



HIGH PRECISION
MACHINES

MATERIAL
REMOVAL

Forest-Liné Modumill^{Ti} Forest-Liné Powermill^{Ti}

Titanium Machining Centers

^{Ti} Titanium Machining



Focusing on innovation in roughing and finishing titanium and hard material aircraft structural complex parts, Fives designs dedicated 5-axis profilers in vertical and horizontal configurations

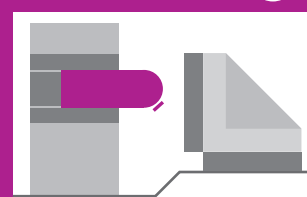
- High stiffness and accuracy
- High torque mechanical spindle
- High pressure and flowrate coolant processing
- Secure process
- Extra compact machines
- Stand-alone or FMS configuration

Forest-Liné Modumill ^{Ti}



Vertical spindle
Mobile horizontal table

Forest-Liné Powermill ^{Ti}



Horizontal spindle
Moving vertical table

Based on its strong expertise in titanium, Fives designs and manufactures adaptative solutions for titanium machining

With the Forest-Liné Modumill[®] and the Forest-Liné Powermill[®], Fives offers adaptative solutions for titanium machining.

- High pressure cooling system, up to 70 bars
- Pressure, allowing efficient cooling of the cutting tool edges and selective removal chips rate
- Patented “constant overhang ram” offering the conducive milling conditions, whatever the position is
- “In-house” design and manufacture of 5-axis milling heads providing high torque up to 1,000 Nm with rigid and compact structure

Safety process:

- Geometry 5-Axis Control System helping to determine the status of the geometry of the machine with an accurate description of temperature variation and within 15 minutes
- Various solutions could be developed together with collision detection device, video camera supervision and 3D scan of the part

The patented “constant overhang” ensures a high stiffness and accuracy of the machine for titanium processing, whatever the position is.



5-axis High Torque Mechanical Spindle

Spindle	HS5 (Standard)
Power	105 kW
Torque	1,000 Nm
Speed	10,000 rpm
Taper	HSK 100 A

FEATURES

- CNC: SIEMENS 840D sl or HEIDENHAIN iTNC
- User-friendly integrated HMI: FL Vision
- Direct measuring system
- C-axis integrated in the ram
- Eco-design
- CE certification

FOREST-LINÉ MODUMILL[®] SPECIFICATIONS

Milling Way	Vertical	
Work area	2 x 4 m	5 x 6 m
Pallet load	15,000 kg	25,000 kg
Axis		
X Axis travel	4.5 m	6.5 m
Y Axis travel	3.5 m	3.5 m
Z Axis travel	1 m	1 m
C rotary Axis	± 400°	
B Rotary Axis	± 110°	
Spindle	Electro-Spindle HS5	
Power	105 kW	
Torque	1,000 Nm	
Speed	10,000 rpm	

FOREST-LINÉ POWERMILL[®] SPECIFICATIONS

Milling Way	Horizontal	
Work area	2 x 4 m	2.2 x 6 m
Pallet load	5,000 kg	5,000 kg
Axis		
X Axis travel	4.5 m	6.5 m
Y Axis travel	2.5 m	2.5 m
Z Axis travel	1 m	1 m
C rotary Axis	± 400°	
B Rotary Axis	± 110°	
Spindle	Electro-Spindle HS5	
Power	105 kW	
Torque	1,000 Nm	
Speed	10,000 rpm	

SOME REFERENCES

Asco — Aubert & Duval — Avic — BAE Systems — DCNS — Oak KnAAZ — ZSKB Progress

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