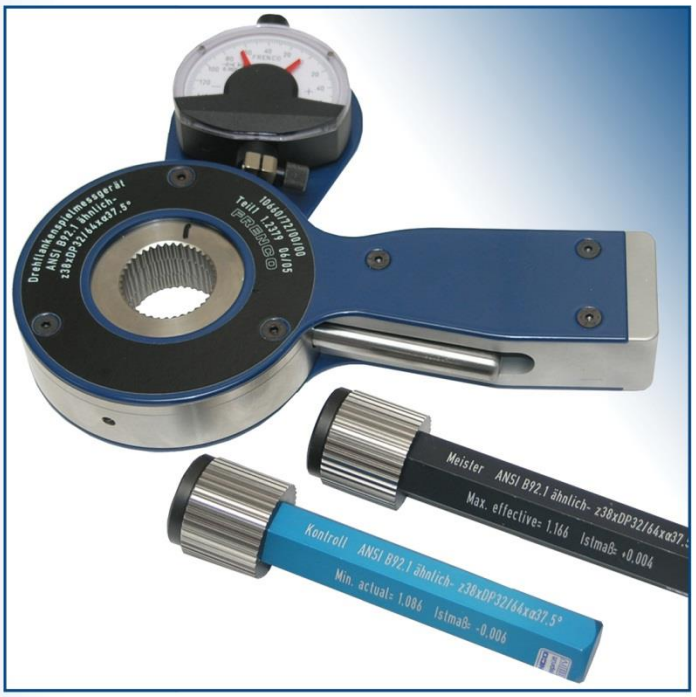


Variable 3-disc indicating gauges VD

Determination of true size effective

pure perfection

FRENCO

Principle of Function

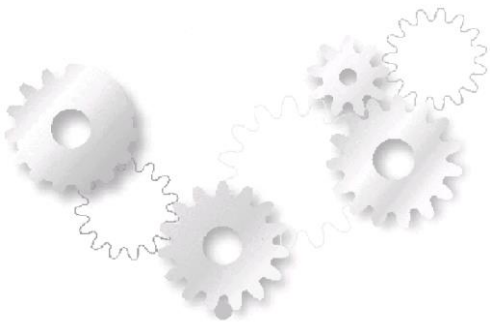
Variable 3-disc indicating gauges are go gauges for splines with variable tooth thickness. Whereas a go gauge consists of only one gage body, a variable 3-disc indicating gauge has got three profile discs of the same size. Only the disc in the middle can rotate. The two other discs are fixed.

If the teeth of the middle disc are at the same position as the teeth of the exterior discs, this instrument works nearly like a go gauge. Variable 3-disc indicating instruments have composite splines like go gauges. When the middle disc is rotated, the effective size of the tooth thickness of this go gage will be varied.

During the measurement of a specimen, the middle disc can rotate only as far as the effective spline allows the rotation. Thus the maximum possible way of torsion describes the effective spline of the work piece, the limiting value effective. For internal splines this limiting value is the „minimum effective“ and for external splines the „maximum effective“.

IVD

AVD

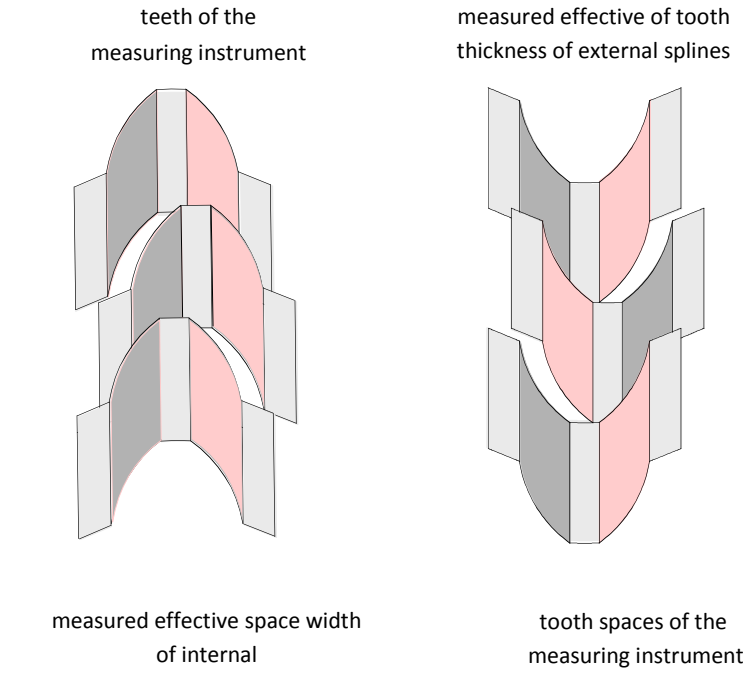


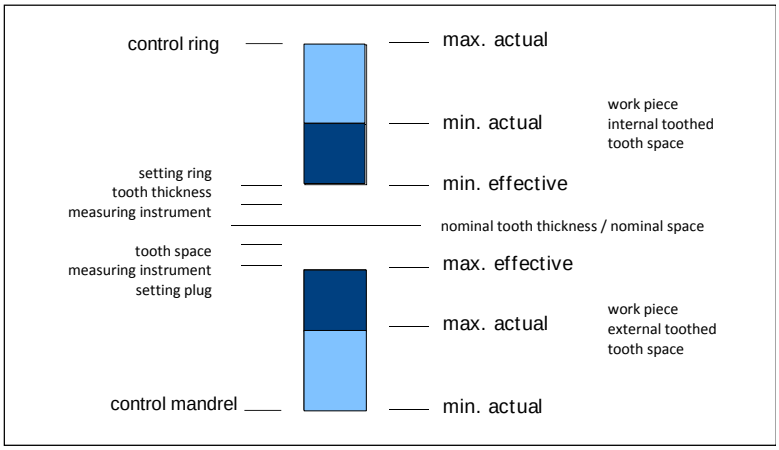
A static go gauge only gives information weather the work piece is inside the effective spline or not. Variable 3-disc indicating gauges indicate the real dimension of the effective spline.

Thereto a dial indicator or a inductive transducer measures the torsion travel of the middle disc. An absolute measurement conclusion can be made, if the dial indicator was set to zero with an exact setting master before the measurement. This composite setting master is redundant exact at the allowed, effective limit dimension.

If the dial indicator amplitude is zero by inspecting the work piece after setting to zero, this conforms the condition of a barely operating go gauge. Every further pointer amplitude greater than zero indicates the difference between the effective spline and the acceptable tolerance limit.

Because of the dial indicator measuring the difference at the pitch circle diameter as a bend line, the indication refers to the tooth thickness / tooth space at the pitch circle.
When the dial indicator displays a value less than zero for internal splines or a value greater than zero for external splines the acceptable effective limit is not kept and a go gauge could not be coupled. Such work pieces are to be rejected. This situation certainly only appears when the tooth thickness of the backlash-measuring instrument is smaller than the go gage. That is exactly how such instruments are designed.





Internal gears and splines		External gears and splines	
max. actual	Limit of permitted space width at single measurement	max. effective:	Limit of effective tooth thickness by accumulative measurement
min. actual REF	Reference limit	max. actual REF	Reference limit
min. effective:	Limit of effective space width by accumulative measurement	min. actual:	Limit of permitted tooth thickness at single measurement

Frenco product range

High precision gears and splines H

Gear and spline gauges

Master gears, master wheels

Artefacts, masters

Punches, dies & electrodes

Profiled clamping systems

Gear and spline manufacture

Instruments for size inspection series V

Measuring pins and balls

Gauges, rocking Type

Gauges with face stop

Gauges, gear & spline profiles

Circumferential backlash measuring instrument

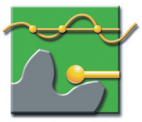
Customized solutions

Rotation measuring systems R

Measuring systems with measuring circles

Multiple inspector

Gear flank analysing
Linear gear flank analyser rack
Gear flank analyser
Double flank gear roll inspection



Gear & spline inspection P

DAkkS- calibration

Monitoring of inspection equipment

Workpiece inspections

Analysis of deviations

Know-how transfer K

Software

Training, seminars, workshops

Consulting and calculations

Literature and documentations

National and international standards

pure perfection

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