: B (Base thread)



If the gas spring has only a single base threaded hole, then the max stroke length for this mounting method should not exceed 25 mm

For: MP, NMP





Always support the mount to avoid compression forces being transferred through to the mounting screws.

Mounting method:
Foot mount (BF, FCR, FFC, FFL, FSL, FSS, RM)

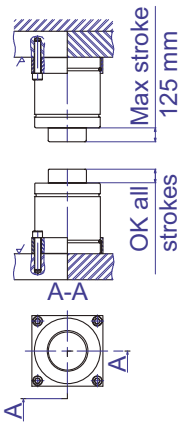
Gas spring orientations:
Vertically upright = OK for all stroke lengths
Vertically upside down = OK up to 125 mm stroke (see ***Warning!*** below)

Link systems: this mounting method is generally suitable for gas link systems, with the exception of the BF, FCR, FSL and FSS flange mounts that do not fully prevent rotation of the gas spring.

Note! A small gap between Foot Mount and mounting surface is normal before the gas spring is clamped to the die using the mounting screws.

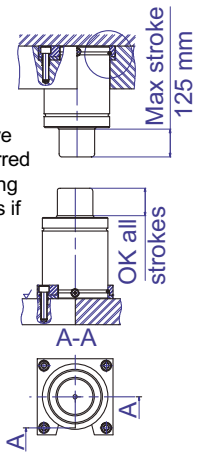
Warning! K-lugs are not recommended for vertically upside down installations. Wherever possible, vertically upside down installations using Foot Mounts should be used in combination with base threaded holes to prevent gas spring rotation within the flange and to provide additional security.

For: BF, FCR

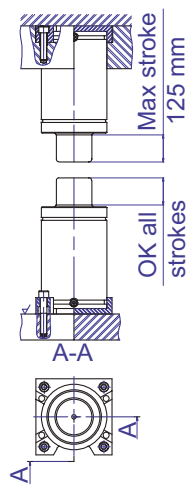


For: FSL, FSS

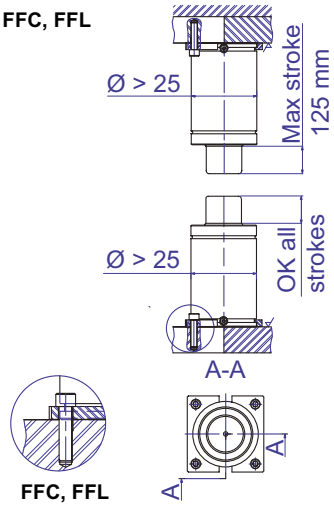
Avoid compressive loads being transferred through to mounting screws (use shims if neccessary)



For: RM

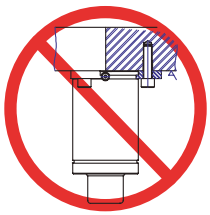


For: FFC, FFL

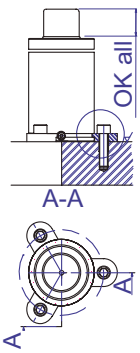


FFC, FFL

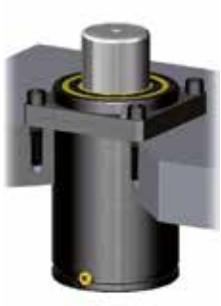
For: K-lug



Do not mount upside down using K-lugs



K-lug



Mounting method:
Top mount (FC, FCS, FCX, FK, FCSC, FCR, FCSX)

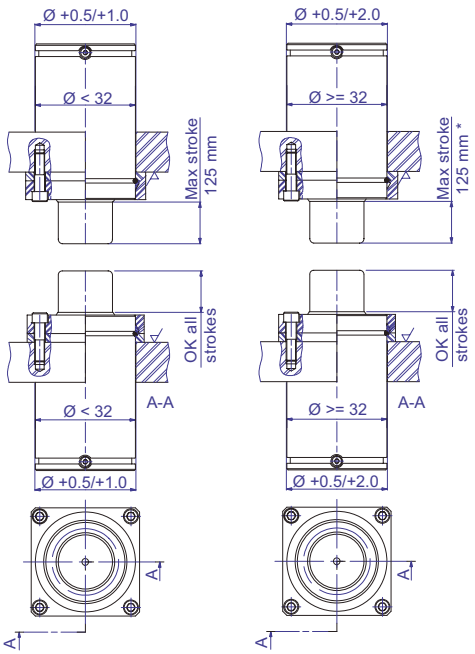
Gas spring orientations:
Vertically upright = OK for all stroke lengths
Vertically upside down = OK up to 125 mm stroke (see ***Warning!*** below)

Cylinder hole clearance for cylinder diameters < Ø32
hole Ø = cylinder Ø + 0.5 to 1.0 mm
Cylinder hole clearance for cylinder diameters > Ø32
hole Ø = cylinder Ø + 0.5 to 2.0 mm
Link systems: FCSC is the preferred flange mount for linked systems as the gas spring is unable to rotate in the flange (see Note below).

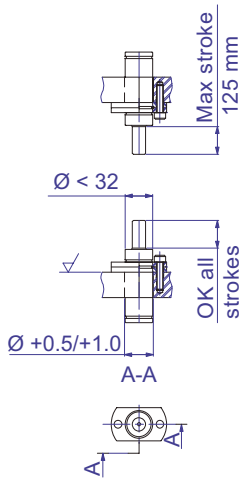
Note! A small gap between flange halves is normal before the gas spring is clamped to the die using the mounting screws. Recent tolerance improvements between gas spring C-grooves and Top Mounts has, in some cases, eliminated the tendency for the gas spring to rotate within the flange. This now makes them more suitable for Link systems.

Warning! Depending on the stroke speed of the press, longer stroke gas springs are not generally recommended for upside down installations unless the FCSC flange mount is used. Top Mounts must never be installed in the die, whereby the mounting screws are required to support the full compression force of the gas spring when stroked (see below).

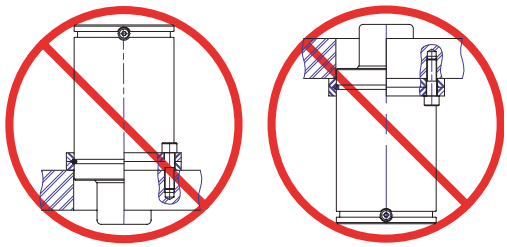
For: FC, FCS, FCX, FK, FCSC, FCSX



For: FCR



For: all Top mounts



Never let the mounting screws support gas spring compression forces

*** Note:** for the FCSC flange, upside down installation is OK for all stroke lengths

Mounting method:
Thread mount (including FRM, FTM)

Gas spring orientations:

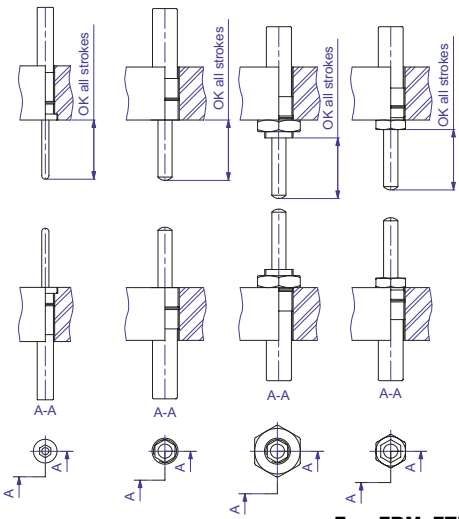
Vertically upright = OK for all stroke lengths
Vertically upside down = OK for all stroke lengths

Link systems: it is possible to link thread mounted gas springs if there is sufficient access to the spring's charge port.

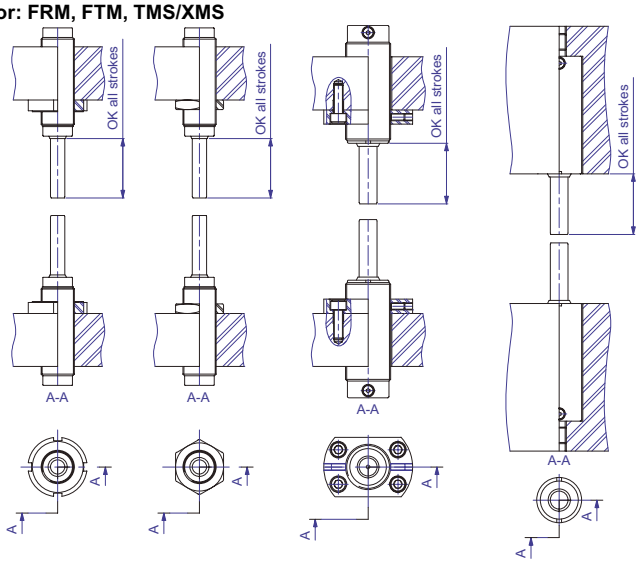
Note! It is important to always use the appropriate torque setting for the springs thread size when mounting the spring to the tool in order to prevent tool vibrations working the spring loose.

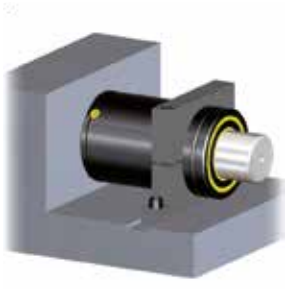
Use a dismountable thread locking compound and ensure that the compound do not touch the piston rod.

For: EP, EPS



For: FRM, FTM, TMS/XMS





Mounting method:
Body mount (S, SM, HM, FAC, SA, HMF)

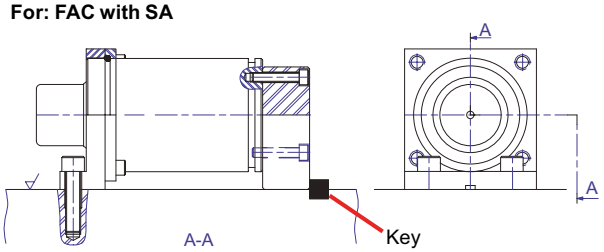
Gas spring orientations: suitable for all stroke lengths and all gas spring orientations from vertically upright through to upside down (see ***Warning!*** below).

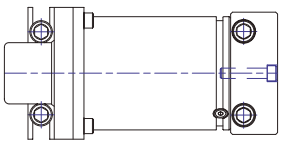
Key grooves: Key-grooves should be used to either recess the Body Mount or to back up the Body Mount with an additional key, thus preventing gas spring compression forces exerting a shear stress on the mounting screws.

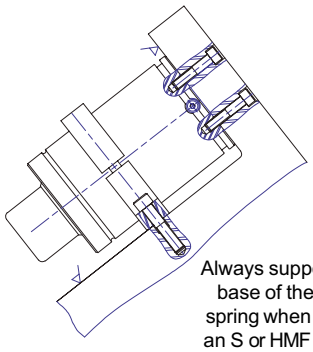
Link systems: this mounting method is very suitable for gas link systems, since the gas spring is unable to rotate.

Warning!
Always ensure the gas spring sits parallel with its mounting surface to minimise the risk of side loading.

For: FAC with SA

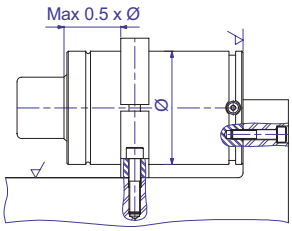


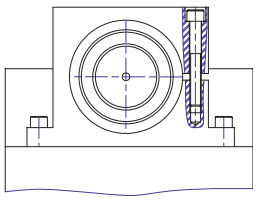




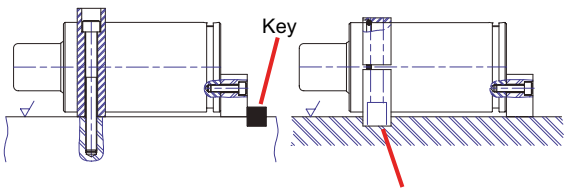
Always support the base of the gas spring when using an S or HMF mount

For: S, SM, HMF

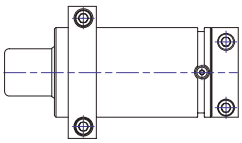




For: HM, HMF



Flange countersunk into 10 mm key groove



The Safer Choice

Introduced in 1983, the KALLER gas spring technology quickly led to world-wide demand. The Safer Choice - Training, Safety and Reliability - has always been a KALLER top priority for providing the safer working environment. We recommend looking through all available KALLER features when selecting gas springs and gas or hose linked systems.

KALLER Training Program

TRAINING. Without doubt the KALLER Training Program is the best and most creative way to fully understand and appreciate the importance of the safety and reliability features.

PED approved for 2 million strokes

RELIABILITY. Our 2 million stroke PED approval ensures safer component cycle life.

Flex Guide™ System

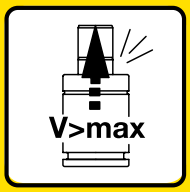
RELIABILITY. Prolongs service life, life, allows more strokes per minute, and offers greater tolerance to lateral tool movements.

Dual Seal™ Link Systems

RELIABILITY. Fewer production interruptions due to leakage caused by vibration. Simplified installation thanks to the non-rotation feature.

Overstroke Protection System

SAFETY. When a gas spring is overstroked, this helps reduce the risk of tool damage or injury.



Overload Protection System

SAFETY. Jammed cam or tool part being forced by gas springs? This will help reducing such risks.

Overpressure Protection System

SAFETY. Vents the spring if the internal gas pressure exceeds the maximum allowable limit to prevent accidents.

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