

VIBRA-FREE HD

Where
precision high speed and
heavy duty milling meet...



VIBRA-FREE HD

- > Second generation
Ultra High Speed Hard Milling...UHSHM™
- > Double the Travels
- > Quadruple the Horsepower
- > Lightning Speed
- > Near Polished Finish

Powered by
UHSHM



Years of field experience with Ultra High Speed Hard Milling (UHSHM™) combined with numerous success stories in mold, die, aerospace, semiconductor, medical and art-form fields brings High Speed Technology in one compact package. VIBRA-FREE HD offers large travels and heavy-duty cutting without sacrificing speed or accuracy.

Start with people who know High Speed Hard Milling. Apply design techniques using a unique massive bridge structure. Add a heavy duty 24,000 RPM (optional 30,000 RPM) quiet, versatile and powerful spindle. Top it off with CNC technology designed to handle the most challenging part geometry. Tie it all together with UHSHM software. The result is VIBRA-FREE HD, providing unmatched balance between heavy-duty roughing and high speed finishing.

VIBRA-FREE HD will keep part integrity in check and produce your parts in a fraction of the time.

Our extensive library of feeds and speeds, tooling data, and hundreds of benchmark cuts means you are backed by an expert team right in your back yard. You can tackle any job, quote it, cut it and ship it before your competition has a chance to evaluate it.

Five Key Elements

1

Bridge Structure

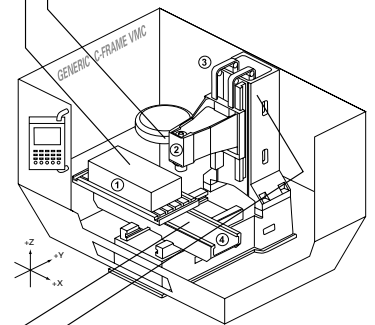
It is an acknowledged fact that no serious high speed milling can be accomplished on a conventional C-frame vertical machining center.

VIBRA-FREE HD is different. Its second-generation unique bridge structure eliminates overhang. Its optimal weight distribution allows rapid travel and response. Its full-stroke supported, no-sag table can machine blocks up to 45 by 24 inches weighing up to 2000 pounds. Thermally controlled ball-screws and special Schneberger™ roller guide-ways eliminate stiction. Way guard protection extends end to end and its 20-station tool-changer is protected from tool steel, composites or graphite.



C-Frame VMC

- 1 Table overhangs and offsets from Y-axis at the end of X stroke.
- 2 Long distance between spindle centerline and its supporting and driving mechanism.



- 3 Heavy Z head requires counterweight or slows Z motion.
- 4 More weight is allotted to moving structure, limiting machine's dynamic response – the essence of High-Speed Machining.

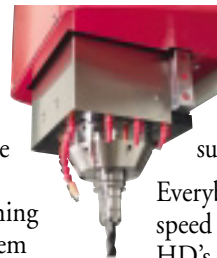
2

Integral Spindle

Made to perform under extreme conditions, VIBRA-FREE HD's 24,000 rpm (optional 30,000 rpm) spindle with intelligent cooling and monitored mist lubrication keeps thermal growth in check from one shift to the next, spinning at maximum speed.



HSK 63 pre-balanced, double-face-contact tooling accepts extended tool holders with the rigidity to machine deep cavities. Roughing is no longer a problem with a 40 continuous horsepower spindle offering full torque at 50 RPM. When the



roughing is done, keep your part on the VIBRA-FREE HD and finish it. At 30,000 rpm, brilliant surface finish is our trademark.

Everybody worries about high-speed spindles. VIBRA-FREE HD's spindle longevity is backed by local response and repair/exchange policies that don't kill the pocketbook.

3

Controlling Thermal Growth at the Source



The challenge of high speed machining is controlling thermal expansion at high feeds and speeds. Thermal growth results in poorer finishes, poorer tolerances and hours of baby-sitting. VIBRA-FREE HD handles heat growth from the ground up. Symmetric bridge construction minimizes distortion despite changes in ambient temperature. An independently controlled spindle chiller and a separate ball-screw chiller extract heat from the source.



On-demand, intelligent lubrication systems are built into the VIBRA-FREE

HD. Your maintenance technicians can relax and leave the worrying to the VIBRA-FREE HD, running 24/7.

4

UHSHM™ Software



Backed by years of experience, UHSHM software guarantees smooth motion. Before a VIBRA-FREE HD goes out the door, parameters are set for a variety of conditions so you can “change gears” when dealing with different challenges. One more thing. The world-class Fanuc 18i-MB CNC, advanced AI Nano High Precision contour control (HPCC), 1 Gb data server and rigid tapping are all standard.



5

The Team

No high speed machine is complete without an expert team backing it. Our experienced applications engineers have a wealth of knowledge that comes with the package direct to your mold makers and machine-shop floor. From the time we ship your benchmark test cut until the time you ship your first piece, our high speed applications team puts UHSHM at your disposal. Everything from 3D surfacing techniques to cutter selection, downloading the information and cutting your part right and fast the very first time. Our customers are our associates and our relationships last a lifetime. No wonder over half of our VIBRA-FREE customers invested in a second machine.





VIBRA-FREE HD

VIBRA-FREE HD Specifications

Major Specifications

X Axis Travel	45 in (1143 mm)
Y Axis Travel	24 in (610 mm)
Z Axis Travel	22 in (559 mm)
Table Size.....	47.2 x 23.6 in (1200 x 600 mm)
Table to Spindle End	3.6 to 25.6 in (91 to 650 mm)
Table to Bridge	23.6 in (600 mm)
Table Surface	T-slot
Load Capacity	2000 lb (910 kg)
Rapid Traverse Rate	1400 in/min (35,560 mm/min)
Maximum Feedrate	1400 in/min (35,560 mm/min)
Tool Magazine	20 Tools, bi-directional, servo
Tool Holders	HSK 63
Maximum Tool Diameter	3 in (75 mm)
Maximum Tool Length	12 in (305 mm)
Maximum Tool Weight	15 lb (6.8 kg)
Control	Fanuc 18i-MB
Axis Drives.....	(X, Y, & Z) 4 kW, Fanuc Alpha 22i (Magazine) 2,2 kW, Fanuc Alpha 4i
Spindle Motor	40 hp (30 kW) S1 Continuous power 54 hp (40 kW) S6 Power
Spindle Speed	0 to 24,000 rpm
Spindle Chiller.....	5 kW

Machine Accuracy

Positioning Accuracy	0.0002 in (0.005 mm)
Repeatability	0.0001 in (0.003 mm)

Dimensional Data

Height	131 in (3330 mm)
Footprint	142 x 98 in (3610 x 2500 mm)
Weight.....	22,440 lb (10,200 kg)

Service Requirements

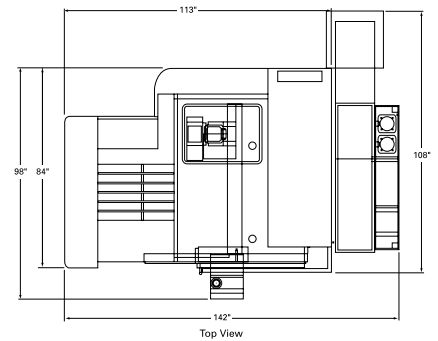
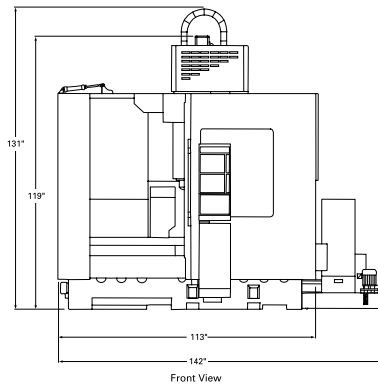
Air	80 psi, 26 cfm, dry air required
Electrical Power	200 to 500 VAC to universal transformer 50 to 60 Hz, Three-phase 45 kVA
Chiller Fluid Capacity	12 gal (45 l)
Lube Oil Reservoir.....	1.65 gal (6.0 l)
Hydraulic Reservoir	0.8 gal (3.0 l)
Mist Coolant Reservoir	0.25 gal (1.0 l)
Flood Coolant Tank.....	57 gal (216 l)

Standard Equipment

Rigid tapping	Mist coolant system
Flood coolant system	Chip wash system
Chip auger and conveyor	Dual chillers (Spindle & ball-screws)
Servo-driven, fast-acting ATC	Remote hand pulse generator
Fully enclosed work area	Fully integrated bed design
Operator work light	Pneumatically operated top cover for crane access
Leveling screws and pads	Operator call light (Red, yellow, green, blue)
Operation and maintenance manuals	

Machine Options and Accessories

HSK tooling package	Coolant through the spindle
30,000 rpm spindle	4th axis rotary table
4th and 5th axis tilting rotary table	Laser tool measuring system
Graphite dust extraction system	Pallet changer



Project Assistance

Qualified application engineers are ready to assist you with special fixturing, programming and cycle time reduction.

Training

Complete programmer and operator training by qualified distributors located throughout the USA and Canada.

Exclusive sales, service and applications in your area

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Some machine photos show covers or doors opened for clarity.

Refer to tool manufacturer for maximum safe cutter speeds.

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Specifications are subject to change.



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