CYSPEED

SPINDLE TECHNOLOGY

CYTEC SYSTEMS

COMPONENTS PERFECTION.

CYTEC SYSTEMS TECHNOLOGY INSIDE COMPONENTS PERFECTION

MADE IN GERMANY

Spindle Technology - tailor made

The CYTEC motor spindles of the type CYSPEED comprise in a modular construction kit high speed versions for the machining of aluminum, composites or plastics up to high torque versions for powerful machining of cast iron and steel.

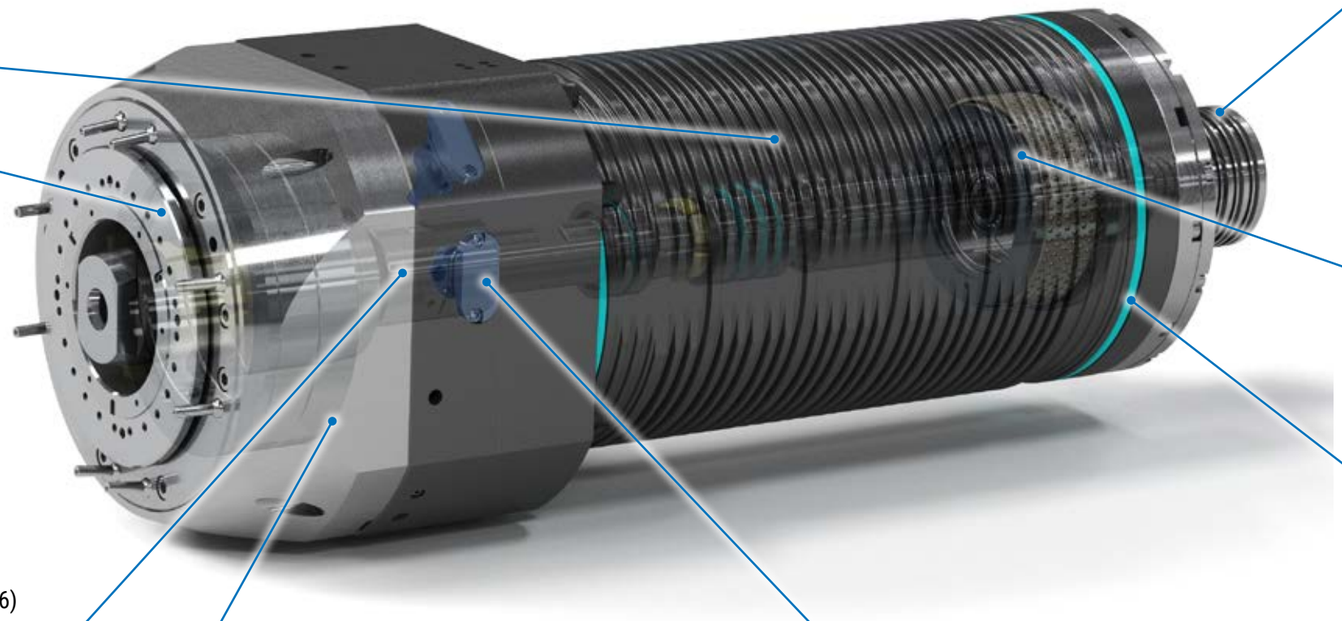
CYSPEED motor spindles are characterized by a particularly compact design. When integrated into milling heads of the CYMILL and CYMILL HD series, the motor cooling system seals directly to the head housing, thus saving valuable installation space and weight. This benefits the achievable dynamics of the machines in which the CYSPEED spindles are used. By optimizing the flow conditions, modern CYSPEED spindles have a particularly stable thermal behavior. Depending on the requirement profile, the spindles are equipped with asynchronous or synchronous motors with high power and torque density. As a supplement for particularly heavy-duty cutting operations, the CSG versions are available with integrated switchable planetary gears. The patented CYTEC clamping technology with self-locking mechanism is used throughout as the tool clamping system. This ensures a high level of safety even during heavy machining and guarantees high clamping forces even after long periods of use. There is no drop in clamping force due to wear. For monitoring the clamping status, CYTEC optionally supplies the in-house developed CYCON K11 electronics or monitoring with analog sensor. In addition, the motor spindles are equipped with extensive current, temperature, vibration and speed sensors for condition and process monitoring. The media supply for the hydromechanical clamping system as well as for the process cooling (optionally with cooling lubricant, oil-air mixture or air) is provided by CYTEC rotary unions integrated in the spindle shaft. In addition to a durable design, this technology also allows particularly compact length dimensions, which benefit the pivot length in particular for swivel heads.

CYTEC Zylindertechnik GmbH is a system partner for mechanical engineering with technical know-how and creativity.

CYTEC has established itself on the market as a developer and producer of machine tool components: in the beginning there was the innovative positive locking clamping system; from then on the development ran rapidly up to the single and multi-axis milling head with highly dynamic, patented direct drive, which meets the highest technical requirements. The great vertical range of manufacture and flexibility are a guarantee for high product quality and special compactness under the motto „Strongest of its kind“.

The modular system at a glance

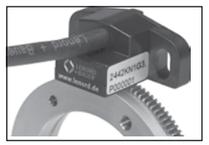
- Asynchronous/synchronous motors, depending on with high torque or high speed, can be combined with all established control systems
- Tool holders standard HSK, optionally SK or Capto
- Option: Clamping spindle for mill-/turn operation (> page 8)
- Option. Planetary gearing (> page 9)



- Automatic hydromechanical tool clamping system eith positive lock (> page 6)

- High-performance hybrid bearings for speeds up to 24,000 min^{-1}
- For maximum rigidity
- For best machining results
- Optimized bearing spacing
- Hydrostatic preload

- Comprehensive media supply for the cooling stator, rotor, bearing and rotary union cooling circuits.
- External coolant supply for effective workpiece cooling
- Option: minimum quantity cooling lubrication
- Δ ZERO cooling housing
  - 30% more cooling performance than ordinary systems
  - Homogenous Temperature gradient (> page 5)
- Complete integrated process monitoring:
  - High-resolution incremental encoders for speed and position measurement
- Full control of temperature behavior over the entire speed range
- Optimal temperature compensation
- Minimized spindle expansion



- Effective heat dissipation even in complex machining processes
- Speed monitoring with MiniCoder
- Control of the clamping cycle/tool position/vibration
  - with analog sensor (inductive)

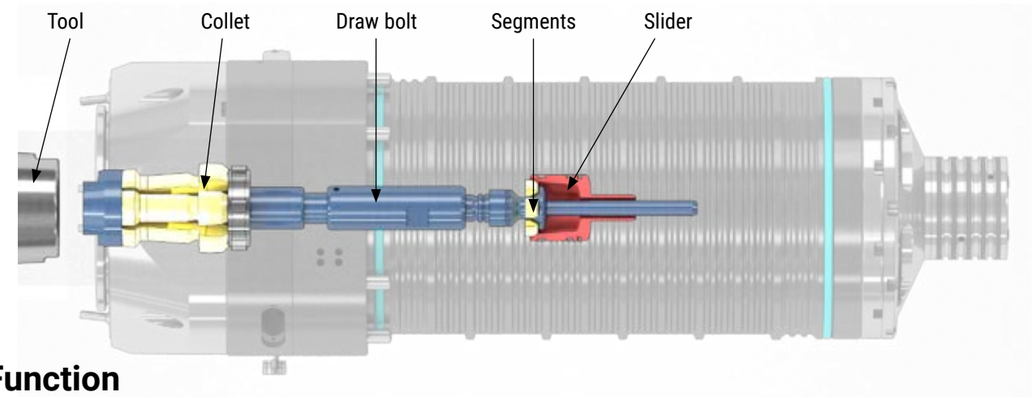
- with microcontroller CyCon K11 (volumetric)

ΔZero Cooling enclosure:

- **30% more cooling capacity than conventional systems**
- **Homogeneous temperature gradient**
- **Full control of temperature behavior over the entire speed range**
- **Optimal temperature compensation**
- **Minimized spindle expansion**
- **Effective heat dissipation even with complex complex machining processes**

The tool clamping system:

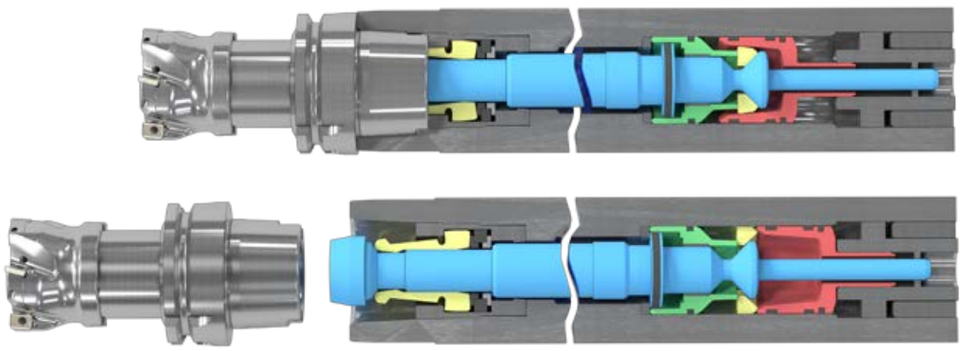
- **100% failsafe**
- **5 million clamping cycles**
- **Highest clamping forces in smallest space**
- **Self locking in clamped position**



Function

The clamping system for clamping the tool is actuated hydraulically. The tool is retracted and positively locked via clamping slides, locking segments, draw bolt and collets.

The wedge principle provides a clamping force transmission with force amplification. This is maintained purely mechanically, without further hydraulic actuation. The connection is released and unlocked via the release connection.

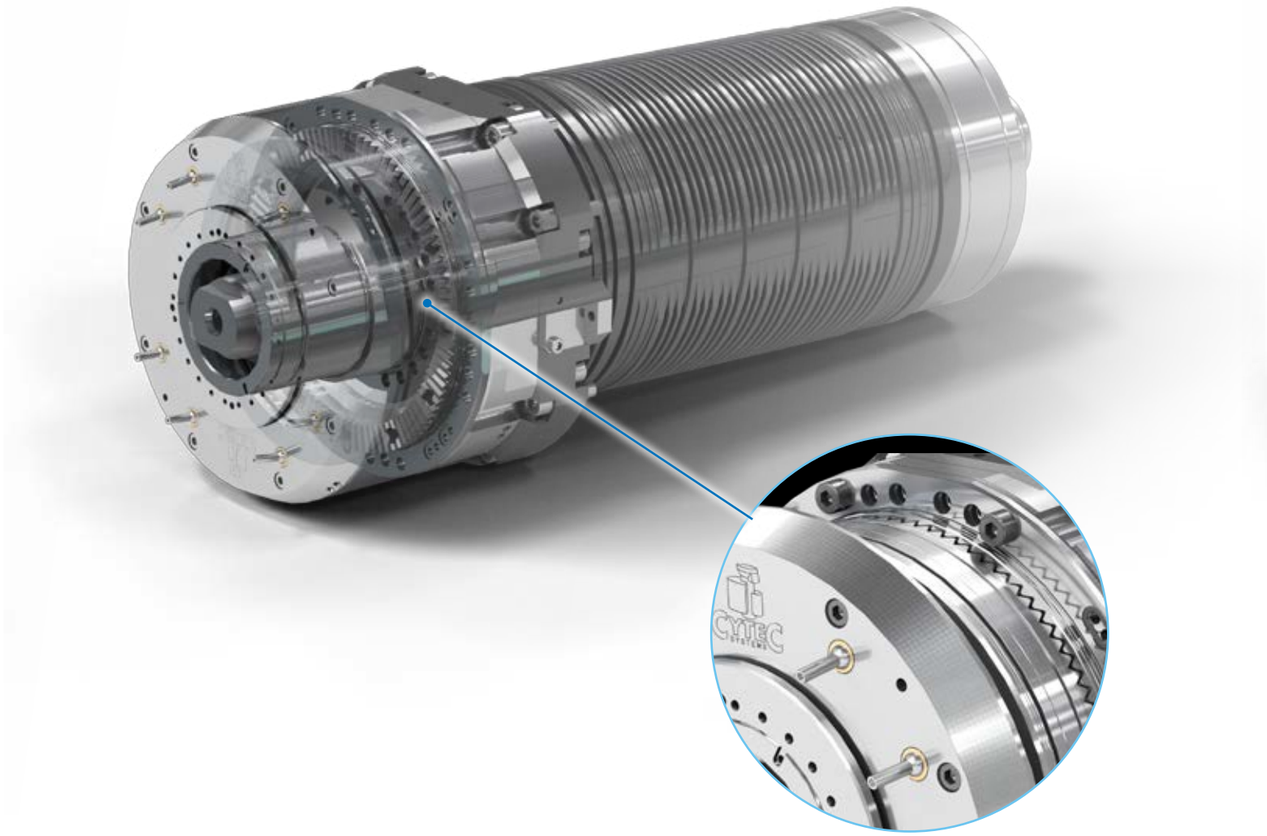


Gripping and releasing the tool

SPINDLE COMPONENTS

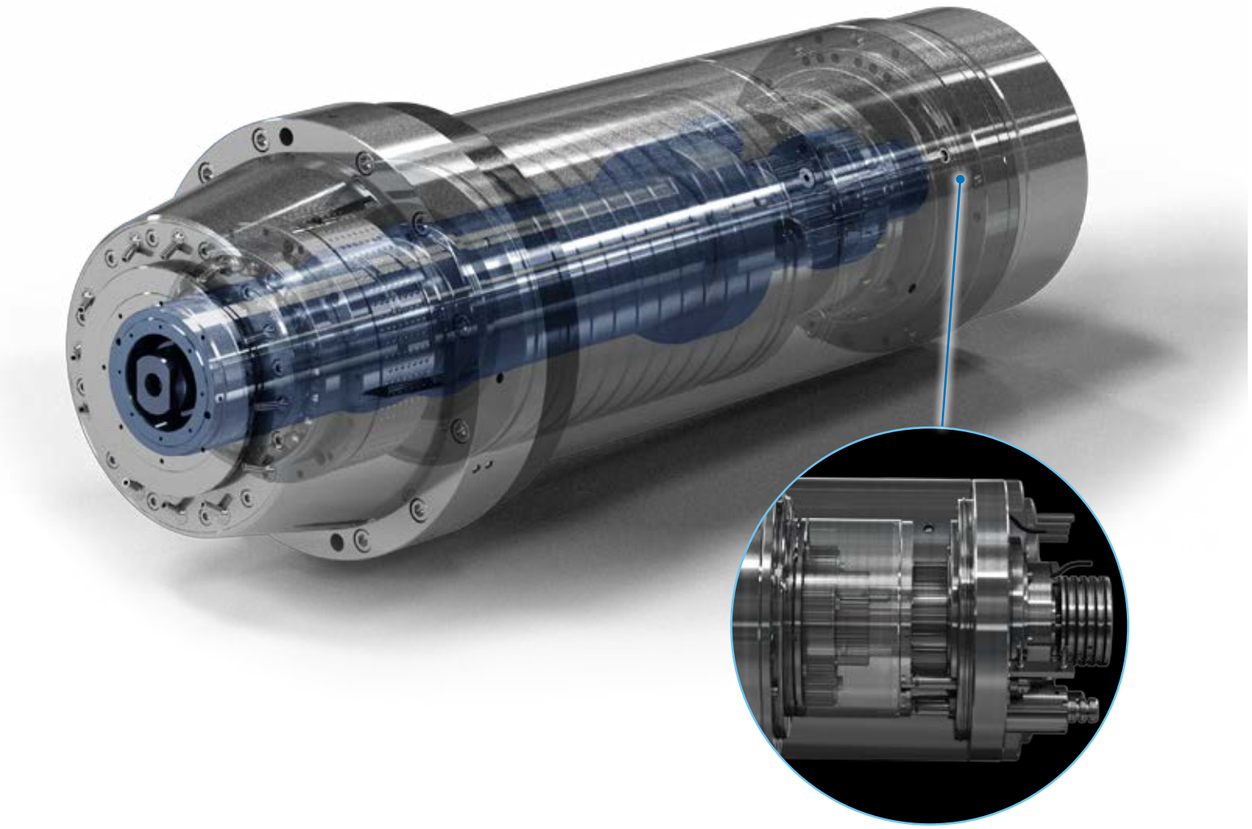
Option turning/milling spindle with Hirth serration:

- **For efficient turning operations**
- **Positive clamping of the spindle shaft**
- **Maximum torque input to the tool tip**
- **Automatic actuation**



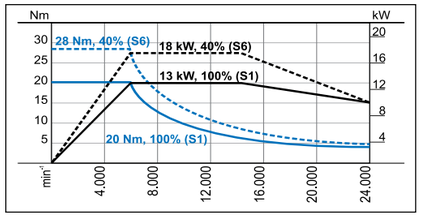
Planetary gear option:

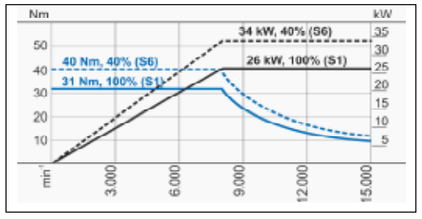
- **Allows for heavy-duty rough machining**
- **Triples the base torque of the spindle motor**
- **Gear shifting: Coarse and fine chip removal in one clamping**



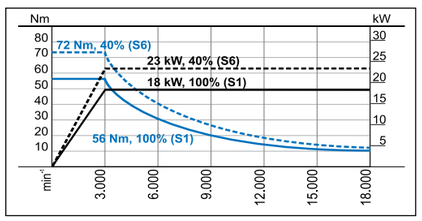
TECHNICAL DATA

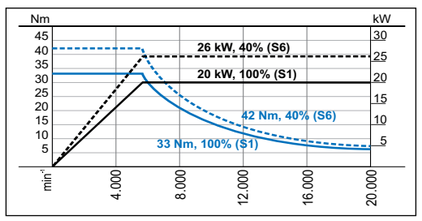
Series:	CS-13-135-A	CS-26-135-S
Power S1/S6:	13/18 kW	26/34 kW
Nom. speed:	6,000 min^{-1}	8,000 min^{-1}
Torque S1/S6:	20/28 Nm	31/40 Nm
Speed max.:	24,000 min^{-1}	15,000 min^{-1}
Tool system:	HSK-A63	HSK-A63



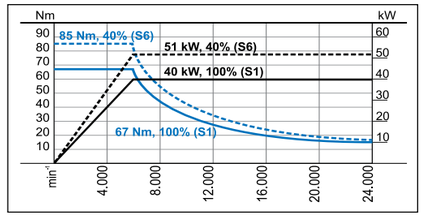


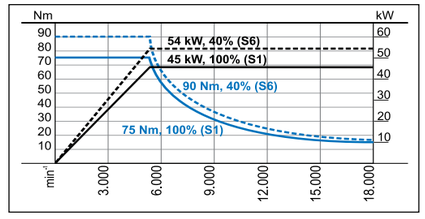
Series:	CS-18-135-S	CS-20-135-A
Power S1/S6:	18/23 kW	20/26 kW
Nom. speed:	3,000 min^{-1}	6,000 min^{-1}
Torque S1/S6:	56/72 Nm	33/42 Nm
Speed max.:	18,000 min^{-1}	20,000 min^{-1}
Tool system:	HSK-A63	HSK-A63



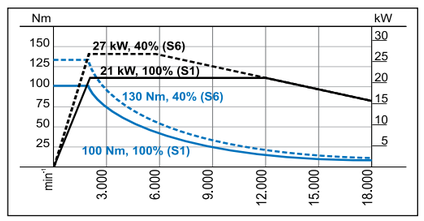


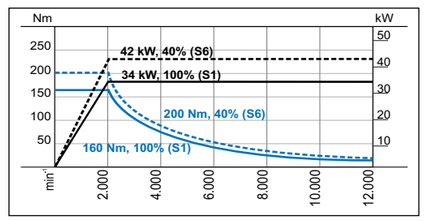
Series:	CS-40-160-S	CS-45-160-S
Power S1/S6:	40/51 kW	45/54 kW
Nom. speed:	5.700 min^{-1}	5.700 min^{-1}
Torque S1/S6:	67/85 Nm	75/90 Nm
Speed max.:	24,000 min^{-1}	18,000 min^{-1}
Tool system:	HSK-A63	HSK-A63





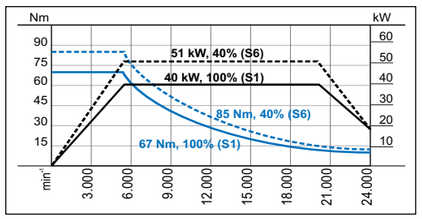
Series:	CS-21-180-A	CS-34-180-S
Power S1/S6:	21/27 kW	34/42 kW
Nom. speed:	2,000 min^{-1}	2,000 min^{-1}
Torque S1/S6:	100/130 Nm	160/200 Nm
Speed max.:	18,000 min^{-1}	12,000 min^{-1}
Tool system:	HSK-A63	HSK-A100

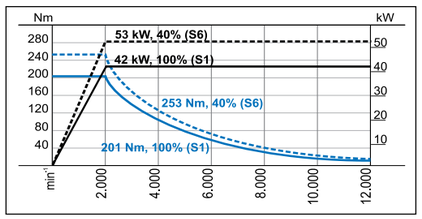




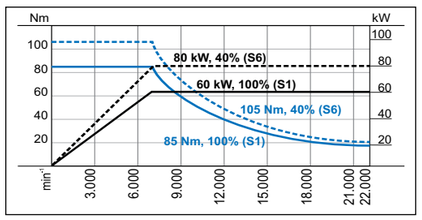
TECHNICAL DATA

Series:	CS-40-180-S	CS/CST-42-180-S
Power S1/S6:	40/51 kW	42/53 kW
Nom. speed:	5,700 min^{-1}	2,000 min^{-1}
Torque S1/S6:	67/85 Nm	201/253 Nm
Speed max.:	24,000 min^{-1}	12,000 min^{-1}
Tool system:	HSK-A63	HSK-A/T100

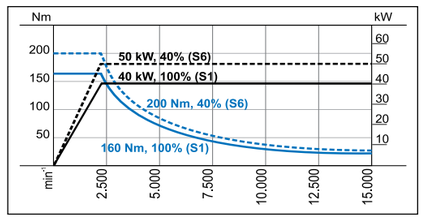


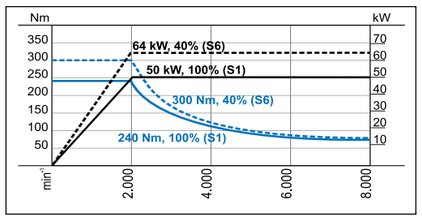


Series:	CS-60-180-S
Power S1/S6:	60/80 kW
Nom. speed:	7,000 min^{-1}
Torque S1/S6:	85/105 Nm
Speed max.:	22,000 min^{-1}
Tool system:	HSK-A63

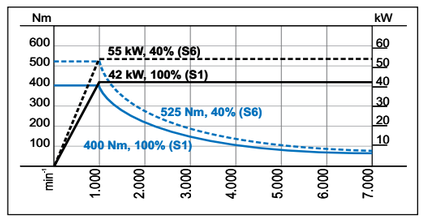


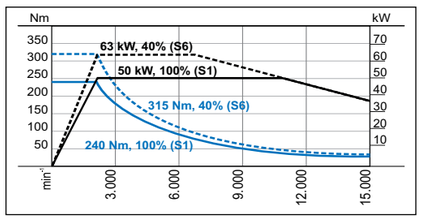
Series:	CS-40-200-S	CS-/CST 50-200-S
Power S1/S6:	40/50 kW	50/64 kW
Nom. speed:	2,400 min^{-1}	2,000 min^{-1}
Torque S1/S6:	160/200 Nm	240/300 Nm
Speed max.:	15,000 min^{-1}	8,000 min^{-1}
Tool system:	HSK-A100	HSK-A/T100





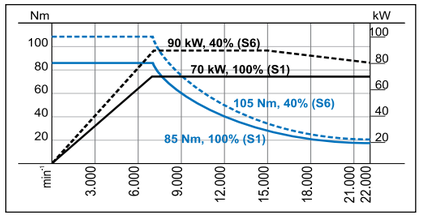
Series:	CS/CST-42-238-S	CS-50-238-A
Power S1/S6:	42/55 kW	50/63 kW
Nom. speed:	1,000 min^{-1}	2,000 min^{-1}
Torque S1/S6:	400/525 Nm	248/315 Nm
Speed max.:	7,000 min^{-1}	15,000 min^{-1}
Tool system:	HSK-A/T100	HSK-A100

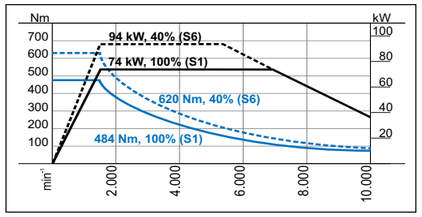




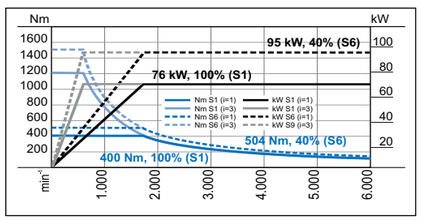
TECHNICAL DATA

Series:	CS-70-238-S	CS-74-260-A
Power S1/S6:	70/90 kW	74/94 kW
Nom. speed:	8,000 min^{-1}	1,600 min^{-1}
Torque S1/S6:	85/105 Nm	484/620 Nm
Speed max.:	22,000 min^{-1}	10,000 min^{-1}
Tool system:	HSK-A63	HSK-A100 / SK-50

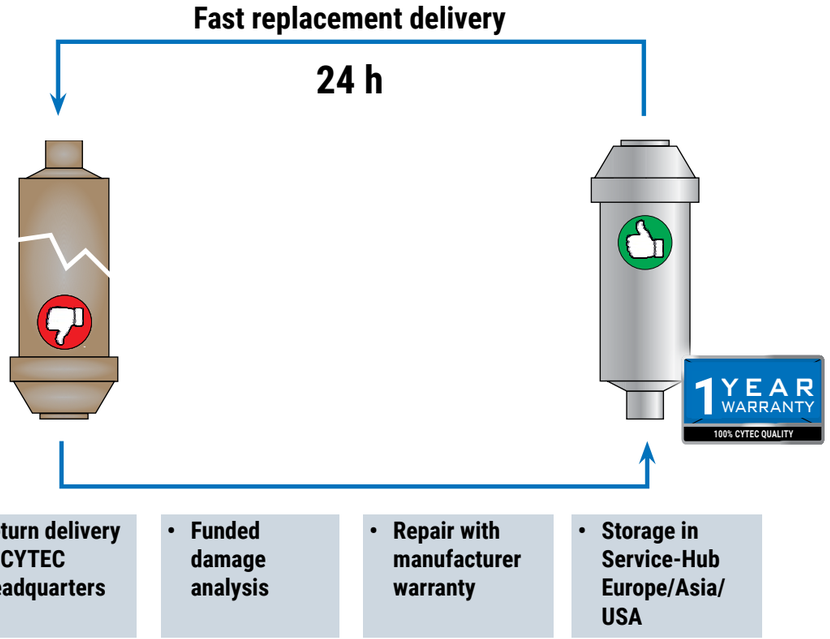




Series:	CSG-76-300-S
Power S1/S6:	76/95 kW
Nom. speed:	1,800 min^{-1} (i=1) / 600 min-1 (i=3)
Torque S1/S6:	400/504 Nm (i=1) / 1,200/1,512 Nm (i=3)
Speed max.:	6,000 min^{-1}
Tool system:	HSK-A100



REFURBISH CONCEPT



- **Return delivery to CYTEC Headquarters**
- **Funded damage analysis**
- **Repair with manufacturer warranty**
- **Storage in Service-Hub Europe/Asia/ USA**

- We have **completely overhauled spindles** in our warehouse ready for exchange
- These spindles are available in Europe, Asia and USA by express delivery **within 24 hours**
- Machine downtimes are **avoided** or **reduced to a minimum**
- We give **1 year warranty** on all exchange spindles
- We charge the residual value of the returned spindle(s) at fair prices

CYTEC WORLD WIDE

● Sales & Services, Home Address and Subsidiaries:

Jülich, Germany | Pliezhausen, Germany | Oldham, Great Britain
Le Vésinet, France | Leiria, Portugal | Milano, Italy | Liberec, Czech Republic
Schwarzenburg, Switzerland | Donaújváros, Hungary | Port Saint Lucie, USA
Anaheim, USA | Aragua, Venezuela | Indianópolis, Brazil
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CYTEC Zylindertechnik GmbH

Steffensrott 1 • D-52428 Jülich
Tel.: (+49) 2461 / 6808-0 • Fax: (+49) 2461 / 6808-758
E-mail: info@CYTEC.de • http:// www.CYTEC.de • www.CYTEC.blog

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