OSIMESS probe with accessoires

measuring stand OSM 3 and OSM 4 with accessoires

OSIMESS

Two-point measuring instrument for bores from ø 1,0 mm

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Schwenk

General characteristics

The OSIMESS internal measuring instrument is a mechanical two-point comparison instrument for the fast manual measuring of small bores in the diameter range from 1 to 40 mm. The holder can be quickly adapted to the measuring range required by means of different exchangeable probes and the corresponding needles. No additional tool is necessary, due to the clamping of tongs at the holder. A precision indicator, a dial gauge or an electronic probe can either be used to display the measuring value.

Applications

With the OSIMESS, it is not only possible to detect deviations from the nominal diameter, but also deviations in shape within the bore to be measured (thus far as possible with the two-point contact comparator method), like roundness, conical form, widening in a curve, convex or concave barrel shapes can be measured. This is not possible when checking the bore with a conventional plug gauge.
The robust design is conceived for the use in praxi:

- directly on the production machine
- in the incoming or final inspection
- in the room for precision measuring

Construction

- Indicating unit (dial gauge, precision indicator, etc...)
- Holder either with or without retraction
- Probe
- Needle
- Setting reference (for example setting ring)
- Options: depth stop, measuring depth extension, etc...

To minimise wear and stress on the probe and on the work piece, as well as to facilitate the insertion in the bore to be measured, we recommend the holder with retraction for all standard probes up to 4 mm and for all blind hole versions.

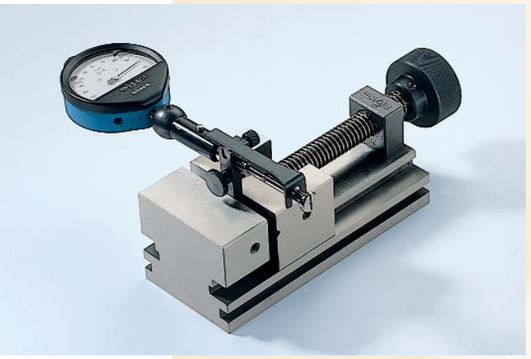
Functions

The springy slit OSIMESS probes are split open by the wedge of the needle located between the two halves of the split probe, due to the spring power of the indicating unit, for example a dial gauge.
As a result, the measuring surfaces of the probe are lying close to the wall of the bore. Through the precisely grinded wedge of the needle, the radial movements of the split probe are transferred free of backlash to the indicating unit. The needle and the probe are exactly coordinated geometrically.

Linear contact between needle and probe

OSIMESS holder with angle piece 90°

Floating holders



OSIMESS holder with clamp and depth stop

Advantages

Highest precision

With a repeatability < 1 µm (manual measuring), the user can fulfil the highest demands for measuring accuracy.

High measuring certainty

The wisely limited measuring travel and the ideal adaptation of the radii on the probe guarantee an optimal centring accuracy.

Easy handling

The probe centres and guides the measuring instrument automatically in the bore through the circular measuring contacts of the two probe halves. The user only has to search for the reversal point (minimum value) on the indicating unit by oscillating the measuring instrument.

High service life

The special method of transmitting the measuring travel via two wedge-shaped surfaces guarantees a long service life due to a low specific surface strain (line contact).
Furthermore, all wearing parts are hard-chrome plated or out of tungsten carbide. All probes up to Ø 4 mm, as well as all needles, are as a standard made of tungsten carbide.

High flexibility

All probes are clamped with a clamping cylinder Ø 5h7, so that all probes from Ø 1 to 40 mm can be assembled quickly to the holder.
Different accessories are available. The OSIMESS is a cost-effective internal measuring instrument.

Accessories

Holder with retraction

To minimise wear and stress on the probes, a holder with retraction should be used for small diameters. By taking off the measuring pressure of the indicating unit, the probe can be inserted easily into the bore to be measured.

Angle piece

90° deviation for awkwardly positioned bores..

Setting rings

They are available for the nominal dimensions of the probe. Further dimensions are available on request. The nominal Ø and the dimension deviation are engraved on the setting rings.

Depth stops

They are adapted to the individual application.
They are especially useful in case of repeatable measurements with a precisely defined measuring depth.

Floating holder

It is especially suitable for the use with automatic measuring stations or with the OSIMESS measuring stand OSM, either for measuring series or for measuring in larger work pieces or whenever a high measuring accuracy is required.
The floating holder allows the measuring instrument to move radially by 0,5 mm. Furthermore, it provides a higher measuring certainty, because the probe is centred automatically in the real measuring axis in the work piece.

Measuring depth extensions MTV

For measuring bores with a large depth, using probes > 10 mm; they are made of Invar steel and are clamped between the holder and the probe. For Ø < 10 mm the probe and needle are available in special lengths. This enables stable and accurate measurements, also with larger measuring depths.

Furthermore, we also solve measuring problems which are not "standard."

Variants

To master the large number of special versions, we have added the following variants to our standard programme:

- probes fitted with tungsten carbide (up to Ø 4 mm standard)
- probes for special profiles - so-called OSF probes, for example for grooves and recesses
- special measuring depths up to 1000 mm
- blind hole design from h = 0,2 mm from the bore bottom
- probes for plane parallel distances with flattened probe halves
- on request, from Ø 0,5 mm and > 20 mm

Delivery

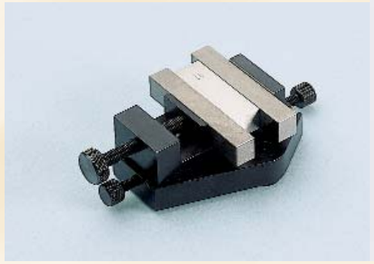
We supply a complete set of probes in a wooden box with holder and needle (depth stop, setting rings and precision indicator as an option).

Single probes are also available separately.

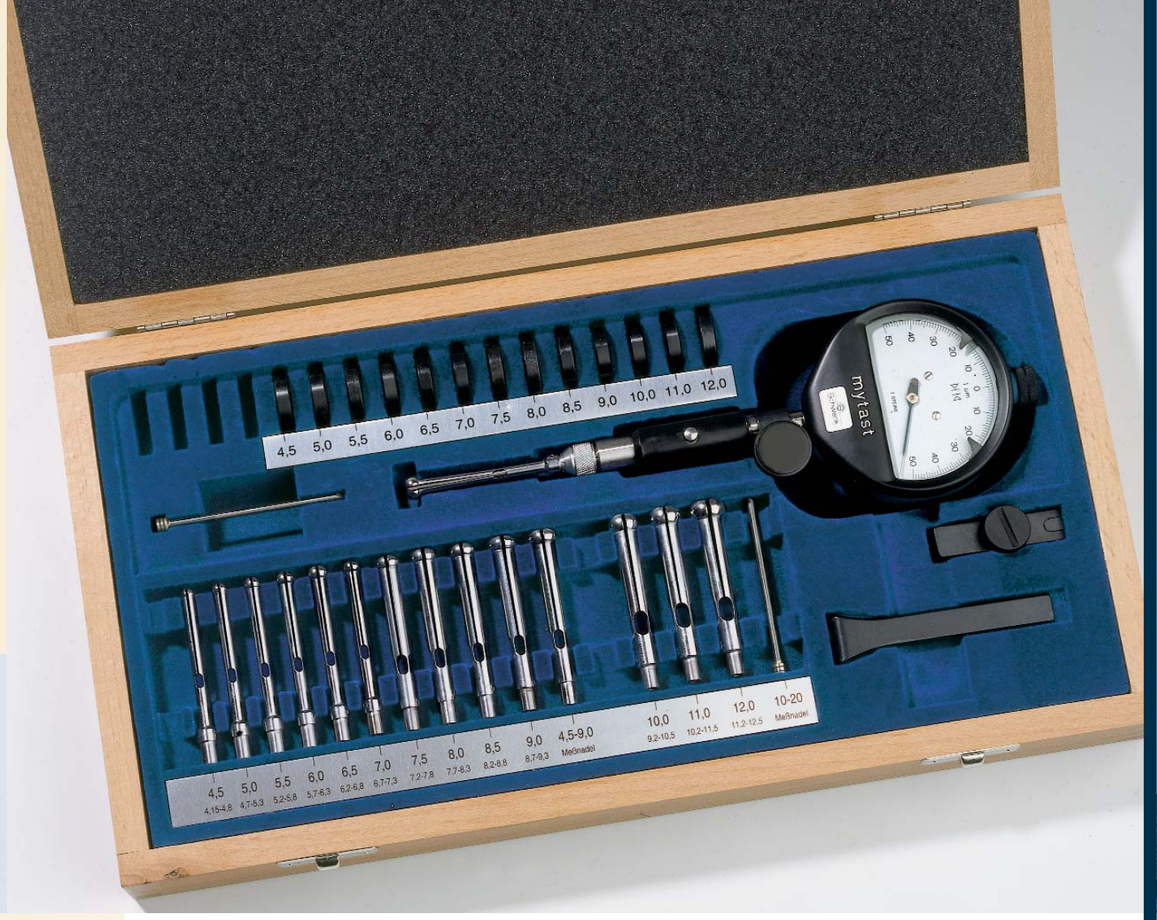
OSIMESS probe in blind hole design OSS (left)
OSIMESS probe in standard design OS (right)

Measuring stand OSM 3

Measuring stand OSM 4



Floating gauge block holder



OSIMESS internal precision measuring instrument Ø 4,5-12 mm in wooden box

Measuring stand **OSM** for OSIMESS internal precision measuring instruments

General characteristics

In combination with the OSIMESS internal precision measuring instrument, the measuring stand OSM eases the checking of series of similar work pieces, especially with bores with tight tolerances.

Advantages

- Fast and accurate measuring, since it is not necessary to search for the reversal point
- High accuracy through a precise rack guidance
- Universal use, like the whole OSIMESS system
- Easy handling
- Minimal wear and stress for the probe and for the work piece
- Centring bore 11H7 in the middle of the table plate for floating work piece support and for floating gauge block holder

OSM 3

In comparison to the OSM 4, the OSM 3 has a larger table plate, so that larger work pieces can also be measured. Furthermore, the OSM 3 has an integrated measuring depth device, which enables the determination of the measuring depth simultaneously if a second display is used. The OSM 3 can also be used to measure both depth and thickness.

OSM 3 accessories

- floating holder (see OSIMESS accessories)
- clamping unit for SUBITO holder and for OD plug gauge
- measuring travel limitation for the OSIMESS holder with retraction in order to minimise wear and stress for the probe and for the work piece

OSM 4

The OSM 4 is the little brother of the measuring stand OSM 3 described below. The OSIMESS split probes are clamped centrally in the rack and can be used without a holder. Repeatable measuring depths can be achieved through the integrated depth stop.

OSM 3 and OSM 4 accessories

Floating work piece support

Due to the floating work piece support, the bore axis is aligned automatically to the measuring axis, which is especially useful when measuring small and light work pieces.

Floating gauge block holder

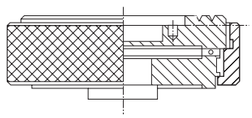
The floating gauge block holder is useful for setting intermediate diameters. Any dimension settings can be realised by using gauge blocks as a reference.

Technical data measuring stand (mm)

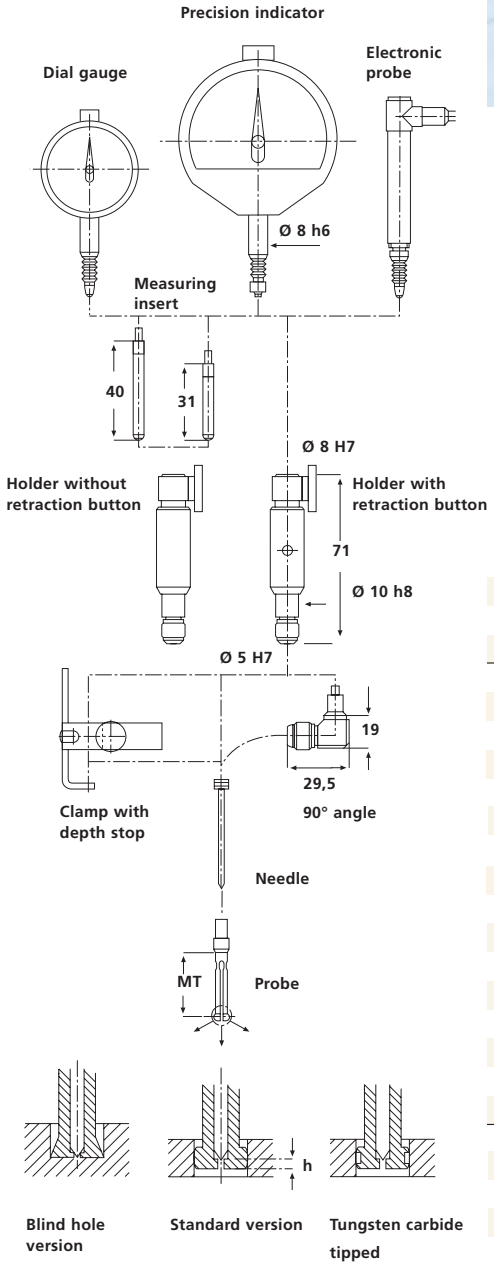
Characteristics	OSM 3	OSM 4
Length	220	167
Width	120	82
Height	316	304
Table diameter	120	80
Adjustment of the lift device	23 -113	36 - 125
Max. lift	41	41
Max. work piece Ø	190	120

Technical Data OSIMESS

Application range	1 - 20	mm
Repeatability	f_w < 1	µm (manual measurement)
Max. deviation	f_e < 3	µm for probes Ø 1-9 mm
	< 4	µm for probes Ø 10-20 mm
Hysteresis	f_u < 2	µm
Shank for dial gauge	Ø 8 h7	
Holder clamping	Ø 10 h7	



Floating work piece support for measuring stands OSM



Nominal dimension/ Measuring range of	Nominal dim. d	Measuring range	Nominal dim. d	Measuring range	Nominal dim. d	Measuring range
single probes	mm	mm	mm	mm	mm	mm
from	1,00	0,95	4,50	4,15	13,00	12,20
to	4,00	4,20	12	12,50	20,00	20,70
	1,00	0,95-1,15	4,50	4,15-4,80	13,00	12,20-13,50
	1,10	1,07-1,25	5,00	4,70-5,30	14,00	13,40-14,70
	1,20	1,17-1,35	5,50	5,20-5,80	15,00	14,40-15,70
	1,30	1,27-1,45	6,00	5,70-6,30	16,00	15,40-16,70
	1,40	1,37-1,55	6,50	6,20-6,80	17,00	16,40-17,70
	1,75	1,50-1,90	7,00	6,70-7,30	18,00	17,40-18,70
	2,00	1,80-2,20	7,50	7,20-7,80	19,00	18,40-19,70
	2,25	2,05-2,45	8,00	7,70-8,30	20,00	19,40-20,70
	2,50	2,30-2,70	8,50	8,20-8,80		
	2,75	2,55-2,95	9,00	8,70-9,30		
	3,00	2,80-3,20	10,00	9,20-10,50		
	3,25	3,05-3,45	11,00	10,20-11,50		
	3,50	3,30-3,70	12,00	11,20-12,50		
	3,75	3,55-3,95				
	4,00	3,80-4,20				

Measuring depth MT (mm)	Nominal dim. d	Measuring depth MT	Nominal dim. d	Measuring depth MT	Nominal dim. d	Measuring depth MT
	1,00-1,40	13	4,5-6,5	41	13-20	45
	1,75-2,25	17	7,0-12,0	45		
	2,50-4,00	25				

Front distance h (mm)	1-4:	h = d/2	4,5-12:	h = 2,2	13-20:	h = 2,5
No. of setting rings	15		13		8	
No. of measuring needles	3		2		1	
for probe dim. from/to	1-1,4		4,5-9,0		10-20	
	1,75-2,25		10-20			
	2,5-4		-			