AIR TURBINE SPINDLE

HTS Series

Max. 150,000min⁻¹ (0.5MPa)
Max. Power 25W

High Speed 150,000min⁻¹
Suitable for Small Diameter Milling

Air Turbine mechanism has extremely low heat generation.

Highly stable milling conditions are possible ever with very small diameter cutting tools

Negligible spindle expansion

Dramatically shorten mold cavity machining time

Collet: Max. ø4.0mm

Negligible spindle expansion
- Air Turbine mechanism has extremely low heat generation.
- Up to cutting tool R x 0.1 depth of cut is possible.

Highly stable milling conditions are possible ever with very small diameter cutting tools
- Usable max. cutting tool diameter: Ball End Mill R0.5, Square End Mill ø1

Collet CHA-4.0

Clean, lubricated, and regulated air is required for HTS Series spindles. Please refer to the diagram to the right for proper connections. AL-M1202 incorporates a filter, regulator and lubricator to provide the appropriate air.

HTS Series Connection Drawing
Clean, lubricated, and regulated air is required for HTS Series spindles. Please refer to the diagram to the right for proper connections. AL-M1202 incorporates a filter, regulator and lubricator to provide the appropriate air.

Caution
- Do not rotate the machining center’s main spindle with the HTS1501 spindle installed.

Please mention “Code Number” upon your order.
### HTS SERIES TURBINE SPINDLE

#### Air Turbine Spindle

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. Power</th>
<th>Speed</th>
<th>Spindle Runout</th>
<th>Air Consumption</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTS1501S-BT30</td>
<td>25W</td>
<td>150,000/min</td>
<td>Within 1 μm</td>
<td>80 l/min</td>
<td>1,030 g</td>
</tr>
<tr>
<td>HTS1501S-BT40</td>
<td>25W</td>
<td>150,000/min</td>
<td>Within 1 μm</td>
<td>80 l/min</td>
<td>1,700 g</td>
</tr>
<tr>
<td>HTS1501S-BT50</td>
<td>25W</td>
<td>150,000/min</td>
<td>Within 1 μm</td>
<td>80 l/min</td>
<td>4,500 g</td>
</tr>
<tr>
<td>HTS1501S-HSK A63</td>
<td>25W</td>
<td>150,000/min</td>
<td>Within 1 μm</td>
<td>80 l/min</td>
<td>1,400 g</td>
</tr>
<tr>
<td>HTS1501S-M2040 (Straight Type)</td>
<td>25W</td>
<td>150,000/min</td>
<td>Within 1 μm</td>
<td>80 l/min</td>
<td>710 g</td>
</tr>
</tbody>
</table>

#### Caution:
Do not rotate the machining center’s main spindle with the HTS1501 spindle installed.

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**Figure:**
- **HTS1501S-BT30**
- **HTS1501S-BT40**
- **HTS1501S-BT50**
- **HTS1501S-HSK A63**
- **HTS1501S-M2040 (Straight Type)**

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**Contact:**
*Please mention "Code Number" upon your order.*

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**Specifications:**
- Max. Power: 25W
- Speed: 150,000/min
- Spindle Runout: Within 1 μm
- Air Consumption: 80 l/min
- Weight: 1,030 g (min) to 4,500 g (max)

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**Accessories (Standard Equipment):**
- Collet: ø4.0 mm (CHA-4.0)
- Collet Nut (CHN-AA)
- Spanner (8 x 5), (9 x 11): 1pc. each
- Filter Joint (FJ-01)
- Hose (K-247): ø6 mm x 4m

**Accessories (Optional):**
- Collet (CHA Group): ø0.5~ø4.0 mm
  - See Page 5 for details

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**Model Numbers:**
- Code No.: 8296
- Model: HTS1501S-BT30
- Code No.: 8297
- Model: HTS1501S-BT40
- Code No.: 8298
- Model: HTS1501S-HSK A63
- Code No.: 8299
- Model: HTS1501S-M2040
AL-M1202 (ø6mm Air Output One-Touch Connector)

The AL-M1202 provides simple, automatic conditioning of the air supplied to NAKANISHI air motors. The filter removes water and impure substances from the input air supply. The regulator maintains proper air pressure and the lubricator ensures proper oil flow to the motor and spindle. This Air Line Kit is wall mountable.

Filter Mesh 0.3 μm

Code No. 4502 Model AL-M1202

< Standard Equipment Accessories >

• Hose for Piping (K-275) : 2m
• Lubricating Oil (K-211) : 1pc.

### Parts

<table>
<thead>
<tr>
<th>Product</th>
<th>Inside Diameter : mm</th>
<th>Fit to</th>
<th>Model</th>
<th>Code No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM-3.35</td>
<td>ø3.35</td>
<td></td>
<td>DM-3.35</td>
<td>91492</td>
</tr>
<tr>
<td>DM-3.0</td>
<td>ø3.0</td>
<td></td>
<td>DM-3.0</td>
<td>91430</td>
</tr>
<tr>
<td>DM-2.5</td>
<td>ø2.5</td>
<td></td>
<td>DM-2.5</td>
<td>91493</td>
</tr>
<tr>
<td>DM-2.0</td>
<td>ø2.0</td>
<td></td>
<td>DM-2.0</td>
<td>91440</td>
</tr>
</tbody>
</table>

• HTS series
• High precision type

Model | / Group | Code No.

CHA | 91495 | 91496 | 91494 |
CHA-1.0 | CHA-3.0 | CHA-3.0AA |
CHA-1.0AA | CHA-3.175AA | CHA-4.0AA |
CHA-1.1, CHA-1.2, CHA-1.3, CHA-1.4, CHA-1.7, CHA-1.8 |
CHA-2.1, CHA-2.2, CHA-2.3, CHA-2.4, CHA-2.6, CHA-2.7, CHA-2.8, CHA-2.9 |
CHA-3.1, CHA-3.2, CHA-3.3, CHA-3.4, CHA-3.6, CHA-3.7, CHA-3.8, CHA-3.9 |

- Please mention "Code Number" upon your order.
- For right hand (cw) rotation only.

### Case Studies

**HTS1501 Series**

Rough mill for deep cutting, High-speed feeding F=2,000 mm/min (Rough cutting)

<table>
<thead>
<tr>
<th>Material</th>
<th>NAK4B (HRC 48)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Speed</td>
<td>100,000 mm+/min</td>
</tr>
<tr>
<td>Usable Tool</td>
<td>R 0.2 x 2.5 Ball End Mill</td>
</tr>
<tr>
<td>Rough Cutting</td>
<td>Ad 0.25 x Rd 0.5 mm</td>
</tr>
<tr>
<td>Rough Cutting Work Feed</td>
<td>2,000 mm/min</td>
</tr>
<tr>
<td>Finishing Cutting</td>
<td>Ad 0.01 x Rd 0.01 mm</td>
</tr>
<tr>
<td>Finishing Cutting Work Feed</td>
<td>1,000 mm/min</td>
</tr>
<tr>
<td>Total Time</td>
<td>4h 35min</td>
</tr>
</tbody>
</table>

**HTS1501 Series**

High-speed rotation and feeding F=2,250 mm/min

<table>
<thead>
<tr>
<th>Material</th>
<th>DC50 (HRC 60)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Speed</td>
<td>160,000 mm+/min</td>
</tr>
<tr>
<td>Usable Tool</td>
<td>R 0.1 x 0.5 DIN</td>
</tr>
<tr>
<td>Work Feed</td>
<td>2,350 mm/min</td>
</tr>
<tr>
<td>Cutting Depth</td>
<td>Ad 0.005 x Rd 0.01 mm</td>
</tr>
<tr>
<td>Total Time</td>
<td>3h 19min (22mm / 1pc)</td>
</tr>
</tbody>
</table>

**HTS1501 Series**

Rib processing F=2,000 mm/min

<table>
<thead>
<tr>
<th>Material</th>
<th>NAK4B (HRC 48)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Speed</td>
<td>100,000 mm+/min</td>
</tr>
<tr>
<td>Sample No.</td>
<td>[1] [2] [3]</td>
</tr>
<tr>
<td>Usable Tool</td>
<td>ø0.2 x 2 ø0.3 x 3 ø0.4 x 4</td>
</tr>
<tr>
<td>Work Feed</td>
<td>2,000 mm/min</td>
</tr>
<tr>
<td>Cutting Depth</td>
<td>Ad 0.001mm Ad 0.005mm Ad 0.007mm</td>
</tr>
<tr>
<td>Total Time</td>
<td>28min, 50sec 27min, 43sec 26min, 22sec.</td>
</tr>
</tbody>
</table>

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