2-axis swivelling spindle heads
Maximum precision and dynamic for 5-axis machining
Applications with high requirements need a reliable partner. KESSLER spindle swivelling heads provide a compact and rigid design with high flexibility for numerous applications within your machine.

Driven by the latest torque motor generation from KESSLER, a high dynamic is achieved which is required especially when milling very intricate and narrow workpiece contours.

High positioning accuracy, high clamping force and a large swivelling angle ensure that precise results are achieved in 5-axis machining.

KESSLER also offers compatible swivelling spindles for use with our swivelling spindle heads, to fulfil your machining needs.

End-to-end precision from the components to the service on site

Founded in 1923 by Franz Kessler, the company has developed to become a leading supplier of motor spindles as well as direct driven swivelling heads and rotary-swivel tables for the machine tool industry. KESSLER is proud to count many major companies from the mechanical engineering sector amongst its long-standing customers.

With over 90 years of expertise, KESSLER is continuously developing further and optimizing its products. The KESSLER product portfolio serves a wide range of branches, procedures and applications. Close cooperation with our customers remains our key focus. The extensive product portfolio, ranging from high-tech spindles, swivelling heads, rotary and rotary-swivel tables to motors and drive systems enables KESSLER to realize customized solutions with speed and flexibility.

Service is a matter of trust — rely on us as your trusted service partner: KESSLER has an established global network of technology and service centres.
Experts for simultaneous machining
The right head for every position: KESSLER 2-axis swivelling heads available from MINI to LARGE

MINI 2AK
Compact and highly dynamic. The entry-level model for processing high-strength aluminium alloys and composite materials. With a fitting diameter of 230 mm and upwards, the MINI 2AK supports a highly compact tool machine design.

MEDIUM 2AK
High-performance machine. The large and highly dynamic MEDIUM 2AK impresses with performance high chip removal rate and precise results whilst machining steel, with spindles up to 400 Nm torque.

SMALL 2AK
Bestseller for numerous application options. This ultrafast and highly efficient professional choice achieves a speed of 24,000 rpm for steel and compositie machining, and a maximum of 30,000 rpm for aerospace applications. Spindles with a torque of up to 150 Nm can be used.

LARGE 2AK
Power solution for heavy cutting requirements. Large-scale 2-axis swivelling head for powerful operation with spindles up to 700 Nm torque, for effortlessly mastering the machining of challenging materials such as titanium Inconel.
Benefits

- Precise machining results due to high positioning accuracy
- Robust design with monolithic fork
- Individual configurability due to modular design
- High dynamics due to powerful KESSLER torque motors
- Reliable skilled project partner – for swivelling heads, spindles and motors
- Very maintenance friendly – wear parts can be easily replaced on site
- High flexibility – and suitability for numerous applications
- High productivity due to high swivelling speed
- Your trusted service partner – know-how directly from the manufacturer

HIGH QUALITY
MADE IN GERMANY
MINI 2AK

C-axis (turning axis)
- Torque S1: 300 Nm
- Maximum torque: 600 Nm
- Clamping: pneumatic
- Clamping torque: 1,080 Nm
- Clamping with safety function
- Swivelling angle: ± 360°
- Measuring system: incremental
- Accuracy of measuring system: ± 6"

A-axis (swivelling axis)
- Torque S1: 150 Nm
- Maximum torque: 280 Nm
- Clamping: pneumatic
- Clamping torque: 650 Nm
- Clamping with safety function
- Swivelling angle: ± 95°
- Measuring system: incremental
- Accuracy of measuring system: ± 5"

### Dimensions (mm)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitting diameter of C-axis</td>
<td>D1</td>
<td>310</td>
</tr>
<tr>
<td>Vector length</td>
<td>L1</td>
<td>225</td>
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<tr>
<td>Projection length of A-axis</td>
<td>L2</td>
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<tr>
<td>Fitting depth of C-axis</td>
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<tr>
<td>Width of A-axis</td>
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<tr>
<td>Depth of A-axis</td>
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<td>310</td>
</tr>
<tr>
<td>Collision circle C-axis</td>
<td></td>
<td>500</td>
</tr>
<tr>
<td>Gross weight</td>
<td>kg</td>
<td>360</td>
</tr>
</tbody>
</table>
Modular extensions available

**A-axis**
- **Second clamping**
  Clamping torque: 1,170 Nm
- **Second motor**
  Torque S1: 300 Nm
  Maximum torque: 560 Nm
- **Measuring system**
  with enhanced accuracy for all standard CNCs
- **Leakage monitoring**

**C-axis**
- **Reduced fitting diameter**
  Fitting diameter: 230 mm
- **Second clamping**
  Clamping torque: 1,944 Nm
- **Measuring system**
  with enhanced accuracy for all standard CNCs
- **Swivelling head installation**
  position horizontal or vertical

### Motor spindles

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. speed (rpm)</th>
<th>S1</th>
<th>S6 / 40%</th>
<th>Tool interface</th>
<th>Bearing lubrication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Torque (Nm)</td>
<td>Power (kW)</td>
<td>Torque (Nm)</td>
<td>Power (kW)</td>
</tr>
<tr>
<td>SMS 060.20-696.367</td>
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<td>23</td>
<td>20</td>
<td>30</td>
<td>23</td>
</tr>
<tr>
<td>SMS 060.20-650.176</td>
<td>20,000</td>
<td>26</td>
<td>20</td>
<td>34</td>
<td>26</td>
</tr>
<tr>
<td>SMS 060.20-688.815</td>
<td>24,000</td>
<td>26</td>
<td>20</td>
<td>34</td>
<td>26</td>
</tr>
</tbody>
</table>

Other tool interfaces possible on request
C-axis (turning axis)
- Torque S1: 810 Nm
- Maximum torque: 1,100 Nm
- Clamping: pneumatic
- Clamping torque: 1,680 Nm
- Clamping with safety function
- Swivelling angle: ± 360°
- Measuring system: incremental
- Accuracy of measuring system: ± 3"

A-axis (swivelling axis)
- Torque S1: 382 Nm
- Maximum torque: 590 Nm
- Clamping: pneumatic
- Clamping torque: 2,160 Nm
- Clamping with safety function
- Swivelling angle: ± 105°
- Measuring system: absolute
- Accuracy of measuring system: ± 5"

<table>
<thead>
<tr>
<th>Dimensions (mm)</th>
<th>D1</th>
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</thead>
<tbody>
<tr>
<td>Fitting diameter of C-axis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vector length</td>
<td>L1</td>
<td>280 (HSK 63) / 390 (HSK100)</td>
</tr>
<tr>
<td>Projection length of A-axis</td>
<td>L2</td>
<td>410</td>
</tr>
<tr>
<td>Fitting depth of C-axis</td>
<td>L3</td>
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<tr>
<td>Width of A-axis</td>
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<tr>
<td>Depth of A-axis</td>
<td></td>
<td>420</td>
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<tr>
<td>Collision circle C-axis</td>
<td></td>
<td>670</td>
</tr>
<tr>
<td>Gross weight</td>
<td>kg</td>
<td>535</td>
</tr>
</tbody>
</table>
Modular extensions available

A-axis
+ Second motor
  Torque S1: 764 Nm
  Maximum torque: 1,200 Nm
+ High-torque motors
  Torque S1: 840 Nm
  Maximum torque: 1,680 Nm
+ Extended swivelling angle
  Swivelling angle: ± 120° (only for variant with one motor in the A-axis)
+ Measuring system
  with enhanced accuracy for all standard CNCs
+ Leakage monitoring

C-axis
+ Reduced fitting diameter
  Fitting measurement: 335 mm
+ Second clamping
  Clamping torque: 3,024 Nm
+ Measuring system
  with enhanced accuracy for all standard CNCs
+ Swivelling head installation
  position horizontal or vertical

Motor spindles

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. speed (rpm)</th>
<th>S1 Torque (Nm)</th>
<th>Power (kW)</th>
<th>S6 / 40% Torque (Nm)</th>
<th>Power (kW)</th>
<th>Tool interface</th>
<th>Bearing lubrication</th>
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<tbody>
<tr>
<td>SMS 080.40-680.393</td>
<td>12,000</td>
<td>119</td>
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<tr>
<td>SMS 080.40-681.520</td>
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<td>HSK A100</td>
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<td>SMS 080.40-690.595</td>
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<td>56</td>
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<td>70</td>
<td>HSK A63</td>
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<td>SMS 080.30-680.395</td>
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<td>56</td>
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<td>HSK A63</td>
<td>Oil-air lubrication</td>
</tr>
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<td>SMS 080.32-675.519</td>
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<td>Oil-air lubrication</td>
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<td>SMS 090.32-697.467</td>
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<td>HSK A63</td>
<td>Oil-air lubrication</td>
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<td>HSC-S 080.32-676.050</td>
<td>30,000</td>
<td>38</td>
<td>60</td>
<td>48</td>
<td>75</td>
<td>HSK A63</td>
<td>Oil-air lubrication</td>
</tr>
</tbody>
</table>

Other tool interfaces possible on request
**MEDIUM 2AK**

**C-axis (turning axis)**
- Torque S1: 2,100 Nm
- Maximum torque: 3,200 Nm
- Clamping: pneumatic
- Clamping torque: 5,500 Nm
- Clamping with safety function
- Swivelling angle: ± 360°
- Measuring system: incremental
- Accuracy of measuring system: ± 3”

**A-axis (swivelling axis)**
- Torque S1: 680 Nm
- Maximum torque: 1,050 Nm
- Clamping: pneumatic
- Clamping torque: 4,080 Nm
- Clamping with safety function
- Swivelling angle: ± 105°
- Measuring system: absolute
- Accuracy of measuring system: ± 5”

**Dimensions (mm)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitting diameter of C-axis</td>
<td>D1</td>
</tr>
<tr>
<td>Vector length</td>
<td>L1</td>
</tr>
<tr>
<td>Projection length of A-axis</td>
<td>L2</td>
</tr>
<tr>
<td>Fitting depth of C-axis</td>
<td>L3</td>
</tr>
<tr>
<td>Width of A-axis</td>
<td>B1</td>
</tr>
<tr>
<td>Depth of A-axis</td>
<td></td>
</tr>
<tr>
<td>Collision circle C-axis</td>
<td></td>
</tr>
<tr>
<td>Gross weight</td>
<td>kg</td>
</tr>
</tbody>
</table>
Modular extensions available

**A-axis**
- Second clamping
  Clamping torque: 7,344 Nm
- Second motor
  Torque S1: 1,360 Nm
  Maximum torque: 2,100 Nm
- Measuring system
  with enhanced accuracy for all standard CNCs
- Leakage monitoring

**C-axis**
- Reduced fitting diameter
  Fitting diameter: 420 mm
- Second clamping
  Clamping torque: 9,000 Nm
- Measuring system
  with enhanced accuracy for all standard CNCs
- Swivelling head installation
  position horizontal or vertical

**Motor spindles**

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. speed (rpm)</th>
<th>S1</th>
<th>S6 / 40%</th>
<th>Tool interface</th>
<th>Bearing lubrication</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS 112.52-681.608</td>
<td>7,000</td>
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<td></td>
<td></td>
<td>Permanent grease lubrication</td>
</tr>
<tr>
<td>SMS 112.52-697.729</td>
<td>10,000</td>
<td>318</td>
<td>50</td>
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<td>Oil-air lubrication</td>
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<tr>
<td>DMS 112.54-665.172</td>
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<td>228</td>
<td>60</td>
<td>344</td>
<td>90</td>
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<td>Oil-air lubrication</td>
</tr>
<tr>
<td>DMS 112.46-691.272</td>
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<td>187</td>
<td>49</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Oil-air lubrication</td>
</tr>
<tr>
<td>HSC-S 090.14-676.078</td>
<td>30,000</td>
<td>50</td>
<td>100</td>
<td>62</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Oil-air lubrication</td>
</tr>
</tbody>
</table>

Other tool interfaces possible on request
C-axis (turning axis)
- Torque S1: 2,675 Nm
- Maximum torque: 4,050 Nm
- Clamping: pneumatic
- Clamping torque: 5,500 Nm
- Clamping with safety function
- Swivelling angle: ± 360°
- Measuring system: incremental
- Accuracy of measuring system: ± 3"

A-axis (swivelling axis)
- Torque S1: 1,130 Nm
- Maximum torque: 2,260 Nm
- Clamping: pneumatic
- Clamping torque: 4,080 Nm
- Clamping with safety function
- Swivelling angle: ± 105°
- Measuring system: absolute
- Accuracy of measuring system: ± 5"

### Dimensions (mm)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitting diameter of C-axis</td>
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<tr>
<td>Vector length</td>
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<td>Projection length of A-axis</td>
<td>L2</td>
<td>505</td>
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<tr>
<td>Fitting depth of C-axis</td>
<td>L3</td>
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<tr>
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<tr>
<td>Depth of A-axis</td>
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<tr>
<td>Collision circle C-axis</td>
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<td>890</td>
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<tr>
<td>Gross weight</td>
<td>kg</td>
<td>1,234</td>
</tr>
</tbody>
</table>
Modular extensions available

**A-axis**
- **Second clamping**
  Clamping torque: 7,344 Nm
- **Second motor**
  Torque S1: 2,260 Nm
  Maximum torque: 4,520 Nm
- **Measuring system**
  with enhanced accuracy for all standard control systems
- **Leakage monitoring**

**C-axis**
- **Reduced fitting diameter**
  Fitting diameter: 420 mm
- **Second clamping**
  Clamping torque: 9,900 Nm
- **Measuring system**
  with enhanced accuracy for all standard control systems
- **Swivelling head installation**
  position horizontal or vertical

---

**Motor spindles**

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. speed (rpm)</th>
<th>S1</th>
<th>S6 / 40%</th>
<th>Tool interface</th>
<th>Bearing lubrication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Torque (Nm)</td>
<td>Power (kW)</td>
<td>Torque (Nm)</td>
<td>Power (kW)</td>
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<td>48</td>
<td>452</td>
<td>71</td>
</tr>
</tbody>
</table>

Other tool interfaces possible on request
2AK Specials

- Special housing / special designs, 2-axis swivelling head for grinding applications
- Composite machining
- Turning applications
- A-axis available separately

MINI 2AK for composite materials
Motor spindle: SMS 060.20-696.367
- Torque (S6 / 40%): 30 Nm
- Power (S6 / 40%): 23 kW
- Maximum speed: 20,000 rpm
- HSK A63
- Re-greasing
- Chips suction device: optional

SMALL 2AK for mold & die
Motor spindle: SMS 090.24-674.237
- Torque (S6 / 40%): 73 Nm
- Power (S6 / 40%): 46 kW
- Maximum speed: 20,000 rpm
- HSK A63
- Grease replenishment

MEDIUM 2AK for aerospace structural components
Motor spindle: HSC-S 090.14-676.078
- Torque (S6 / 40%): 62 Nm
- Power (S6 / 40%): 124 kW
- Maximum speed: 30,000 rpm
- HSK A63
- Oil-air lubrication
SMALL 2AK Special
High performance spindle for high-performance machining

- **High-performance machining**
  Processing of high-strength aluminium alloys and composite materials

- **Powerful**
  Standard converter for the use with 8 kHz rated frequency

- **Short processing times**
  due to high chip removal rate

- **High productivity**
  due to maximum cutting capacity

- **High processing quality**
  due to maximum retention force of the tool clamping system

- **Precise results**
  Usage of long extending tools possible

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. speed (rpm)</th>
<th>S1</th>
<th>S6 / 40%</th>
<th>Tool interface</th>
<th>Bearing lubrication</th>
</tr>
</thead>
<tbody>
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<td>SMS 090.32-697.467</td>
<td>24,000</td>
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<td>60</td>
<td>77</td>
<td>60 HSK A63</td>
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</tbody>
</table>

Other tool interfaces possible on request

All information was carefully produced and checked. The printed illustrations are of an explanatory nature and may differ from the actual design. However, we cannot accept liability for any possible errors.

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