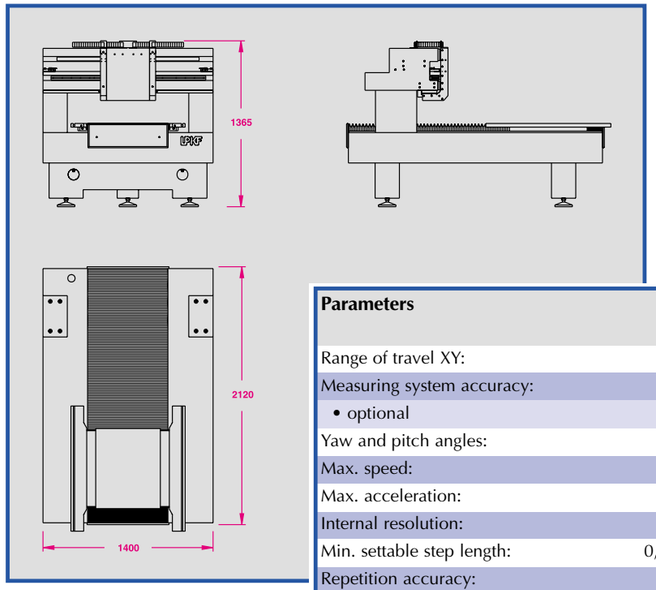
Technical Parameters



Parameters	Data
Range of travel XY:	800 x (800+400) mm²
Measuring system accuracy:	linear: ± 3 µm
• optional	± 1 µm
Yaw and pitch angles:	< 2 sec
Max. speed:	300 mm/sec
Max. acceleration:	1 g
Internal resolution:	0,05 µm
Min. settable step length:	0,25 µm ; 0,5 µm ; 1,0 µm
Repetition accuracy:	< 1 µm
Additional mass:	ca. 50 kg
Space needed for erection LxBxl	2,2 x 1,4 x 1,4 m
Total weight:	ca. 3,2 t
Temperature conditions:	20°C ±0,5°C
• Change with time:	max. 0,5°C / h
Air humidity:	max. 60 %
Compressed air supply:	controlled: 6,1 bar ± 0,2 bar
• Residual oil content:	< 7 mg/m³
• Solid particles:	< 3µm
• Moisture:	5,953 g/m³
Air consumption:	ca. 1000 l/h

Eine Anpassung an OEM und spezifische Anwendungen erfolgt in Zusammenarbeit mit dem Kunden.
Eine exakte Aussage über die Führungs- und Positioniergenauigkeit gibt ein mit dem Laser-Interferometer aufgenommenes Protokoll.

LPKF-Products

- Präzisionsantriebe / Precision Drives
- Steuerungen / Control Systems / Software
- Meßtechnik / Measurement Engeneering
- Sondersysteme / Special Systems

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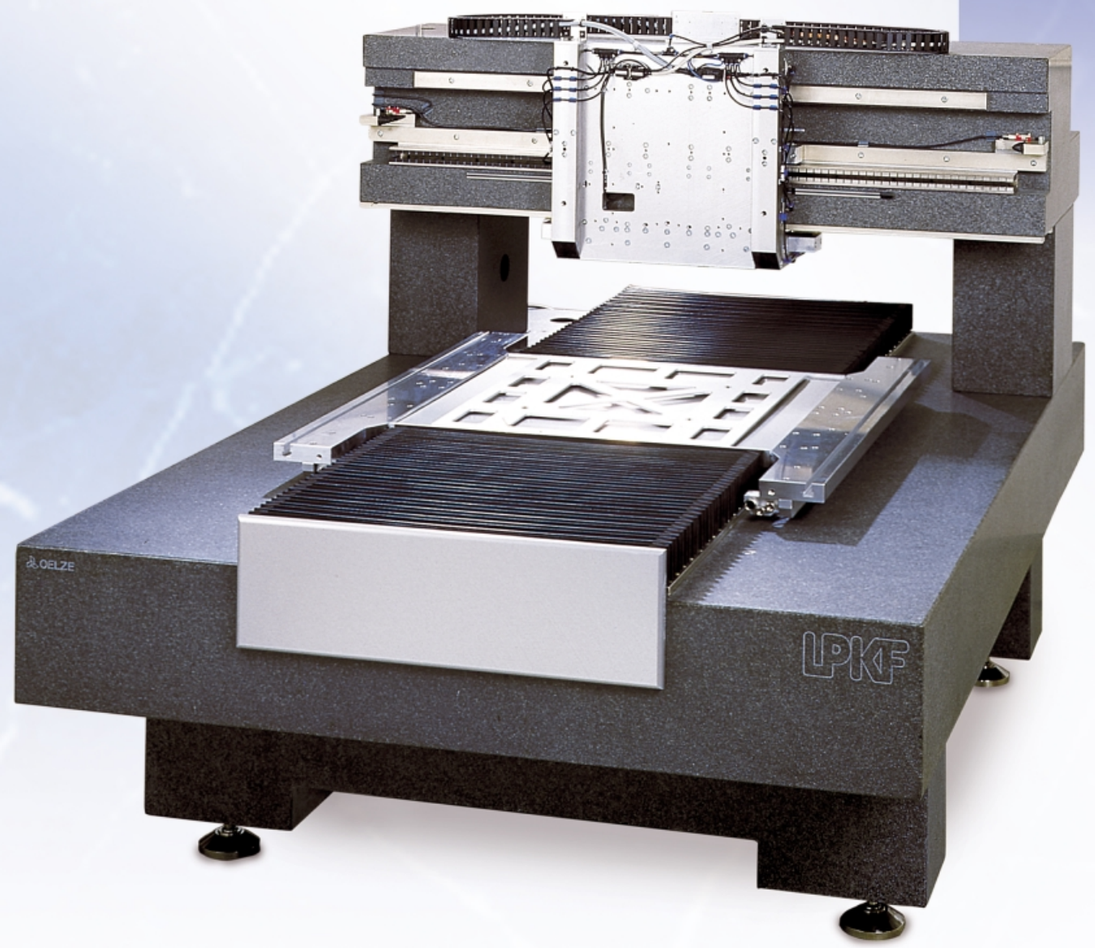
Portal XY 80/120 G

Precision Drives

Portal system with air-bearing linear drives for positioning and travelling tasks requiring high mobility and micrometer accuracy



Highest accuracy over 0.8 x 1.2 m²

Statically and dynamically calculated dimensions ensure the greatest rigidity

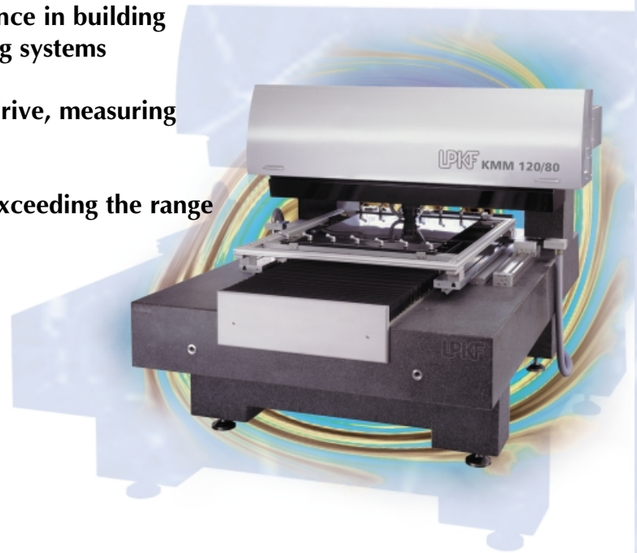
Tried and tested design principles and the uncompromising application of error invariant arrangements

Over 15 years competence in building high-precision positioning systems

Use of state-of-the-art drive, measuring and guiding components

4-fold security against exceeding the range of travel

For OEM and end-user customers



General Description

The LPKF XY 80/120 G portal system is the successful synthesis of the highest requirements for accuracy, high mobility of the positioning axes and a very large range of travel.
The excellent features of this system are based on over 15 years experience in the design, manufacture and control of linear drive systems and the layout of mechanical and aerostatic guideways.

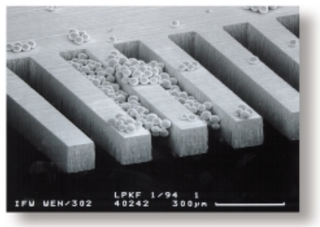
Granite means
long-term stability of the highly accurate guide surfaces, excellent oscillation damping and stabilising mass for high-acceleration actuators

Aerostatic guiding means
extremely high resolution through the almost total lack of friction, freedom from vibration and oscillation, highest guidance accuracy through the integration of surface errors, no wear and maintenance-free

The brushless, balanced, air-core DC linear induction motor means
outstanding path accuracy and synchronising features, high acceleration capacity through direct power transmission, no wear or maintenance because there is no mechanical contact

The open, incremental linear scale means
no wear or maintenance because there is no mechanical contact, increased accuracy through error compensation

Application

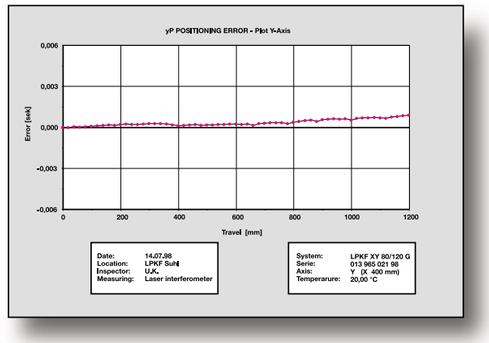


· Structuring flat objects, e.g. laser cutting and engraving, photo-overlays etc.

· Sensitive assembly platform and handling system

· Positioning device for quality control, e.g. with an optical inspection system

Construction



The system has been designed as a portal construction in which the functional separation of the two axes allows the optimal arrangement and guidance of the two carriages. Statically and dynamically calculated dimensions ensure the greatest rigidity and a high degree of long-term stability.

Both axes are driven in their centres of gravity by brushless and contact-free DC linear induction motors. These motors are balanced, i.e. as there is no magnetic attraction between moving and static parts, the drive units do not exert any influence on the guidance accuracy.

In combination with granite-based air-bearings, reproducible characteristics below 0.5" can be achieved with comparatively little effort.
The size of linear drives is particularly critical in respect of thermal considerations. Starting from the extreme case, a heat analysis calculation was carried out which took all relevant influences into account. The result led to a slight over-sizing of the system, without having to resort to the otherwise usual air or water cooling.

Each axis has a high-resolution, open linear measuring system with an exact reference point. For general operating safety, each axis has two limit of travel switches and two padded buffers. In addition, the range of travel can be set and monitored by a softframe.

Control System

The LPKF "MotionSystem" control is a positioning control for high mobility linear servomotors.
The modular construction enables a multitude of applications to be implemented.
Up to 6 axes can be synchronously controlled.
Versatile driver software enables the work process to be planned easily.

Extensions

- Z-axis (see illustration)
- Rotating and swivelling unit
- Multiple axis alignment

Options

- The accuracy is increased by the use of linear measuring systems with ± 1 µm /m
- The accuracy is increased by error compensation in both axes after laser calibration
- The upper portal axis is completely enclosed
- Protected area round the installation