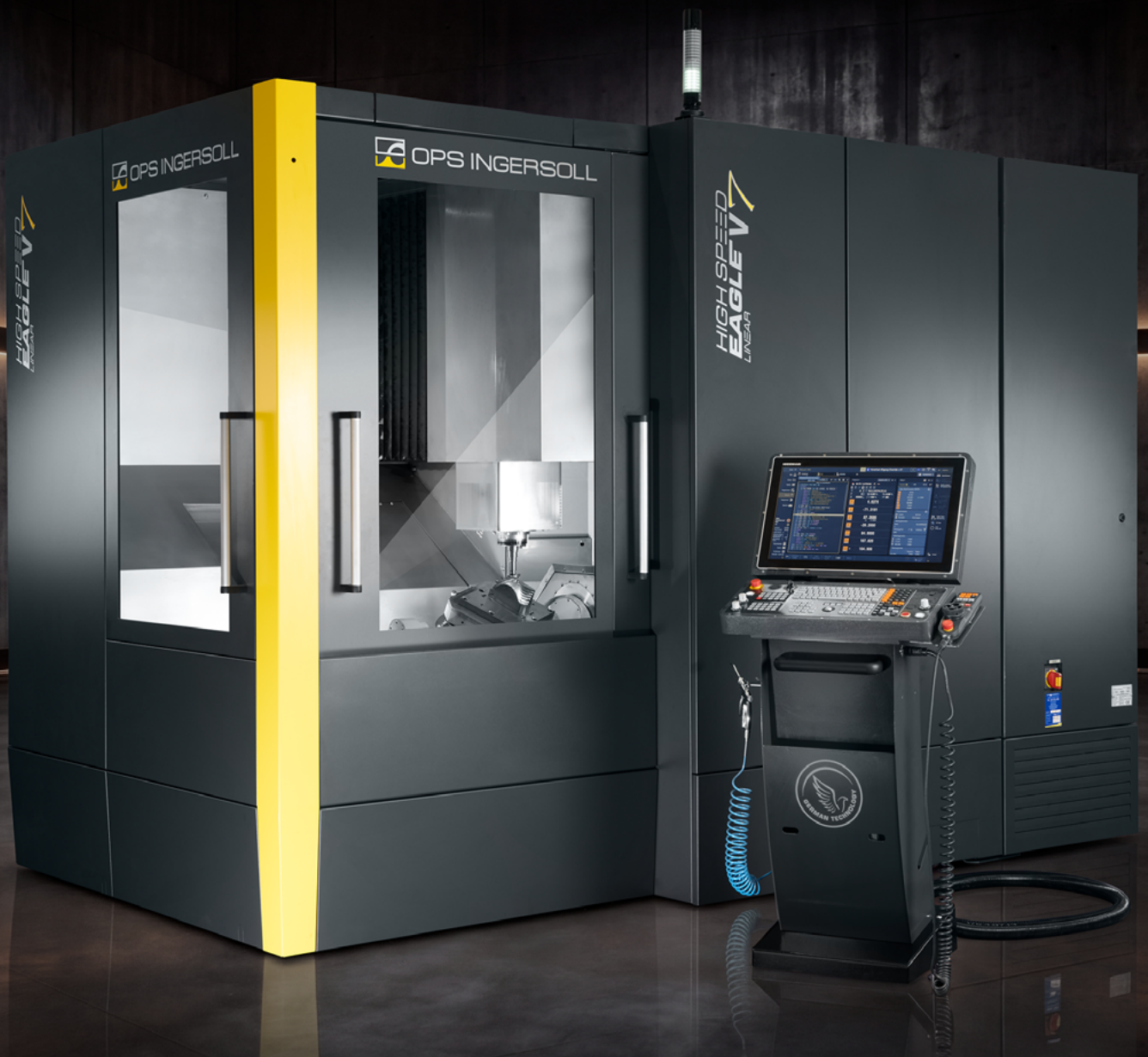


HIGH SPEED EAGLE V7 LINEAR



DYNAMICS. PRECISION. PROCESS STABILITY.
For repeatable machining results under real-world production conditions.

PRECISION MADE SIMPLE.

Consistent accuracy under dynamic loads, changing load conditions, and thermal influences.

Precision is not defined by positioning accuracy alone. What matters is a machine tool's ability to maintain machining quality under dynamic loads, changing cutting forces, and thermal influences over extended periods.

THE CHALLENGE



Dynamic Loads

High acceleration, rapid changes in direction, and varying machining forces place demanding loads on the machine structure and drive systems.



Repeatable Results

Stable production conditions ensure consistent quality over long operating periods.



Thermal Influences

Temperature fluctuations affect the machine geometry, tool, and workpiece—and therefore machining accuracy.



Operating Time

Long machining cycles intensify thermal effects and deviations.



Process Reliability

Stable machining conditions ensure repeatable production results.

THE SOLUTION

HIGH SPEED **EAGLE***V7linear*

The HIGH SPEED EAGLE V7 linear combines dynamics, precision, and process stability in one fully integrated machine concept.

The result is repeatable machining performance under highly demanding production conditions.

PRECISION IS NOT PROVEN AT A STANDSTILL—
IT IS PROVEN IN THE PROCESS.

DYNAMICS. STRUCTURE. PRECISION.

Engineered for highly dynamic milling.

The demands placed on modern milling operations extend far beyond positioning accuracy alone. What matters is the ability to maintain precision throughout the entire machining process.

Dynamic loads, changing cutting forces, and thermal influences continuously affect the machine, tool, and workpiece. The V7 linear was engineered to control these factors by design and ensure repeatable results in day-to-day production.

DESIGN FEATURES



DIRECT DRIVES & DYNAMICS

- Direct drives in all axes
- Traverse speeds of up to 60 m/min
- High acceleration with precise positioning



KINEMATICS & STRUCTURE

- Compact table kinematics
- Low moving masses
- Defined force flow throughout the machine structure



RIGIDITY & PRECISION

- High structural stability
- Repeatable machining results
- Superior surface quality and contour accuracy



CONTROLLED DYNAMICS. STABLE STRUCTURE.
PRECISE RESULTS.



HIGH SPEED **EAGLE***V7linear*

DIRECT DRIVES FOR MAXIMUM DYNAMICS AND
PRECISION.

DIRECT DRIVES & DYNAMICS

Direct force transmission for fast and precise axis movements.

The V7 linear uses direct-drive technology in every axis. Mechanical transmission components are eliminated entirely, preventing backlash and accuracy losses caused by wear. The machine responds immediately to motion commands and executes even demanding machining strategies with precision.

ADVANTAGES OF LINEAR DRIVES



ZERO BACKLASH

Direct force transmission enables precise positioning and repeatable results.



LOW MAINTENANCE

Without ball screws, wear and maintenance requirements are significantly reduced. Performance is maintained over the long term.



SHORTER NON-CUTTING TIMES

High acceleration and traverse speeds of up to 60 m/min reduce non-productive time.



HIGH DYNAMICS

Direct drives respond immediately to motion commands and enable maximum productivity.



PRECISE CONTOUR ACCURACY

Complex geometries and free-form surfaces are machined with precision.

The direct drives, machine structure, and control system are precisely coordinated. This allows the machine to move quickly and accurately while delivering consistent results, even in demanding machining applications.

DYNAMICS WITHOUT BACKLASH.
PRECISION IN THE PROCESS.

60
m/min

KINEMATICS, STRUCTURE & RIGIDITY

Engineered for controlled force flow and stable machining performance.

The machine kinematics were consistently engineered for dynamics, rigidity, and repeatable machining conditions. The objective is controlled force absorption and stable machine behavior throughout the entire travel range.

The compact rotary-tilting axis enables precise machining of complex geometries from virtually any position. Workpieces weighing up to 200 kg can be machined simultaneously in a single setup. This reduces setup times, improves accuracy, and increases the efficiency of the entire production process

ADVANTAGES OF 5-AXIS KINEMATICS



LARGE TILTING RANGES

The $\pm 100^\circ$ tilting range of the A-axis and the continuously rotating C-axis enable complex workpieces to be machined in a single setup.



MAXIMUM ACCURACY

Precise results, even in demanding simultaneous 5-axis machining applications.



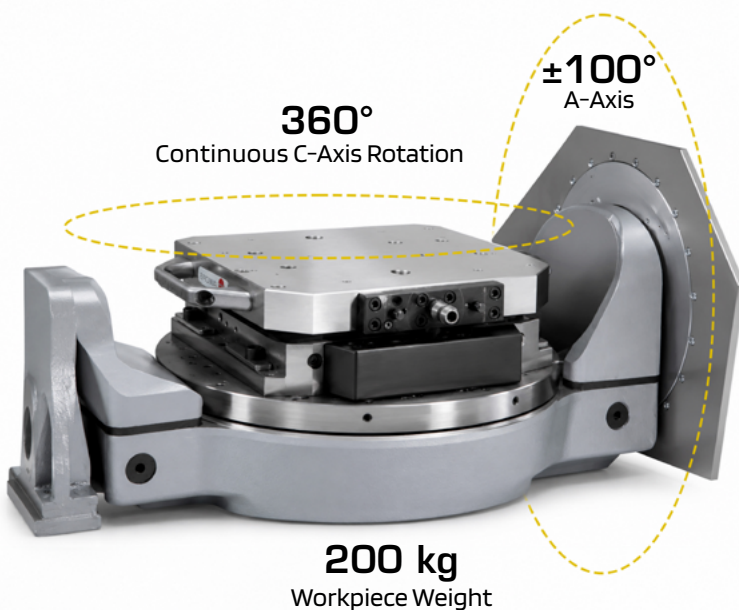
HIGH DYNAMICS

Fast axis movements and short non-cutting times with full process control.



OPTIMAL ACCESSIBILITY

Workpieces can be machined from multiple sides. Repositioning operations are reduced or eliminated entirely.



STABILITY IS THE RESULT OF CONSISTENT
ENGINEERING.

5-AXIS MACHINING IN A SINGLE SETUP. DYNAMICS AND PRECISION FOR COMPLEX COMPONENTS.

COMPREHENSIVE TEMPERATURE CONTROL.

Thermal stability for repeatable processes.

Temperature-induced displacement is one of the primary factors affecting precision, surface quality, and process reliability. The HIGH SPEED EAGLE V7 linear therefore uses consistent temperature control for all relevant machine components, including the rotary-tilting table. The objective is stable thermal behavior throughout the entire machining process.

TEMPERATURE MANAGEMENT



THERMALLY STABLE STRUCTURE

The machine bed, column, and moving components are engineered for uniform thermal behavior and high geometric stability.



PRECISION OVER LONG OPERATING PERIODS

Dimensional accuracy, surface quality, and process stability remain consistent, even during extended machining cycles.



CONTROLLED AXIS TEMPERATURES

Targeted temperature control of relevant assemblies reduces thermal displacement and maintains consistent positioning accuracy.



REDUCED THERMAL DISPLACEMENT

Heat input is controlled before it can affect machining accuracy.

The V7 linear temperature-management system considers the machine structure, drive technology, and milling spindle as an integrated system. Comprehensive temperature control of all thermally relevant components creates repeatable machining conditions.

CONTROLLED TEMPERATURES.
STABLE MACHINING PROCESSES.

THERMALLY STABLE SPINDLE TECHNOLOGY

Targeted spindle temperature control reduces thermal growth directly at the relevant components. This keeps machining conditions, repeatability, and process reliability stable, even during long operating periods and under changing loads.

As an option, the CSC cooling system—Compact Shaft Cooling—minimizes heating and expansion of the spindle shaft. This increases thermal stability and machining accuracy, shortens warm-up time, and improves production efficiency and flexibility.

ADVANTAGES OF CSC SPINDLE TECHNOLOGY



70% LESS THERMAL EXPANSION

Up to 70% less axial tool elongation for greater thermal stability.



GREATER PERFORMANCE RESERVES

Controlled heat dissipation improves the spindle's thermal load capacity.



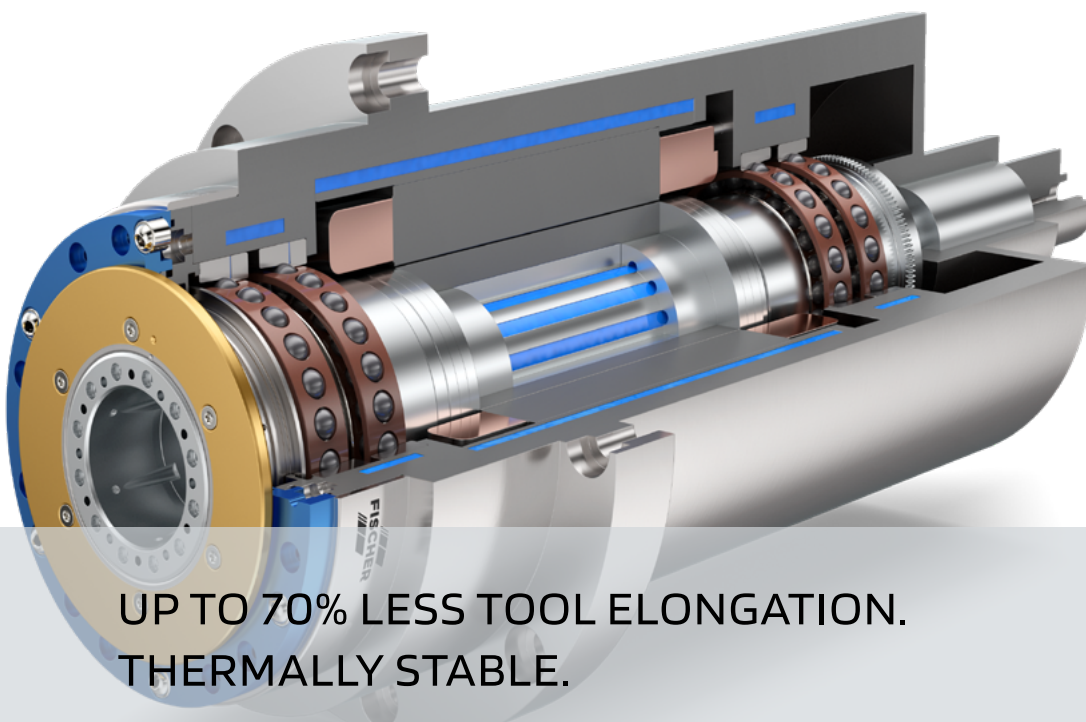
FASTER TEMPERATURE STABILIZATION

Shorter warm-up and cool-down times reduce waiting periods within the production process.



STABLE CONTINUOUS OPERATION

Consistent process conditions, even during extended machining cycles.



UP TO 70% LESS TOOL ELONGATION.
THERMALLY STABLE.

HEIDENHAIN TNC7

INTELLIGENT CONTROL. SMART PRODUCTION.

Intuitive operation. Maximum control.

The HEIDENHAIN TNC7 combines a modern operating concept with powerful CNC technology. The 24-inch touchscreen can be customized to meet the operator's requirements and provides a clear overview of all relevant information. High computing performance enables rapid block processing and precise simultaneous 5-axis machining of complex geometries.

TNC7—NEXT-GENERATION CONTROL



MODERN OPERATING ARCHITECTURE

Large 24-inch touchscreen display with a customizable user interface for efficient operation.



HIGH COMPUTING PERFORMANCE

Powerful hardware enables short response times, even with extensive NC programs.



ASSISTANCE FUNCTIONS

Support for programming, setup, and process control.



PRECISE SIMULTANEOUS MACHINING

Complex free-form surfaces and demanding geometries can be machined precisely and under controlled conditions.



INTUITIVE OPERATION.
TRANSPARENT PROCESS CONTROL.

IO-LINK

REAL-TIME TRANSPARENCY. MEASURABLE PRODUCTIVITY.

Connected. Transparent. Future-ready.

IO-Link connects the machine, tools, and peripheral equipment to create an intelligent production system. Sensors and components provide relevant process data in real time, establishing the foundation for complete transparency throughout production.



REAL-TIME DATA AVAILABILITY

For informed decisions based on current machine and process data.



TRANSPARENT PROCESSES

For maximum visibility across the entire production process.



SEAMLESS INTEGRATION

For easy connectivity between the machine, tools, and peripheral equipment.



CONNECTED SENSOR TECHNOLOGY

Transparency across operating conditions, signals, and process data.



TOOL DATA & PROCESS SUPPORT

The HIGH SPEED EAGLE V7 linear is available with 51, 96, or 197 tool positions —fully integrated and requiring no additional machine footprint.



TOOL DATA MANAGEMENT

Automated tool data.



TOOL MEASUREMENT

Precise tool compensation.



TOOL ORGANIZATION

Efficient organization and setup processes.



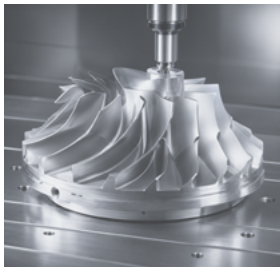
PROCESS MONITORING

Full control in real time.

ENGINEERED FOR THE HIGHEST DEMANDS.

When quality allows no compromises.

Whether in tool and mold making, medical technology, aerospace, or defense technology, the V7 linear delivers the benefits of its advanced design wherever precision, surface quality, and process reliability are critical.



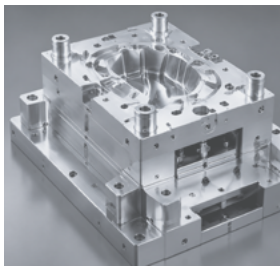
AEROSPACE

Maximum precision and process reliability for complex lightweight components made from aluminum, titanium, and high-performance materials.



MEDICAL TECHNOLOGY

Perfect surfaces and maximum accuracy for implantable components and surgical instruments.



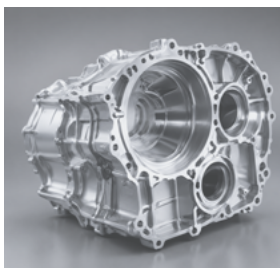
TOOL AND MOLD MAKING

High dynamics and superior surface finishes for mold inserts, tools, and complex geometries.



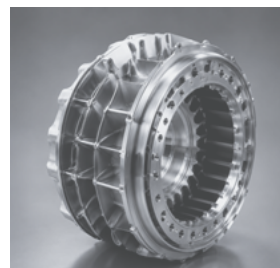
PRECISION COMPONENTS / MICROMECHANICS

Micron-level machining of intricate structures and demanding surfaces.



AUTOMOTIVE

Productive manufacturing of engine, transmission, and e-mobility components to the highest quality standards.



POWER GENERATION

Reliable machining of large and high-precision components for turbines, pumps, and compressors.

COOLANT CONCEPTS AND CHIP EVACUATION

Customized coolant and chip-management solutions ensure maximum process reliability and cost efficiency. Aerosol dry lubrication, water management, through-spindle coolant, work-area flushing, and high-performance filtration, conveying, and separation systems are optimally configured for each machining application.

TECHNICAL DATA

Everything you need to know at a glance.



200

kg

Workpiece Weight



60

m/min

Maximum Traverse Speed



197

Tools

Maximum Tool Capacity



±100°

A-Axis

Tilting Range

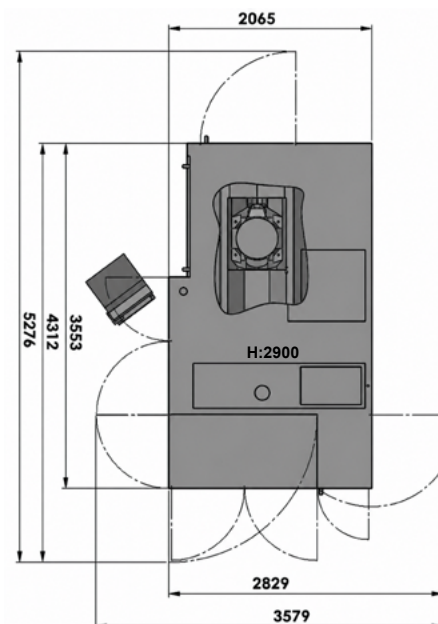
Specification	HIGH SPEED <i>EAGLE V7 linear</i>
Travel (X × Y × Z)	X: 600 mm (+120 mm auxiliary travel) Y: 660 mm (+320 mm auxiliary travel) Z: 400 mm
A- and C-Axis Travel	A: ±100° · C: 360°
Working Area (X × Y × Z)	600 × 660 × 400 mm
Worktable	3-axis: 750 × 650 mm · 5-axis: Ø 430 mm
Distance Between Table and Spindle	max. 570 mm
Workpiece Weight / Workpiece Size	3-axis: max. 500 kg 750 × 650 mm · Height 400 mm 5-axis: max. 200 kg Ø 500 mm · Height 300 mm on pallet
Dimensions (W × D × H)	2,100 × 3,600 × 2,900 mm
Machine Weight	9,500 kg
Spindles	HSK-E40 – 42,000 rpm HSK-E50 – 36,000 rpm
Through-Spindle Coolant	Rotary union included as standard
Tool Changer	51 / 96 / 197 magazine positions Maximum tool length: 260 mm
Traverse Speed	60 m/min
A-/C-Axis Rotational Speed	100 rpm
CNC Control	HEIDENHAIN TNC7 with 24-inch touchscreen
Workpiece Automation	External handling system

COMPACT. ACCESSIBLE.

MAINTENANCE-OPTIMIZED.

Maintenance-friendly down to the last detail:

Removable side panels, an electrical cabinet that opens by 90°, and overhead cable routing provide optimal access while maintaining a compact machine footprint.



EXPERIENCE THE V7 LINEAR IN ACTION.

We will demonstrate real-world applications, processes, and automation solutions.
Schedule an appointment for a personal consultation or live demonstration.

OPS-INGERSOLL FUNKENEROSION GMBH

Daimlerstrasse 22
57299 Burbach | Germany

Phone: +49 2736 446-0
Email: info@ops-ingersoll.de
Web: ops-ingersoll.de

