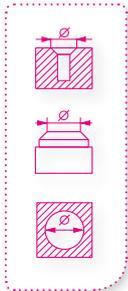
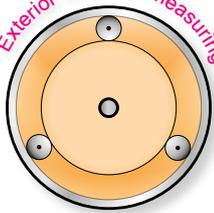


# HEXAACON



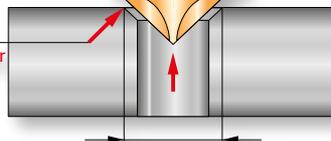
Exterior chamfer measuring



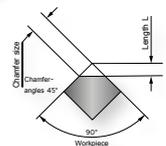
1:2 · Special gage for chamfer



Measuring outside diameter of chamfer

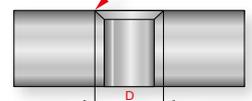


Ø



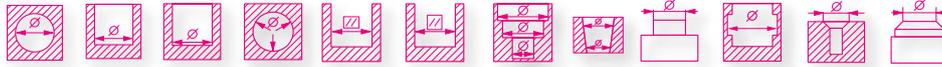
Precise measurement of chamfer with 45° angles on 90° workpieces.

Measures the largest diameter of chamfers



**Precision interior and exterior chamfer measuring instruments**

# HEXAACON



**Hexacon Messtechnik GmbH specializes in the area of precision hole and chamfer measurement.**

We produce high-precision chamfer measuring instruments for the measurement of interior and exterior chamfers for either single or series measurement. The advantage is the wide measuring range of up to 20 mm with very high accuracy. Even the smallest diameters, as low as 0.5 to 20 mm, can be reliably and precisely measured with a single measuring instrument. Our standard product line includes measuring heads with diameters from 0.5 to 120 mm. Other diameters or measuring angles are available upon request.

**The repeat accuracy of our chamfer measuring heads at IT 8 is < 0.01 mm.**

The modular design of our chamfer measuring instruments is particularly advantageous. Our chamfer measuring heads are interchangeable. With their standard M10x1.5 mm threads, the measuring heads can be easily and quickly replaced at any time. This allows holders and gages or measuring probes to be used with different measuring heads. For example, the measuring angle can be kept the same while swapping the measuring heads for interior and exterior chamfers. We offer interior and exterior chamfer measuring instruments with measuring angles of 90°, 60° and 127° in standard variants. Other measuring angles upon request.

A special gage for 90° measuring instruments is included in the delivery. It shows the measuring results on a 1:2 scale directly in millimeters, making it much easier to read the result off. That eliminates the need for conversion, saving time and ensuring reliable measuring results.

For measuring heads over 80 mm or for other measuring angles, we recommend digital gages with a factor setting, for example the MU 04-001 digital measuring gage or inductive measuring probes in our overall hole and chamfer measuring catalog.

**100 % Made in Germany**



All Hexacon PMK precision measuring heads and chamfer measuring heads, chamfer probes and insertion measuring instruments are tough, reliable, high-precision metrology equipment made 100% here in Germany.

Our system accessories, such as gage holders, centering holders, and depth extensions are also made in our own facilities, 100% Made in Germany. Standard accessories are generally in stock in the warehouse.

**Know-how and years of experience**

Our engineering services in the area of technical and production development since 1996 guarantee you perfect measuring problem solutions in the area of precision hole and chamfer measurement.

**Titanium nitride coating**

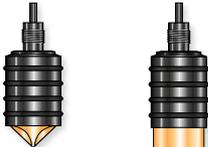
All Hexacon precision metrology equipment is manufactured of high-quality tool-grade steel and treated **at no extra charge** with a quality-improving titanium nitride coating. This has been our standard for many years.

TiN coating provides very good hardness, about 2200 HV, as well as corrosion resistance with outstanding sliding and friction characteristics. The result is reduced wear and longer service life for your measuring tools.

**Repair capability and service**

All our hole and chamfer measuring instruments are not only robust, but are also outstandingly capable of repair. Our services include the delivery of original replacement parts up to and including complete refurbishment and remanufacture of worn measuring tools to as-new condition in our factory, **as well as recalibration of metrology equipment.**

interior- exterior chamfers



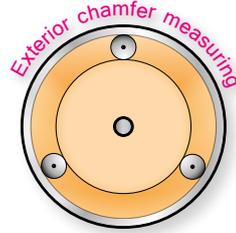
● Factory: Dieburg  
● Germany.



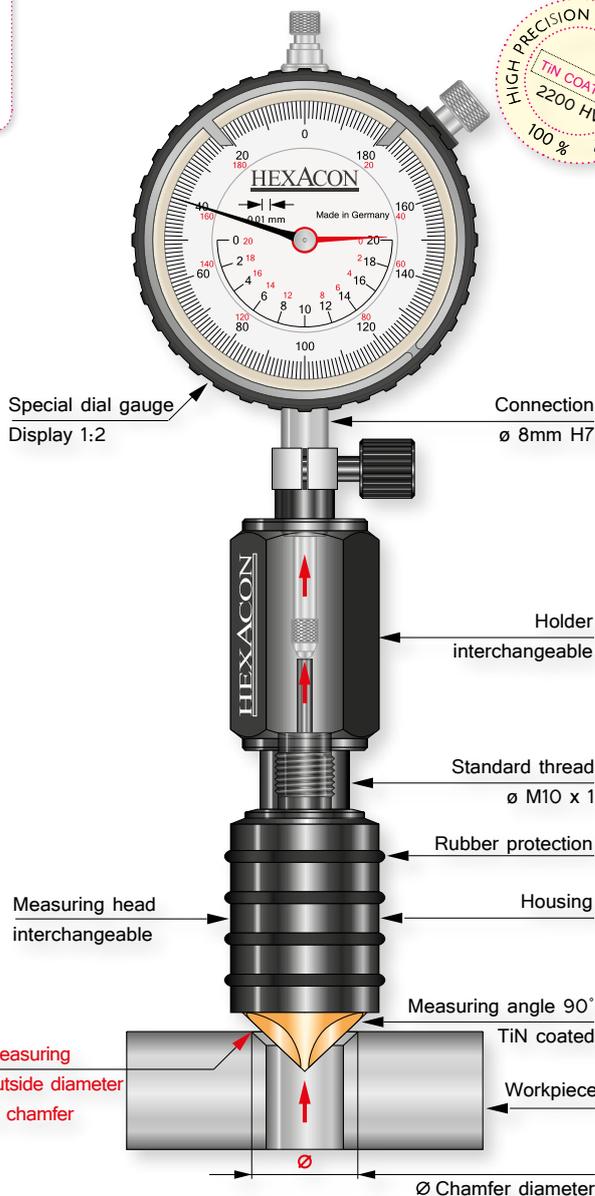
# Chamfer measurement

## Functional principle of chamfer measurement

# HEXAACON



Display resolution 0.01 mm



Precision interior and exterior chamfer measuring instruments with titanium nitride coating.

We offer interior and exterior chamfer measuring instruments with measuring angles of 90°, 60° and 127° in standard variants.

They are suitable for quick precision measurement of chamfers, depressions and holes, both for one-time measurement or for series measurement.

Their wide measuring range of up to 20 mm is a great advantage.

In their purely mechanical measuring principle, the measuring cone probes the chamfer, depression, or hole and directs the force within the housing onto a hardened, ground drive needle and then to the display.

A measuring gage holder connects the measuring head to corresponding displays such as analog or digital measuring gages, inductive measuring probes, measuring columns, or automated computer measuring systems.

The removable HM-03-60 measuring gage holders are included in the standard scope of delivery and permit the flexible handling of different measuring heads.

For example, at 90° measuring angles, measuring heads of different sizes as well as interior and exterior measuring heads can easily be swapped while still using the same holders, gages, or measuring systems.

The quality-improving titanium nitride coating, with high hardness values - about 2200 HV - and outstanding sliding and friction characteristics, is included in the standard scope of delivery at no extra cost. It gives our precision metrology equipment its outstanding service life.

Other measuring angles upon request.

All Hexacon metrology equipment 100% Made in Germany

The special measuring gages with 1:2 display scale for 90° measuring angles conveniently show the size of the outer diameter of the chamfer directly in millimeters! That eliminates conversion and reading errors. The measuring gages are equally suitable for either interior or exterior measurement. We offer these special measuring gages for precision measuring heads with diameters from 0.5 to 80 mm, each with a 20 mm measuring range.

The special analog measuring gage with 1/100 mm display accuracy and a 20 mm measuring range is included in the standard scope of delivery with all 90° measuring heads!

**TIP!**

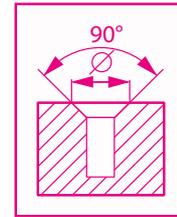
# Chamfer measuring 90°

## Interior chamfer measuring instruments for 90° chamfers

Standard variant including holder and gage.

Measuring range about 20 mm

# HEXAACON



Principle: Cone

**FM SB-01 90°**     $\varnothing 0,5 - 20 \text{ mm}$

**FM SB-02 90°**     $\varnothing 20 - 40 \text{ mm}$

The special measuring gage displays the result of the chamfer directly in mm!



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The special measuring gage displays the result of the chamfer directly in mm!



Overall catalog · Page 88

## Precision interior chamfer measuring instrument with titanium nitride coating.

Interior chamfer measuring instruments with a 90° measuring cone quickly and accurately measure the largest diameter of chamfers, depressions and holes. Their measuring accuracy is 0.01 mm.

The special analog measuring gage included, with its 1:2 scale division, shows the result of the largest chamfer diameter directly in mm with no conversion needed. The display accuracy is 0.01 mm. The special measuring gage is suitable for interior or exterior cone measuring instruments with 90° measuring angles.

The HM-03-60 measuring gage holder, also included, is removable to permit its use and combination with other components in our accessory line.

Particularly convenient is not only the large measuring range of about 20 mm, but also the long service life of the measuring head thanks to the titanium nitride treatment.

Measuring range:	Cone:	Order-Nr.:	Measuring range:	Cone:	Order-Nr.:
$\varnothing 0,5 - 20$	90°	FM-SB-01	$\varnothing 60 - 80$	90°	FM-SB-04
$\varnothing 20 - 40$	90°	FM-SB-02	$\varnothing 80 - 100$	90°	FM-SB-05
$\varnothing 40 - 60$	90°	FM-SB-03	$\varnothing 100 - 120$	90°	FM-SB-06

The special measuring gage is included in the standard scope of delivery up to a 80 mm diameter! The measuring gage holder is always included in the delivery.

The special measuring gages and holders are identical for interior and exterior measurement of the same size at 90°, and the measuring heads are interchangeable.



**TIP!**

**Precision exterior chamfer measuring instrument with titanium nitride coating.**

Standard exterior chamfer measuring instruments with 90° measuring angles are used for quick precision measurement of the diameter of exterior chamfers and shaft ends. Their wide measuring range of about 20 mm is a great advantage.

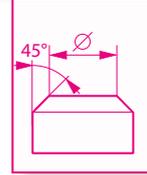
For all 90° variants up to a diameter of 80 mm, the measuring head, special measuring gage, and measuring gage holder are provided together as a kit! For larger diameters, we recommend digital measuring gages with a factor setting.



**Exterior chamfer measuring instruments for 90° chamfers**

Standard variant includes holder and analog gage.

Principle:



Bell

**FM FB-01 90°**

**Ø 5 - 20 mm**

**FM FB-04 90°**

**Ø 60 - 80 mm**

The special measuring gage displays the result of the chamfer directly in mm!



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For larger diameters of over 80 mm, we recommend digital measuring gages with a factor setting!

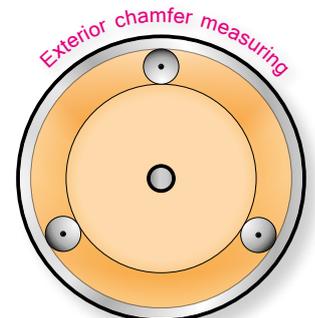


Digital measuring gage not included in scope of delivery.

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Measuring range:	Cone:	Order-Nr.:	Measuring range:	Cone:	Order-Nr.:
Ø 15 - 20	90°	FM-FB-01	Ø 60 - 80	90°	FM-FB-04
Ø 20 - 40	90°	FM-FB-02	Ø 80 - 100	90°	FM-FB-05
Ø 40 - 60	90°	FM-FB-03	Ø 100 - 120	90°	FM-FB-06

For comparative measurements a reference workpiece or configuration master is required.



Chamfer measuring 90°

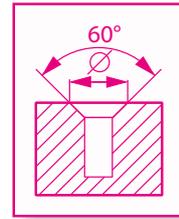
# Chamfer measuring 60°

## Interior chamfer measuring instruments for 60° chamfers

Standard variant including holder.

Measuring range about 10 mm

# HEXAACON



Principle: Cone

FM SA-01 60° Ø 0,5 - 12 mm

FM SA-04 60° Ø 30 - 41 mm

The special measuring gage is not included!

**NEU!**



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The special measuring gage is not included!

**NEU!**



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**Precision interior chamfer measuring instrument** with titanium nitride coating.

Interior chamfer measuring instruments with a 90° measuring cone quickly and accurately measure the largest diameter of chamfers, depressions and holes. Their measuring accuracy is 0.01 mm.

The measuring gage holder is made of high quality stainless steel with a polished surface. The measuring gage holder is made of high quality stainless steel with a polished surface. The measuring gage holder is made of high quality stainless steel with a polished surface.

The HM-03-60 measuring gage holder, also included, is removable to permit its use and combination with other components in our accessory line.

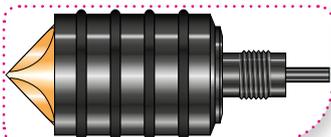
Particularly convenient is not only the large measuring range of about 20 mm, but also the long service life of the measuring head thanks to the titanium nitride treatment.

Measuring range:	Cone:	Order-Nr.:	Measuring range:	Cone:	Order-Nr.:
Ø 0,5- 12	60°	FM-SA-01	Ø 60 - 71	60°	FM-SA-07
Ø 10 - 21	60°	FM-SA-02	Ø 70 - 81	60°	FM-SA-08
Ø 20 - 31	60°	FM-SA-03	Ø 80 - 91	60°	FM-SA-09
Ø 30 - 41	60°	FM-SA-04	Ø 90 - 101	60°	FM-SA-10
Ø 40 - 51	60°	FM-SA-05	Ø 100 - 111	60°	FM-SA-11
Ø 50 - 61	60°	FM-SA-06	Ø 110 - 121	60°	FM-SA-12

The measuring gage holder is always included in the delivery. The special measuring gage is not included!

**TIP!**

The special measuring gages and holders are identical for interior and exterior measurement of the same size at 60°, and the measuring heads are interchangeable.



made in germany



Page 6

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**Precision exterior chamfer measuring instrument with titanium nitride coating.**

Standard exterior chamfer measuring instruments with 60° measuring angles are used for quick precision measurement of the diameter of exterior chamfers and shaft ends. Their wide measuring range of about 10 mm is a great advantage.

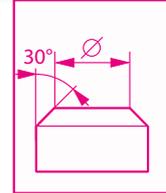


For all 60° variants we recommend digital measuring gages with a factor setting.

**Exterior chamfer measuring instruments for 60° chamfers**

Standard variant includes holder.

Principle:



Bell

**FM FA-01 60°**

**Ø 5 - 12 mm**

**FM FB-04 60°**

**Ø 60 - 80 mm**

Standard variant includes holder.

**NEU!**



For all 60° variants we recommend digital measuring gages with a factor setting.

**NEU!**

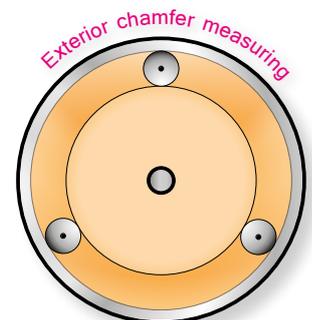


Chamfer measuring 60°

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Measuring range:	Cone:	Order-Nr.:	Measuring range:	Cone:	Order-Nr.:
Ø 5 - 12	60°	FM-FA-01	Ø 60 - 71	60°	FM-FA-04
Ø 10 - 21	60°	FM-FA-02	Ø 70 - 81	60°	FM-FA-05
Ø 20 - 31	60°	FM-FA-03	Ø 80 - 91	60°	FM-FA-06
Ø 30 - 41	60°	FM-FA-03	Ø 90 - 101	60°	FM-FA-06
Ø 40 - 51	60°	FM-FA-03	Ø 100 - 111	60°	FM-FA-06
Ø 50 - 61	60°	FM-FA-03	Ø 110 - 121	60°	FM-FA-06

For comparative measurements a reference workpiece or configuration master is required.



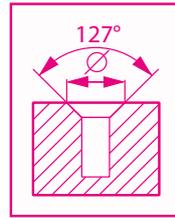
# Chamfer measuring 127°

Interior chamfer measuring instruments for 127° chamfers

Standard variant including holder.

Measuring range about 20 mm

# HEXAACON



Principle: Cone

FM SC-01 127° Ø 0,5 - 20 mm

FM SC-02 127° Ø 20 - 40 mm

For all 60° variants we recommend digital measuring gages with a factor setting.

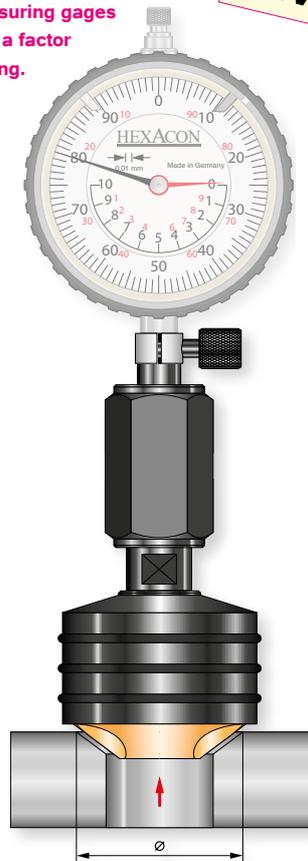
**NEW!**



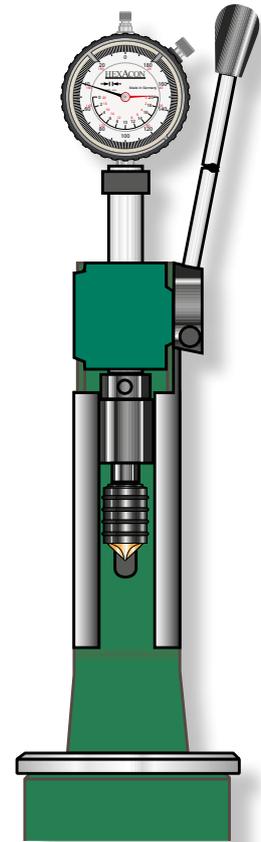
Overall catalog · Page 92

For all 60° variants we recommend digital measuring gages with a factor setting.

**NEW!**



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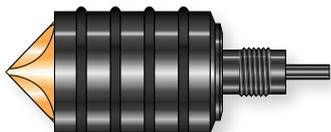
Measuring stand · MS-1

**TIP!**

Effective chamfer measurement is possible using the MS-1 measuring stand along with the ZH centering holder.

Measuring range:	Cone:	Order-Nr.:	Measuring range:	Cone:	Order-Nr.:
Ø 05 - 20	127°	FM-SC-01	Ø 60 - 80	127°	FM-SC-04
Ø 20 - 40	127°	FM-SC-02	Ø 80 - 100	127°	FM-SC-05
Ø 40 - 60	127°	FM-SC-03	Ø 100 - 120	127°	FM-SC-06

The special measuring gages and holders are identical for interior and exterior measurement of the same size at 127°, and the measuring heads are interchangeable.



**Precision exterior chamfer measuring instrument with titanium nitride coating.**

Standard exterior chamfer measuring instruments with 127° measuring angles are used for quick precision measurement of the diameter of exterior chamfers and shaft ends. Their wide measuring range of about 20 mm is a great advantage.

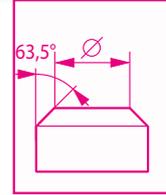


For all 127° variants we recommend digital measuring gages with a factor setting.

**Exterior chamfer measuring instruments for 127° chamfers**

Standard variant includes holder.

Principle:



Bell

**FM FC-01 127°**

**Ø 5 - 20 mm**

**FM FC-04 127°**

**Ø 60 - 80 mm**

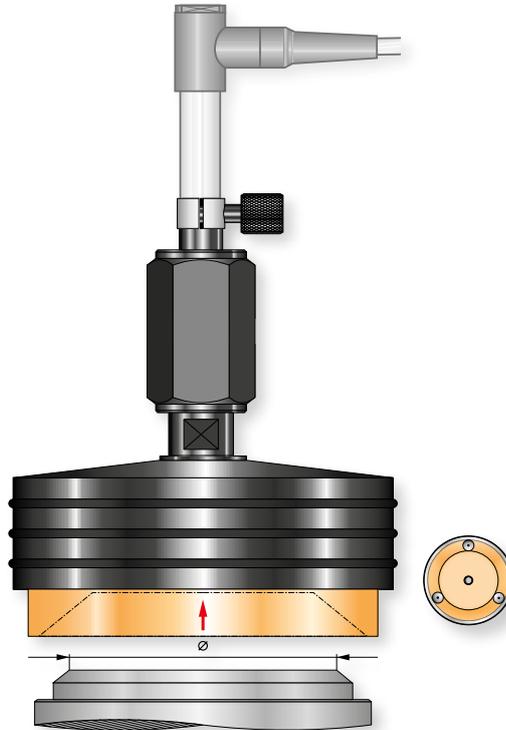
For all 60° variants we recommend digital measuring gages with a factor setting.

**NEW!**



For all 60° variants we recommend digital measuring gages with a factor setting or inductive probe

**NEW!**

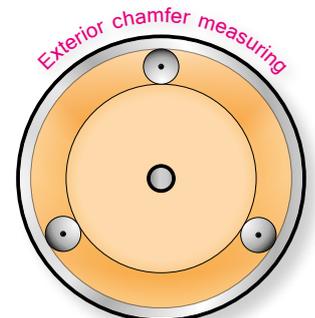


Chamfer measuring 127°

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Measuring range:	Cone:	Order-Nr.:	Measuring range:	Cone:	Order-Nr.:
Ø 05 - 20	127°	FM-FC-01	Ø 60 - 80	127°	FM-FC-04
Ø 20 - 40	127°	FM-FC-02	Ø 80 - 100	127°	FM-FC-05
Ø 40 - 60	127°	FM-FC-03	Ø 100 - 120	127°	FM-FC-06

For comparative measurements a reference workpiece or configuration master is required.



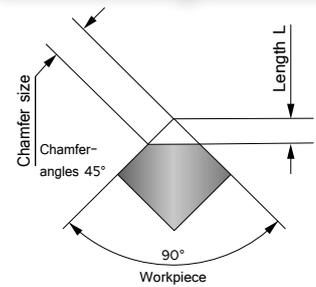
# Chamfer probe 45°

## Precision 45° chamfer probe

Precise measurement of chamfer with 45° angles on 90° workpieces.

Measuring range about 10 mm

# HEXA CON



FT - 01

45° chamfer probe

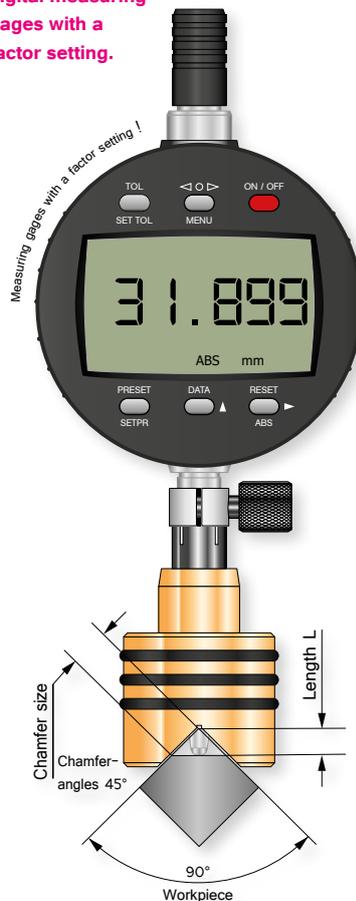
Includes measuring gage. The measuring gages have concentric indicator arrangement. Measuring accuracy is 0.01 mm

**NEW!**



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We recommend also digital measuring gages with a factor setting.



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### Determination of the chamfer size

Chamfer size F	Length L
0,1 mm	0,07 mm
0,2 mm	0,14 mm
0,3 mm	0,21 mm
0,4 mm	0,28 mm
0,5 mm	0,35 mm
0,6 mm	0,42 mm
0,7 mm	0,49 mm
0,8 mm	0,57 mm
0,9 mm	0,64 mm
1,0 mm	0,71 mm
1,5 mm	1,06 mm
2,0 mm	1,41 mm
2,5 mm	1,76 mm
3,0 mm	2,12 mm
3,5 mm	2,47 mm

The determination of the chamfer size is via the table display

$L = \text{Chamfer size } F \times 0,7071$

$\text{Chamfer size } F = \text{Length } L : 0,7071$

The setting or conversion factor is 1.4142.

### FT-01 precision 45° chamfer probe with titanium nitride coating.

Prismatic measurement principle. Measures precision chamfers with 45° angles on 90° workpieces. Diameter 30mm. Set includes measuring gage, display accuracy of 1/100mm. Standard measuring gage connection, diameter 8H7 mm. Can also be combined with other analog and digital measuring gages as well as inductive measuring probes.

Order-Nr.: FT-01 including analog measuring gage • Order-Nr.: FT-01-X without measuring gage

The special measuring gage is included in the standard scope of delivery.

Digital measuring gages with factor setting capability allow direct display in mm. The setting or conversion factor is 1.4142.

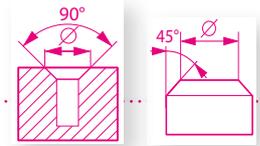
**TIP!**

# Chamfer measuring gages

Analog mechanical special precision measuring gages  
for 90° measuring heads with a large measuring range of 20 mm.

Display scale with a 1:2 scale · Display accuracy 0,01 mm.

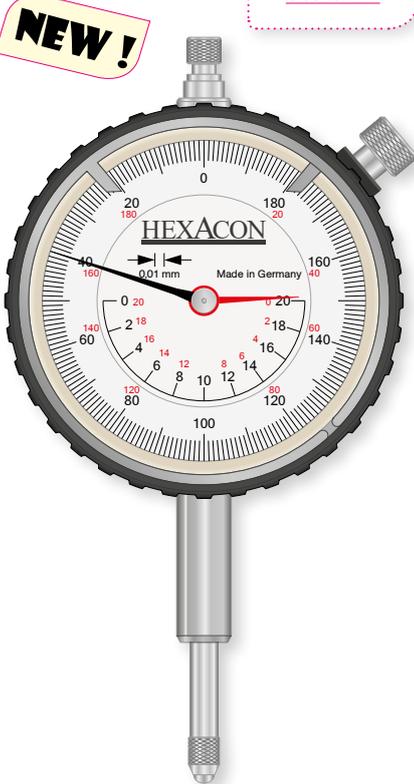
# HEXAACON



**DIN EN ISO 463 / DIN 874 measuring gage**  
for interior and exterior chamfer measurement.  
Measuring range 10 mm.

**AD FM-01 90°** Ø 0,5 – 20 mm

Scale 1:2



**Measuring: Cone: Order-Nr.:**

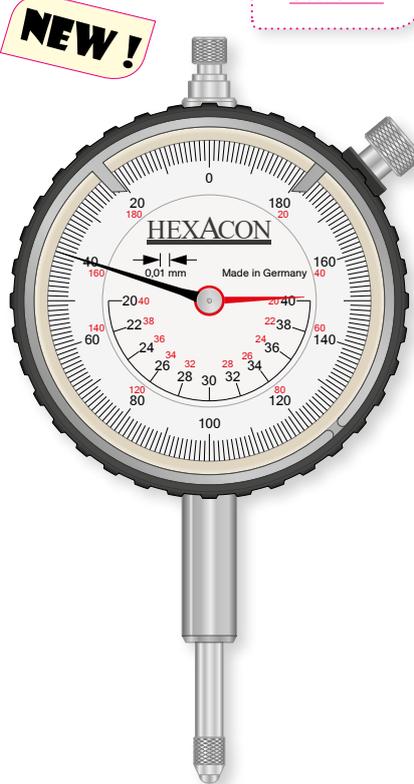
Ø 05 – 20 90° AD-FM-01

Measuring force 0,7 N ± 10 %

Interior and exterior chamfer measuring.

**AD FM-02 90°** Ø 20 – 40 mm

Scale 1:2



**Measuring: Cone: Order-Nr.:**

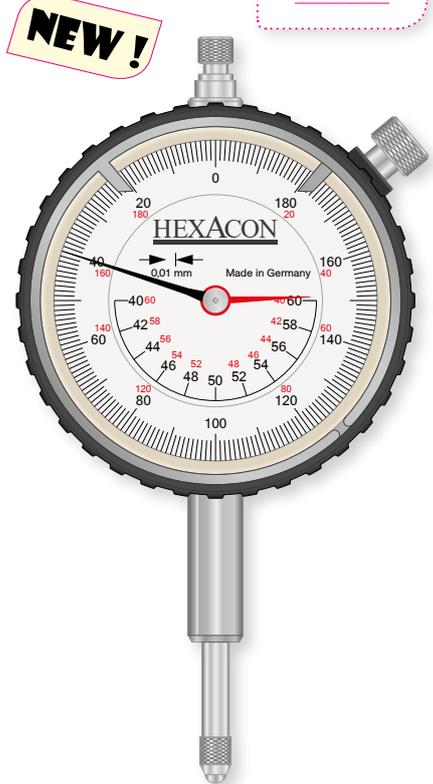
Ø 20 – 40 90° AD-FM-02

Measuring force 0,7 N ± 10 %

Interior and exterior chamfer measuring.

**AD FM-03 90°** Ø 40 – 60 mm

Scale 1:2



**Measuring: Cone: Order-Nr.:**

Ø 40 – 60 90° AD-FM-03

Measuring force 0,7 N ± 10 %

Interior and exterior chamfer measuring.

Analog mechanical special precision measuring gages for 90° measuring heads with display scale  
directly in mm and a large measuring range.

The measuring gages have concentric indicator arrangement as well as a display scale with a 1:2 scale, permitting convenient read-off of the measured value directly in millimeters for 90° measurement. This eliminates reading errors. The measuring range is about 20 mm and display accuracy is 0.01 mm. Clamping shaft Ø 8H6 mm. With fastening screw to prevent unintentional twisting of the scale. Outer ring Ø 58 mm. Threaded measurement tip M2,5.

The special analog measuring gage is already included in the standard scope of delivery for 90° measuring heads!

**AD FM-04 90°** Ø 60 – 80 mm

Interior and exterior chamfer measuring.

**Measuring: Cone: Order-Nr.:**

Ø 40 – 60 90° AD-FM-04

Measuring force 0,7 N ± 10 %



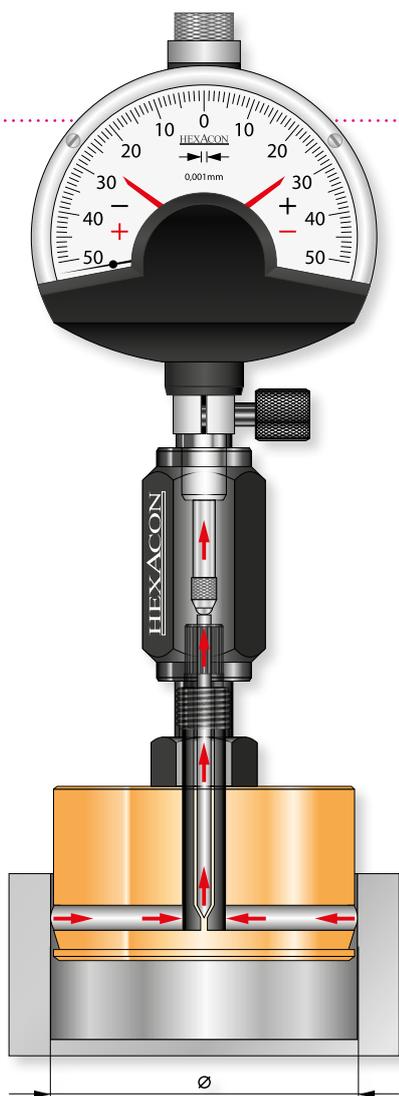
**NEW!**

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# HEXAACON

## Precision hole and chamfer measurement

HIGH PRECISION - MADE IN GERMANY  
TIN COATED  
2200 HV  
100%



Hole measurement



Chamfer measurement



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● D-64807 Dieburg  
● Germany  
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Fax +49 (0) 6071 - 21874  
Mail: germany@hexacon.net  
www.hexacon.net

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New overall catalog  
μ-precise hole and  
chamfer measuring instruments.

