

ECO - Spindle

2SP2 Motorspindle

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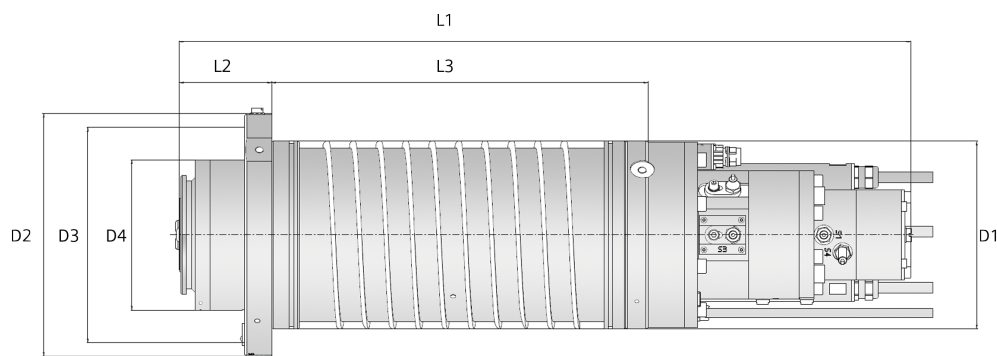
2SP2 - the new middle class standard

The new 2SP2 asynchronous milling spindle series is characterized by robustness and performance. Their compact dimensions meet the necessary requirements to keep the space required in the machine as small as possible. The option with or without external cooling jacket offers the machine builder flexibility in designing the connection of the spindle to the Z-slide.

Here, the new spindle series with an outer diameter of 170 mm already achieves a nominal torque of 45 Nm. For applications requiring more spindle torque, a variant with an outer diameter of 210 mm is available.

The spindle has been designed with a slim diameter and open cooling jacket, but is also optionally available with a closed cooling jacket.

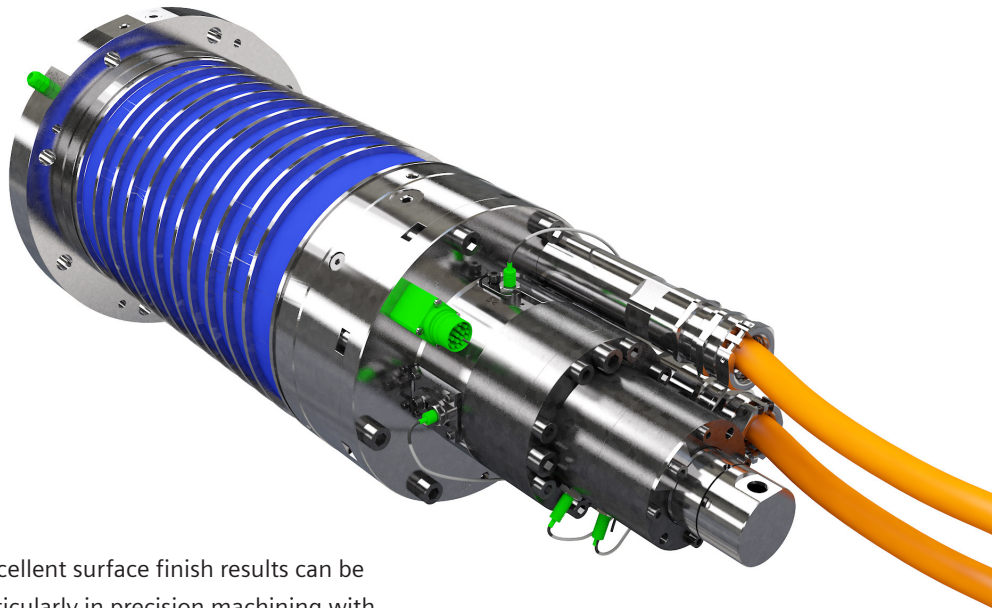
The robust bearing system ensures speeds of up to 20,000 rpm with lifetime grease lubrication. For speeds of up to 24,000 rpm, a version with air-oil lubricated bearings is also available. The specially developed asynchronous motor is equipped with loss-optimized profile rods to keep the rotor losses as low as possible. In this way, the spindle ensures low heat-up and reduced growth at the tool interface, even at maximum speeds.



Dimensions

	Tool interface	D1 Centering ø [mm]	D2 A-ø Flange [mm]	D3 TK-ø Counter- sinks [mm]	D4 A-ø Nose [mm]	L1 Overall length* [mm]	L2 Nose projec- tion [mm]	L3 Rear support distance [mm]
2SP2174-xxA	HSK A-63	170 h6	220	195	136	665	84	342
2SP2174-xxB	BBT40	170 h6	220	195	136	666	85	342
2SP2214-xxA	HSK-A63	210 h6	268	240	146	735	94	402
2SP2214-xxB	BBT40	210 h6	268	240	146	736	95	402
2SP2215-xxA	HSK-A63	210 h6	268	240	146	735	94	402
2SP2256-xxD	HSK-A100	250 h6	300	275	200	930	185	455
2SP2256-xxE	BBT50	250 h6	300	275	200	930	185	455

* with rotaty unit approx. 43 mm longer



In this way excellent surface finish results can be achieved, particularly in precision machining with small tools.

The asynchronous technology allows for simple periphery in the drive train and dispenses with an electrical ballast or return feed protection, which lowers the system costs. In addition, the asynchronous motor is much more robust against overtemperature which offers advantages in standstill applications with controlled C-axis operation.

The spindle can also be varied through a wide range of options and thus adapted to different requirements. This means, among other things, further installed sensor technology up to the creation of the necessary prerequisites for process monitoring. Thus, the 2SP2 spindle also supports digitization of the machine tool.

With the optional SMI24 interface, signal transmission from the spindle to the SINUMERIK is realized with only one Drive CliQ cable. Additional modules in the control cabinet, e.g. for speed encoder evaluation or temperature monitoring, are no longer required. The clamping states for the tool clamping system are determined at the SMI24 spindle interface and are available as a digital signal on machine-readable addresses in the control. Last but not least, SMI24 in combination with the SINUMERIK integrated spindle monitor offers extensive possibilities for process data monitoring.

The optional booster converts compressed air for release of the clamping system into hydraulic pressure so that no separate hydraulics unit is required with the machine. In this way, the release unit on the spindle unit can be designed more compact. The booster is connected to the spindle by means of hydraulic lines and can be positioned outside the headstock in the machine.

Various tool interfaces, internal and external cooling lubricant feeds for tool cooling or safety-relevant digital or analog tool clamping condition queries are optionally available. Speed monitoring via incremental shaft encoder and the thermal motor protection sensor are mandatory.



Booster
(Pressure transformer pneumatic-hydraulic)

Technical Data

Order No.	Maximum speed	Rated speed	Rated power	Rated torque	Rated current	Rated power	Rated torque	Rated current
	[rpm]	[rpm]	S1 [kW]	S1 [Nm]	400/200 V S1 [A]	S6-25% [kW]	S6-25% [Nm]	400/200 V S6-25% [A]
2SP2174- G 18-0	18,000	3,760	18	46	45/90	26	68	63/126
2SP2174- G A 20-0	20,000	3,760	18	46	45/90	26	68	63/126
2SP2174- A A 24-0	24,000	3,760	18	46	45/90	26	68	63/126
		Y / Δ	Y / Δ	Y / Δ		Y / Δ	Y / Δ	
2SP2214- G 18-0	18,000	1,600/4,750	15/17	90/34	45/92	25/28	148/56	75/152
2SP2214- G 16-0	16,000	1,050/3,200	15/18	136/55	45/91	25/31	226/91	74/150
2SP2215- G 16-0	16,000	1,000/3,000	18/22	177/70	60/-	31/36	292/116	99/-
2SP2256- G 12-0	12,000	750/2,000	18.5/25	235/118	60	-	-	-
2SP2256- G 15-0	12,000	700/1,500	25/30	344/190	85	-	-	-
2SP2256- A 15-0	15,000	750/2,500	18.5/25	235/118	60	-	-	-

AVAILABLE SOON

Options

Booster (Pressure transformer pneumatic-hydraulic)

0: Without

1: With

Sensors

A: PT1000 + clamping status digital

B: PT1000 + clamping status digital + bearing temperature PT100

C: PT1000 + clamping status digital + bearing temperature PT100 + vibration sensor

D: PT1000 + clamping status analog

E: PT1000 + clamping status analog + bearing temperature PT100

F: PT1000 + clamping status analog + bearing temperature PT100 + vibration sensor

G: PT1000 + clamping status analog + bearing temperature PT100 + SMI24 (only 2SP221-xxx)

H: PT1000 + clamping status analog + bearing temperature PT100 + SMI24 + vibration sensor (only 2SP221-xxx)

Cooling sleeve / rotary unit

A: Open cooling sleeve, without rotary unit

B: Open cooling sleeve, with rotary unit

C: Closed cooling sleeve, without rotary unit

D: Closed cooling sleeve, with rotary unit

E: Open cooling sleeve, without rotary unit, with ext. tool cooling

F: Open cooling sleeve, with rotary unit, with ext. tool cooling

G: Closed cooling sleeve, without rotary unit, with ext. tool cooling

H: Closed cooling sleeve, with rotary unit, with ext. tool cooling

Tool interfaces

A: HSK-A63

B: BBT40 (MAS 45°)

C: CAT40 (ANSI)

D: HSK-A100 (2SP2256-xxx)

E: BBT50 (2SP2256-xxx)

Lubrication

G: Grease

A: Air-oil

Power supply motor

2: 200V

4: 400V

