

# P-LINE

## LEVER-TYPE DIAL TEST INDICATORS



The new P-LINE range reflects all the quality and high precision of the well-known COMPAC brand.

# The new P-LINE range



The P-LINE range evokes the history of the internationally renowned COMPAC lever-type dial test indicators.

TESA Technology is preserving and enhancing this history today through its know-how.

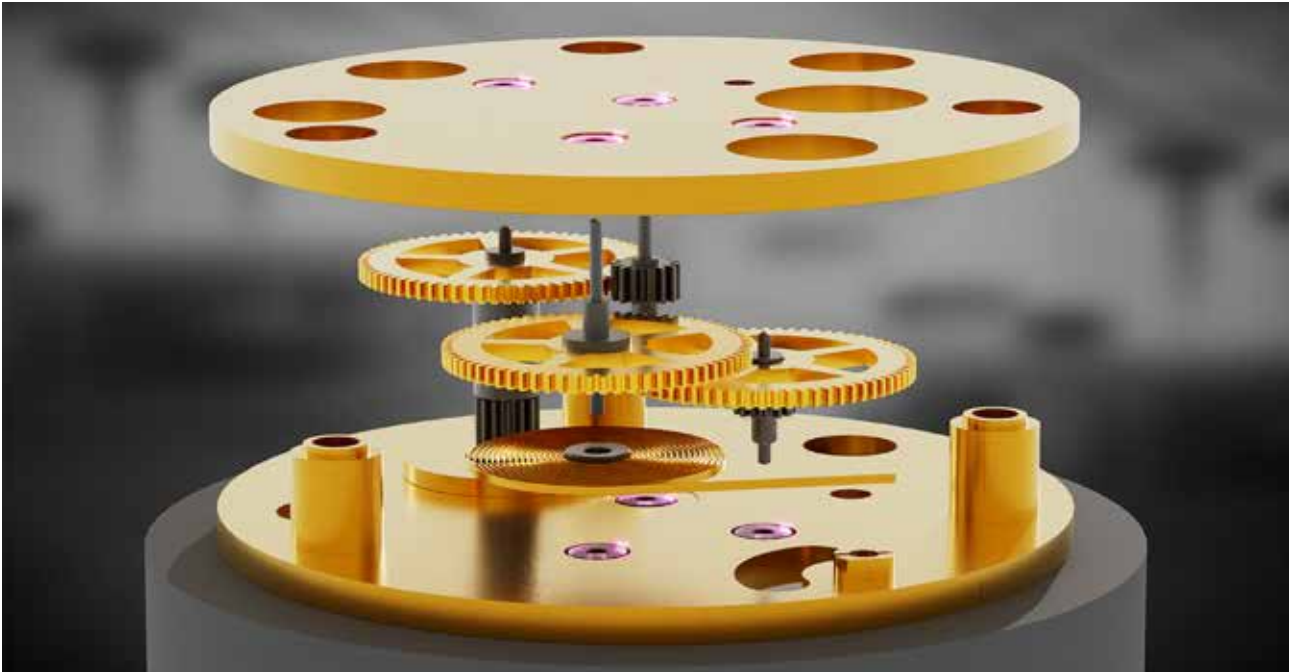
The instruments made by our experts are extremely robust due to the longevity of the mechanism incorporating mechanical design and premium-quality components.

The P-LINE range is specially designed to bring back the magic of the old COMPAC brand and to satisfy our customers' specific needs for long measurement distances.





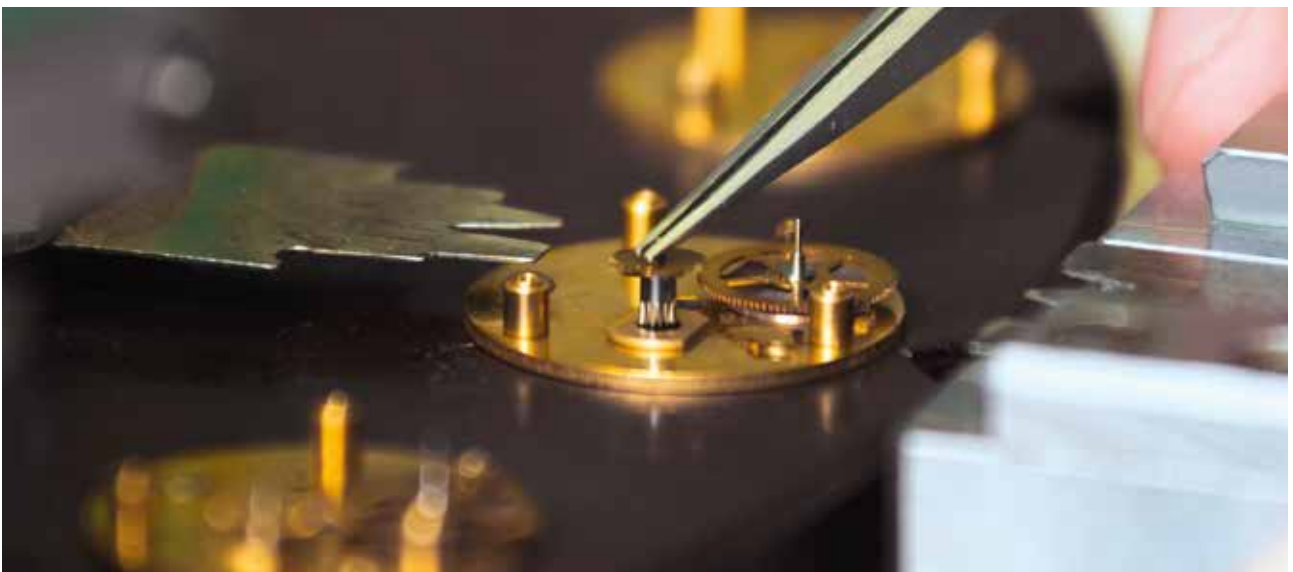
## Our expertise



The assembly technology of the swivel-mounted wheels contributes to the reliability of the mechanism.



The movement is composed of rubies to ensure the long life of the instrument.



Operator know-how ensures the precision and repeatability of the instrument, thanks to meticulous assembly with adjustments in the order of microns.



## Our expertise

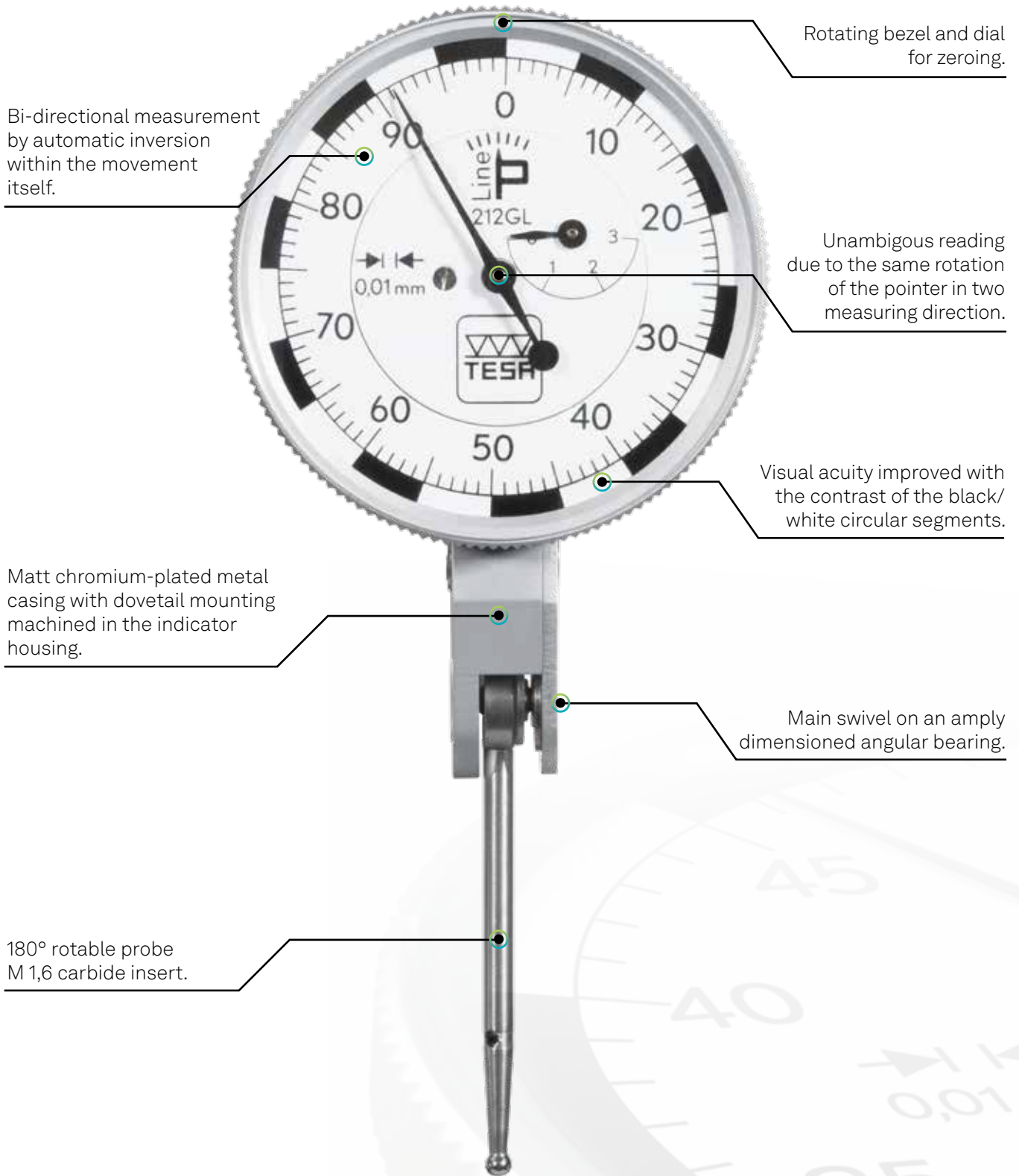


Each instrument is individually tested on a test bench to confirm its function and measurement accuracy.



The construction of the P-LINE lever-type dial test indicator includes the best materials to guarantee its longevity in demanding environments like those of a workshop.

# Product description



Rotating bezel and dial for zeroing.

Bi-directional measurement by automatic inversion within the movement itself.

Unambiguous reading due to the same rotation of the pointer in two measuring direction.

Visual acuity improved with the contrast of the black/white circular segments.

Matt chromium-plated metal casing with dovetail mounting machined in the indicator housing.

Main swivel on an amply dimensioned angular bearing.

180° rotatable probe  
M 1,6 carbide insert.



# P-LINE

## Lever-type dial test indicators

The new P-LINE range reflects all the quality and high precision of the well-known COMPAC brand. The benchmark in the field of lever-type dial test indicators, the success of these instruments is due to the long measurement range of up to 3 mm.

The key lengths and available measurement distances are the longest on the market, while guaranteeing exceptional metrological performance (ISO 9493).

The lever-type dial test indicator is invaluable for the recording of errors of form and position. Ideal for measuring axial and radial runout.

Combined with decades of metrological expertise, the high-quality materials used make this new range an undisputed reference.

The dial has been modernized with better readability thanks to larger numbers, a pure white dial for greater contrast and a new design of the circular segments.

### Main points

- Measuring range up to 3 mm
- Measuring insert up to 36 mm
- Precision movement mounted on rubies
- Secondary pointer with revolution counter
- Movement with a very robust construction

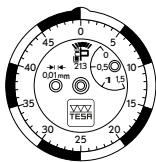


## P-LINE STANDARD

Resolution 0.01 mm	01810400 (213)	01810401 (213G)	01810402 (212L)	01810403 (212GL)
Measuring range (mm)	1.5	1.5	3	3
Resolution (mm)	0.01	0.01	0.01	0.01
Dial, Ø (mm)	27	40	27	40
Stroke/revolution (mm)	0.5	0.5	1	1
Circular scale	0 ÷ 25 ÷ 50	0 ÷ 25 ÷ 50	0 ÷ 50 ÷ 100	0 ÷ 50 ÷ 100
Measuring insert length (mm)	18	18	36	36
Indication error over the measurement range (plunger retractable and extendable) MPE <sub>tot</sub> (µm)	13	13	26	26
Indication error over the measurement range (retractable plunger) MPEE (µm)	10	10	20	20
Partial indication error (over 1 revolution) MPEP (µm)	6	6	12	12
Partial indication error (over 1/2 revolution) MPEP (µm)	5	5	10	10
Partial indication error (over 1/10 revolution) MPEP (µm)	3	3	6	6
Hysteresis of the indication error MPEH (µm)	3	3	7	7
Repeatability of the indication error MPER (µm)	3	3	3	3
Measurement force (N)	0.35	0.35	0.2	0.2

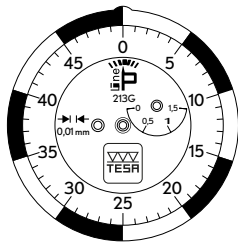
## Dial reading 0.01 mm

213



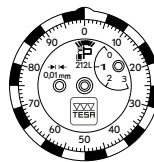
01810400

213G



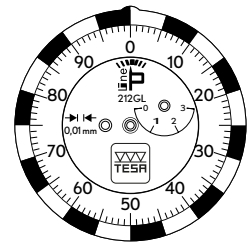
01810401

212L

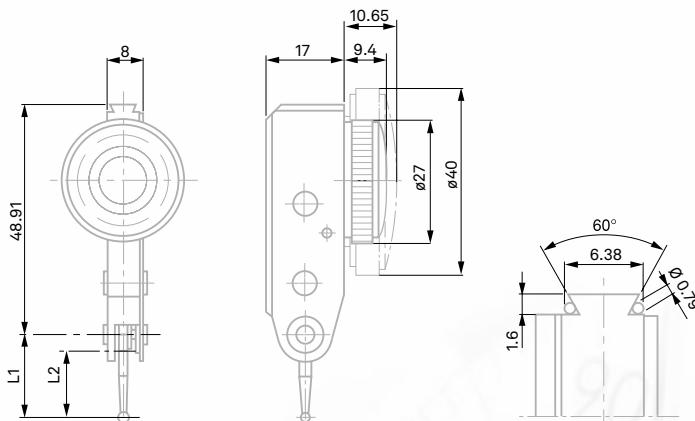


01810402

212GL



01810403



L1 and L2, see table of measuring insert, p. 12



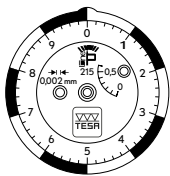


## P-LINE STANDARD

Resolution 0.002 / 0.001 mm	01810404 (215)	01810405 (215G)	01810406 (215GL)	01810407 (216G)
Measuring range (mm)	0.6	0.6	1.2	0.6
Resolution (mm)	0.002	0.002	0.002	0.001
Dial, Ø (mm)	27	40	40	40
Stroke/revolution (mm)	0.1	0.1	0.2	0.1
Circular scale	0 ÷ 5 ÷ 10	0 ÷ 5 ÷ 10	0 ÷ 10 ÷ 20	0 ÷ 5 ÷ 10
Measuring insert length (mm)	18	18	36	18
Indication error over the measurement range (plunger retractable and extendable) MPE <sub>tot</sub> (µm)	13	13	26	13
Indication error over the measurement range (retractable plunger) MPEE (µm)	10	10	20	10
Partial indication error (over 1 revolution) MPEP (µm)	5	5	10	5
Partial indication error (over 1/2 revolution) MPEP (µm)	3	3	6	3
Partial indication error (over 1/10 revolution) MPEP (µm)	1	1	2	1
Hysteresis of the indication error MPEH (µm)	4.5	4.5	8	4.5
Repeatability of the indication error MPER (µm)	1.5	1.5	1.5	1.5
Measurement force (N)	0.3	0.3	0.2	0.3

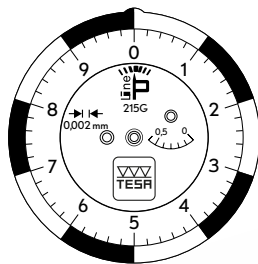
## Dial reading 0.002 / 0.001 mm

215



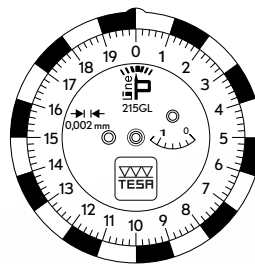
01810404

215G



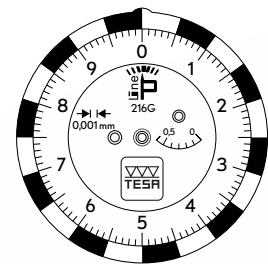
01810405

215GL

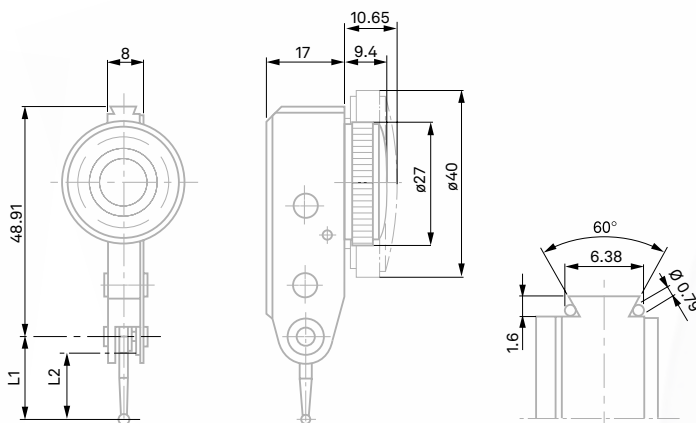


01810406

216G



01810407

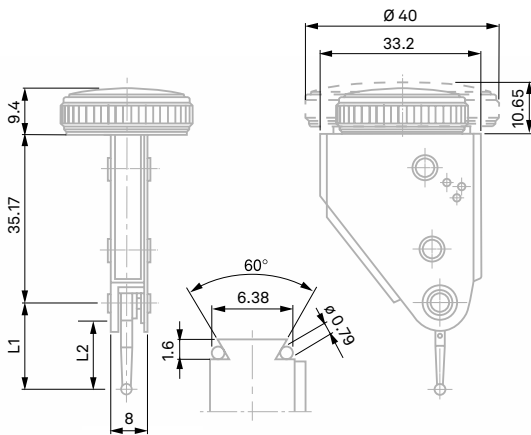


L1 and L2, see table of measuring insert, p. 12



## P-LINE PERPENDICULAR

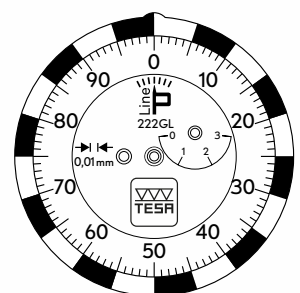
Resolution 0.01 mm	01810408 (222GL)
Measuring range (mm)	3
Resolution (mm)	0.01
Dial, Ø (mm)	40
Stroke/revolution (mm)	1
Circular scale	0 ÷ 50 ÷ 100
Measuring insert length (mm)	36
Indication error over the measurement range (plunger retractable and extendable) MPE <sub>tot</sub> (µm)	26
Indication error over the measurement range (retractable plunger) MPEE (µm)	20
Partial indication error (over 1 revolution) MPEP (µm)	12
Partial indication error (over 1/2 revolution) MPEP (µm)	10
Partial indication error (over 1/10 revolution) MPEP (µm)	3
Hysteresis of the indication error MPEH (µm)	7
Repeatability of the indication error MPER (µm)	3
Measurement force (N)	0.2



L1 and L2, see table of measuring insert, p. 12



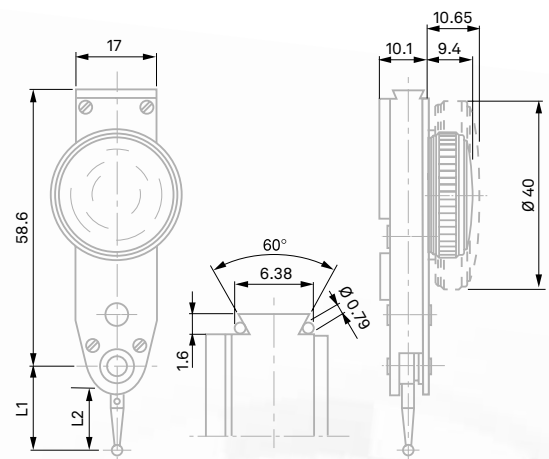
222GL



01810408

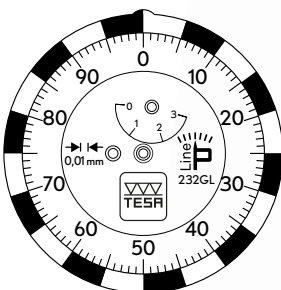
## P-LINE PARALLEL

Resolution 0.01 mm	01810409 (232GL)
Measuring range (mm)	3
Resolution (mm)	0.01
Dial, Ø (mm)	40
Stroke/revolution (mm)	1
Circular scale	0 ÷ 50 ÷ 100
Measuring insert length (mm)	36
Indication error over the measurement range (plunger retractable and extendable) MPE <sub>tot</sub> (µm)	26
Indication error over the measurement range (retractable plunger) MPEE (µm)	20
Partial indication error (over 1 revolution) MPEP (µm)	12
Partial indication error (over 1/2 revolution) MPEP (µm)	10
Partial indication error (over 1/10 revolution) MPEP (µm)	3
Hysteresis of the indication error MPEH (µm)	7
Repeatability of the indication error MPER (µm)	3
Measurement force (N)	0.2



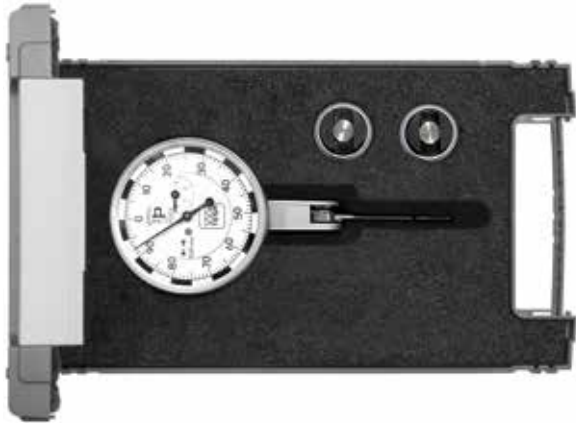
L1 and L2, see table of measuring insert, p. 12

232GL



01810409

## Delivery

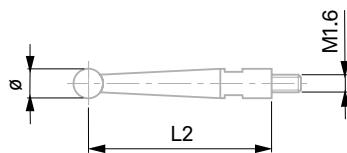


The lever-type dial test indicator is supplied with:

- Key diameter 2 mm
- Rigid fixing rod  $\varnothing$  8 mm, L=15 mm - 01840107
- Rigid fixing rod  $\varnothing$  4 mm, L=15 mm - 01840109
- Measurement report
- Declaration of conformity
- User manual

## Measurement inserts

Part numbers	Ball, $\varnothing$ mm	Ball material	L1, mm	L2, mm
01866014	0.8	Hard metal	18	14.26
01866003	2	Hard metal	18	14.26
01866021	3	Hard metal	18	14.26
01866016	0.8	Hard metal	36	32.26
01866004	2	Hard metal	36	32.26
01866023	3	Hard metal	36	32.26
01866026	2	Ruby	18	14.26
01866027	2	Ruby	36	32.26

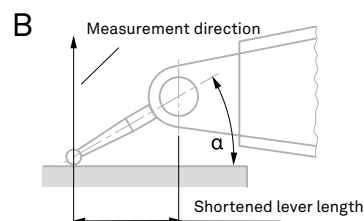
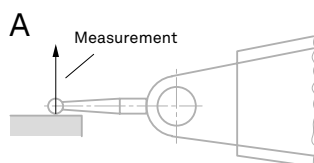


L1= length from ball axis  
to pivot axis



01866014

The mounting thread is M1.6; the original keys fitted to all lever-type dial test indicators can be replaced by keys of the same length but different diameter.

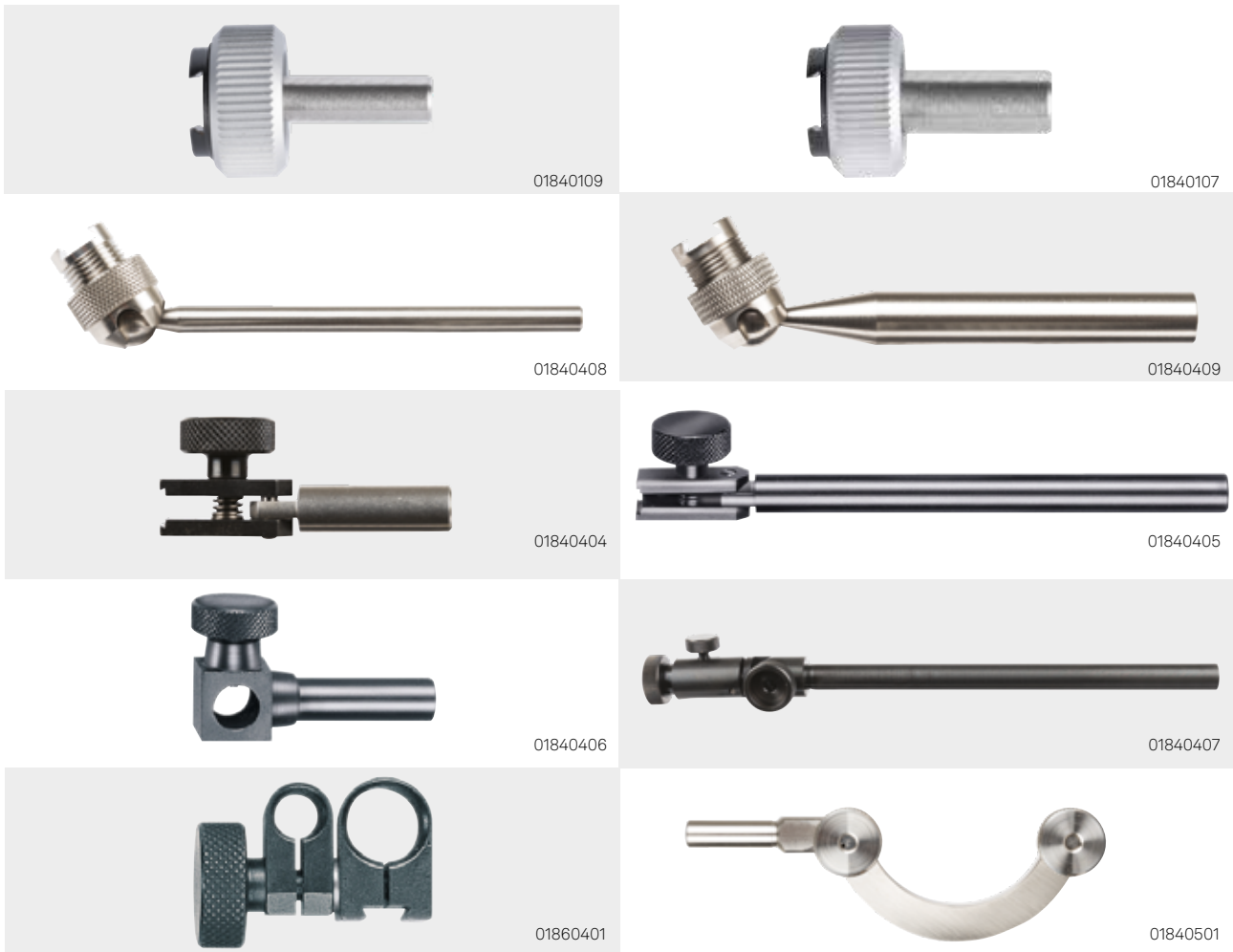


Note on the use of P-LINE lever-type dial test indicators;

If the position of the key is parallel to the surface of the workpiece (Fig. A), the ratio of 1:1 is correct. The read value does not require any correction. Otherwise (angle  $\alpha$ , Fig. B), the effective length of the lever changes. The read values must then be corrected. Please refer to the user manual.



## Accessories



Part numbers	Designation
01840109	Knurled rigid stem Ø 4 mm x 15 mm
01840107	Knurled rigid fixing rod Ø 8 mm x 15 mm
01840408	Swiveling fixing rod Ø 4 mm x 64 mm
01840409	Swiveling fixing rod Ø 8 mm x 64 mm
01840404	Swivel holder Ø 8 mm x 25 mm
01840405	Swivel holder Ø 8 mm x 90 mm
01840406	Angular swivel holder Ø 8 mm x 25 mm
01840407	Swivel holder Ø 8 mm x 125 mm with fine adjustment
01860401	Dovetail clamp with dovetail clamp Ø 5,6 mm and Ø 9,5 mm
01840501	Centering holder Ø 4 mm x 25 mm

## Application examples



Measurement of the perpendicularity through a P-LINE lever-type dial test indicator mounted on a MICRO-HITE measuring column.



The centering holder allows a large range of movement of the lever-type dial test indicator, useful for measuring at different distances as well as for centering a workpiece on a machine tool.



High precision positioning thanks to the fine adjustment available on the TESA magnetic support with articulated arm.





### **About Hexagon and TESA**

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

TESA Technology, part of Hexagon's Manufacturing Intelligence division, is a leading innovator and manufacturer of precision measuring instruments, long-established in Switzerland. Learn more at [tesatechnology.com](https://tesatechnology.com).

Hexagon's Manufacturing Intelligence division provides solutions that utilize data from design and engineering, production and metrology to make manufacturing smarter.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 4.4bn USD.

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