

# Loewe<sup>®</sup> GK



## About us

### Many years of experience

For 50 years, we have been advising machine manufacturers as partners for compact coupling systems. Our experience in power transmission has given us extensive know-how in many industries, as we know and understand the most varied applications, and this allows us to optimally support you. Our products are always a safe

choice. No matter if it is a standard product, a coupling tailored to a specific industry, or a coupling solution designed for a specific application.

### Products with high technical functionality

Our product range includes torsionally stiff couplings which stand out due to their compactness and

high functionality. Their unique technical features offer technical users a variety of practice-oriented advantages. Renowned OEMs from all areas of machinery manufacturing are among our partners.

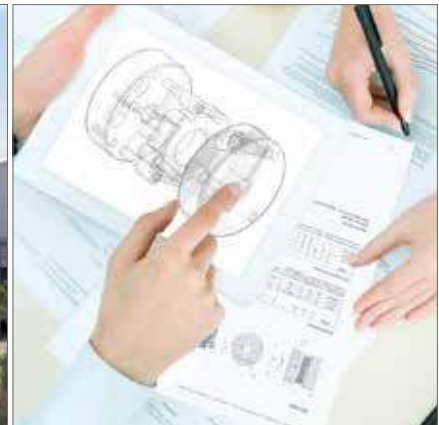
50 years of experience

Trust and partnership

Precision couplings

Understanding applications, solving problems

Ongoing development



### Industry-specific versions

Being familiar with the applications of a variety of industries, we can design tailored coupling versions. No matter if in the food, vacuum, packaging or printing industry, or in sensor or medical technology - we feel at home anywhere.



### Your drive optimisation

Close cooperation with our customers in the design and implementation of a project results in coupling solutions precisely tailored to application-specific requirements. Comprehensive counselling, FEM analyses, prototype definition and production of Rapid Prototyping Models, as well as confirmation of the calculated design data on modern test

benches - all this ensures the optimisation of your drive train.

### Continuous development work

Your wishes are our motivation - With us, new impulses from the market stream into the ongoing further development of our products.

Individual counselling

Closeness to customers

Tailored coupling systems

Industry know-how

Drive optimisation

## Introduction Loewe GK

The axially-stiff coupling

Axially fixed

Anodised clamp hubs

Use of high-performance plain bearings



### The coupling with high axial stiffness

The Loewe GK is an axially stiff coupling for transmitting torques while absorbing axial push and pull loads without changing its length.

Thus, it is also able to perform guiding tasks in axial directions. By combining kinematic properties, it also enables high radial and angu-

lar displacements. The Loewe GK is also perfect as a linear coupling for the precise transmission of pure linear lifting forces.

## Technique

### High power density

Loewe GK uses self-lubricating heavy-duty slide bearings with highest pressure and wear resistance, thus ensuring optimised mechanical properties of the coupling.

When in conjunction with coupling pins optimally tailored in tolerance and material as counter elements, coupling backlash as well as friction and wear rates are minimised. In addition, slide bearings have very high thermal resistance. Thus,

the Loewe GK coupling operates at constant temperature of  $-20^{\circ}$  to  $+150^{\circ}$ .

### Axially fixed

In addition to torque transmission, the coupling performs guiding tasks in axial directions and can, for example, simultaneously act as a fixed bearing.

### High stiffness

The interaction of hubs and inner rings made of high-strength alumi-

nium with coupling pins made of case-hardened and heat treatable steel ensures high torsional and axial stiffness for the Loewe GK.

### Compact design

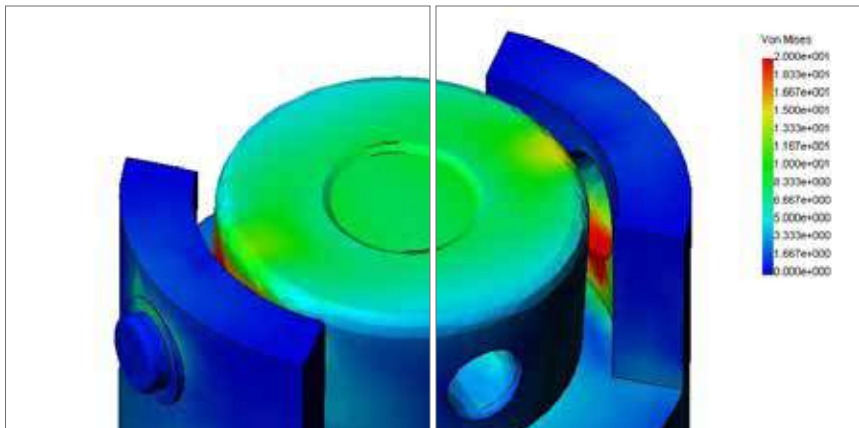
Pins can perform a combined, linear and swivelling movement in slide bearings. A high, combined radial and angular displacement is performed accordingly without deformation in very short installation length.

High axial- and torsional stiffness

Compact design

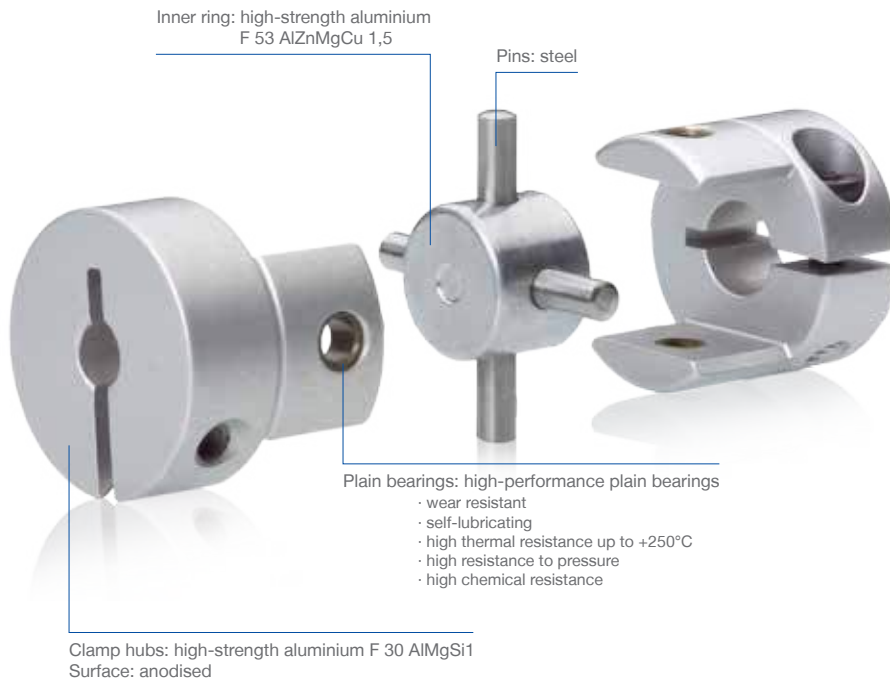
High angular displacement

High radial displacement





## Material



## Product line-up



### Torque

The coupling line for applications where couplings must transmit torque on the one hand, while additionally being able to be loaded by axial push and pull forces, or even perform guiding tasks in axial directions, on the other. Couplings provide radial and angular displa-

cement capacity up to 2.5 mm and 3 degrees respectively. The couplings are provided with aluminium clamp hubs and are available for 6 to 50 mm shaft diameters. The Torque line is available for nominal torques up to 220 Nm.



### Linear

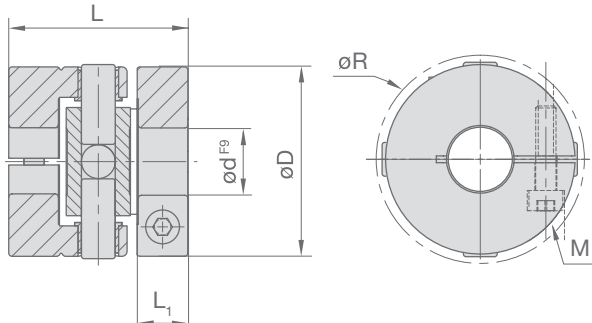
The couplings for applications where couplings must transmit pure linear push and pull forces. This force transmission can be found for example in actuators, cylinders and worm gear screw jacks. For connection to the linearly moving shafts and piston rods, the portfolio includes various moun-

ting options. The couplings in this line are equipped as standard with internal screw thread on both sides. They can also be supplied with clamping hubs, threaded pins or in a combination of the mentioned hub shapes.

The Linear line is available for axial loads up to 13.000 N.

## Loewe GK

### Torque



### Specifications

Size	D mm	R mm	L mm	L <sub>1</sub> mm	m kg	M	M <sub>A</sub> Nm	T <sub>KN</sub> Nm	T <sub>Kmax</sub> Nm	C <sub>T</sub> Nm/°	Misalignment		n <sub>max</sub> 1/min	P <sub>RN</sub>
											angular °	radial mm		
GK 27	27	33	36	10,5	0,05	M4	3	4	9	13,5	3	1	4.000	1
GK 35	35	41	37	12	0,09	M5	5,7	7	15	27,5	3	1,5	3.500	2
GK 56	56	61	53	15	0,3	M6	8	33	95	355	3	2	2.500	8
GK 75	74,5	84	83	25	0,8	M8	24	90	240	880	3	2	2.500	16
GK 100	100	109	97	27,5	1,8	M12	80	220	550	1.475	3	2,5	1.500	32

M = Size of screw, M<sub>A</sub> = Tightening torque, T<sub>KN</sub> = Nominal torque, C<sub>T</sub> = Torsional stiffness, m = Masse, P<sub>RN</sub> = Nominal friction, R = measured at max. radial misalignment, Mass of coupling size measured at max. bore diameter

### Bore diameters

Size	d mm															
	6	8	10	11	12	14	16	18	20	24	25	30	35	40	45	50
GK 27	■	■	■	■												
GK 35		■	■	■	■	■	■									
GK 56							■	■	■	■	■	■				
GK 75								■	■	■	■	■	■	■		
GK 100												■	■	■	■	■

Combinations of different bore diameters are possible. Additionally bore diameters with keyway according to DIN 6885/1 starting from bore diameter 8 mm are available on request. Smaller bore diameters as shown in the table are available on special request as well.

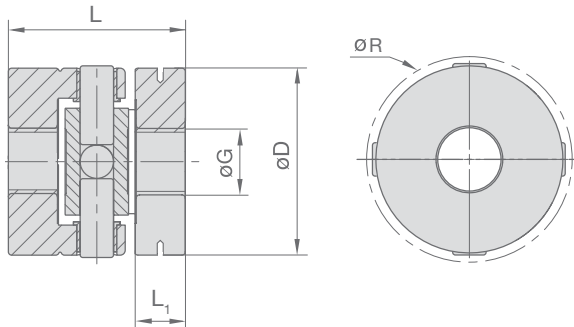
Ordering example:

#### GK 27 Ø6 Ø8

Loewe GK Torque size 27, bore 6 mm, 8 mm

## Loewe GK

### Linear



### Specifications

Size	D mm	R mm	L mm	L <sub>1</sub> mm	m kg	F <sub>Ka</sub> N	C <sub>a</sub> N/mm	Misalignment	
								angular °	radial mm
GK L 27	27	33	36	10,5	0,05	800	16.000	3	1
GK L 35	35	41	37	12	0,09	1.000	11.500	3	1,5
GK L 56	56	61	53	15	0,3	4.000	32.000	3	2
GK L 75	74,5	84	83	25	0,8	7.500	43.900	3	2
GK L 100	100	109	97	27,5	1,8	13.000	61.500	3	2,5

Dimensions are related to the standard version with inner threads on both sides. On request the Loewe GK Linear is available with inner and outer threads, with outer threads on both sides or with clamp hubs as well. Please ask our application engineers.

F<sub>Ka</sub> = Maximum axial loads, C<sub>a</sub> = Axial stiffness, R = Measured at max. radial misalignment

### Thread diameters

Size	ØG										
	M6	M8	M10	M12	M16	M20	M24	M30	M36	M42	M48
GK L 27	■	■	■								
GK L 35		■	■	■	■						
GK L 56			■	■	■	■					
GK L 75					■	■	■	■	■		
GK L 100								■	■	■	■

Combinations of different thread diameters are possible. Smaller thread diameters as shown in the table are available on special request.

Ordering example:

**GK L 35 M8 M10**

Loewe GK Linear size 35, inner threads M8 and M10

## Selection sequence

### Torque

#### 1. Friction power

If speed, torque and offset occur together, a friction power specifically related to couplings must not be exceeded:

$$P_{RA} = \frac{T_A (Nm) * R_A (mm) * n_A (min^{-1})}{D (mm) * 60}$$

$P_{RA}$  = Friction power,  $T_A$  = Torque of the application,  $R_A$  = Offset,  $n_A$  = Speed,  $D$  = Coupling diameter

$$P_{RA} < P_{RN}$$

The calculated friction power of the application  $P_{RA}$  must be smaller than  $P_{RN}$  the rated friction power in the table. Individual catalogue data should not be exceeded.

The permanent service temperature of the catalogue types "Linear" and "Torque" is 150 °C. Plastic slide bearings can be loaded up to 250 °C and temporarily even up to 300 °C. When surface temperatures are critical for your application, please contact our application consultants. If necessary, we can also have couplings certified according to ATEX.

#### 2. Service life

Torque and Linear variants are equipped with highly pressure and wear resistant universal bearings. Furthermore, stiffness and temperature resistance are very high in this type of bearing. Plastic bearings are self-lubricating and reach their highest operating performance without any external additives.

Plastic slide bearings are subject to a very complex wear behaviour. Wear is influenced by environmental factors such as temperature and surrounding abrasive or corrosive media. The following calculation method can only supply guide values for wear. We recommend performing tests under real conditions or contacting our application consultants.

$$x = \frac{n_A (min^{-1}) * Lh_A * R_A (mm)}{8500}$$

$$V_B = \frac{x * T_A (Nm)}{T_{KN} * 85}$$

Bushing wear should not exceed 0.5. Exception: GK 27 max. 0.3.

$$D_K = \arctan \left( \frac{4 * V_B}{\varnothing D} \right)$$

$Lh_A$  Application lifetime,  $x$  bushing path,  $V_B$  bushing wear,  $D_K$  rotational backlash [°] at the end of run time

### Linear

In typical Linear applications, the coupling is applied with static or dynamic axial forces. The design is performed according to:

$$F_{KA} > F_A * S$$

$F_{KA}$  = max. axial load of the coupling in N,  $F_A$  = Feeding force application in N,  $S$  = Impact factor

#### Impact factor S

	Load uniform	light impacts	medium impacts	strong impacts
Factor S	1	1,5	2	2,5



## Installation

### General

Loewe GK are delivered ready-to-mount with the desired bore diameters.

During installation, please observe the permissible displacement values. Due to design-related reasons, the Loewe GK performs no axial displacement.

### Installation

The shaft ends and hub bores to be

connected must be clean, dry and burr-free. Check shaft connection dimensions (also feather key dimensions) and tolerances.

For installation, the Loewe GK is fully pushed onto the motor stub shaft. Bores are supplied in fit F9. When properly positioned, the fastening screw of this hub is to be tightened to the full driving torque (values can be found in the relevant tables). Fit the second stub

shaft into the second hub and, when properly positioned, tighten also this clamp screw or set screws to the full driving torque.

The Linear series with threaded bores is installed using hook spanners. The coupling must not be loaded with the driving torque.

## Loewe GK coupling solutions

In addition to standard products, SCHMIDT-KUPPLUNG manufactures industry-specific versions and application-specific coupling solutions of the Loewe GK line. These are, for example:



### Special application requirements

Materials and used slide bearings can be customised according to customer needs. Versions for increased chemical resistance as well as food contact with

FDA-compliant bearings, suitable for wet areas, or ATEX certified ones with conductive slide bearings, are available.



### Very short in length for flange-mounting

Space-saving version of the Loewe GK for flange-mounting to inte-

grate into smallest envelopes.

### Special sizes

Coupling sizes for increased torque requirements or axial loads. Likewise, dimensions as inner dia-

meters or structural lengths can be adapted to customer needs.



### Special hubs

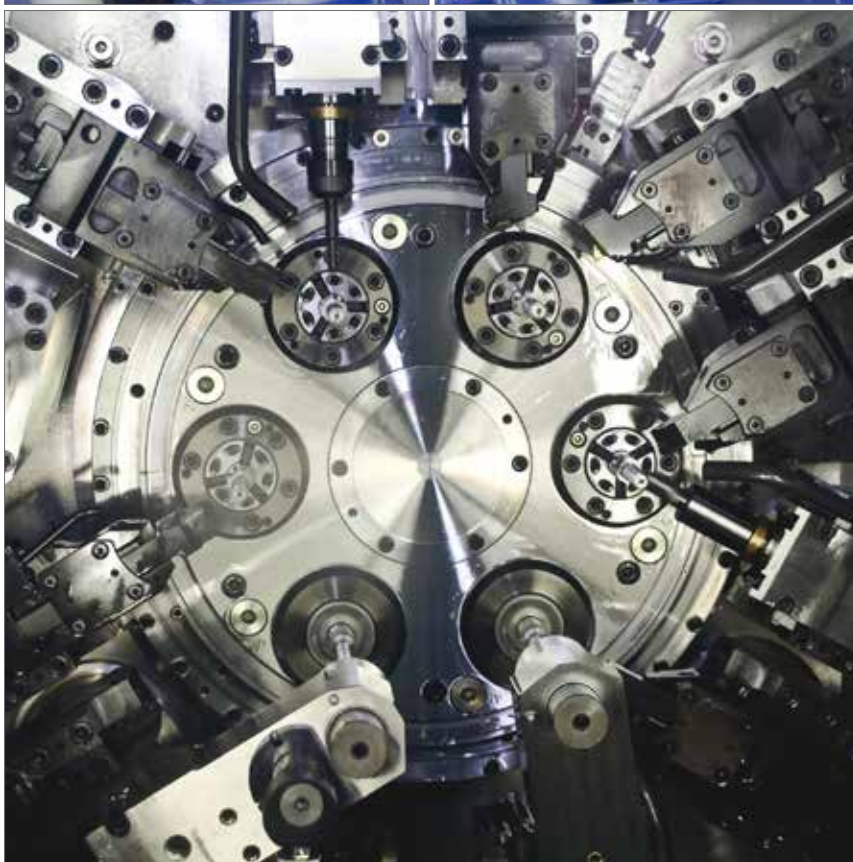
Versions with pins for vertical applications, such as for integration into the hollow shafts of lifting

devices in rotary and linear lifting drives.

## Applications



Pick and place systems  
PCB exposure systems  
Forming  
Machine tools  
Medical technology  
and much more



### We speak your language

Every industry has its own peculiarities. Understanding this is a key task for the successful implementation of industry-specific applications.

For 50 years, the release of countless applications in various

industries has given us the experience and know-how to implement, jointly with our customers, the most suitable and efficient coupling solution for each application. No matter whether you deal with assembly or exposure systems for

PCB production, medical technology or process engineering, forming or machine tools: We speak your language!

## The optimal solution for every application

### Printed circuit boards

Technology and quality requirements in the manufacture of printed circuit boards are constantly increasing. Thus, demands grow in terms of registration accuracy when loading and exposing associated with a higher level of productivity. Loewe GK is used in combined pivoting/lifting units for pick and place loading processes as well as in the z-axes of PCB exposure systems.

### Process engineering

For the precise ejection of liquids and gases, they are generally used in process and apparatus engineering in the form of valves. Actuating drives or feed drives with combined thrust units generate the axial force required for adjusting valve flaps. Thanks to its high axial stiffness, the Loewe GK coupling is used to precisely transfer generated push and thrust forces. Tensions throughout the drive train, which would prevent fine lif-

ting movements from being transferred, are compensated by the coupling system via high angular and radial displacement capacity.

### Machine tools

Especially for the manufacture of mass-produced parts, multi-spindle automatic lathes play a significant role due to their high productivity and remarkably good profitability. In material feeding the Loewe GK coupling displays all its strengths. Due to high axial stiffness, this coupling made of steel ensures precise bar feeding and also offers great compensation of the occurring combined radial and angular displacement without deformation in short installation length. The machine feed cables are located in an application-oriented internal space of the Loewe GK.

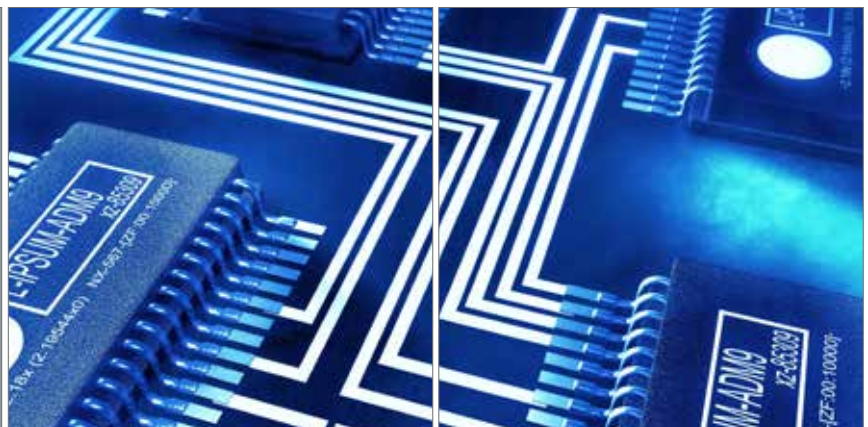
### Medical technology

In process plants of the medical technology field, an ATEX-certified

version of the Loewe GK is used. It is perfect for use in explosive gaseous atmosphere. Entirely made of stainless steel and equipped with conductive slide bushings, it compensates occurring radial displacements, thus minimising tensions in the system and increasing the lifetime of high-precision process equipment.

Versions in stainless steel are also used in the food industry, for pharmaceutical applications and in chemical apparatus engineering. Also here, due to high demands on corrosion resistance, bolts are entirely made of stainless steel, and coupling parts, such as hubs and inner rings, in V4A stainless steel. In addition, for applications in the food industry, FDA-compliant, polymer slide bearings are used, in accordance with the food sector high standards.

Valve flaps adjustments  
Piston pump  
Roller feeds  
Process plants  
Bending machines  
and much more

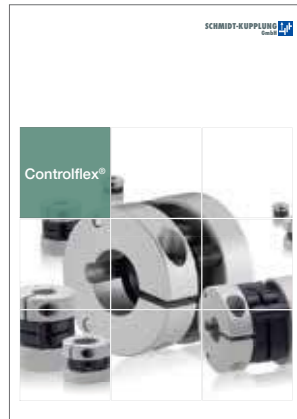




## Product Overview



*Catalogue Spinplus*



*Catalogue Controlflex*



*Catalogue Semiflex*



*Catalogue Schmidt-Kupplung*



*Catalogue Servoflex*



*Catalogue Loewe GK*



*Catalogue Omniflex*



*Overview Industries*

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