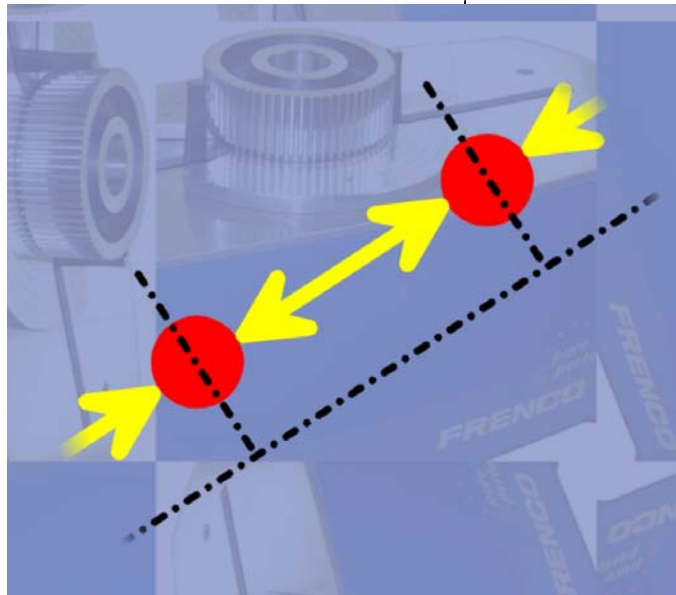
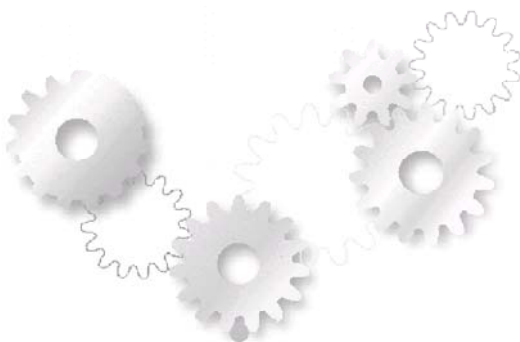




Gear testing instruments VP with face stop



***Static or dynamic measurement of
the size between or over two balls***

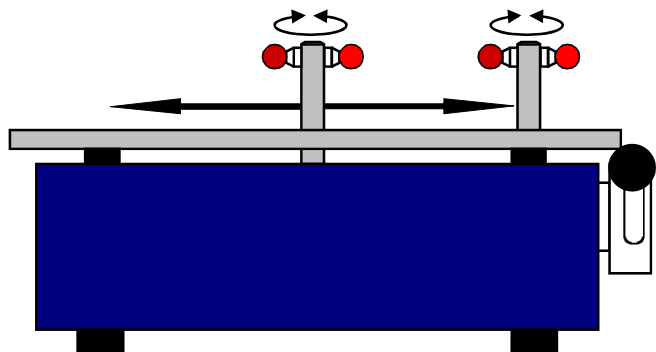
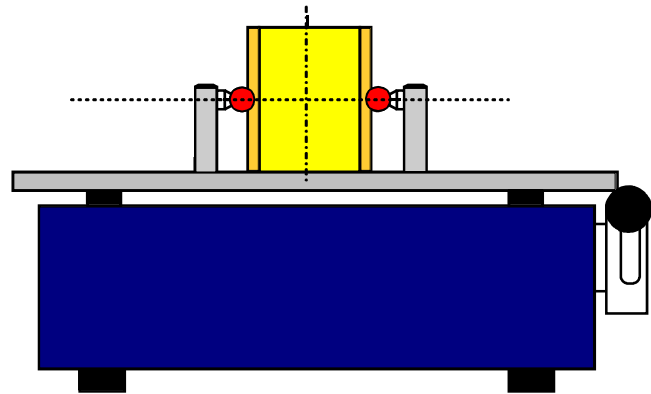


Measuring with face stop

With the gear testing instruments type VP rocking is not necessary any more because they are equipped with a face stop. Specimens with a usable face are deposited on the table of the instrument and measured right-angled.

Testing instruments are all purpose. The bars are as well turnable for the measurement of internal and external gears and splines as relocatable for the measurement of small and big diameters.

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



Features:

- The measuring results do not depend on the worker
- The measuring results can be processed electronically.
- The measurement is made always at a right angle with the axis of the specimen
- Different sizes, types and diameters of gears and splines can be measured by one instrument
- Measurement of helicals is possible
- The wear of the measuring inserts is compensated by the use of a setting master
- The measurement is possible in different planes (VPE only)
- The instruments are prepared for a computer connection

Overview

	Designation	For the measurement of pitch circle diameters:
<p>VPO without plane travel</p>	<p>VPO1</p> 	<p>external gear up to 100 mm internal gear up to 120 mm</p>
	<p>VPO2</p> 	<p>external gear up to 200 mm internal gear up to 220 mm</p>
<p>VPE with plane travel</p>		<p>external gear up to 200 mm internal gear up to 220 mm</p>
<p>VPS with bars and plane travel</p>		<p>gears and splines up to 350 mm</p>
<p>Extension L-Dyn</p>		<p>for VPE and VPS</p>

Gear testing machine VPO

The VPO is a simple gear testing machine for the determination of the diametrical size over two balls in one specific plane.

It can be converted in best time and is particularly suitable for the quick measurement of small pieces up to a PCD of 120 mm.

The balls are each mounted on a movable and a fixed carriage. To change the work piece the movable carriage can be retracted with the leverage on the front side.

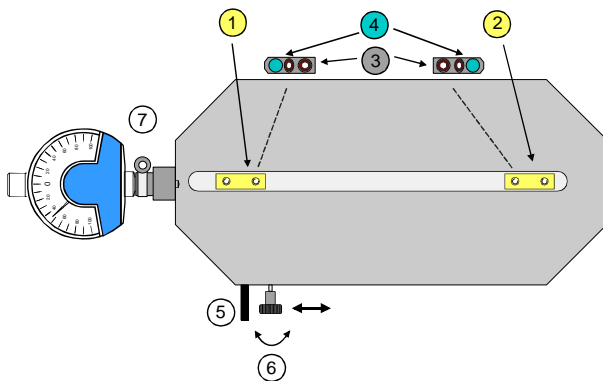
To display the measuring results both a dial indicator and a digital probe can be used.



VPO1



VPO2



1.	Movable carriage
2.	Fixed carriage
3.	Bar holders
4.	Bore for bars
5.	Leverage for the retraction of the carriage
6.	Clamping wheel to set the measuring force and measuring direction
7.	Clamping wheel for dial indicator or digital probe

Technical specifications:	VPO1	VPO2
external gears up to:	100 mm PCD	200 mm PCD
internal gears up to:	120 mm PCD	220 mm PCD
measuring force: continuously adjustable up to	10 N	10 N
dimensions (without bars)	185x58x180 mm	340x118x210 mm
weight approx.:	3,3 kg	11 kg

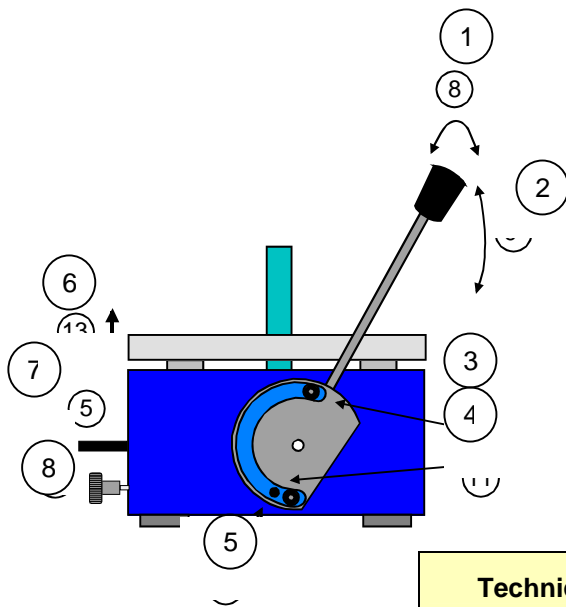
Gear testing machine VPE

The VPE is a gear testing machine for the determination of the diametrical size over two balls in any plane

It is convertible within a few minutes and is mainly used for the quick measurements of pieces with a PCD up to 220 mm.

Moreover the height-adjustable plane enables the measurement of the crowning and taper.

By connecting two probes, the measuring results can be recorded on a PC and allows a dynamic analysis.



1.	Turnable leverage to clamp a travel height
2.	Leverage to change the travel height
3.	Adjustable stop for the lower travel height
4.	Adjustable stop for the upper travel height
5.	Fixed stop for the travel adjustment
6.	Travel table
7.	Leverage to retract the carriage
8.	Wheel for clamping the measuring force and direction

Technical specifications:	VPE
external gears up to:	200 mm Teilkreis-Ø
internal gears up to:	220 mm Teilkreis-Ø
vertical travel:	30 mm
measuring force: continuously adjustable up to:	10 N
dimensions (without bars)	340x118x210 mm
weight approx.:	11 kg

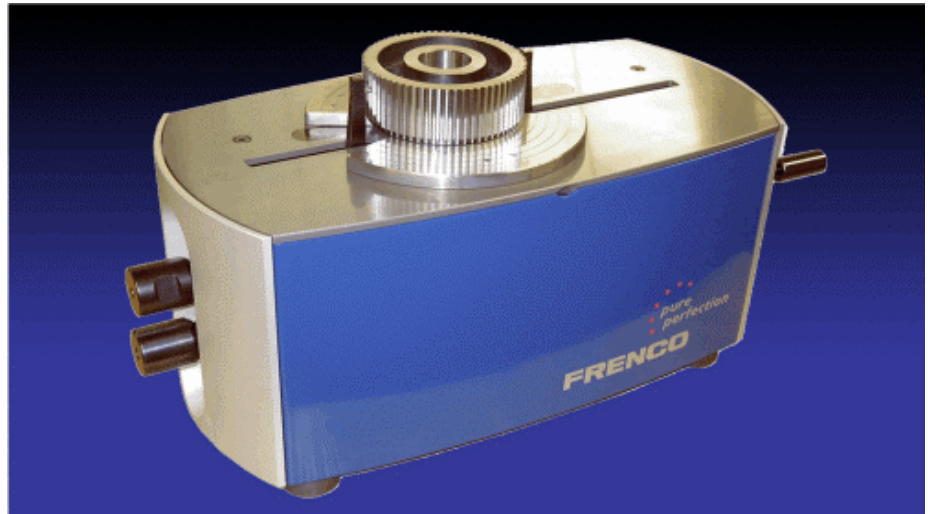
Gear testing machine VPS

The VPS-machine is the latest development of this product line. It is the result of the consistent enhancement of the gear testing machines VPO/VPE. It is especially suitable for big and heavy specimens.

Beside precision and accuracy importance was attached to functionality, optic, a deliberate design and optimal ergonomics.

The VPS is easy in use and a very stable tabletop machine for the shop floor use.

Like the gear testing machines VPO and VPE it is used for the size inspection of internal and external gears and splines.



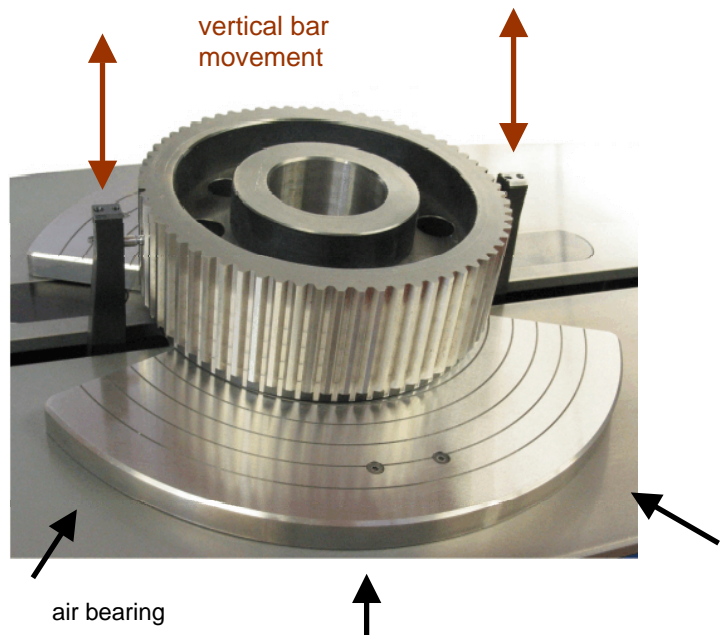
Size inspection of a external gear with the VPS

Technical specifications

Size of mounting plate approx.:	250 x 500 mm
Maximum outer diameter with bar displacement approx.:*	350 mm
Maximum outer diameter without bar displacement approx.: [~]	180 mm
Minimum outer diameter:	0 mm
Maximum inner diameter with bar displacement approx.: [~]	350 mm
Maximum inner diameter without bar displacement approx.: [~]	200 mm
Minimum inner diameter approx.: [~]	55 mm
Maximum vertical travel:	75 mm
Maximum work piece weight:	20 kg
Maximum measurement error:	± 3µm
Reproducibility:	± 3µm
Weight approx.:	60 kg

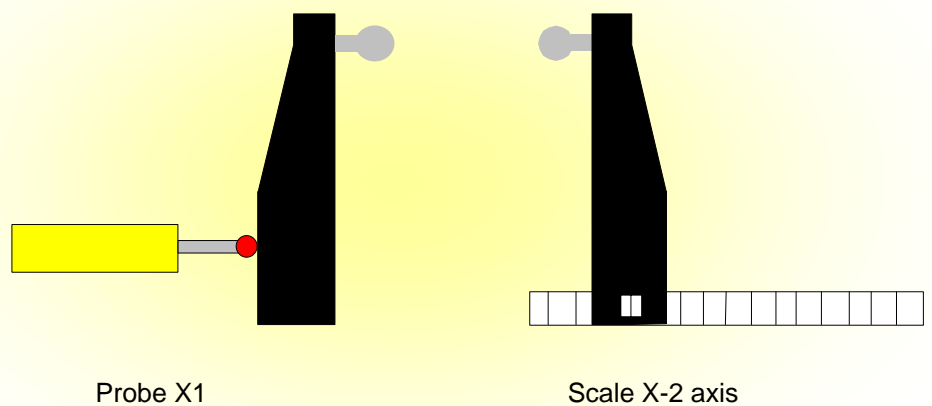
* depending on insert

The VPS does not have a plane travel any more. For the longitudinal dynamic measurements the bars are vertically movable. The work piece is lying on a fixed steel plate. On both bars there are fixtures for measuring balls or rolls M 2.5; M4 and $\text{Ø}3.5$. Optional it is possible to mount the work piece for the size inspection floating onto air bearings. That ensures the double flank contact during the measurement especially for heavy pieces.



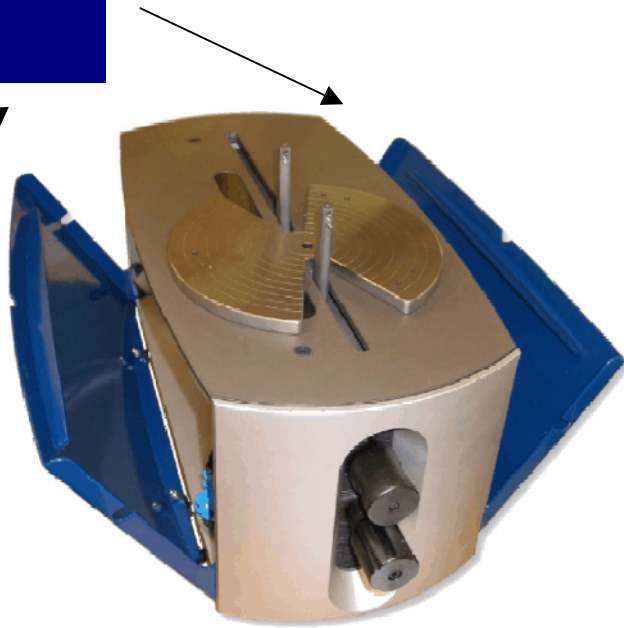
Supplement X2-axis

The flexible carriage is equipped with a reading head, which can ascertain the position on the glass scale. The true measured size of the work piece is calculated from the value of the probe X1 and the value of the scale X2. That way it is possible to measure work pieces of different sizes with only one setting master. Using a flexible setting master enables the calibration of different measuring balls.

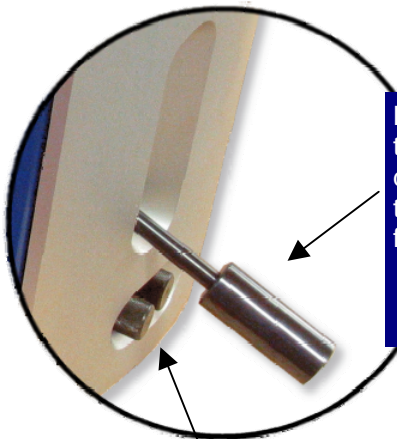


The hinged front and rear panels provide an easy access for retrofitting and maintenance.

Optional stops for the floating steel plate

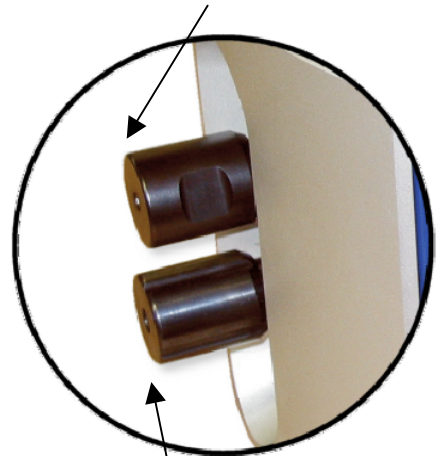


For the easy change of work pieces : By pulling the leverage the bars are retracted and by turning counterclockwise they are fixed.



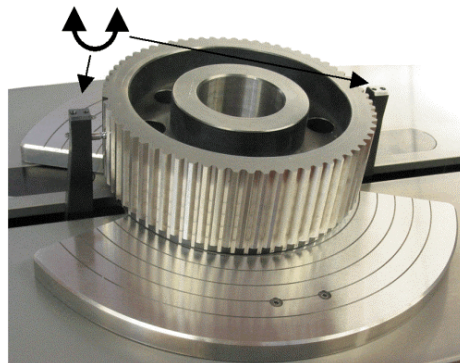
Lever for the vertical movement of the bars during the longitudinal dynamic measurement. By turning the lever clockwise the bars can be fixed for a static measurement.

Buttons to set the upper and lower stops for the longitudinal dynamic measurement



Continuous adjustment for the measuring force

Bars adjustable for the measurement of internal and external gears and splines.



Extension dynamic evaluation of measurements

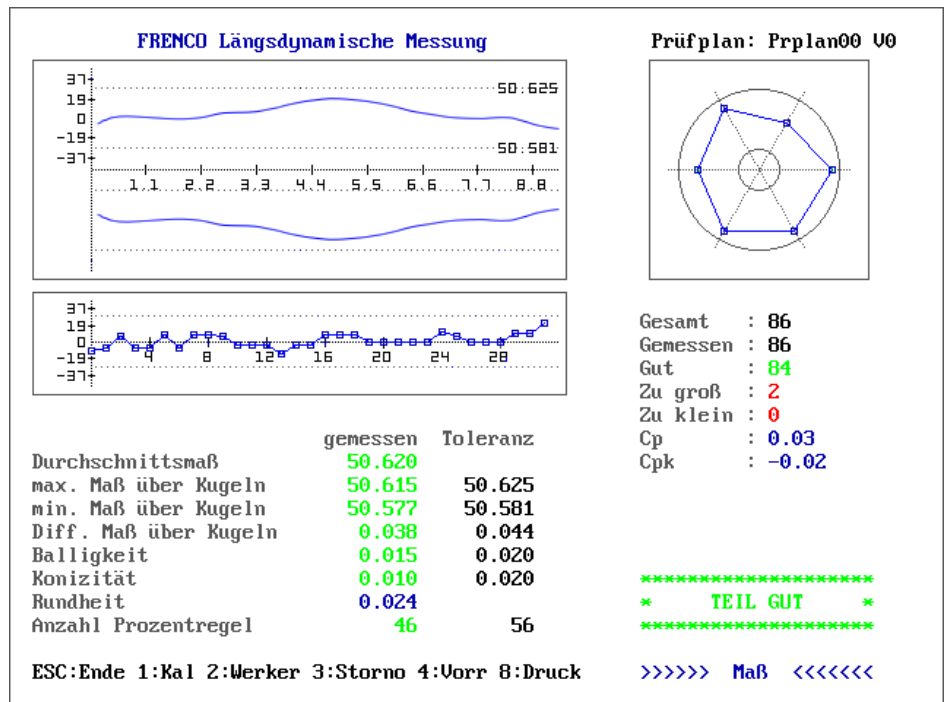
Extension LDYN

VPE and VPS gear testing instruments are upgradeable for dynamic measurements. The travel of the table or the bars is assigned to one measurement reading and recorded. Thus the work piece can be measured in hundreds of planes and the values can be evaluated on the PC.













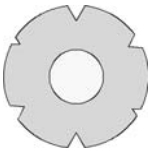

The software LDYN

Every extension package includes the software LDYN. It runs with any standard PC. Also simple statistical calculations are possible.






Accessories VP-machines

○ = optional ● = standard

		VPO1	VPO2	VPE	VPS
Bars 35 mm for measuring ball inserts M2,5 or M4,0 or for Mahr inserts		○	○		
Bars 60 mm for measuring ball inserts M2,5 or M4,0 or for Mahr inserts		○	○	○	
Bars 35 mm for measuring pin inserts		○	○		
Bars 60 mm for measuring ball inserts		○	○	○	
Measuring ball inserts tungsten carbide available in 1 micron steps stepped, with M2,5 (from Ø1-7 mm) or M4 connecting thread (from Ø7 mm)		○	○	○	○
Measuring pin inserts, rocking and rotating		○	○	○	○
Stopping prisms for easier mounting of work pieces		○	○	○	
FRENCO-dial indicator with eccentric zero point		○	○	○	
Probe with „Haidenhain“-display		○	○	○	●
Setting rings and plugs		○	○	○	○
Flexible setting rings and plugs					○
Extension L-Dyn				○	○

Accessories VP-machines

○ = optional ● = standard

		VPO1	VPO2	VPE	VPS
Flexible bars 80 mm					●
Steel plate Ø250 with 3 air bearings, maintenance unit and button for compressed air					○
Stops for the steel plate on air bearings					○
Extension X2-axis					○

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



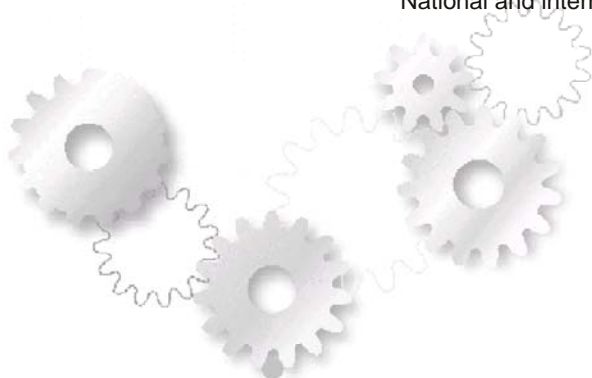
Gear and spline inspection

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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