

## **Gear testing instruments VP with face stop**

Measurement of the dimension  
between or over two balls

带断面挡块的齿轮测试仪器 VP

跨球距测量

  
*pure  
perfection*

## Measuring with Face Stop 用断面挡块测量

VP gear testing instruments feature a face stop. Finding the reversal point is no longer required.

VP 齿轮测试仪器以端面挡块为特色。已经不再需要寻找逆转点。

Specimens with a usable end face are placed on the table of the instrument and measured at right-angles without reversal point.

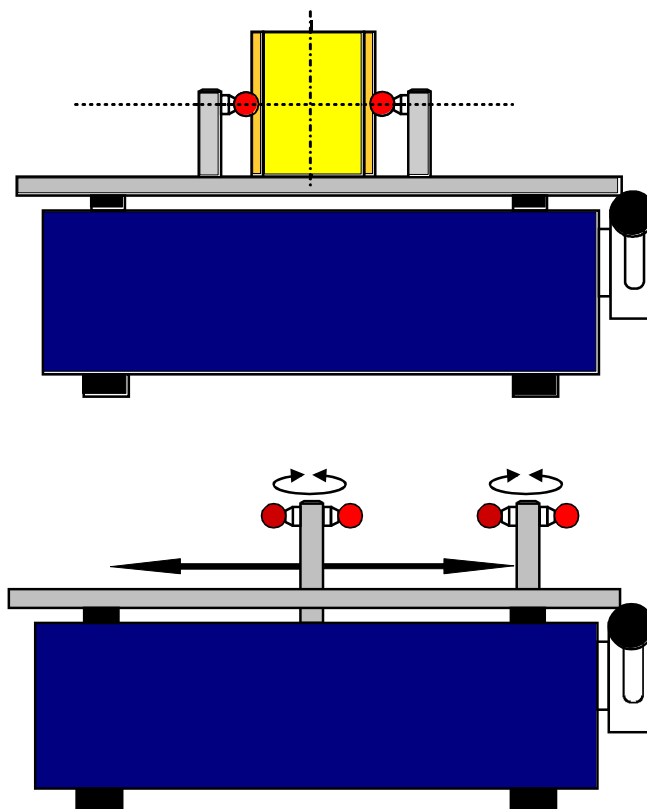
具有可用端面的试测件放在仪器桌上，并在无需逆转点的情况下测量直角。

The measuring stilts of the VP instruments can be rotated and moved. They are universally suitable for both internal and external profiles with small or large diameters.

VP 仪器的测量支脚可以转动和移动。其可广泛适用于各种大小直径的内齿廓和外齿廓。

A **setting plug or ring** is needed for calibration. The spline or gear profile has to equal the specimen.

校准时需要一个调整塞规或者环。齿轮或者花键的齿廓需与试测件相同。



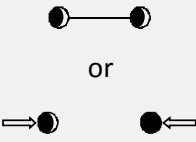



### Features 特色:


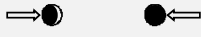

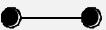
- The measuring results are not reliant on the operator.  
测量结果不依赖于操作者
- Measurements are always carried out at right-angles to the work-piece axis.  
总能在工件轴的直角进行测量
- Different sizes, types and diameters of gears and splines can be measured with one instrument.  
可在同一仪器上测量不同尺寸型号和直径的齿轮和花键
- Measuring helical profiles is possible. 可测量螺旋角
- Wear of the measuring inserts can be compensated for through calibrations with a setting master.  
测量插入件的磨损可以用设定标准件来补偿其通过校准
- Measurement is possible in any number of planes (VPE only).  
可测量任意数量端面数 (仅适用于 VPE)

## Product Overview 产品概述

Type & Picture 型号及图片	Pitch circle diameter 齿节圆直径
<b>VPO</b> 	External gear up to 100 mm Internal gear up to 120 mm 外齿轮直径至 100mm 内齿轮直径至 120mm
<b>VPE</b> 	External gear up to 200 mm Internal gear up to 220 mm 外齿轮直径至 200mm 内齿轮直径至 220mm
<b>VPOS</b> 	For shafts with external gearing up to 250 mm 对于带有外齿轮的轴，直径可达 250mm

<b>Measured value display</b> 测量值显示		Analogue dial indicator 模拟盘针指示表
		Digital 数字式
<b>Radial measuring points</b> 径向测量点		Two opposite-lying for inside and outside 两个用于内部和外部的对面卧式点
<b>Axial measuring planes</b> 轴向测量面		Static 静态 Dynamic 动态

# Gear Testing Instrument VPO 齿轮测量仪 VPO

Measured value display 测量结果显示	Radial measuring points 径向测量点	Axial measuring planes 轴向测量面
		
88		

The VPO is a simple gear testing machine to determine the diametrical size over two balls in **one** specific measuring plane.

VPO 是一款简单的齿轮测试设备，用以在一个特定的测试平面内确定跨球距。

It can be refitted within a few minutes and is particularly suitable for quick measurements of small pieces up to a PCD of 120 mm.

它可以在数分钟内重装夹，特别适用于节圆直径小于 120mm 的小件测量。

The balls are mounted on a movable and a fixed carriage. To change the workpiece, the movable carriage can be retracted using the lever on the front.

球被装在一个可移动的和一个固定的架子上。更换工件时，可以用前面的控制杆对可移动的架子进行伸缩。

To display the measuring results both a dial indicator or a digital probe can be used.

可以用一个盘针指示表或者一个数字探头来显示测量结果。




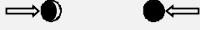

Gear testing instrument VPO  
齿轮测试仪 VPO

Technical specifications VPO 技术规格 VPO	
External gears 外齿轮	up to 100 mm PCD 节圆直径可达 100mm
Internal gears 内齿轮	from 120 mm PCD 节圆直径从 120mm 开始
Measuring force 测试力	infinitely adjustable up to 10 N 可无极调至 10N
Dimensions (without stilts) 尺寸 (无支脚)	185x180x58 mm
Weight approx. 大概重量	3.3 kg

# Gear Testing Instrument VPE 齿轮测试仪 VPE

The VPE is a gear testing machine to determine the diametrical size over two balls in any number of planes. It can be refitted within a few minutes and is mainly used for quick measurements of pieces with a PCD up to approx. 220 mm.

VPE 是一款齿轮测试仪器，用来在多个平面内测量跨球距。它能在数分钟内进行重新装夹，并且主要用于节圆直径达到大约 220mm 的工件的快速测量。

Measured value display 测量结果显示	Radial measuring points 径向测量点	Axial measuring plane 轴向测量面
		
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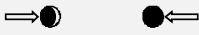



Measuring device VPE

测量设备 VPE

Technical specifications 技术规格	
External gears 外齿轮	up to 200 mm PCD 节圆直径可达 200mm
Internal gears 内齿轮	up to 220 mm PCD 节圆直径从 220mm 开始
Vertical travel 垂直行程	30 mm
Measuring force 测试力	infinitely adjustable up to 10 N 可无极调至 10N
Dimensions (without stilts) 尺寸 (无支脚)	40x210x118 mm
Weight approx. 大概重量	11 kg

# Gear Testing Instrument VPOS 齿轮测试仪 V P O S

Measured value display 测量结果显示	Radial measuring points 径向测量点	Axial measuring planes 轴向测量面
		
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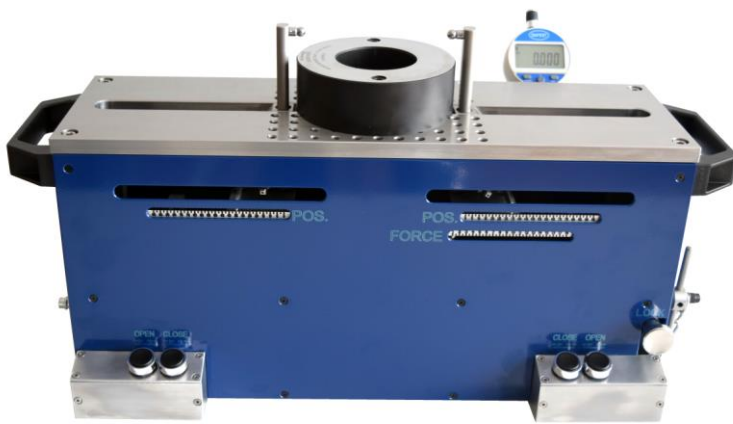
The VPOS instrument was designed to measure the dimension over/between balls on large workpieces and splined shafts.

V P O S 测试仪设计用于测量大工件和花键轴的跨球距

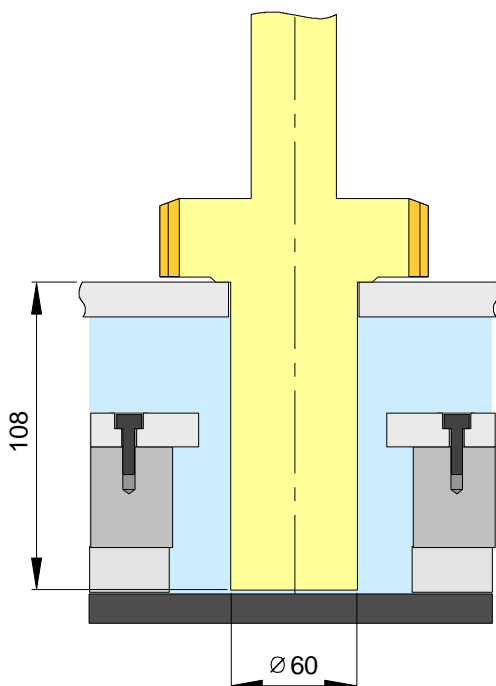
Great importance was given to functionality, optical characteristic and easy handling to ensure that, besides precision and accuracy, a comprehensive objective was achieved. The positioning of the stilts is performed pneumatically, and the feed mechanically dampened. To increase safety, the device can be operated in two-hand mode. The measuring force can be adjusted to the workpiece weight quickly and easily via the lever.

功能、光学特性和操作建议性被极大地重视，以保证除了精度以外，能达到更综合的目标。这些支脚的定位通过气动控制，且进给机械地衰减。为了增加安全性，设备可以两个手同时操作。测量力可非常方便快捷地通过杠杆调节至工件重量。

The VPOS is easy to operate and a stable table-top instrument to be used on the shop floor  
VPOS 操作简单并且是一款可用到车间中的稳定的桌面仪器。



Measuring device VPOS for toothed shafts  
V P O S 测试仪用于测试齿轴



## Technical Specifications 技术规格

External gears 外齿轮	Dimension over balls: 75 - 260 mm 跨球距: 75 - 260 mm
Max. shaft diameter 最大轴直径	up to $\varnothing 60$ mm (in standard version) 可达 $\varnothing 60$ mm (标准版本)
Max. shaft shoulder length 最大轴肩长度	up to 108 mm (extendable) 可达 108 mm (可扩展)
Measuring force 测量力	infinitely adjustable up to 15 N 可无极调节至 15N
Dimension (without stilts) 尺寸 (无支脚)	340x210x118 mm

Lever to infinitely adjust the measuring force  
用于无极调节测量力的控制杆





## Accessories 配件

<p>Stilts 35 mm for measuring ball inserts M2.5 or M4 or for Mahr inserts 35mm 支脚用于测量球插入件，可用 M2.5 或者 M4 或者 Mahr 插入件</p>	
<p>Stilts 60 mm for measuring ball inserts M2.5 or M4 or for Mahr inserts 60mm 支脚用于测量球插入件，可用 M2.5 或者 M4 或者 Mahr 插入件</p>	
<p>Stilts 35 mm for measuring pin inserts 35mm 支脚用于测量插销插入件</p>	
<p>Stilts 60 mm for measuring ball inserts 60mm 支脚用于测量球插入件</p>	
<p>Measuring ball inserts tungsten carbide available in 1 micron steps, with M2.5 (from <math>\varnothing 1-7</math> mm) or M4 thread (from <math>\varnothing 7</math> mm) 硬质合金测量球插入件步进量可达 1 微米，加工有 M2.5 (<math>\varnothing 1\sim 7\text{mm}</math>) 或者 M4 (从 <math>\varnothing 7\text{mm}</math> 起) 的螺纹</p>	
<p>Measuring pin inserts, rocking and rotating 测量插销，可摇摆和转动</p>	
<p>Stop prisms for easier mounting of workpieces 限位块使工件的安装更便捷</p>	
<p>FRENCO dial indicator with eccentric zero point 带有偏心零点的 FRENCO 针盘指示表</p>	
<p>Probe with "Heidenhain" display 探针带有 "Heidenhain" 显示</p>	
<p>Setting rings and plugs 设定环和塞棒</p>	
<p>Centering support 定中心支撑</p>	
<p>Setting master for measuring height 用于测量高度的设定标准块</p>	

# Frenco Produktgruppen



## Verzahnte Höchstpräzision H

Prüfkörper  
Verzahnungslehren  
Prüfräder  
Meister  
Normale  
  
Werkzeuge  
Spannsysteme  
Umformwerkzeuge  
Elektroden  
  
Verzahnungsherstellung



## Rotationsmessgeräte R

Messgeräte mit Messkreisen  
Multiple Mehrstellenmessgeräte  
Wälzprüfgeräte  
Linear-Wälzprüfgerät Zahnstange  
Wälzscangeräte  
Zweiflankenwälzprüfgeräte



## Istmaßprüfgeräte Gruppe V

Messrollen- und Kugeleinsätze  
Prüfgeräte zum Auspendeln  
Prüfgeräte mit Plananschlag  
Prüfgeräte mit Führungsverzahnung  
Drehflankenspielmessgeräte  
Sonderprüfgeräte



## Verzahnungsprüfung P

Werkstückprüfungen  
Prüfzertifikate im Neuzustand  
Prüfmittelüberwachung  
DAkkS-Kalibrierscheine



## Know-how Transfer K

Beratung und Berechnung  
Software für Passverzahnungen  
Schulungen und Seminare  
Literatur und Dokumentationen  
Normung



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