

**PATENT**  
EP1 190 815



COMPENSATING CHUCKS  
OVEKA & KA



# COMPENSATING CHUCKS

For centric cylindrical, orbital pin or form grinding of complex shaft-type components, the workpiece is generally ground between centers. The challenge faced by the workholding device is to transfer the necessary torque, and thus the rotational movement to the workpiece, without deforming it by excessive lateral loads. SwissChuck's high-precision OVEKA/KA compensating chucks have been originally designed for the machining of crankshafts, a task for which they have amply proven themselves. Over the years, these chucks have undergone continuous improvements such that today, they are perfectly suited for the grinding of all shaft-type workpieces.

These chucks have been designed in such a way that the actual clamping force is not applied until all of the chuck's jaws are sitting flush against the workpiece's clamping location. The highly sensitive compensation mechanism effortlessly equalizes any workpiece related non-concentricity in the area of the clamping location.

The compact design allows an optimal utilization of the machine tool's overall distance between centers. For this reason, OVEKA/KA compensating chucks are the ideal interface between the workpiece and the machine tool spindle when grinding between centers.

To meet the high demands in terms of process stability, the SwissChuck compensating chucks are hermetically sealed against contamination.

The hydraulically actuated **chuck series Type OVEKA** has been equipped with a patented circulating lubrication system (EP1 190 815). All the chuck's internal components are actively lubricated during each clamping process. As a consequence, these practically maintenance-free workholding devices lead to minimal lifecycle costs. Production downtime based on chuck malfunctions can thus be excluded.

The drawbar actuated **chuck series Type KA** is permanently oil filled to ensure a sealed-for-life lubrication. The rotational movements during grinding ensure an active lubrication of all the chuck's internal components. For this reason, these chucks require extremely low maintenance.

## Benefits



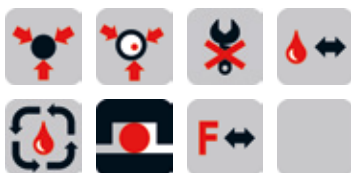
- patented circulating lubrication system
- highly sensitive compensation mechanism
- extremely low maintenance

## Function



- hydraulically or drawbar actuated compensating chuck for clamping between centers
- 2, 3 or 4-jaw options available in different sizes
- engineered for grinding machines

PATENT EP1 190 815



Explanation of symbols:  
SwissChuck.com



OVEKA

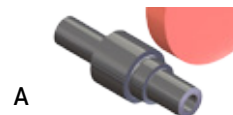
Type	Item	Number of jaws	Jaw stroke radial [mm]	Clamping force max. [kN]	Weight [kg]	RPM [1/min]	ø outside [mm]	Overall height <sup>1)</sup> [mm]	Stroke index	suitable for
2OVEKA 140	CHX200786	2	5	15	10	1500	140	109		AB(DE)
3OVEKA 140	SX1013285	3	3	30	10	1500	143	109		AB(DE)
2OVEKA 170	SX1019165	2	5	15	16	2000	170	101		AB(DE)
4OVEKA 180	SX1002649	4	2	50	20	3000	180	118		ABDE
4OVEKA 206	CHX100614	4	2	55	27	1000	206	118		AB
4OVEKA 206	CHX100547	4	2	55	27	1000	206	118	•	AB
4OVEKA 270	SX1005160	4	2	55	45	1000	270	118		AB
4OVEKA 270	SX1000969	4	2	55	46	1000	270	118	•	AB



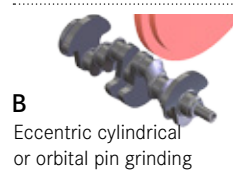
KA

Type	Item	Number of jaws	Jaw stroke radial [mm]	Clamping force max. [kN]	Act. force [N]	Weight [kg]	Max. speed [1/min]	ø outside [mm]	Overall height <sup>1)</sup> [mm]	suitable for
2KA 140	CHX201214	2	5	15	8000	10	2500	140	109	AB(DE)
3KA 140	SX1013460	3	3	20	20000	10	3000	143	109	ABDE
2KA 170	SX1019174	2	5	15	8000	16	2000	170	101	AB(DE)

Suitability according to machining process:



A  
Cylindrical grinding



B  
Eccentric cylindrical or orbital pin grinding



C  
Turning



D  
Hard turning



E  
Combination Grinding/hard turning

1) Overall height = Distance from the locating face of the spindle flange to the mounting surface of the jaws

# EXAMPLES OF APPLICATIONS

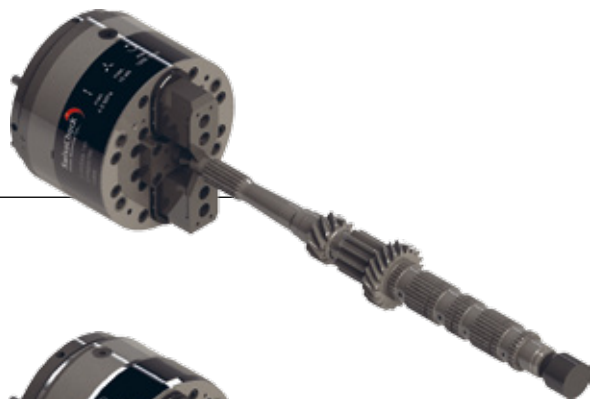
## 2OVEKA 140

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### **Gear shaft:**

#### **Clamping between centers of a gear shaft**

- Grinding the outer diameters
- Typical application of grinding between centers
- High roundness and concentricity accuracy



## 3KA 140

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### **Ball screw shaft:**

#### **Clamping of ball screw shafts between centers**

- Grinding of the ball screw track
- Accurate and firm positioning of shaft to the center point
- Very short and thin-walled clamping location



## 2OVEKA 140

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### **Camshaft:**

#### **Clamping camshafts in the pitch circle of the gear profile**

- Form grinding of the cam geometry
- Angular pre-alignment with special positioning mechanism
- Precise angular clamping in the pitch circle
- Top jaws with integrated tungsten carbide clamping pins



## 3KA 140

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### **Shaft part of CVT gearbox:**

#### **Clamping CVT shaft component**

- Grinding of cone and outer diameters
- Stable and powerful clamping
- High roundness, concentricity and axial run-out accuracies





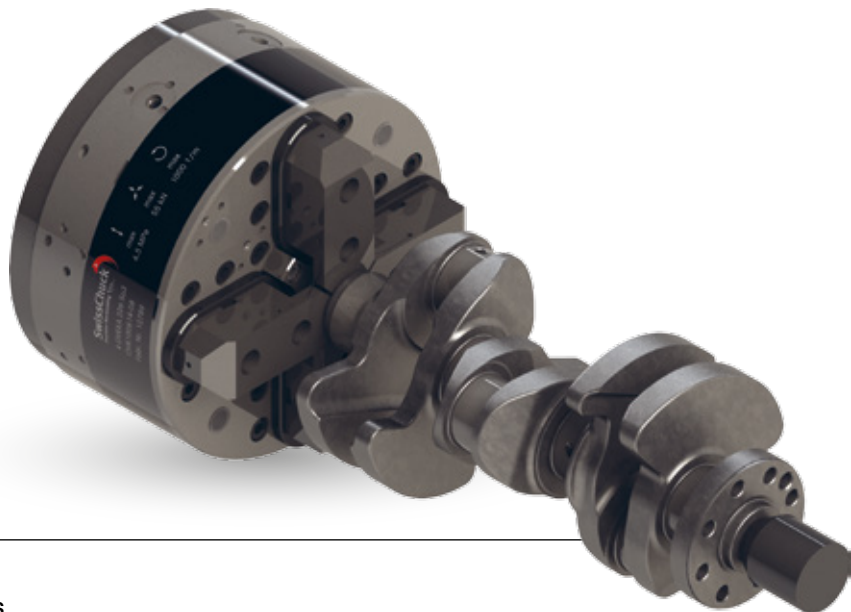


## 2KA 170

### Capto tool holders:

#### Clamping of different Capto tool holders

- Grinding polygon and face
- Stable and powerful clamping
- High flexibility based on multiple adjustable jaw concept
- Minimum of interchangeable parts
- Only 2 sets of clamping jaws for the clamping range of  $\varnothing$  10 to 80 mm
- Short changeover times
- Clamping on tapered diameters with compensation of angular differences



## 4OVEKA 206

### Crankshaft:

#### Clamping of crankshafts between centers

- Grinding of crankpins and main bearing journals
- Generally suitable for automotive crankshafts (up to 6 cylinders)
- Meets highest requirements for roundness, concentricity, run-out and axial run-out accuracies
- Low-maintenance operation; ideal for high-volume production
- Chuck with very low life cycle costs

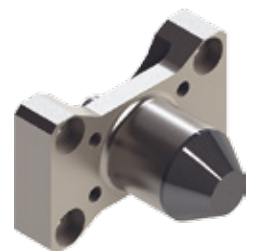
# ACCESSORIES



## TOP JAWS

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The top jaws are designed workpiece specific by SwissChuck. In this way, the clamping function of the chuck will be perfectly transferred to the workpiece. The generally hardened jaws can be given an additional PVD coating at the clamping contact locations. This permits an even higher transmission of torque, or alternatively, the clamping force for sensitive workpieces can be reduced.



## CENTER POINTS

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As a rule, the wear-resistant center points are fitted with tungsten carbide inserts. The conical or spherical centers are designed and produced according to requirements. Some chucks are equipped with specifically produced tapered holders. The center points are produced according to specific gauges and can be installed with micrometer precision. The center point does not need to be aligned.

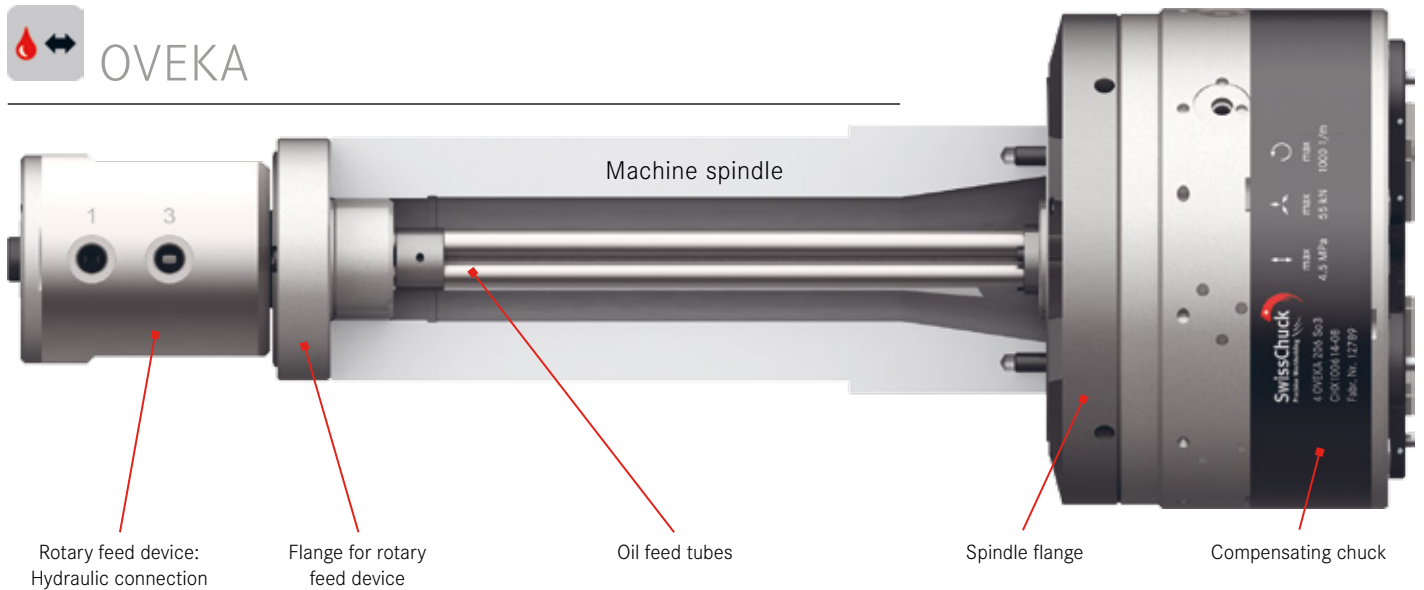
## SPECIAL SOLUTIONS

The compensating chuck range covers a wide range of applications. Nevertheless, there may be a need for customized solutions. SwissChuck develops special solutions that are tailored to the functional specifications of either the machine builder or the end user.

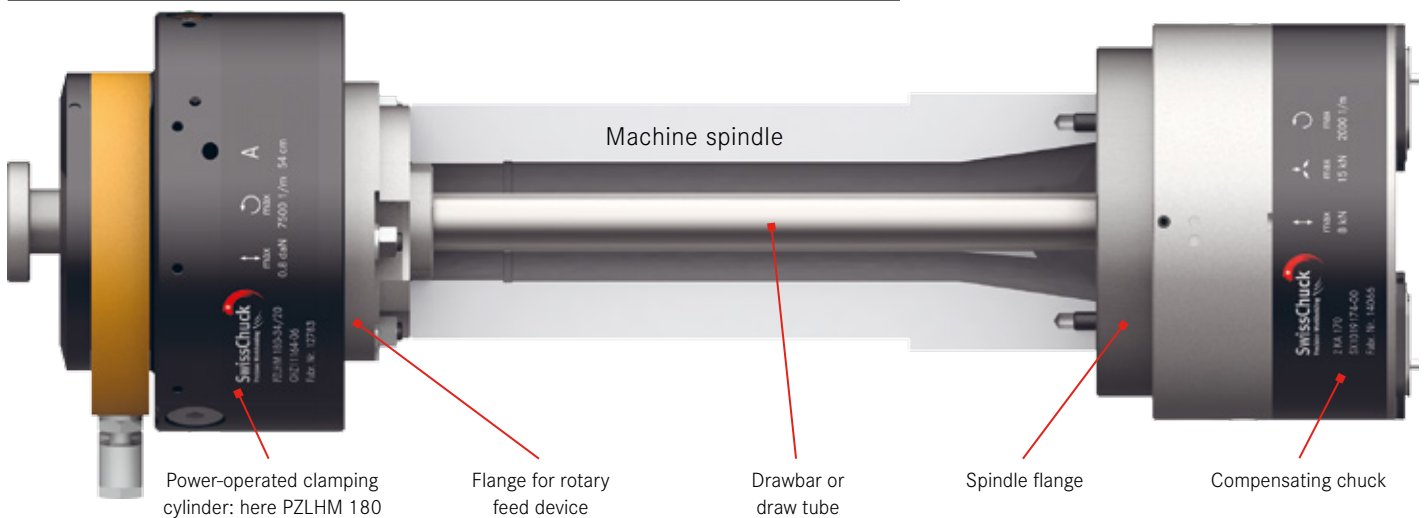
## MOUNTING EXAMPLES



OVEKA



KA



The chuck is specifically mounted according to the machine type, SwissChuck designs and provides all the required components. Hence, our customers will receive the entire workholding unit ready for installation.



**KCHP/VKHP**  
High-precision force chuck



**SAP to KCHP**  
Automated drive carrier



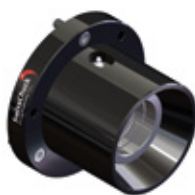
**KFHP**  
Precision power chuck



**KHSF**  
Centrifugal force chuck



**VMCHP**  
Diaphragm chuck



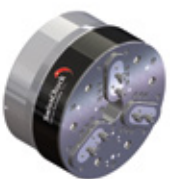
**LZK/LSK-S**  
Collet chuck with clamping lamellas



**DL**  
Collet expanding mandrel



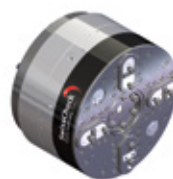
**TGC/FTGC**  
Tool chuck



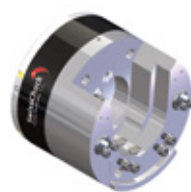
**OVEK**  
High-precision force chuck



**OVEKA**  
Compensating chuck



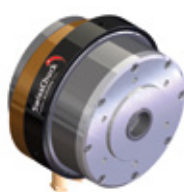
**OVEKAV**  
Moving compensating chucks



**FLD/AFLD**  
Twist finger type console chuck



**SPECIAL SOLUTIONS**  
Tailor made solutions



**PZLHM**  
Pneumatic force clamping cylinder

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