

CYMILL



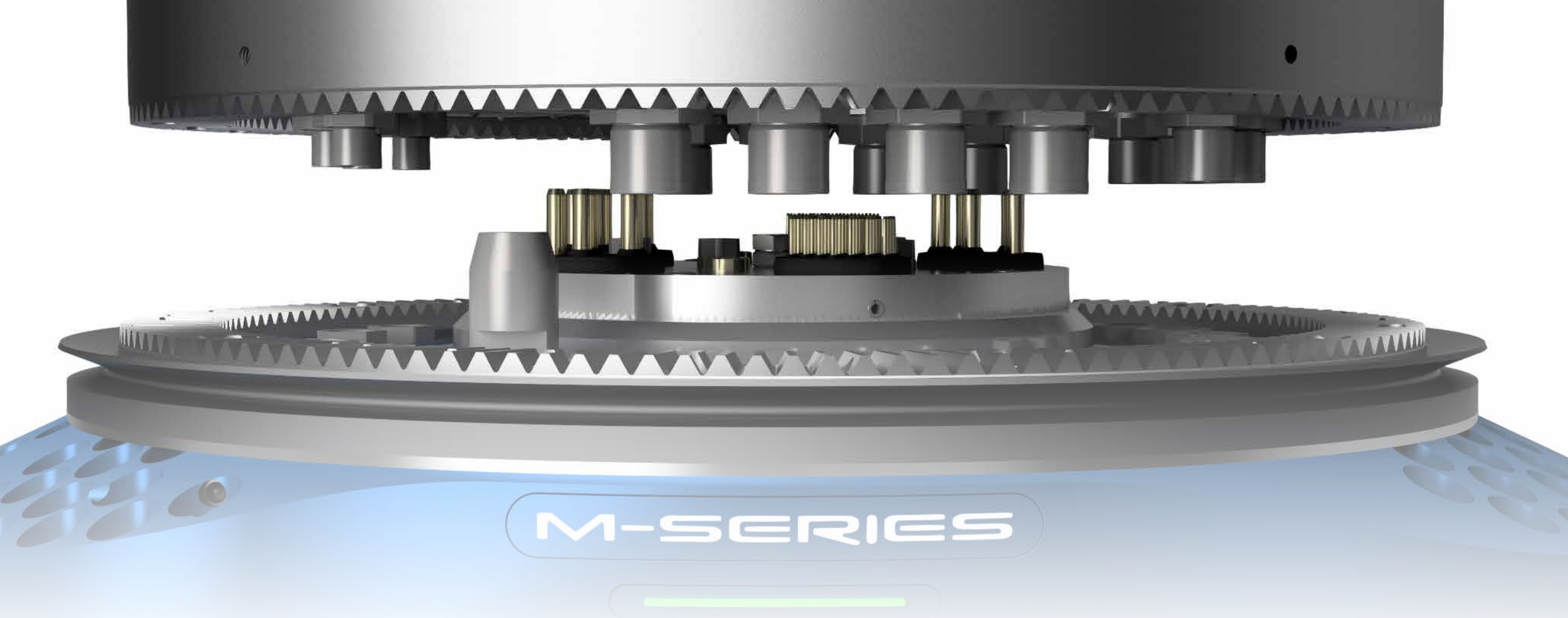
M-SERIES GENERATION II

COMPONENTS
PERFECTION.



MADE IN GERMANY





M-SERIES Generation II

With the new fork-type milling heads, CYTEC delivers enhanced performance, precision, and reliability for your manufacturing processes. Building on the proven success of the previous model, we are driven by one goal: to provide even more power and a decisive competitive edge through cutting-edge technology.

For decades, CYTEC Zylindertechnik GmbH has stood for innovation, precision, and uncompromising quality in the development and production of high-tech components for the machine tool industry.

As a globally recognized technology partner, we offer a comprehensive portfolio of modular and customized solutions – designed and manufactured in Germany with the highest level of vertical integration.

Our new fork-type milling heads combine this long-standing expertise with forward-looking technology. They are precisely tailored to your needs, ensuring sustainable efficiency, cost-effective processes, and a long-term investment in competitiveness.

The new **M-SERIES** marks the beginning of a new era in 5-axis machining. Based on our flagship M21 model, we have developed a fork-type milling head with the same external dimensions – yet featuring a host of innovative improvements inside.

At the heart of this advancement are the specially developed ultra-high-torque direct drives, designed not just to meet but to surpass state-of-the-art standards.

Machines equipped with the **M-SERIES** are capable of mastering virtually any application – from heavy-duty machining of large components to the ultra-precise finishing of freeform geometries.

With backlash-free, contactless, and maintenance-free drives, they deliver maximum precision, dynamics, and repeatability – even in complex 5-axis simultaneous operations.

Thanks to FEM-optimized force flow, CFD-optimized thermal symmetry, and state-of-the-art motor technology, the **M-SERIES** combines maximum rigidity with superior machining quality.

The result: the most torque-powerful fork-type milling head in its class – a true allrounder for the most demanding machining challenges.



M-SERIES Gen. II 2-Axis NC Head

Precision and reliability, even in the toughest conditions

SmartLight

Machine conditions
visible at a glance

SafeLock +

Working clamp and failsafe
combined for maximum safety

ServiceSafety

Quick diagnosis of all
media channels in service

UHT motors

integrated in the A- and C-axes

Stiffness +

Massively reinforced design
for absolute precision

ThermoSync Pro

Intelligent thermal management
for lasting high precision

High-performance motor spindles

for any application

ΔZERO Temperature Control

for absolute thermal stability

C - Axis

Nom./Max. torque: 1.430 / 2.290 Nm (UHT)

Clamping torque: 7.000 Nm

Swivel angle: $\pm 360^\circ$ / ∞

Measuring system: absolute

Position accuracy: $\pm 2''$ (optional $\pm 1''$)

A - Axis

Nom./Max. torque: 1.100 / 1.940 Nm (UHT)

Clamping torque: 9.000 Nm

Swivel angle: $\pm 120^\circ$

Measuring system: absolute

Position accuracy: $\pm 4''$ (optional $\pm 2''$)

YRT-Duplex bearing arrangement

Maximum rigidity for highest precision
and stability under extreme torque loads

Direct AeroLube

Optimal lubrication for
high-speed spindles

TorqueLock

Secure fixation even
under extreme loads

Coolant Flow Advanced

Maximum coolant flow for
highest machining safety

Technology Exchange Interface

Unlimited Flexibility for Multi-Technology Machining

The CYTEC Technology Exchange Interface connects the C-Axis to milling heads or other machining technology heads, enabling fully automatic head changes in less than one minute. This innovative system allows you to integrate multiple machining technologies on a single machine with ease.

» RAPID HEAD EXCHANGE:

Swap machining heads automatically in under a minute for seamless transitions.

» CYFIT MEDIA COUPLINGS:

Ensure the highest volumetric flow of all required media (coolant, air, hydraulics) through the machining head for optimal performance.

» CYTRAC CLAMPING SYSTEM:

Paired with a precision Hirth Ring, it provides maximum rigidity and stability at the connection point, ensuring consistent accuracy under load.



UHT Ultra-high-torque Motors

Next-generation synchronous drives with maximized torque constant and minimized losses.

Compact design enables YRT bearing integration for superior rigidity across all axes. Optimized coil fill, laminations, and magnet geometry ensure peak efficiency. Specialized for ultra-precise positioning and dynamic performance.



TorqueLock - Axis Clamping

Outer-rotor clamping elements deliver up to 300% higher clamping force at the same pressure—compared to typical market systems. Alternatively, identical clamping torques can be achieved at significantly lower system pressure. The result is flexible, energy-efficient clamping with high process reliability, maximum accuracy, and minimal deformation.

TorqueLock – maximum clamping performance, minimal energy input.



SafeLock+ – Advanced Clamping Element

The safety-oriented, self-locking axis brake holds head position reliably—even during pressure loss or an emergency stop. Dual-channel sensing monitors lock states, and releases are only permitted under safe conditions. This prevents collateral damage and protects setup/service operations.

SafeLock+ – position secure, process secure.

M-SERIES Gen. II 2-Axis NC Head

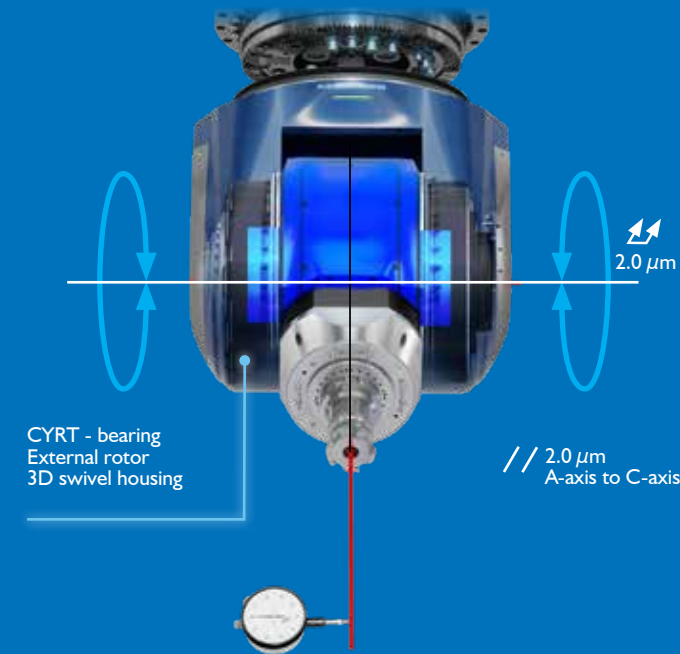


THERMOSYNC Pro

Four independent cooling circuits with larger cross-sections than is typical in the market and a 0.7 m^2 heat-exchange area keep the milling head in thermal balance. Flow rate can be finely adjusted per circuit; temperature differentials and internal stresses are minimized, and form stability is maintained under load.

The result: stable dimensional accuracy, consistent surface finishes, and longer component life.

ThermoSync Pro – temperature under control, precision in process.



CYTEC 5X Precision Housing

The Foundation of Milling Head Accuracy

The CYTEC 5X Precision Housing is the key element for maximum mechanical precision in milling heads. Manufactured as a single unit and directly integrated into the bearing, it guarantees exact axis alignment and eliminates positional deviations.

The A-axis swivel housing and spindle position are ground in a single setup, ensuring minimal tolerances. The result: outstanding accuracy, exceptional rigidity, and reliable top-level performance.

Direct Aero Lube (Oil-Air Lubrication)

An oil-air mixer integrated in the swivel housing conditions the medium immediately upstream of the spindle bearings. The fine aerosol reduces friction and heat generation and stabilizes bearing conditions—especially at high speeds.

This boosts process reliability, extends spindle life, and ensures repeatable surface quality.

Direct Aero Lube – engineered for high speed, built for peak performance.

Stiffness+ - Structural Rigidity

Optimized rigidity, uncompromised performance

The load path from the spindle center to the machine interface is FEM-optimized; load-bearing elements are robustly engineered and work in harmony with the YRT duplex bearing arrangement. Deformation is effectively suppressed—maintaining precision and process reliability even at high torque levels.

Stiffness+ – when stiffness is the benchmark.

Coolant Flow Advanced (Coolant Supply)

Internal coolant channels with larger-than-market cross-sections and a significantly expanded external coolant feed (including ECS Plus) deliver above-average coolant volumes directly to the tool.

This improves chip evacuation and process stability in deep-hole drilling and heavy roughing, reduces thermal load, and extends tool life.

Coolant Flow Advanced – maximum flow, maximum control, maximum performance.

YRT-Duplex bearing arrangement

Maximum rigidity for highest precision and stability under extreme torque loads

A YRT duplex bearing arrangement uses two identical axial/radial YRT bearings mounted symmetrically around the central axis so that loads and moments are evenly distributed. This greatly increases tilting stiffness and resists overturning with minimal angular deflection.

In fork-style milling heads, the setup ensures precise positioning, reduced deformation, and stability even under combined axial, radial, and moment loads.





C - AXIS 360°/INFINIT

System accuracy: $\pm 2''$
360° < 1sec.

CYTEC Infinite Precision with the M-Series Infinite C-Axis

The optional Infinite Turning C-Axis for the M-Series milling head enables uninterrupted simultaneous machining for unparalleled accuracy and productivity.

» CONTINUOUS ROTATION:

Perform complex operations with seamless transitions.

» MAXIMUM PRECISION:

Achieve exceptional accuracy on intricate geometries.

» ENHANCED EFFICIENCY:

Optimize cycle times with continuous motion.

Engineered for the highest demands, the Infinite C-Axis ensures superior results on the most challenging parts.

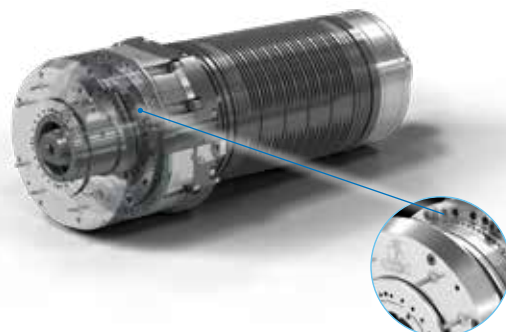
ΔZero Cooling Housing:

- Homogeneous temperature distribution
- Full temperature control across the entire speed range
- Optimized temperature compensation
- Minimized spindle expansion
- Efficient heat dissipation during complex machining
- 30% more cooling performance than standard systems



Option: Turning / Milling Spindle with Hirth Coupling:

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



M-SERIES

SmartLight (LED Status)

LEDs integrated in the head plate visualize spindle load, maintenance windows, and machine states.

Deviations are evident at a glance, enabling proactive intervention—resulting in planned maintenance and higher process reliability.

SmartLight – when light becomes the human-machine-interface.

ServiceSafety (Service & Diagnostics)

The A-axis and spindle feature integrated leak-detection channels—potential leaks are visible immediately, preventing consequential damage.

Behind the A-axis side cover, all fluid/media channels are directly accessible; temperatures, flow, blockages, or media quality can be checked within seconds.

ServiceSafety – full control, minimal risk, maximum availability.



M-SERIES Gen. II 2-Axis NC Head

Dimensions

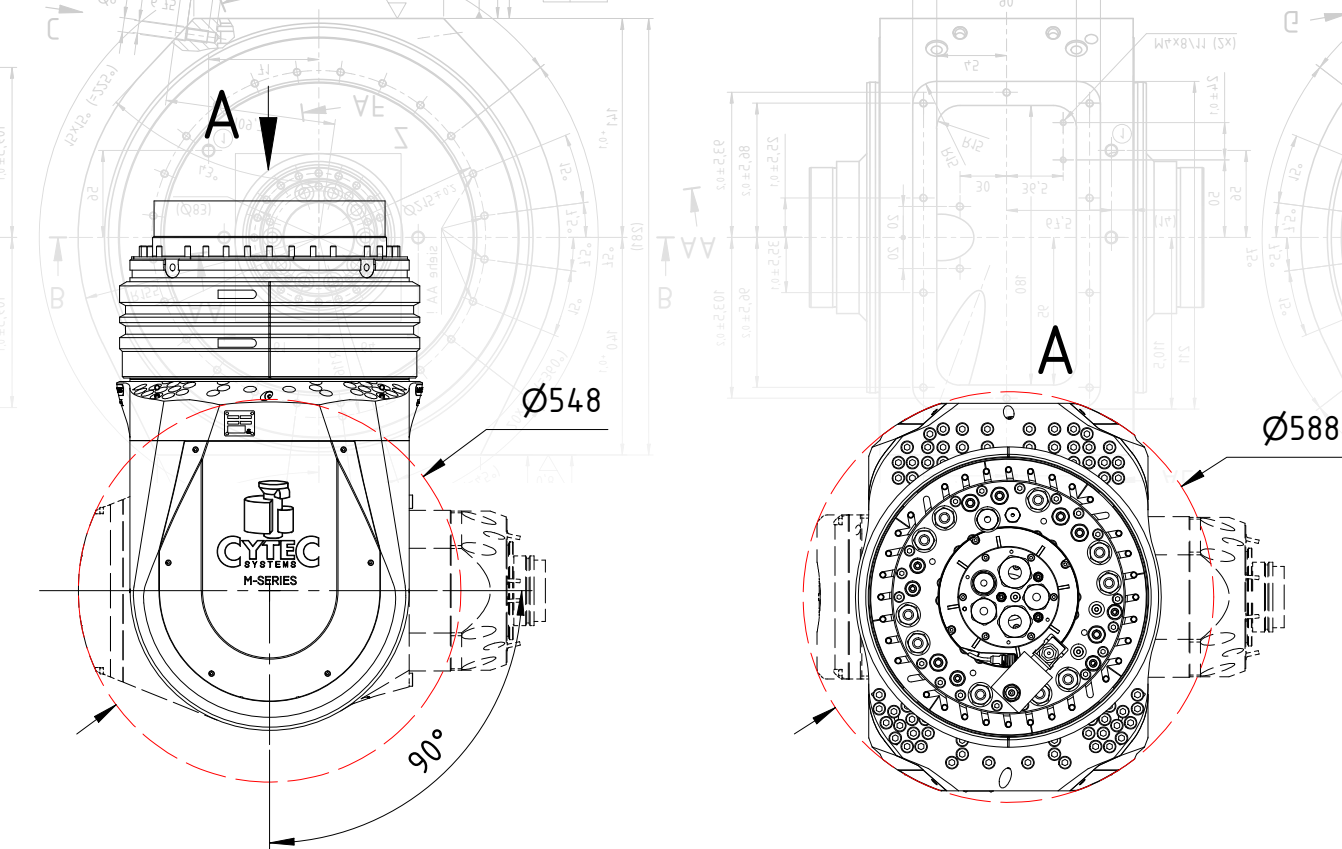
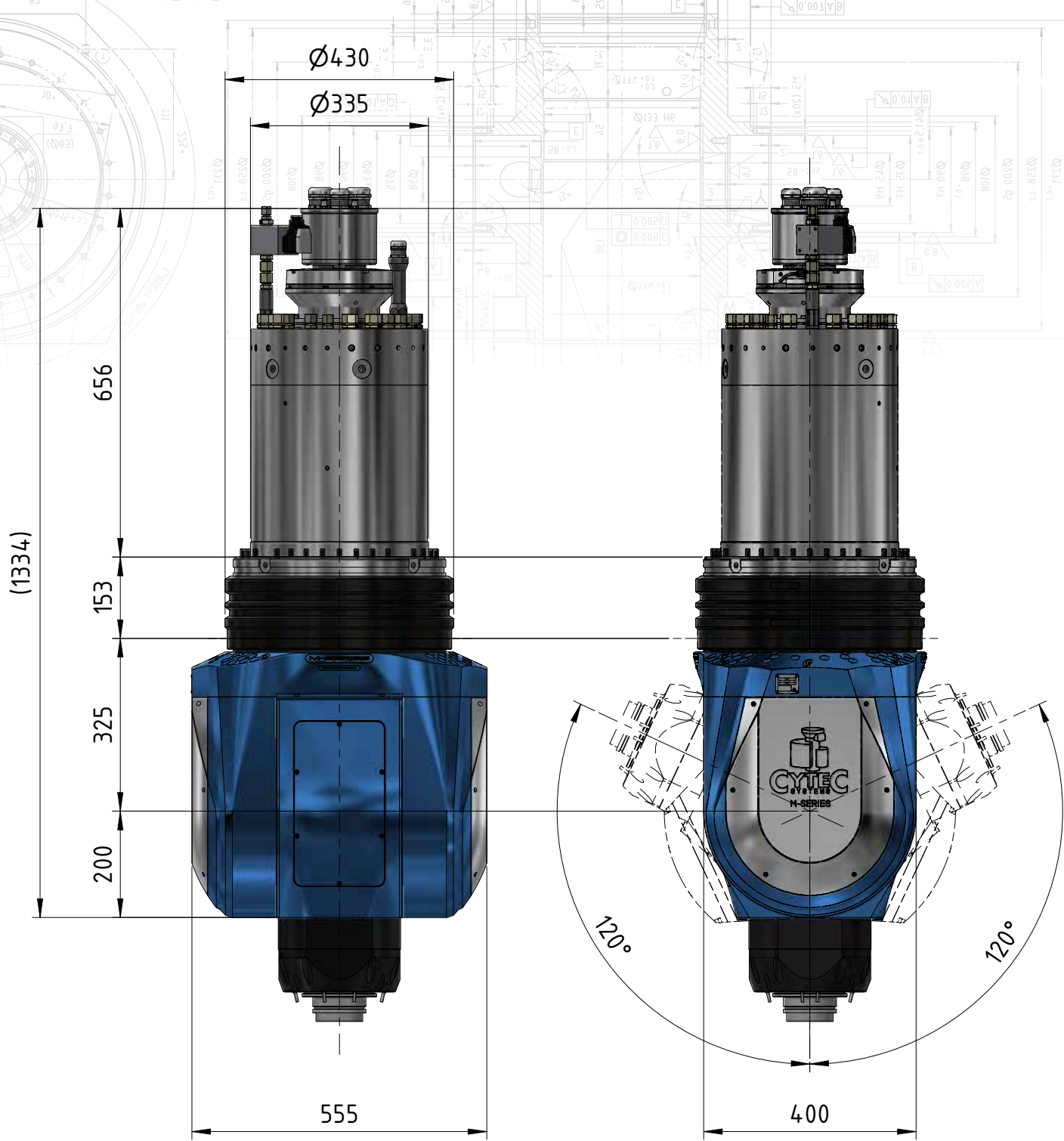
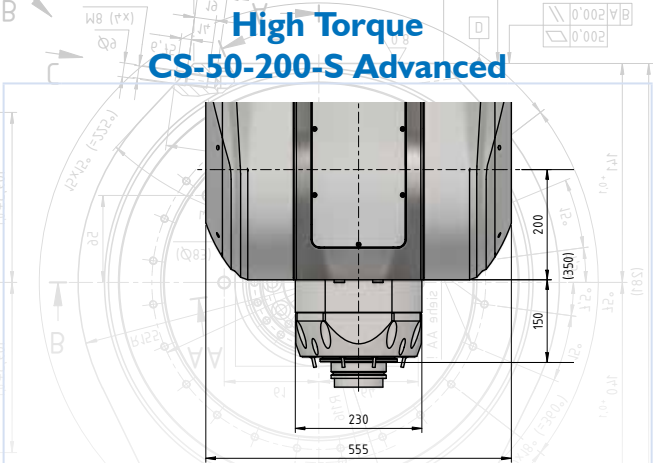


Fig. A Interference Contour

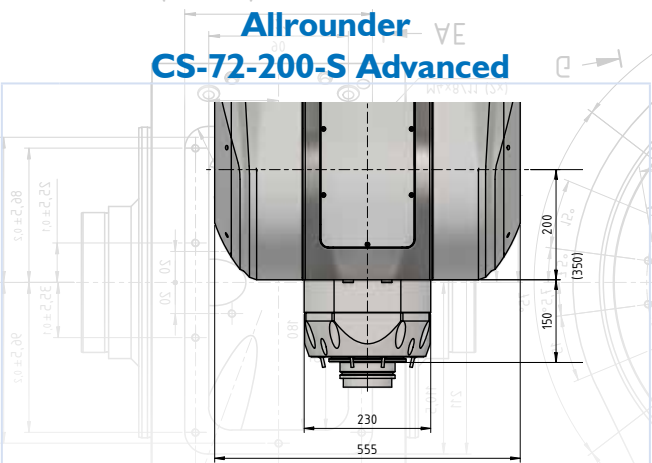
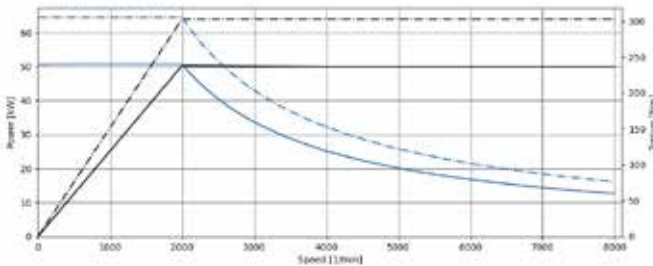
Item Details	A - Axis	C - Axis
Rated/Max. Torque UHT [Nm]	1.100 / 1.940	1.430 / 2.290
Max. Speed [rpm]	108	93
Rated Current [A]	12	14
Clamping Torque [Nm]	10.000	17.000
Swivel Angle [°]	±120	±360/cont.
Measuring System	absolute	absolute
Positioning Accuracy ["]	±2	±2
Total Weight [Kg]	370	380
Spindle Mount Diameter Ø [mm]	210	-



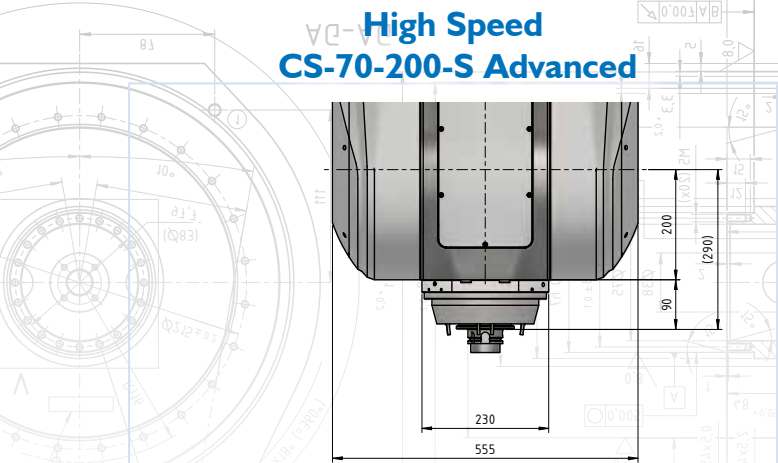
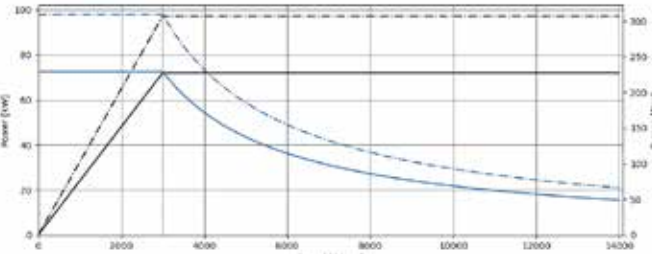
Motor-Spindles Technical Data



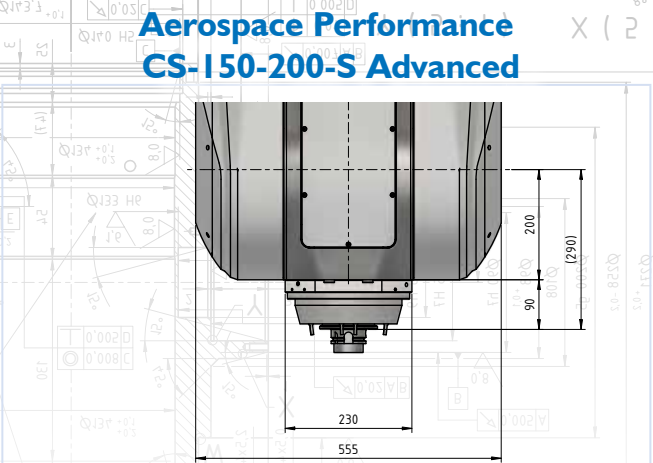
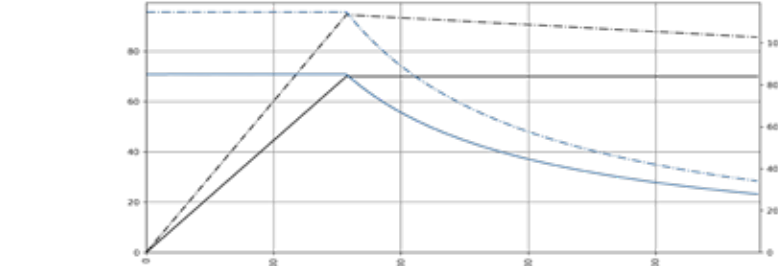
General specifications			
Power S1 / S6		50 / 68 kW	
nominal speed		2.010 1/min	
Max. Speed		8.010 1/min	
Tooltaper		HSK-A100	
Weight		127 kg	
Operational mode			
S1 (100%)	Speed [rpm]	2.010	8.010
	Torque [Nm]	238	60
	Power [kW]	50	50
	Voltage [V]	238	500
	Current [A]	164	79
S6 (60%)	Speed [rpm]	2.010	8.010
	Torque [Nm]	274	69
	Power [kW]	58	58
	Voltage [V]	249	494
	Current [A]	188	86
S6 (40%)	Speed [rpm]	2.010	8.010
	Torque [Nm]	306	76
	Power [kW]	64	64
	Voltage [V]	282	425
	Current [A]	195	116



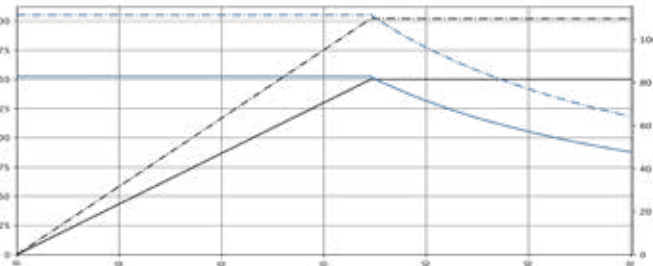
General specifications			
Power S1 / S6		72 / 97 kW	
nominal speed		3.000 1/min	
Max. Speed		14.000 1/min	
Tooltaper		HSK-A100	
Weight		127 kg	
Operational mode			
S1 (100%)	Speed [rpm]	3.000	14.000
	Torque [Nm]	230	50
	Power [kW]	72	72
	Voltage [V]	342	400
	Current [A]	145	127
S6 (60%)	Speed [rpm]	3.000	14.000
	Torque [Nm]	265	60
	Power [kW]	83	83
	Voltage [V]	350	400
	Current [A]	168	135
S6 (40%)	Speed [rpm]	3.000	14.000
	Torque [Nm]	309	66
	Power [kW]	97	97
	Voltage [V]	364	400
	Current [A]	200	148



General specifications			
Power S1 / S6		70 / 97 kW	
nominal speed		7.900 1/min	
Max. Speed		24.000 1/min	
Tooltaper		HSK-A63 / HSK-A80	
Weight		115 kg	
Operational mode			
S1 (100%)	Speed [rpm]	7.860	24.000
	Torque [Nm]	85	27,9
	Power [kW]	70	70
	Voltage [V]	346	400
	Current [A]	155	105
S6 (60%)	Speed [rpm]	7.900	24.000
	Torque [Nm]	98	32
	Power [kW]	81	81
	Voltage [V]	365	400
	Current [A]	185	118
S6 (40%)	Speed [rpm]	7.860	24.000
	Torque [Nm]	115	34
	Power [kW]	94,5	85,6
	Voltage [V]	385	400
	Current [A]	233	126



General specifications			
Power S1 / S6		150 / 202 kW	
nominal speed		17.300 1/min	
Max. Speed		30.000 1/min	
Tooltaper		HSK-A63 / HSK-A80	
Weight		115 kg	
Operational mode			
S1 (100%)	Speed [rpm]	17.300	30.000
	Torque [Nm]	83	47,8
	Power [kW]	150	150
	Voltage [V]	463	520
	Current [A]	223	178
S6 (60%)	Speed [rpm]	17.300	30.000
	Torque [Nm]	96	55
	Power [kW]	173	173
	Voltage [V]	464	512
	Current [A]	256	203
S6 (40%)	Speed [rpm]	17.300	30.000
	Torque [Nm]	112.1	64.5
	Power [kW]	202	202
	Voltage [V]	455	495
	Current [A]	307	243





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We reserve the right to make technical modifications. The components/machines shown here may include options, accessories and control variants.