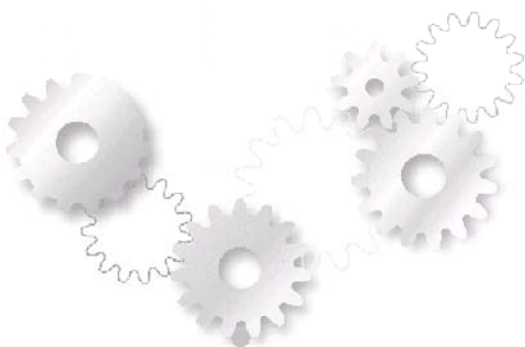




## Measuring instruments rocking type



*The size inspection  
of small batches*



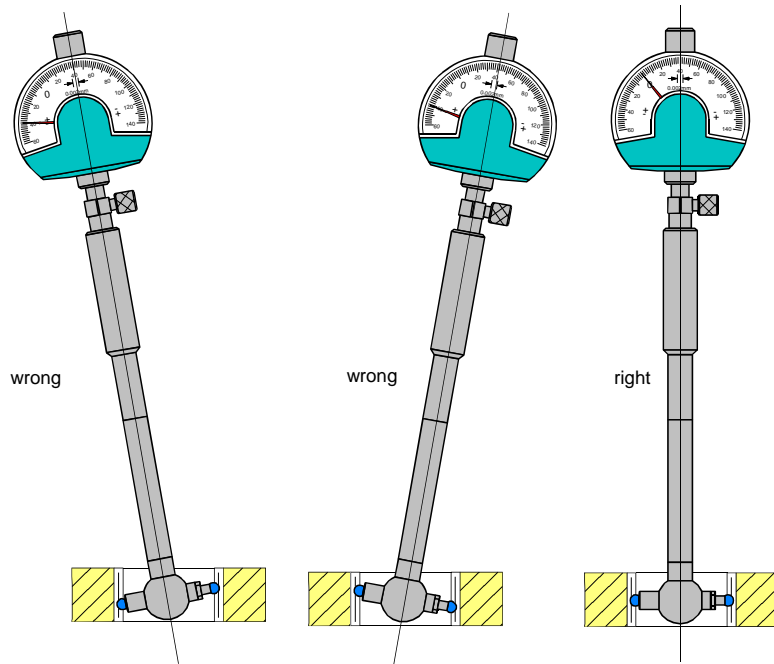
pure  
perfection

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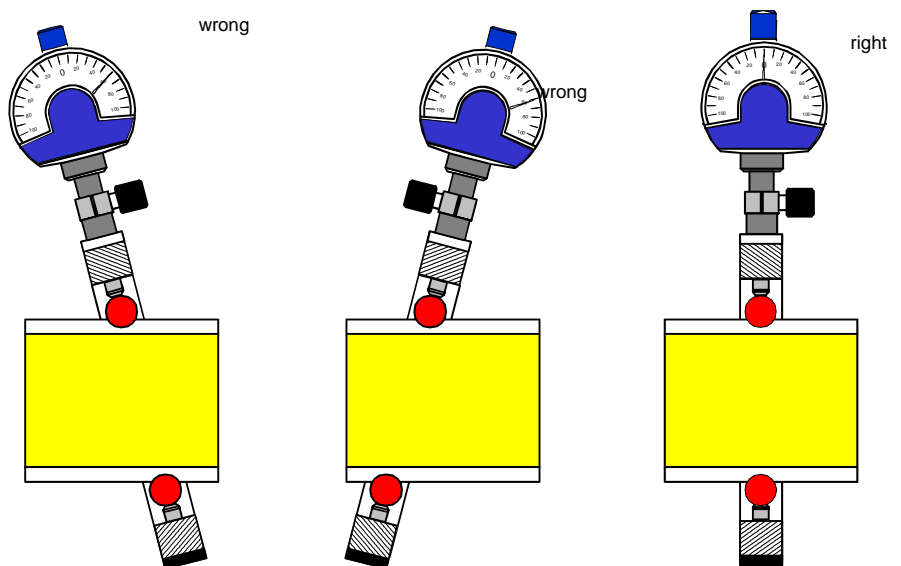
## Measuring rocking type

There are a number of methods to inspect the true size over or between balls and pins of gears and splines. The most simple methods by use of pins or balls depend on the worker and his experience and have the need of rocking the instrument to find the correct size. These rocking methods prevent the use of electronic readouts. Don't use these instruments for helical gears and splines with odd number of teeth.



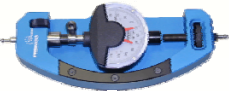
Measurements with pins and dial indicators are quite difficult. It needs a lot of experience to get the lower pin in line to the indicator and finding the highest point of the upper pin by rocking at the same time.







The using of rocking instrument type VA needs to find the smallest size by rocking along the part axis. These instruments needs a setting master to adjust them.



## Productline VA

<b>IVA</b>	IVA 0	4 - 15 mm	
	IVA 1	15 - 28 mm	
	IVA 2	28 - 130 mm	
	IVA 3	50 - 330 mm	
	IVA 4	ab 190 mm	

<b>AVA</b>	AVA 1	10 - 30 mm	
	AVA 2	30 - 50 mm	
	AVA 3	50 - 70 mm	
	AVA 4	70 - 90 mm	
	AVA 5	90 - 110 mm	
	AVA 6	110 - 130 mm	

## Rocking type indicating gage for external tooth profiles IVA

The IVA is as simple as efficient. It is used for the measurement of small and middle batches. The proper setting ring has a sector gear and is made of aged or hardened steel. The labeling displays the actual size. The dial indicator harmonizes with gear measurement and has a measuring force of 2 N. The measuring range is from  $-0,060$  to the left to  $+0,140$  to the right. For calibration a setting master is needed.

### IVA 0

For PCD 4 – 15 mm



Measuring head with needle

### IVA 1

For PCD 15 – 28 mm

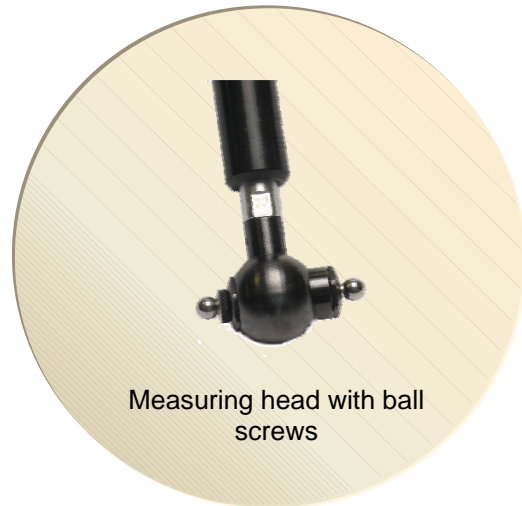


Measuring head with needle and ball inserts

## IVA 2 and IVA 3

IVA 2 : For PCD 28 – 130 mm

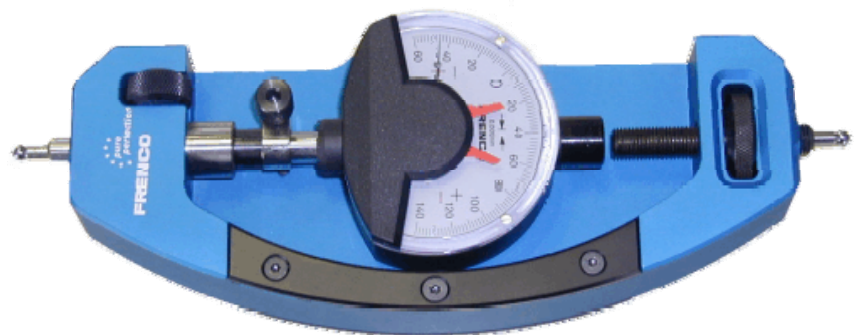
IVA 3 : For PCD 50 – 330 mm



## IVA 4

For PCD from 190 mm

The IVA 4 is measuring instrument for external gears and splines. To get familiar with the advantages and the mode of operation please read the following description of measuring instruments for external gears and splines AVA.



## Rocking type indicating gage for external tooth profiles AVA

Like the IVA also the AVA convinces with simple handling and efficient measurements of small and middle batches.

The fitting setting plug has a sectored gear and is made of aged or hardened steel. The actual size is shown by the marking.

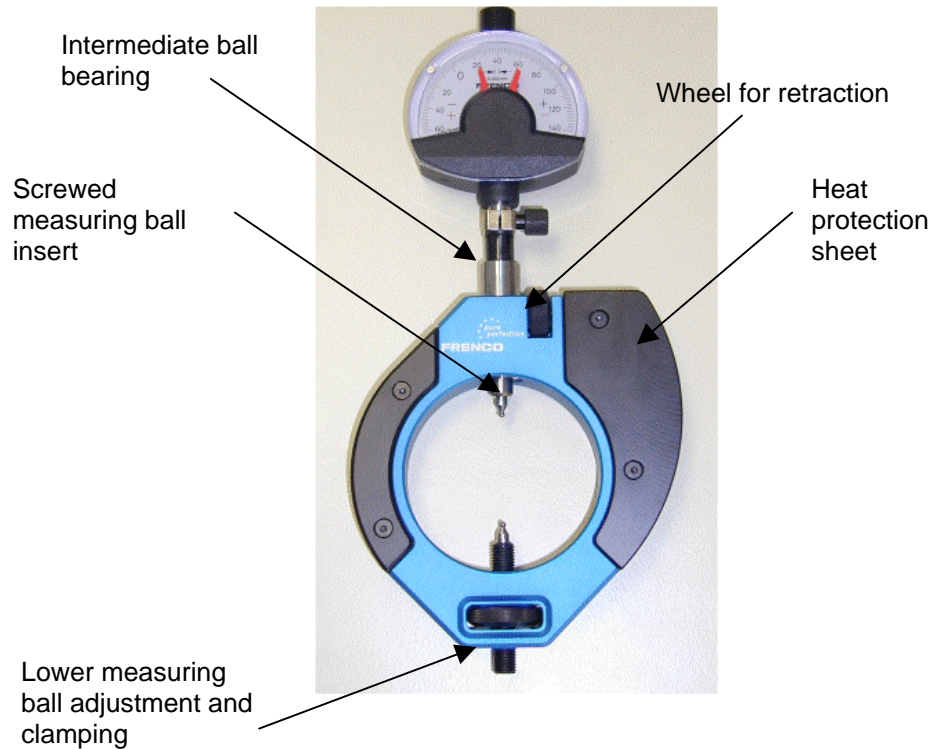
The dial indicator is exactly matched for the measurement of gear and spline. The measuring force is 2 N. The measuring display of the indicator display is scaled from  $-0,060$  to  $+0,140$ . The calibration is made with the setting plug.

The advantage of our AVA is that the ball inserts are rocking which prevents them of damage.

The measuring balls are located in an intermediate ball bearing. The knurled wheel enables a single hand operation. The measuring ball is secured from rotation.

Two plastic heat protection sheets prevent heat transfer by the hands.

The lower measuring ball insert has an easy to use length adjustment with clamping wheel.



AVA-R and AVA-C are available for the following PCDs:

AVA 1	10 – 30 mm	10440
AVA 2	30 – 50 mm	10441
AVA 3	50 – 70 mm	10442
AVA 4	70 – 90 mm	10443
AVA 5	90 – 110 mm	10444
AVA 6	110 – 130 mm	10445

## Versions of AVA

**AVA-R**



**AVA-C**



# FRENCO Product Lines



## Gear and spline high precision

Spline Gages  
Master Gears, master wheels  
Artefacts, masters  
Profiled tools  
Clamping systems  
Gear and spline manufacturing



## Instruments for size inspection Series V

Ball inserts and pins VRK  
Instruments for rocking VA  
Instruments with face stop VP  
Indicating Gages VM  
Variable 3-Disc Gages VD  
Customized solutions VS



## Rotation Measuring Systems

URM - K with balls and pins  
URM - R with master wheels  
EWP Single flank gear rolling  
ZWP Double flank gear rolling  
WS Gear Rollscan



## Gear and spline inspection

DKD gear calibration  
Gage wear inspection  
Part inspections  
Deviation analysis



## Know-how transfer

Software for gear and spline calculating  
Training, seminars and workshops  
Consulting and calculations  
Literature and documents  
National and international standards



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