



Detent pins for gearboxes in mobile machinery

Features

Detent pins are used in gearshift systems in gearboxes. They act on movable parts such as the input selector shaft, selector rods or selector rails.

Due to their design and functions specially matched to the application, they have a decisive influence in the manual gearbox on the gearshift behaviour and the gearshift feel experienced by the driver.

Function

Detent pins fulfil the following functions in manual gearboxes:

- They locate and position the required gearshift point
- They lock the gearshift point once it has been located
- They ensure precise and secure gearshift by means of a defined gearshift resistance
- They communicate a clear sensation to the driver that the gear has been engaged
- They can fulfil secondary functions such as guidance of gearshift plates and gates or integration of electric switches.

Detent pins ARRE

With its detent pins ARRE, Schaeffler offers a comprehensive range including various designs.

The basic design of a detent pin comprises a compression spring and a spring-loaded ball. This design allows not only axial motion – the stroke – but also horizontal motion, comprising travel across the ramps.

In order to achieve the required gearshift force and improve the friction value at the same time, the components differ in configuration due to their design:

- They are supported by plain or rolling bearings for the stroke length
- They are also supported by plain or rolling bearings for travel of the detent ball across the ramps.

Location

Depending on their design, the housing bodies of detent pins are screwed or pressed into the gearbox housing. They can, however, also be located on gearshift mechanisms within the gearbox.

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Anti-corrosion protection

Depending on the design principle of the gearbox, parts of the detent pins may protrude from the gearbox housing. These parts are exposed to corrosion as a result of environmental influences and must be appropriately protected.

Measures for the prevention of corrosion include:

- Corrotect® coating
- chromate coating
- components made from corrosion-resistant materials.

Sealing

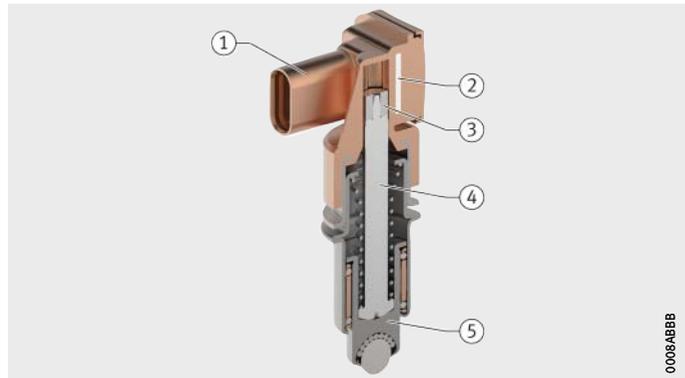
Where designs are pressed into the threaded housing, the interference fit ensures secure sealing against the gearbox housing. The designs screwed into place are generally provided with a sealing compound on the thread.

Switch function

Conventional detent pins can be modified and thus used for additional functions. With the addition of electrical and electronic components, detent pins can for example undertake electrical switch functions, *Figure 1*.

- ① Plug connector
- ② Sensor
- ③ Magnetic encoder
- ④ Connecting pin
- ⑤ ARRE

Figure 1
Detent pin
with integrated switch function



Application in mobile machinery

As a development partner and supplier for gearbox components over many years in the automotive industry, Schaeffler has built up extensive know-how. In the light of continuously increasing demands on gearboxes, this can now also be used to considerable benefit for applications in mobile machinery.

Advantages

Detent pins ARRE from Schaeffler offer numerous advantages in the mobile machinery sector:

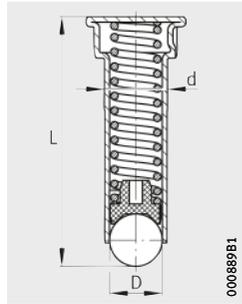
- They are easy to assemble due to the single piece design
- Responsibility for the complete component with a single supplier gives increased quality compared to the sourcing of individual components.
- The design is both robust and optimised for cost due to the formed sheet steel housing and integrated, spring-loaded ball
- Existing designs can easily be matched to a specific design envelope
- The improved gearshift function and gearshift behaviour have a positive effect on the gearshift feel and the impression of quality experienced by the driver.

Further information

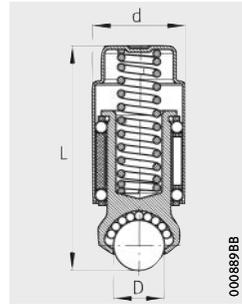
- API 14, Detent Pins for Automotive Transmissions.

Detent pins

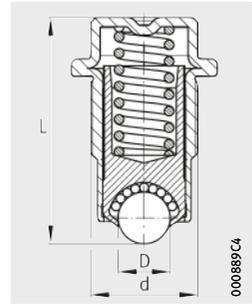
Available designs for mobile machinery



Design 1



Design 2



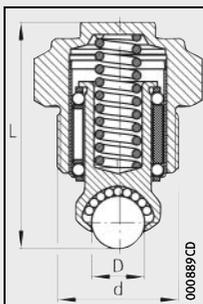
Design 3

Dimension table · Dimensions in mm

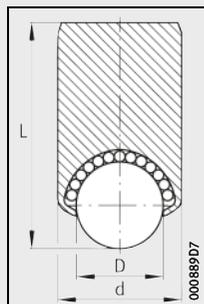
Designation	Dimensions			Design
	D	d	L	
F-216710.15	10	12	47,7	1
F-550881.08	9	11	23,3	1
F-234334.2-230	10	12	33,2	1
F-234334.02-0340	9	11	31,3	1
F-230940.04	9	11	31,6	1
F-230870.13	8,731	20	44,6	2
F-556832.1	8,731	20	40,9	2
F-223541.23	8,731	16	38,9	2
F-555412	8,731	16	46	2
F-554563.03	8,731	16	44	2
F-229550.04	8,731	16	34,5	2
F-239258	8,731	16	32	2
F-222707.08	8,731	M18×1,5	38,2	3
F-212601.21	8,731	M20×1,5	37,5	4
F-233677.04	8,731	M27×1,5	53	4
F-233677.03 (TN)	8,731	M27×1,5	54	4
F-217859.17	8,731	M18×1,5	50,4	4
F-218416.17	7,5	M18×1,5	44,5	4

Dimension table (continued) · Dimensions in mm

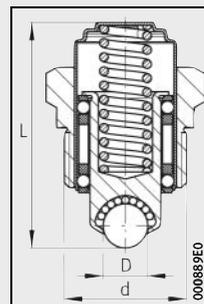
Designation	Dimensions			Design
	D	d	L	
F-222964.1	11,906	17	31	5
F-218887-0510	8,731	14	31,2	5
F-220578.04	8	12,5	28	5
F-553917.01	8	12,5	24	5
F-229341.1	11,906	17	31	5
F-238155	12	20	37,3	5
F-226817-10	12	20	28,1	5
F-550190.01	8,731	M24×1,5	44,6	6
F-552230	8,731	M18×1,5	43,4	6
F-212601.23	8,731	M20×1,5	38,9	6
F-235988.09	8,731	17	44,8	7
F-227095.01	8,731	14,5	49,4	7
F-558454.01	6	17	39,8	7



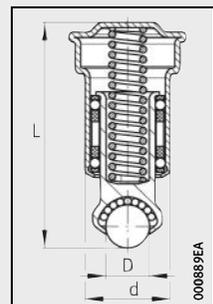
Design 4



Design 5



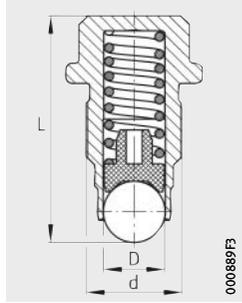
Design 6



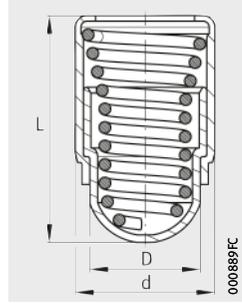
Design 7

Detent pins

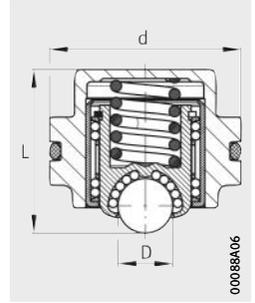
Available designs for mobile machinery



Design 8



Design 9



Design 10

Dimension table (continued) · Dimensions in mm				
Designation	Dimensions			Design
	D	d	L	
F-553307.03	9	M14×1,5	33,4	8
F-239514	9	M13×1,5	33,2	8

Dimension table (continued) · Dimensions in mm				
Designation	Dimensions			Design
	D	d	L	
F-237232.05-0690	10	12	19	9
F-234984	10	12	16	9
F-231621	12	42	36	10

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