

*Fixturing systems*

*Clamping systems for contour  
and surface metrology*



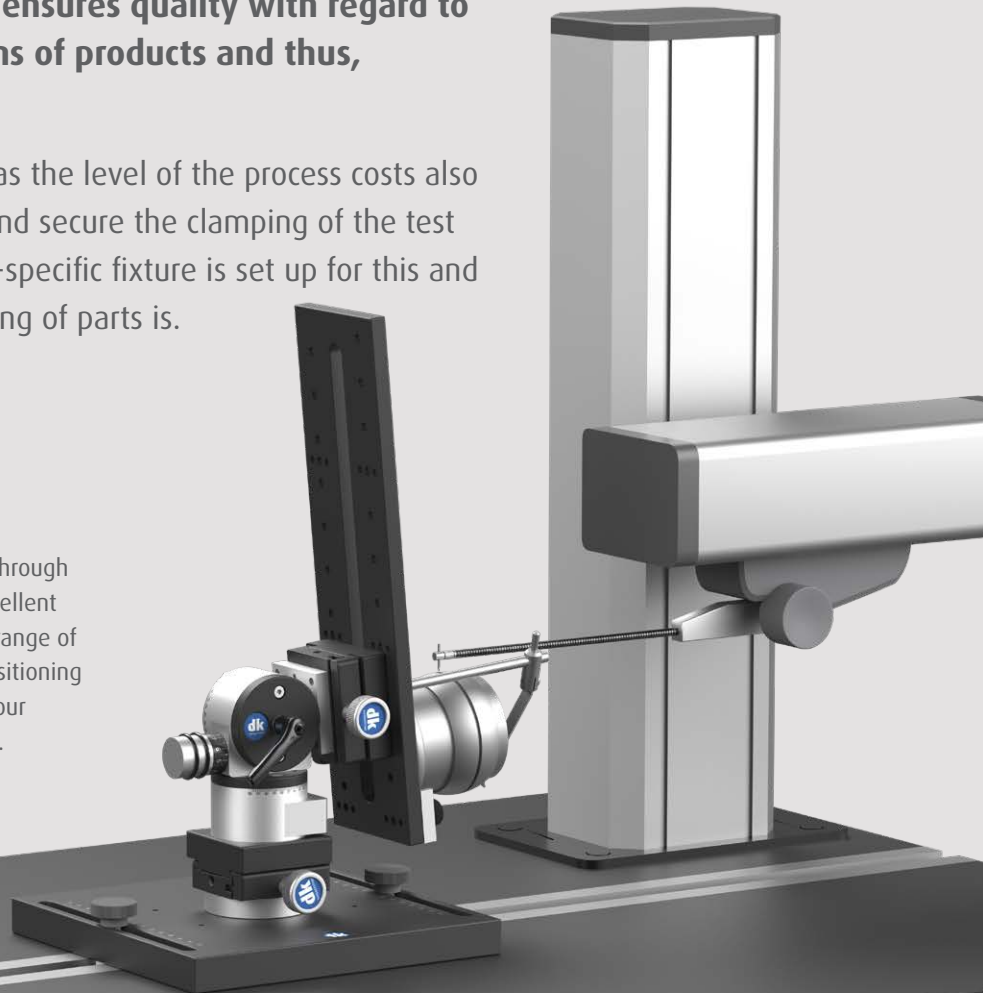
# Clamping systems for contour and surface metrology

Surface and contour metrology ensures quality with regard to fine and coarse shape deviations of products and thus, ultimately, their functionality.

The reliability of the results as well as the level of the process costs also result decisively from how precise and secure the clamping of the test specimens is, how quickly a process-specific fixture is set up for this and how simple the repeatable positioning of parts is.

## Efficient and secure processes

dk guarantees efficient and secure processes through proven, modular fixing fixtures and their excellent usability. The combination of the dk standard range of basic, add-on and clamping elements with positioning units specially developed for surface and contour measuring technology offers clear advantages.



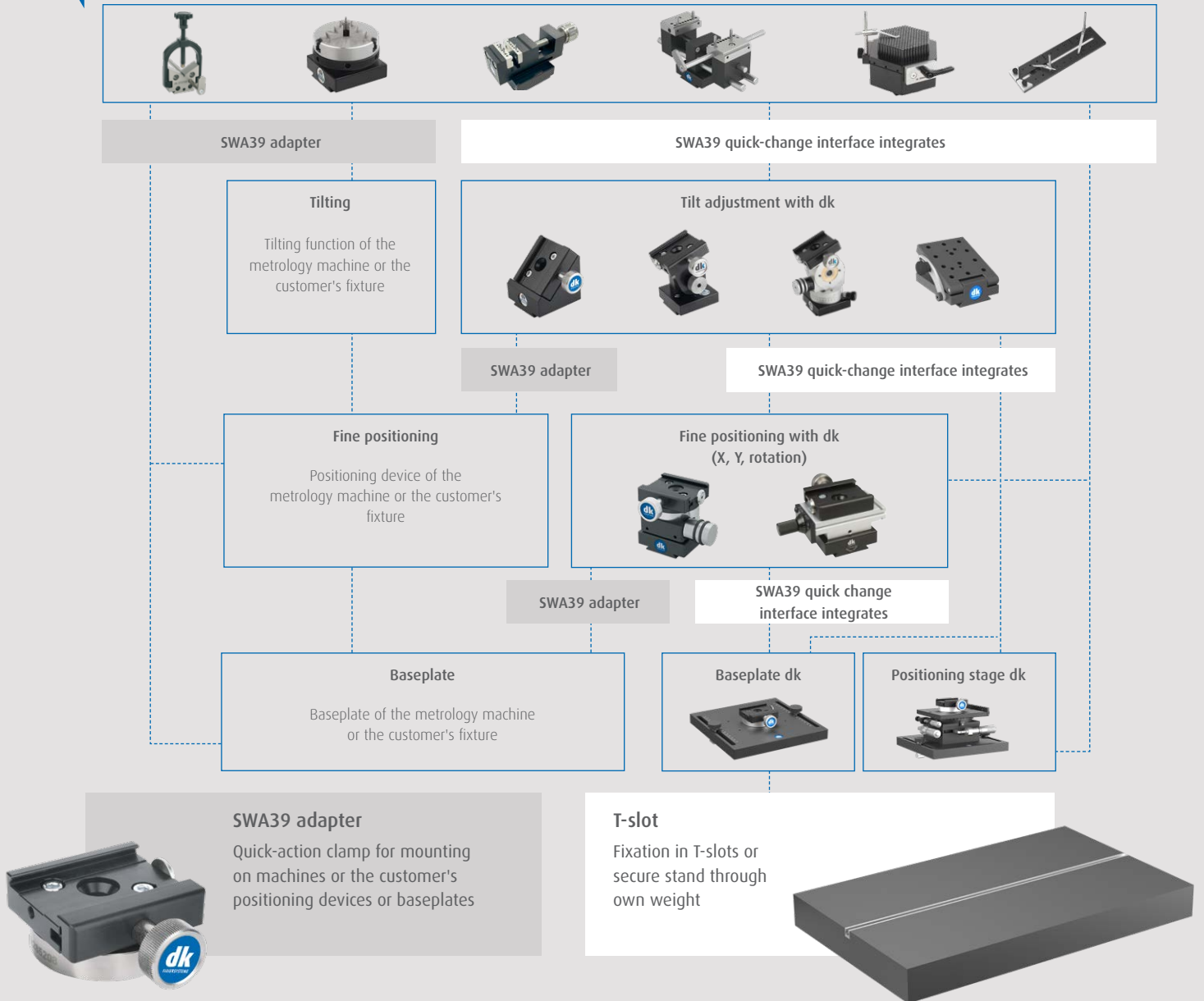
**FAST  
REASSEMBLY  
LIFELONG**

## A modular system

High flexibility through an outstanding selection of combinable modules

- » Exactly adaptable to processes through function and size variants as well as accessories
- » Precision 3D spatial adjustments through infinite linear, rotation and tilting elements
- » Simple and rapid measurement set-ups due to the dk quick-change interfaces
- » Precise repeat fixation due to zero point clamping by means of stops
- » Minimisation of clamping forces for filigree parts: controlled, adjustable and reproducible
- » Robustly dimensioned and with hardcoat surfaces for long-lasting use
- » Universal utilisation together with other fields of quality assurance and also for laser marking through standardised SWA interfaces

## Workpiece clamping with dk



### dk Module system

## The philosophy of module systems

As a manufacturer of fixation systems for measuring, laser, dispensing and handling technology, we have been pursuing the philosophy of the modular system for many years. The modular structure, the compatibility both with each other and with the customer's initial situation and, above all, the number of combinable functional elements give our programmes an outstanding utility value.

### SWA39 system

## Offers almost endless possibilities

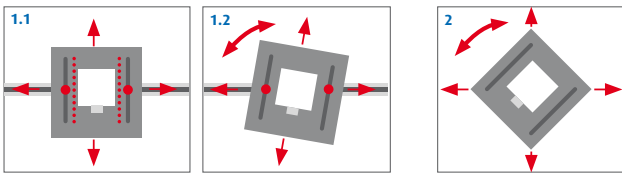
Generating machine, product and process specific fixtures from individual modules:

- » Easily adaptable to the initial conditions of the measuring machine
- » Highly efficient, due to variable and precise orientation to the process
- » As diverse as the workpieces to be inspected

# Specifications: X, Y, +/- 15° rotation

**Clamping and positioning test pieces;  
the end positions can be solidly fixated using a clamp**

The baseplate fulfils the basic requirement for aligning the measuring area of the specimen with the axis of the measuring device. It can be infinitely moved in the X and Y axis in a T-slot on the machine. Guide pins can be mounted in the underside of the plate and are adjustable in the Y axis of the grid; they engage in the table slot and thus hold movement in the X axis exactly in the measuring axis (1.1). Without guide pins, the base plate can be infinitely rotated (1.2) and, in both cases, effectively clamped. On tables without a T-slot, the base plate can be placed in any position and is absolutely stable due to its own high weight (2).



## Easy access to the whole world of dk

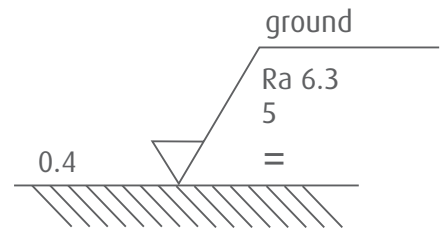
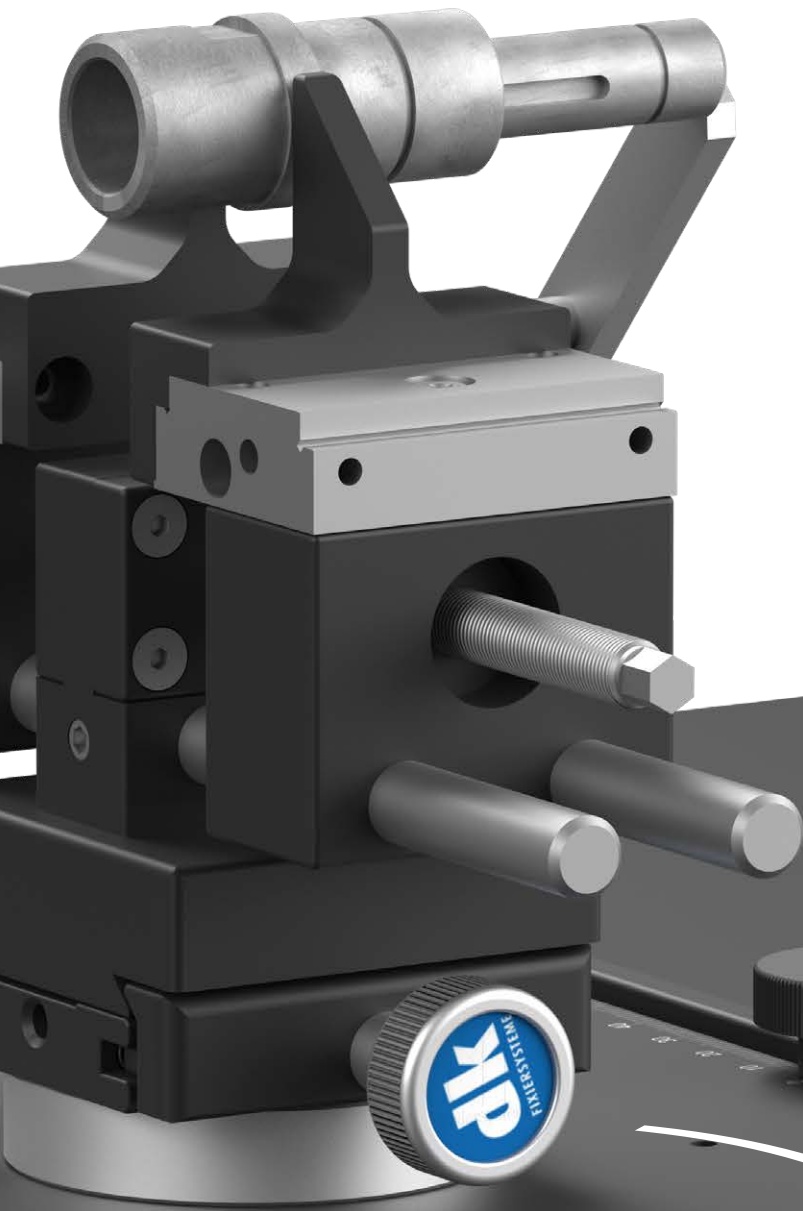
A SWA39 quick-change interface can, of course, also be retrofitted to any of the customer's basic function plates. This is the easy access to the whole world of dk fixation systems and enables the positioning, tilting and clamping elements to be used without any problems.

## Freely positionable

Without T-slot fastening absolutely freely positionable.

## Infinite Y-axis adjustment range

Infinite Y-axis adjustment range of 150 mm corresponding to the baseplate T-slot. Additionally, if required, can be pinned in a 15 mm grid so as not to lose the exact alignment by displaced in the X-axis.



### **Clamping element with SWA39 interface**

An exemplary clamping element with SWA39 interface from dk's extensive standard modular system. Toolless fixation on the SWA39 quick-clamp adapter. The range includes a huge selection of clamping elements in different sizes and with a variety of useful accessories.

### **Infinite X-axis adjustment range**

Infinite X-axis adjustment range corresponding to the machine table T-slot.

### **Infinite rotation**

Infinite rotation of the entire baseplate through use of both T-slots.

### **SWA39 for rapid, simple adaption**

Baseplate with SWA39 quick-clamp adapter for rapid, easy and tool-free adaptation of all positioning, tilting and clamping elements with the standardised SWA39 interface from dk.

# Specifications: X, Y, +/- 15° rotation, 0-90° tilt

**Clamp and position and tilt test pieces, the end positions can be solidly fixated using a clamp**

Very many test specimens require a tilt function of the fixture in order to align it, so that the test surface can be set at the required horizontal plane. The advantage of modular systems is that a wide variety of clamping elements can all be adjusted using the same tilt element. It is ideal if there is not only a wide choice of clamping systems, but also different versions of the tilt function. The function can thus be adapted to the optimal process: Fixed angles, indexable angular increments, infinite fixation-variable angles, inclinations adjusted via high precision worm drives - dk opens up all possibilities. Special as standard!

### Infinite tilt

Tilt 180° infinitely adjustable and can also be indexed at 0°, 45°, 90°, 135° and 180°.

### Infinite Y-axis adjustment range

Infinite Y-axis adjustment range of 150 mm corresponding to the baseplate T-slot. Additionally, if required, can be pinned in a 15 mm grid so as not to lose the exact alignment by displaced in the X-axis.

### Freely positionable

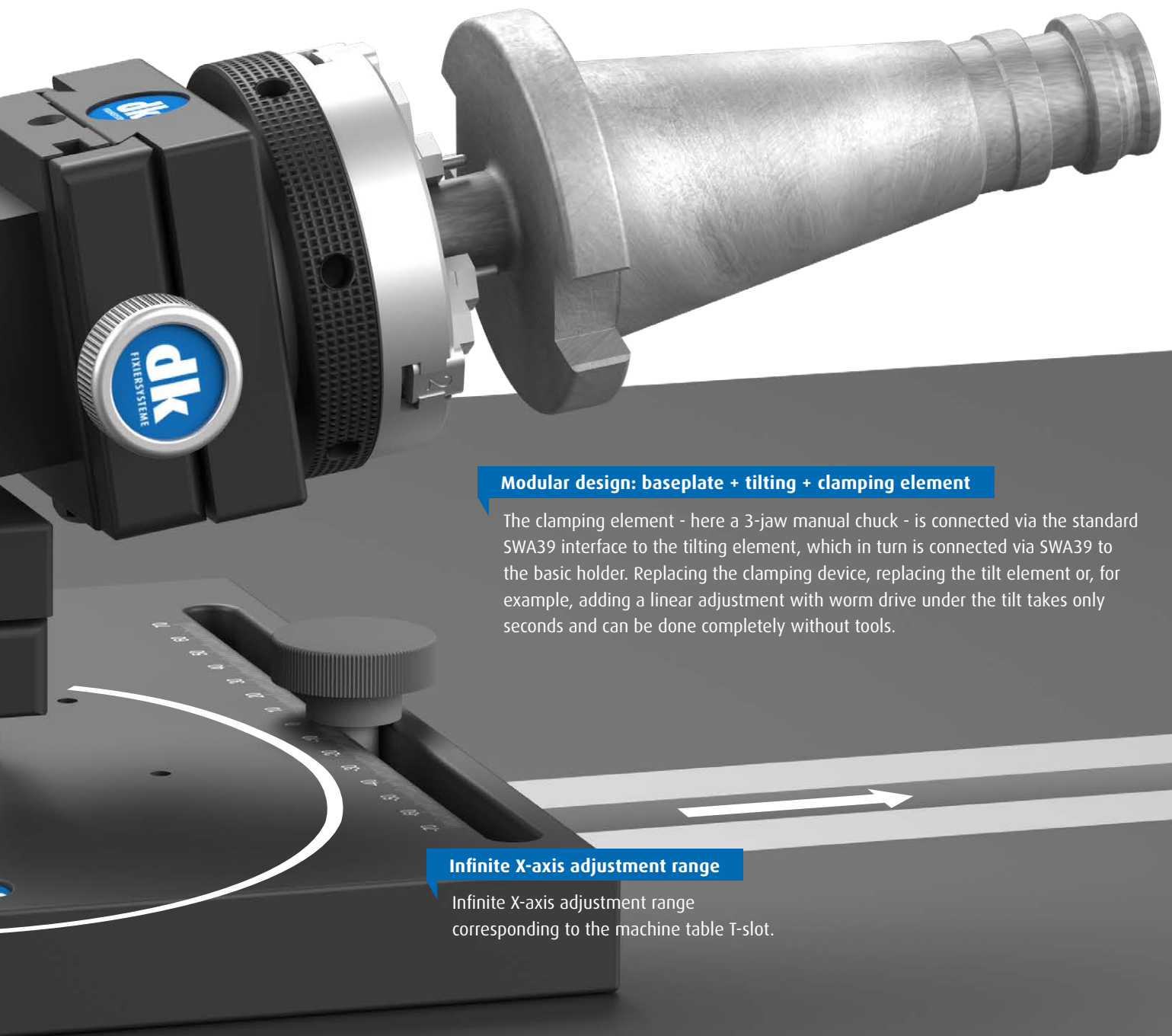
Without T-slot fastening absolutely freely positionable.

### Infinite rotation

Infinite rotation of the entire baseplate through use of both T-slots.

### ***Rapid and tool-free positioning***

The SWA39 quick-change interface is not just an interface for positioning a fixture on the measuring table. It is the integrated, tool-free operating link for combining tilt, rotary and linear components with each other and, of course, with the clamping element itself. Extremely rapid with repeat precision.



### **Modular design: baseplate + tilting + clamping element**

The clamping element - here a 3-jaw manual chuck - is connected via the standard SWA39 interface to the tilting element, which in turn is connected via SWA39 to the basic holder. Replacing the clamping device, replacing the tilt element or, for example, adding a linear adjustment with worm drive under the tilt takes only seconds and can be done completely without tools.

### **Infinite X-axis adjustment range**

Infinite X-axis adjustment range corresponding to the machine table T-slot.

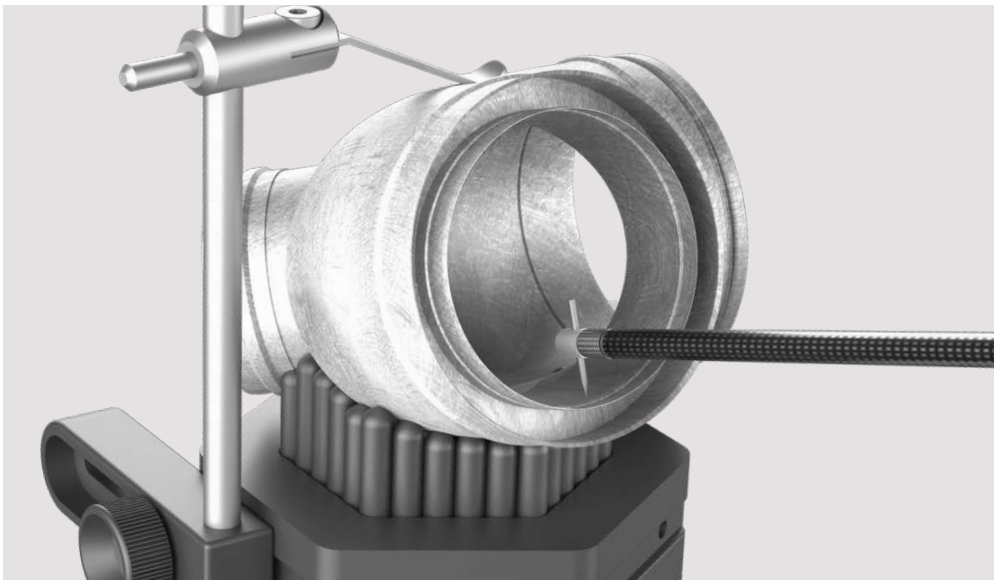
*modular. simple. better.*

Level 3

## ***Specifications: Fine adjustment of all movements***

**Clamp test pieces and adjust them linearly in X and/or Y axis with individual modules from the modular system; tilt them precisely up to 90° and rotate them through 360°; all adjustment mechanisms can be operated sensitively and are self-locking; the final tilt position can also be securely fixated by means of a clamp**

The X/Y coordinates and the positioning angle relative to the axis of the measuring instrument can no longer be set accurately and thus quickly enough by merely sliding them along the T-slots. The mobility of the baseplate is only used here for rough positional adjustment. The fine adjustment is now carried out with absolute precision in the complete 3D spatial plane by worm gears for the two linear axes and optionally, also for the rotation and the inclination.



### ***Position free-form parts easily***

The actual product holder - here a self-forming pincushion with column and spring finger - is connected to the combined rotary/tilt element via SWA39. Since the fine positioning along the measuring axis is not always needed, only a transverse adjustment actuated by a worm drive is set underneath. Of course, a cross table from the dk module programme could also be used.



## Unlimited combinations

The SWA39 interface is absolutely universal: from the direct, tool-free mounting of a dk clamping device on a quick-action clamping fixture to the complex combination with one or more intermediate, additional manipulation units, the mounting is always identical.



### Freely positionable

Without T-slot fastening absolutely freely positionable.

### Infinite fine adjustment

Fine adjustment of rotation and inclination infinitely variable by worm gear with scales.

### Infinite transverse adjustment

Fine adjustment of the position perpendicular to the measuring axis by worm gear with scales.

### Infinite X-axis adjustment range

Infinite adjustment range of the X axis corresponding to the T-slot of the machine table.

### Infinite rotation

Infinite rotation of the entire baseplate through use of both T-slots.

### Infinite Y-axis adjustment range

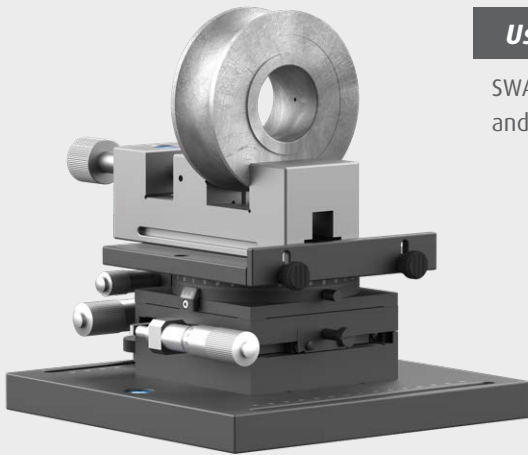
Infinite Y-axis adjustment range of 150 mm corresponding to the baseplate T-slot. Additionally, if required, can be pinned in a 15 mm grid so as not to lose the exact alignment by displaced in the X-axis.

Level 4

## Specifications: Fine adjustment with compact unit

Clamp test pieces and adjust them linearly in the X and Y axis by means of a compact positioning stage and rotate them precisely through 360°; the virtually backlash-free, self-locking adjustment mechanisms can all be securely fixated by clamping; 90° tilt modules with fine adjustment, self-locking and fixation can also be attached

An optimisation compared to level 3 is possible in the form of minimising the number of components and thus the tolerances as well as the overall height of modularly stacked adjustment elements: Instead of the combination of three (X, Y, rotation) elements in height, a compact unit is then recommended, which of course lacks the change interfaces of the functions among each other. This means that the fixture has a much lower overall height and is even further optimised in terms of tolerances.



### Use of standard clamping elements

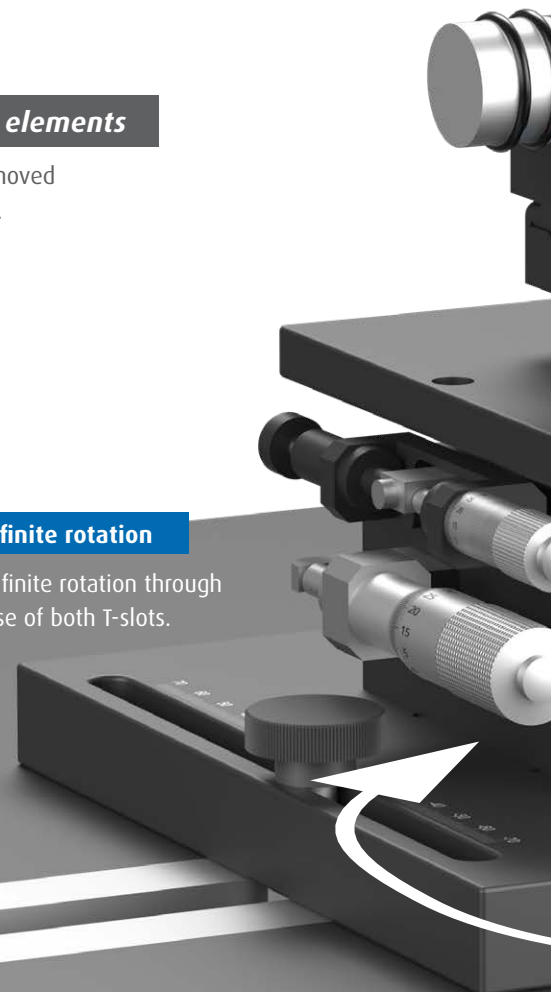
SWA39 quick clamp holder was removed and the integrated stop was raised.

### Outstanding added value through SWA39 modular systems

The enormous scope of the SWA39 modular system, the sensible detailed solutions and the interaction with other dk fixation programmes create an outstanding benefit. This is further increased by the possible - mutual or alternating - use of all basic, assembly and clamping elements not only in contour and surface metrology, but also on the tactile, optical and computer tomographic measuring machines, which are often located close together in quality control departments.

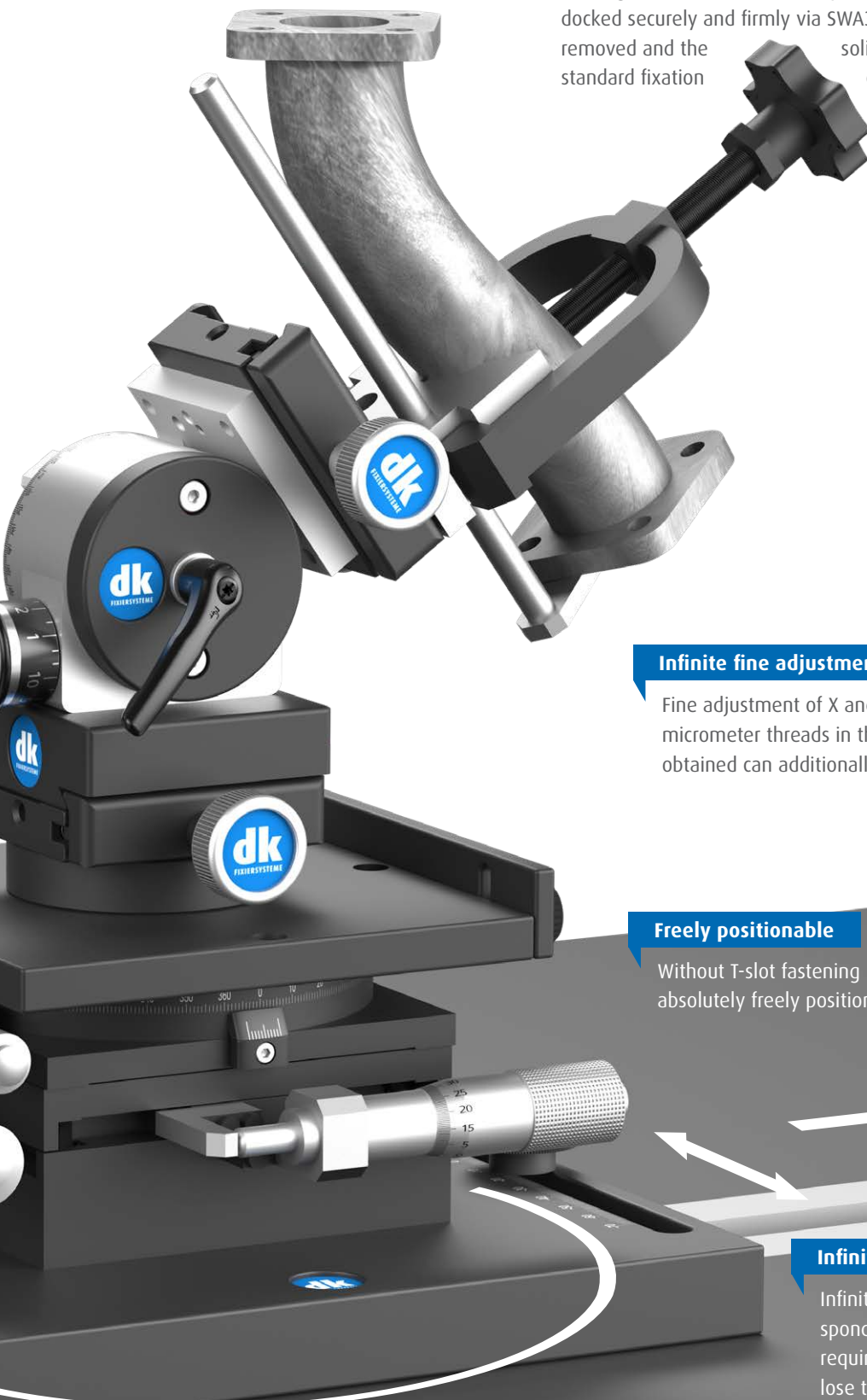
### Infinite rotation

Infinite rotation through use of both T-slots.



### *Compact, comfortable and highly precise*

Two linear adjustments and the 360° rotation are coupled in a compact design. They move backlash-free and with spring tension along precision guides. Additional features such as a quick adjustment of the angle of rotation as well as the clamp fixation of the comfortable and highly precise overall setting leave nothing to be desired. At the top, clamping or tilting elements from dk can be docked securely and firmly via SWA39. Or the SWA39 interface adapter is removed and the solid plate with stop is then free to accept any standard fixation element by simply placing it on top.



#### **Infinite fine adjustment**

Fine adjustment of X and Y position as well as rotation via micrometer threads in the positioning stage. Each setting obtained can additionally be fixated.

#### **Freely positionable**

Without T-slot fastening absolutely freely positionable.

#### **Infinite X-axis adjustment range**

Infinite adjustment range of the X axis corresponding to the T-slot of the machine table.

#### **Infinite Y-axis adjustment range**

Infinite Y-axis adjustment range of 150 mm corresponding to the baseplate T-slot. Additionally, if required, can be pinned in a 15 mm grid so as not to lose the exact alignment by displaced in the X-axis.

# Selected basic and add-on elements for positioning and tilting

## Baseplate including SWA39

### Baseplate including SWA39 quick-action clamp with integrated fastening for machine T-slots

For mounting all attachment, adjustment and clamping elements of the SWA39 system. Tool-free adjustment in machine table T-slot. Adjustment crosswise to this +/- 75 mm infinitely variable and tool-free; with scale for parallel alignment to the T-slot. Due to the long-hole construction, the possibility of rotation is also included. Please state the T-slot size when ordering. The solid, flat plate with durable Hardcoat coating is also perfectly suited for secure positioning without fastening in a T-slot. SWA39 Quick-action clamp on top.



Order No.	Description
274750	Baseplate including SWA39

## SWA39 Positioning stage

### With fine adjustment via three micrometers

Infinite adjustment of +/- 12.5 mm in X and Y axis. Adjustment of 0.5 mm per rotation. Infinite rotation through 360°, with coarse advance adjustment, then adjustment of 0.33° per rotation. Integrated SWA39 quick-action clamp for holding all attachment, adjustment and clamping elements of the SWA39 system; this is removable. Without quick-action clamp attachment face for any fixation elements that can be applied to the integrated stop; the stop is removable. SWA39 Quick-action clamp on top.



Order No.	Description
314440	SWA39 precision positioning stage X, Y and 360° adjustment

## SWA39 Quick-action clamp

### With carriage guide

Infinite travel within 25 mm in Y axis Adjustment of 0.5 mm per rotation. SWA39 interface below and SWA39 quick-action clamp on top.



Order No.	Description
314450	SWA39 quick-action clamp with carriage guide

## SWA39 Quick-action clamp

### With cross table

Infinite travel both ways within 25 mm in X and Y axis Adjustment of 0.5 mm per rotation. SWA39 interface below and SWA39 quick-action clamp on top.



Order No.	Description
314460	SWA39 quick-action clamp with cross table

## SWA39 Quick-action clamp

### 360° manual rotation

Infinite rotation. Indexes every 90°. Can be locked with a knurled screw. SWA39 interface below and SWA39 quick-action clamp on top.



Order No.	Description
283450	SWA39 quick-action clamp 360° manual rotation

## SWA39 Quick-action clamp

### 360° with fine adjustment

Infinite rotation. Precise adjustment via worm drive. SWA39 interface below and SWA39 quick-action clamp on top.



Order No.	Description
283460	SWA39 360° quick-action clamp with fine adjustment

## SWA39 Quick-action clamp

### Angle element

Fixed angle of 90° or 45°. SWA39 interface below and SWA39 quick-action clamp on top.



Order No.	Description	Angle element
283300	SWA39 quick-action clamp with angle element	90°
283320	SWA39 quick-action clamp with angle element	45°

More product details and possible combinations in the main catalogue under the following link [www.dk-fixiersysteme.de/katalog](http://www.dk-fixiersysteme.de/katalog)



### SWA39 Quick-action clamp

#### Swivel unit with quick adjustment

Infinite +/- 90° tilt, can be locked with a clamping screw. At 0°, 45°, 90°, 135° and 180° additional precise positive locking using pins. SWA39 interface below and SWA39 quick-action clamp on top.

Order No.	Description
314000	SWA39 quick-action clamp swivel unit with quick adjustment



### SWA39 Quick-action clamp

#### Swivel unit with fine adjustment and locking set for swivel unit

Infinite +90° / -55° tilt, precise adjustment via self-locking worm drive. Additional locking with a clamping lever.

Order No.	Description
314010	Swivel unit with fine adjustment
314015	clamping set for pivot unit



### SWA39 Quick-action clamp

#### Swivel unit with fine adjustment for tilt and rotation

Infinite +90° / -55° tilt and 360° rotation. Both functions precisely adjustable via worm drive. Tilt additionally locked using a clamping lever.

Order No.	Description
314030	Rotation/swivel unit with fine adjustment
314015	clamping set for pivot unit



### SWA39 Quick-action clamp

#### Swivel table with optimised height

Infinite 0-90° tilt, fixated using a knurled screw. Fixed 30° and 45° angles directly adjustable via attachments. Customer or part-specific fixed angles can be realised via simple cylindrical attachments with a special diameter. Optimised height in Z axis. SWA39 interface below and SWA39 interface on top.

Order No.	Description
314055	SWA39 quick-action clamp tilt table with optimised height Alternative use without SWA39 Quick-action clamp as inclinable screw plate



Alternative use



### SWA39 Quick-action clamp

#### Rotary/swivel unit with ball joint

Infinite +90° tilt and 360° rotation, can each be locked using a clamping screw. For comfortable and safe operation, the pre-tension of the ball joint is adjustable so that no unintentional collapse can occur even when the clamp is released. SWA39 interface below and SWA39 quick-action clamp on top.

Order No.	Description
270500	SWA39 quick-action clamp rotary/swivel unit with ball joint



### SWA39 Quick-action clamp

#### 3 axis tilt drive

Tilt up to 60° infinitely adjustable by clamping tilt mechanism. With first goniometer precise inclination of a further 30° via a self-locking drive. 30° inclination at right angles to this with second goniometer. Entire tilt drive can be rotated through 360° on a rotary axis underneath. Additionally, the SWA39 quick-action clamp on top can also be separately rotated through 360°. All adjustments on scaled axis for perfectly repeatable settings. SWA39 interface below and SWA39 quick-action clamp on top.

Order No.	Description
270650	Rotation/swivel unit with 3 axis tilt drive



# Selected clamping elements

## SWA39 120° prism

Prism length 20 mm or 60mm

Width 60 mm. With adjustable stop. Further accessories such as clamping brackets or spring fingers as well as prisms for smaller or larger diameters, switchable or permanent magnetic prisms and belt tensioning devices with prisms that for T-slot rails in the main catalogue. SWA39 interface below.

Order No.	Description	Prism length	Width
272700	SWA39 120° prism	20	60
272810	SWA39 120° prism	60	60

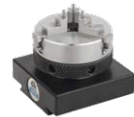
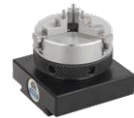


## Three-jaw manual chuck

50 mm / 65mm / 100 mm

Offset, tool-free reversible hard jaws with pin holes and 2 or 3 sets of 3 pins each for elevated part fixation. Outside clamping diameter when using the reversed jaws (without pins): 50 chuck: 1 to 54 mm OD and 17 to 53 mm ID. 65 chuck: 1 to 66 mm OD and 17 to 65 mm ID. 100 chuck: 1 to 102 mm OD and 20 to 100 mm ID. Useful accessories such as torque limiters and supports for defined Z-axis positioning in the main catalogue. SWA39 interface below.

Order No.	Description	Diameter
329705	Precision three-jaw manual chuck	50
329700	Precision three-jaw manual chuck	65
283220	Precision three-jaw manual chuck	100



## Precision vice

15 mm black brass / 25 mm black aluminium  
35 mm black aluminium

Jaw width 15 / 25 / 35 mm and clamping width 14.5 / 24.5 / 34.5 mm. Each with mounted stainless steel jaws with prism one side and interchangeable plastic jaws. Useful accessories such as prism jaws and stops in the main catalogue. The 35 version is incl. pin jaws with 4 straight pins for elevated part fixation. SWA39 interface below.

Order No.	Description	Jaw width
270910	precision vice	15
270960	precision vice	25
270870	precision vice	35



## Precision centric vice

Jaw width 50 mm

Clamping width up to 120 mm. Offset jaws with pin holes and 4 straight pins for elevated part fixation. With adjustable stop incl. scale and operating tool. Useful accessories such as prism jaws, 3D stop and offset (prism) straight pins in the main catalogue. SWA39 interface below.

Order No.	Description	Jaw width
282150	Precision centric vice	50



## Precision clamping plate

300 mm, incl. slot for passing measuring probe through

Including 2 variably positionable combi-prism supports as well as 2 columns of different lengths and spring fingers for tool-free part fixation. SWA39 interface below.

Order No.	Description	Size
394020	Tapped plate with accessories	300 x 80



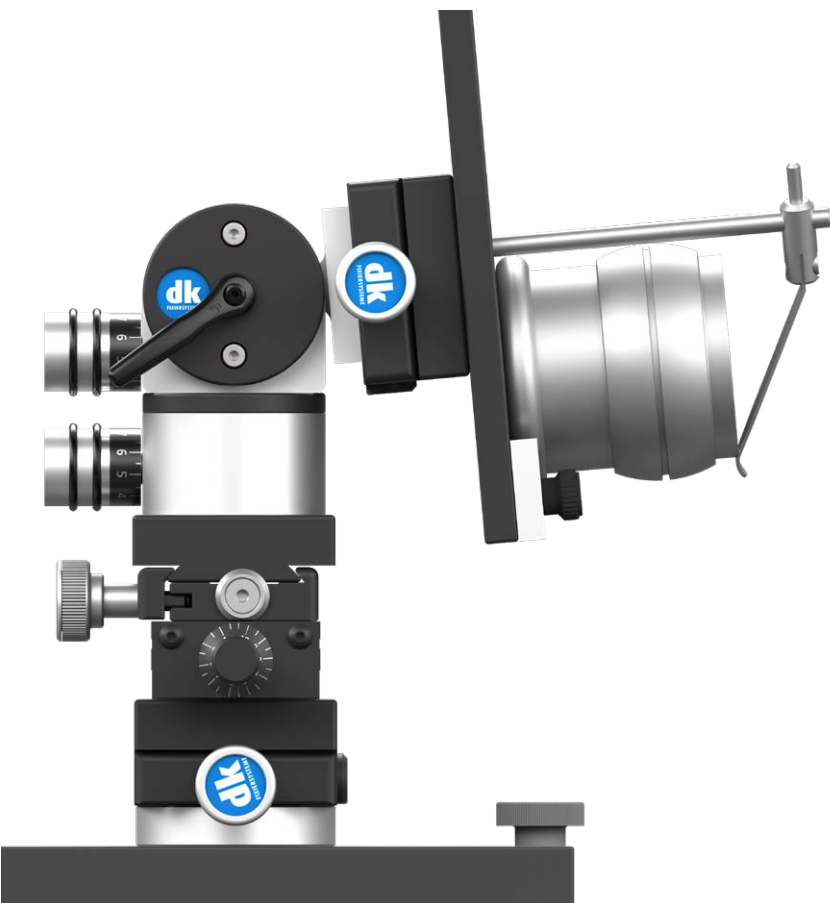
## NADELFIX 5 Maxi

95 x 83 mm with 271 pins

Variable self-forming to products, especially those with free-form geometries. Secure hold due to positive and frictional locking. Tool-free operation. Integrated on rail adjustable spring tensioner. Perfectly repeatable fixation of several identical test specimens. Rapid adaptation to differently shaped test specimens. SWA39 interface below.

Order No.	Description	Size
396020	NADELFIX 5 Maxi	95 x 83



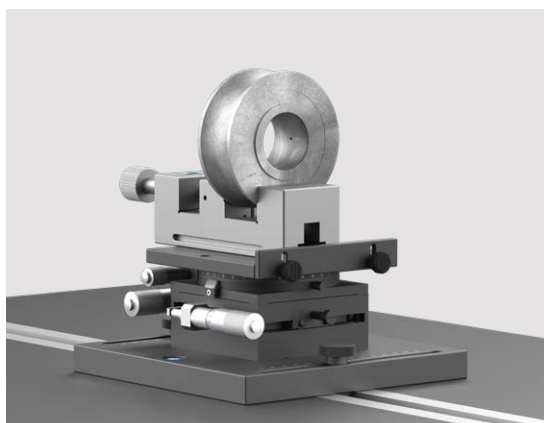
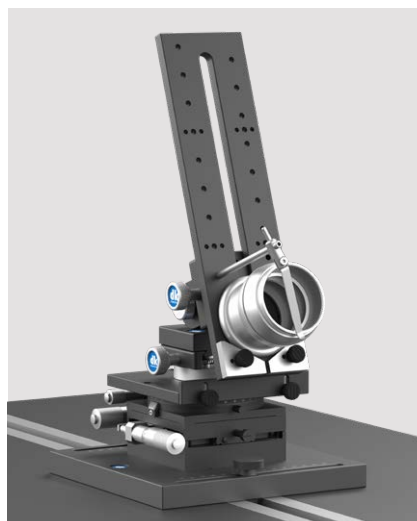


## *Specific positioning and clamping elements for contour and surface measuring*

**Our mission: We solve our customer's clamping problems and make their tasks easier, more successful and more efficient.**

### **394020 Precision clamping plate for measuring surfaces and contours**

Combination supports can be mounted tool-free in three positions: in pairs, as prisms or as straight stops. Two columns with lengths of 75 and 100 mm and two spring fingers with lengths of 50 and 75 mm can be mounted tool-free in 18 different positions. In this way, the test part can be securely and tool-free fixated almost anywhere. The SWA39 adapter underneath makes the fixture combinable with the baseplate and all SWA39 positioning elements. It can therefore be ideally enhanced with an X, Y, swivel and tilt adjustment. This can be modular in all functions or several fine adjustment functions can be combined on the positioning stage.



### **314440 Precision positioning stage with X, Y and 360° adjustment**

SWA39 quick-change adapter for further assembly with tilt adjustment or direct tool-free adaptation of dk clamping elements. Can be used without SWA39 adapter with integrated but optionally removable stop for placing simple standard fixation elements such as prisms or inspection vices. Infinite adjustment in X and Y axis and 360° rotation, all by micrometer thread. All adjustment functions self-locking on precision guides with counterpressure springs and each separately securable in the end position. Supplied on baseplate for fixation in T-slot or for free sliding on a baseplate. [Inspection vices, see dk main catalogue.](#)



The digital version of our catalogue is available here:  
[www.dk-fixiersysteme.de](http://www.dk-fixiersysteme.de)



# The entire world of fixating, clamping and positioning.

The ca. 1,000 parts of the comprehensive standard modular system of the dk fixation systems for measurement technology offers the following advantages:

- » Tried and tested modular system that has grown over decades
- » Modularity across different programmes
- » Solutions for every positioning task
- » Economic efficiency through synergy effects of several sector solutions

SWA39



SPANNFIX PRO



SPANNFIX ECO



QUADERFIX



SCHIENENFIX



MICROFIX



SWA39CT



SPEZIALFIX



ARTICULATED SYSTEMS



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*modular. simple. better.*



**FAST  
 REASSEMBLY  
 LIFELONG**

The basic principle of all dk fixating systems!

Our modular fixtures can effortlessly be disassembled and precisely reassembled at any time. The compatibility of the fixturing systems make the utility value perfect.