

# NAKANISHI SPINDLE HTS



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Specifications and design are subject to change without notice.



Nature of Tochigi, Japan

AIR TURBINE SPINDLE

# HTS Series



Max. **150,000min<sup>-1</sup>** (0.5MPa)

Max. Power **25W**

## High Speed 150,000min<sup>-1</sup> Suitable for Small Diameter Milling

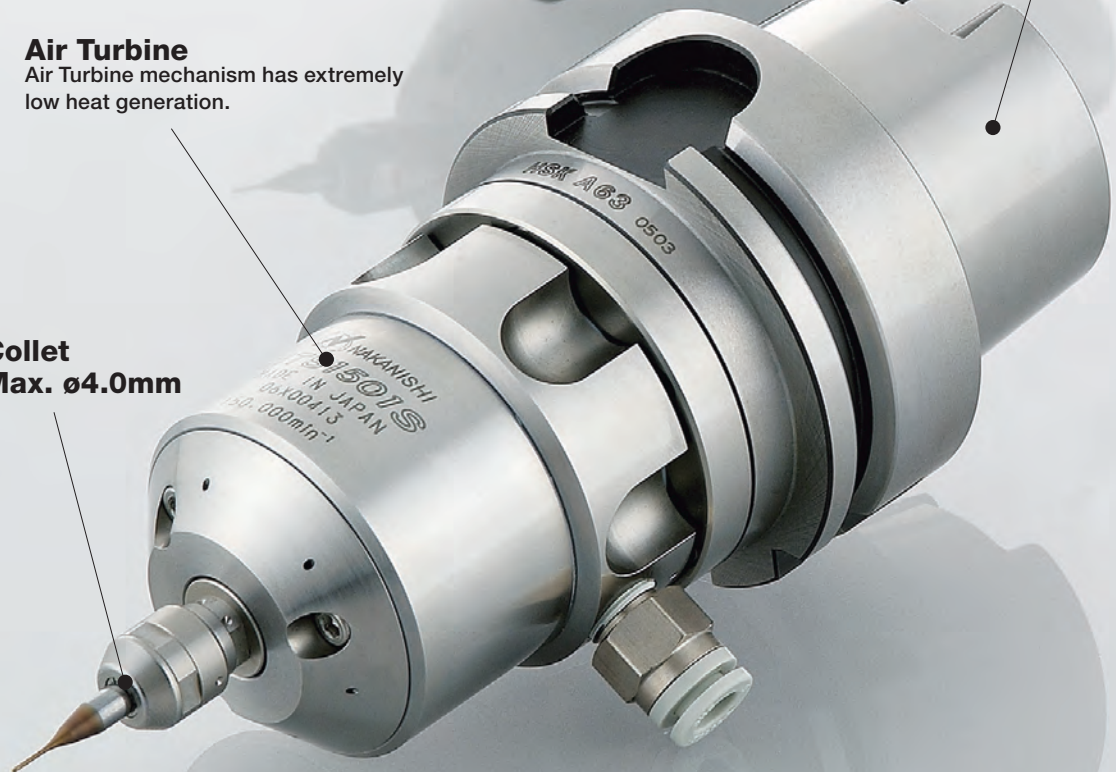


**Large Variety of Tapers Available**  
SHANK

M2040 (Straight), BT30 / 40 / 50  
HSK E25 / 32 / 40 / 50  
HSK A63 / F63

**Air Turbine**  
Air Turbine mechanism has extremely low heat generation.

**Collet**  
Max.  $\phi 4.0\text{mm}$



## ► "HTS SERIES" TURBINE SPINDLE

UPGRADE MACHINING CENTERS TO  
HIGH SPEED MACHINES SOLUTION

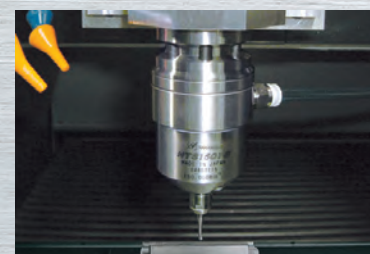
▼ AIR TURBINE SPINDLE

# HTS Series



Max. **150,000min<sup>-1</sup>** (0.5MPa)

Max. Power **25W**



Air Turbine Spindle  
HTS1501S-BT40



### 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 even with very small diameter cutting tools

- Usable max. cutting tool diameter :  
Ball End Mill R0.5mm, Square End Mill  $\phi 1\text{mm}$

### Dramatically shorten mold cavity machining time

**Spindle Runout :**  
Within 1  $\mu\text{m}$

**Collet :**  
Max.  $\phi 4.0\text{mm}$

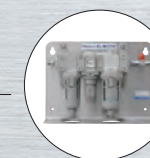
Collet  
CHA-4.0

OPTION → Refer to **P.5**

\*Other collet sizes are available.

Air Line Kit  
AL-M1202

OPTION → Refer to **P.5**



### 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.



HTS Series



Air Line Kit AL-M1202

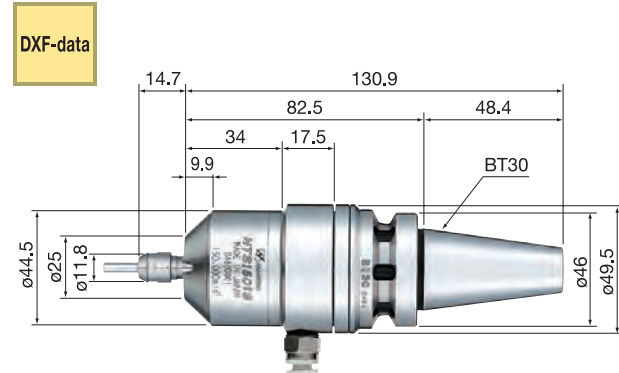
Compressor

### ⚠ Caution

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

**⚠ Caution :** Do not rotate the machining center's main spindle with the HTS1501 spindle installed.

Air Turbine Spindle	Max. Power	Speed	Spindle Runout	Air Consumption	Weight
<b>HTS1501S-BT30</b>	<b>25W</b>	<b>150,000</b> min <sup>-1</sup> (0.5MPa)	Within <b>1</b> μm	<b>90</b> Nℓ/min	<b>1,030</b> g



Code No. **8296** Model **HTS1501S-BT30**

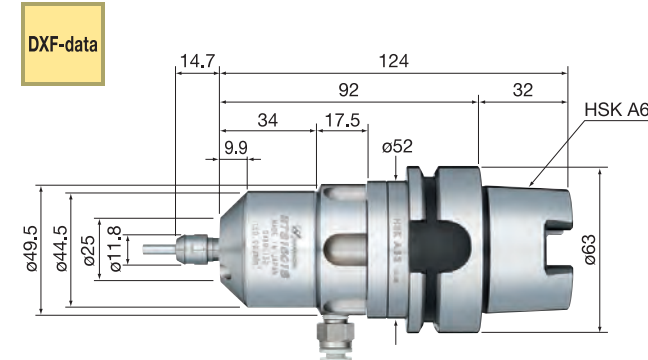
< Standard Equipment Accessories >

- Collet : ø4.0mm (CHA-4.0)
- Collet Nut (CHN-AA) • Spanner (8 x 5), (9 x 11) : 1pc. each
- Filter Joint (FJ-01) • Hose (K-247) : ø6mm x 4.0m

< Optional >

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

Air Turbine Spindle	Max. Power	Speed	Spindle Runout	Air Consumption	Weight
<b>HTS1501S-HSK A63</b>	<b>25W</b>	<b>150,000</b> min <sup>-1</sup> (0.5MPa)	Within <b>1</b> μm	<b>90</b> Nℓ/min	<b>1,400</b> g



Code No. **8298** Model **HTS1501S-HSK A63**

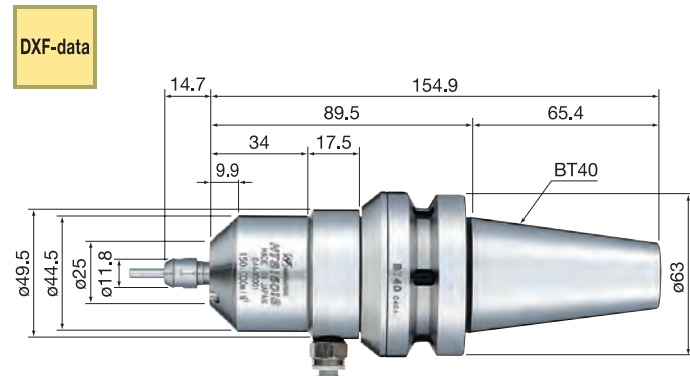
< Standard Equipment Accessories >

- Collet : ø4.0mm (CHA-4.0)
- Collet Nut (CHN-AA) • Spanner (8 x 5), (9 x 11) : 1pc. each
- Filter Joint (FJ-01) • Hose (K-247) : ø6mm x 4.0m

< Optional >

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

Air Turbine Spindle	Max. Power	Speed	Spindle Runout	Air Consumption	Weight
<b>HTS1501S-BT40</b>	<b>25W</b>	<b>150,000</b> min <sup>-1</sup> (0.5MPa)	Within <b>1</b> μm	<b>90</b> Nℓ/min	<b>1,700</b> g



Code No. **8297** Model **HTS1501S-BT40**

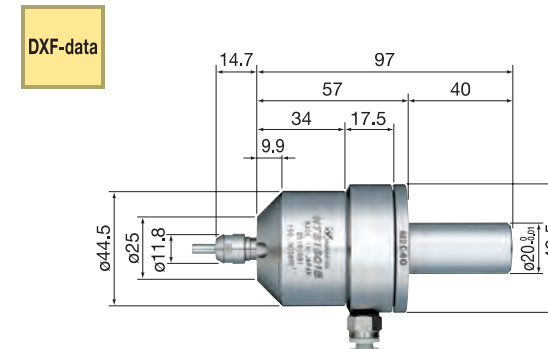
< Standard Equipment Accessories >

- Collet : ø4.0mm (CHA-4.0)
- Collet Nut (CHN-AA) • Spanner (8 x 5), (9 x 11) : 1pc. each
- Filter Joint (FJ-01) • Hose (K-247) : ø6mm x 4.0m

< Optional >

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

Air Turbine Spindle	Max. Power	Speed	Spindle Runout	Air Consumption	Weight
<b>HTS1501S-M2040</b> (Straight Type)	<b>25W</b>	<b>150,000</b> min <sup>-1</sup> (0.5MPa)	Within <b>1</b> μm	<b>90</b> Nℓ/min	<b>710</b> g



Code No. **8299** Model **HTS1501S-M2040**

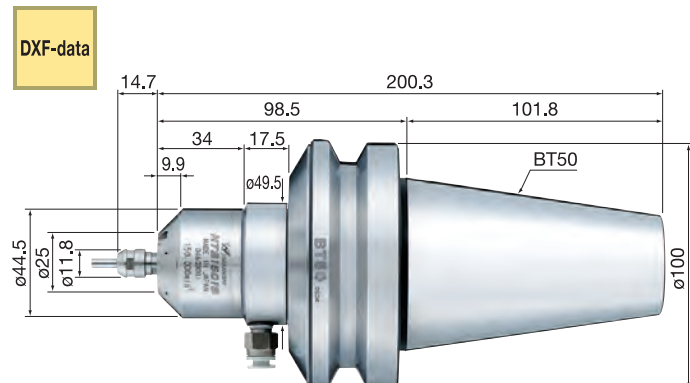
< Standard Equipment Accessories >

- Collet : ø4.0mm (CHA-4.0)
- Collet Nut (CHN-AA) • Spanner (8 x 5), (9 x 11) : 1pc. each
- Filter Joint (FJ-01) • Hose (K-247) : ø6mm x 4.0m

< Optional >

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

Air Turbine Spindle	Max. Power	Speed	Spindle Runout	Air Consumption	Weight
<b>HTS1501S-BT50</b>	<b>25W</b>	<b>150,000</b> min <sup>-1</sup> (0.5MPa)	Within <b>1</b> μm	<b>90</b> Nℓ/min	<b>4,500</b> g



Code No. **8281** Model **HTS1501S-BT50**

< Standard Equipment Accessories >

- Collet : ø4.0mm (CHA-4.0)
- Collet Nut (CHN-AA) • Spanner (8 x 5), (9 x 11) : 1pc. each
- Filter Joint (FJ-01) • Hose (K-247) : ø6mm x 4.0m

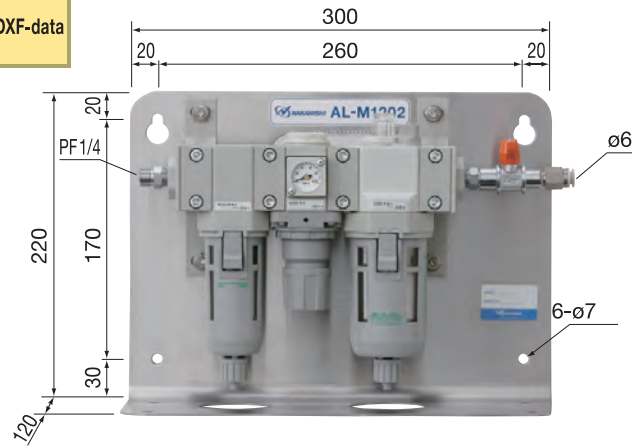
< Optional >

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

Air Line Kit

**AL-M1202** (ø6mm Air Output One-Touch Connector)

DXF-data



■ 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 to 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.	<b>4502</b>	Model	<b>AL-M1202</b>
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< Standard Equipment Accessories >

- Connection Hose (K-275) : 2m
- Lubricating Oil (K-211) : 1pc.

■ Parts

Product	Inside Diameter : ød	Fit to	Model	Code No.
	ø3.0AA*	HTS series ※ High precision type AA (Spindle runout within 2μm)	CHA-3.0AA	<b>91494</b>
	ø3.175AA*		CHA-3.175AA	<b>91496</b>
	ø4.0AA*		CHA-4.0AA	<b>91495</b>
	ø2.35		CHA-2.35	<b>91492</b>
	ø3.0		CHA-3.0	<b>91430</b>
	ø3.175		CHA-3.175	<b>91493</b>
	ø4.0		CHA-4.0	<b>91440</b>
	ø0.5, ø0.6, ø0.7, ø0.8, ø0.9		CHA-□□	—
	ø1.1, ø1.2, ø1.3, ø1.4, ø1.7, ø1.8, ø1.9 ø2.1, ø2.2, ø2.3, ø2.4, ø2.6, ø2.7, ø2.8, ø2.9 ø3.1, ø3.2, ø3.3, ø3.4, ø3.6, ø3.7, ø3.8, ø3.9			
	ø1.0, ø1.5, ø2.0, ø2.5, ø3.5 ø1.6			
CHA Group				
	Collet Nut for Collet (CHA)	HTS series	CHN-AA	<b>2159</b>
	Hose ø6mm (O.D.) (INLET) 4m · Blue	HTS series	K-247	<b>2056</b>
	Lubricating Oil (70cc)	Air Line Kit (AL-M1202)	K-211	<b>1057</b>
	Lubricating Oil (1L)	Air Line Kit (AL-M1202)	K-202	<b>1058</b>

\*: For right hand (cw) rotation only.

HTS1501 Series

**Case Studies** <Rough mill for deep cutting, High-speed feeding> F=2,000mm/min (Rough cutting)



Material	NAK80 (HRC 40)
Motor Speed	150,000min <sup>-1</sup>
Usable Tool	R 0.2 x 2L Ball End Mill
Rough Cutting	Ad 0.03 x Rd 0.04mm
Rough Cutting Work Feed	2,000mm/min
Finishing Cutting	Ad 0.01 x Rd 0.01mm
Finishing Cutting Work Feed	1,500mm/min
Total Time	4h 31min

HTS1501 Series

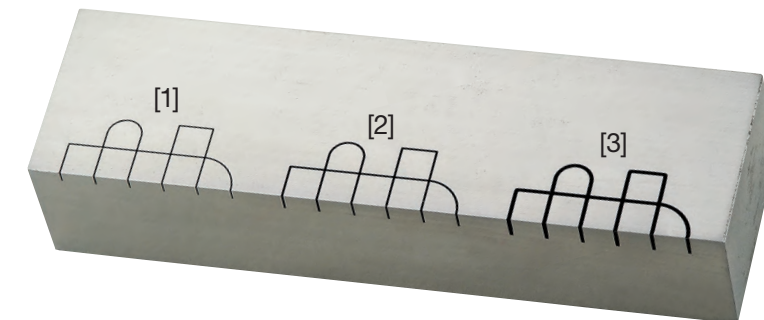
**Case Studies** <High-speed rotation and feeding> F=2,250mm/min



Material	DC53 (HRC 60)
Motor Speed	150,000min <sup>-1</sup>
Usable Tool	R 0.1 x 0.5 cBN
Work Feed	2,250mm/min
Cutting Depth	Ad 0.005 x Rd 0.01mm
Total Time	3h 30min (42min / 1pc.)

HTS1501 Series

**Case Studies** <Rib processing> F=2,000mm/min



Material	NAK80 (HRC 40)		
Motor Speed	150,000min <sup>-1</sup>		
Sample No.	[1]	[2]	[3]
Usable Tool	ø0.2 x 2	ø0.3 x 3	ø0.4 x 4
Work Feed	2,000mm/min		
Cutting Depth	Ad 0.003mm	Ad 0.005mm	Ad 0.007mm
Total Time	29min. 50sec.	27min. 43sec.	26min. 22sec.