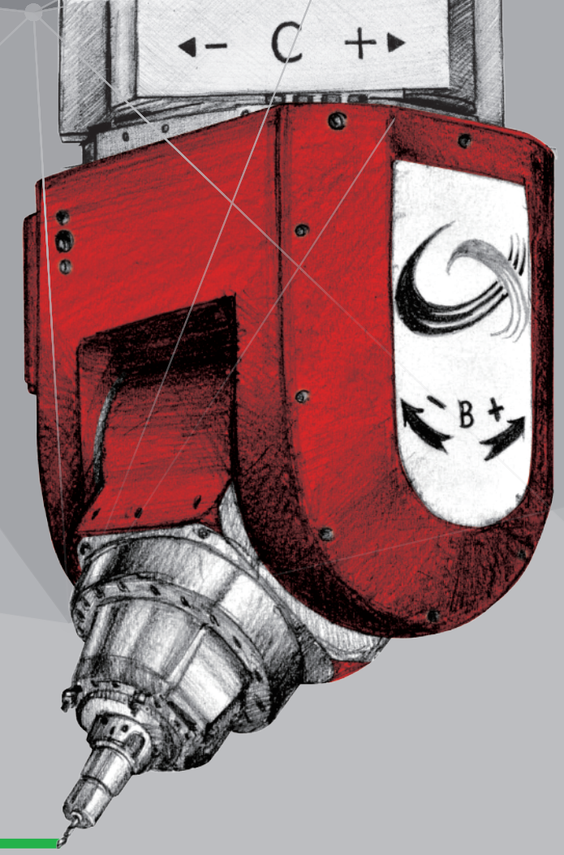
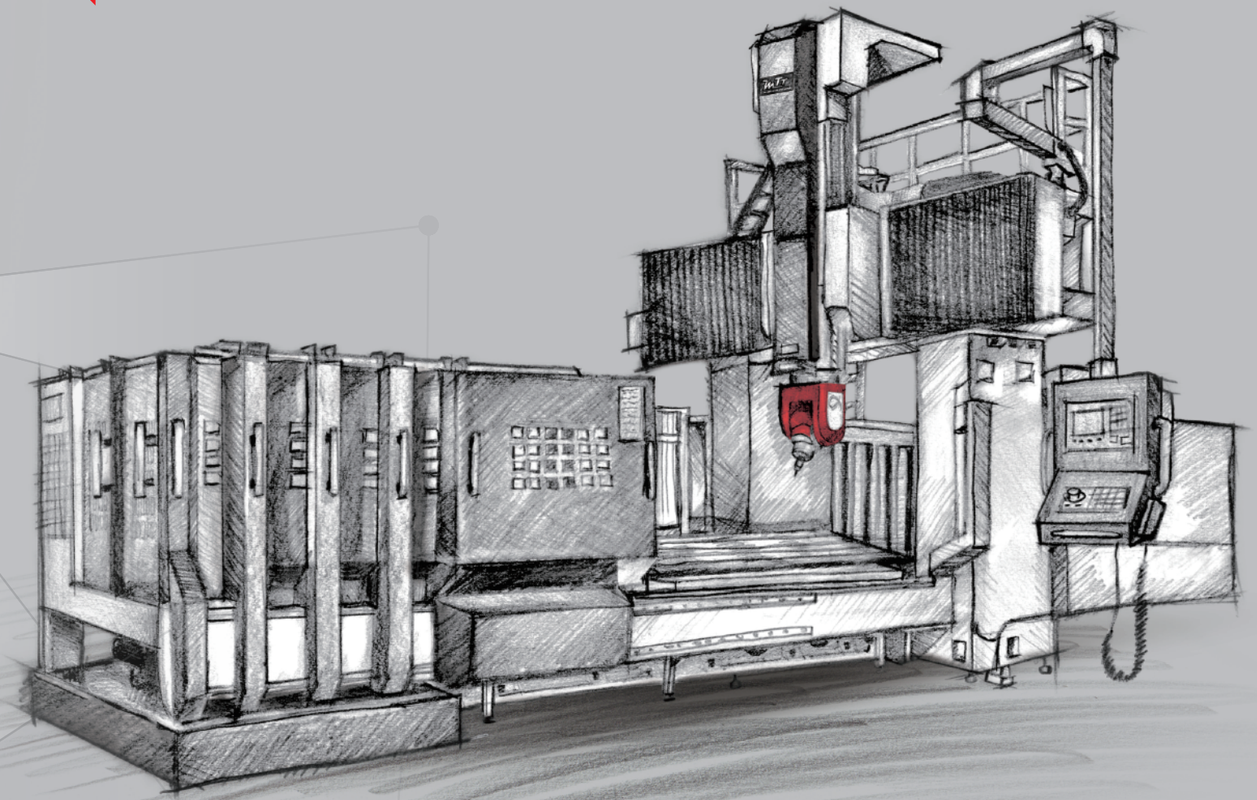
SOLUTION OF WORLDWIDE SALES NETWORK



HELIOS Series

5 axis Bridge Type Machining Center



Twinhorn

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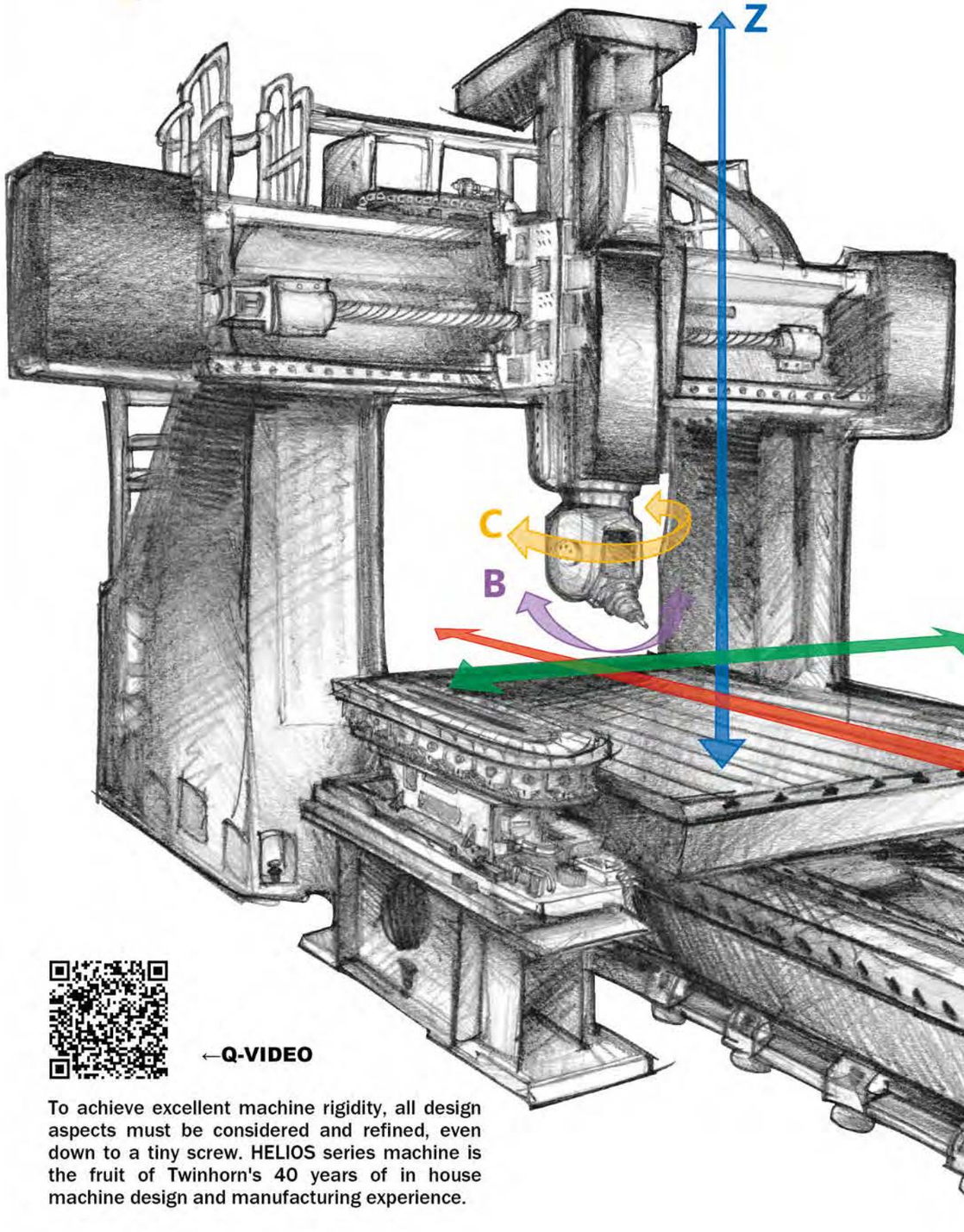
GCL INTERNATIONAL ISO 9001 5965
UKAS MANAGEMENT SYSTEMS

From zero to infinity

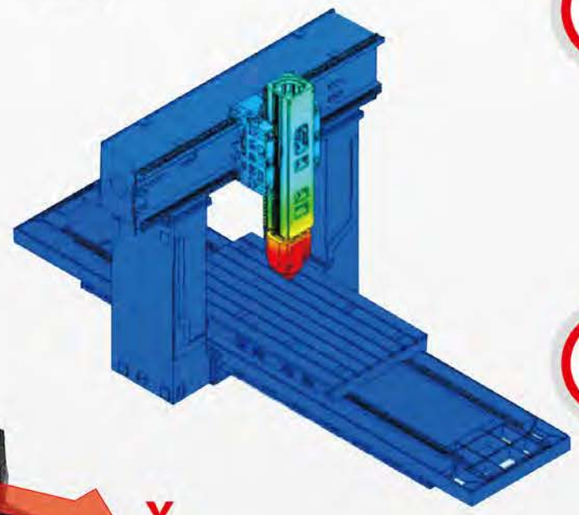


←Q-VIDEO

To achieve excellent machine rigidity, all design aspects must be considered and refined, even down to a tiny screw. HELIOS series machine is the fruit of Twinhorn's 40 years of in house machine design and manufacturing experience.

Optimum structure FEA

Finite Element Analysis is applied to simulate the machine structure under realistic loading conditions. All structural components are optimized to meet the required rigidity and stability.



Structural characteristic

High rigidity cross-roller linear guides

X, Y, Z Axes adopts rigid, high-precision and smooth running guide ways. Mutiple blocks and guide ways along the same axis enhance the static and dynamic loading capacity, thus guarantee accuracy and long service life.

High rigidity crossbeam structure design

The muti-layered steel column structure is specially reinforced and widened at the base to achieve the stability, rigidity and vibration damping characteristic required during high pricision and high chip removal rate operations.

High performance five Axis milling head

C-axis is powered by a DD motor to achieve high speed, and B-axis is driven by a servo motor with specially designed zero backlash transmission to minimize the head size. Optical encoders are equipped to ensure accuracy and hydraulic clamping system provides the rigidity during fixed angle machining.

HELIOS Series

5-Axis Bridge Type Machining Center

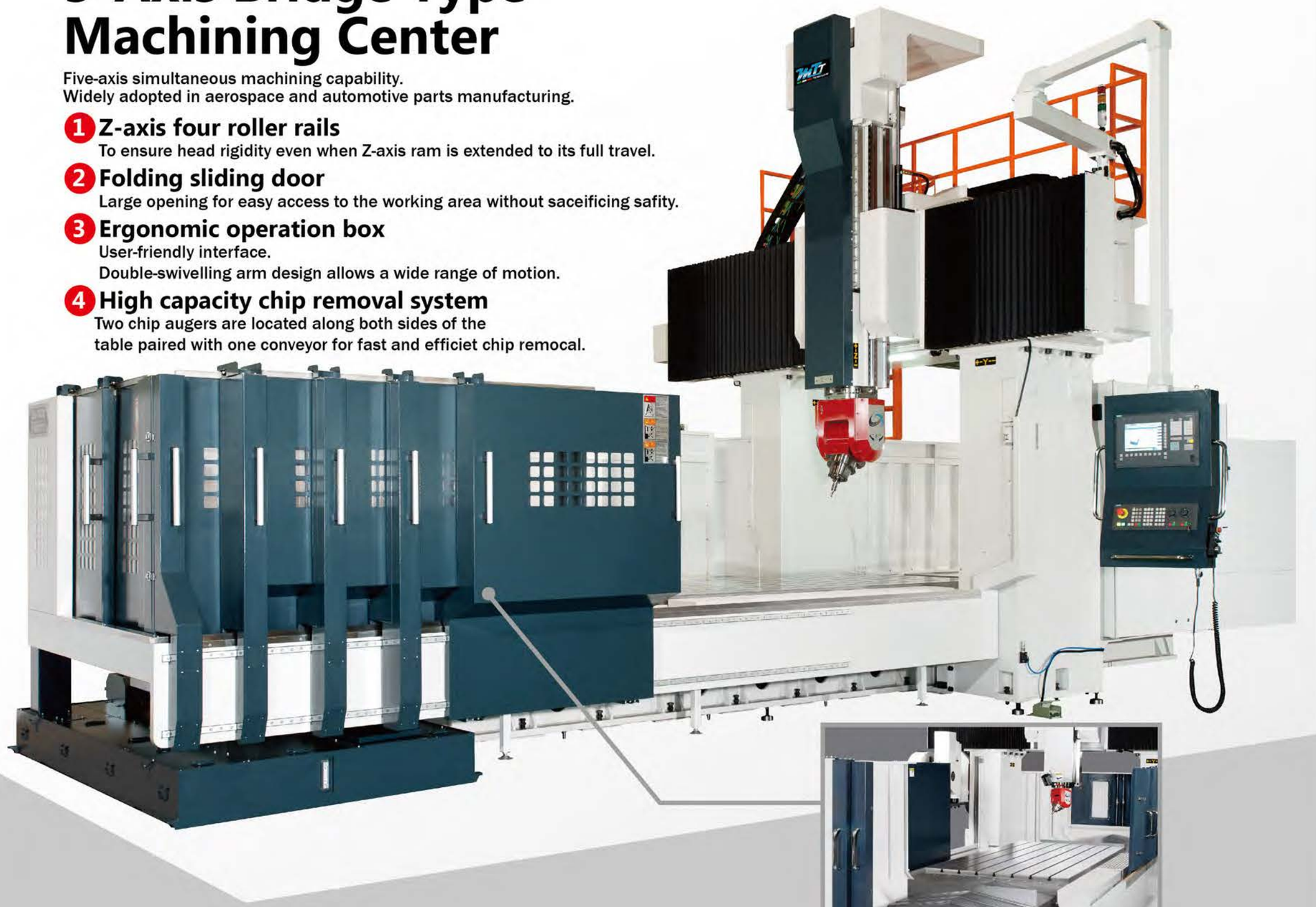
Five-axis simultaneous machining capability.
Widely adopted in aerospace and automotive parts manufacturing.

1 Z-axis four roller rails
To ensure head rigidity even when Z-axis ram is extended to its full travel.

2 Folding sliding door
Large opening for easy access to the working area without saceificing safity.

3 Ergonomic operation box
User-friendly interface.
Double-swivelling arm design allows a wide range of motion.

4 High capacity chip removal system
Two chip augers are located along both sides of the table paired with one conveyor for fast and efficiet chip remocal.



A wide range of milling heads for flexible choice, all with CTS option.

Five-axis simultaneous movement control milling head (TTFE3)

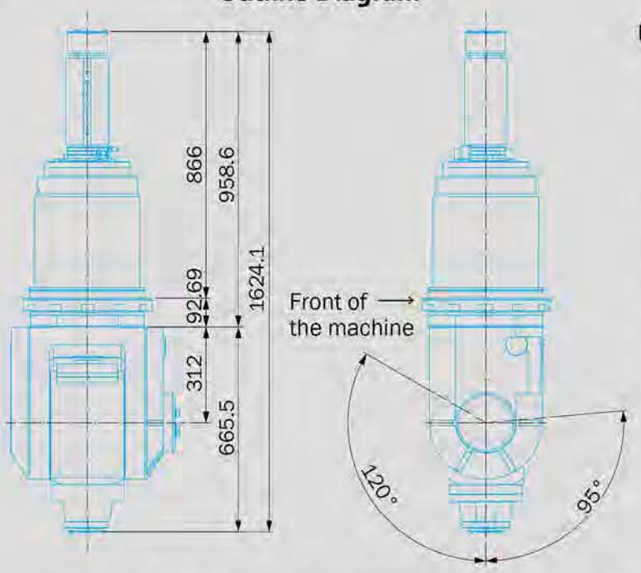
Rigid, compact, agile and accurate design to ensure machining speed and efficiency.

C-axis travel	± 200°	450/700 Nm
B-axis travel	+120°~-95°	450/630 Nm
Resolution of B/C	0.001°(Continuously)	
Spindle type	18000 rpm Built-in HSK-A63	
Base speed	3000 rpm	
Spindle power(S1/S6-40%)	35/49 kw (380V)	
Spindle torque(S1/S6-40%)	120/170 Nm	

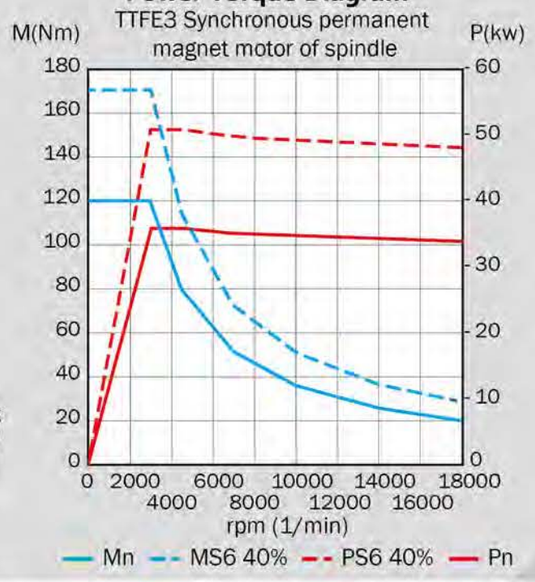
B/C axes calibration and RTCP rotating center error compensation are always applied to our whole series 5-ax machines, to ensure tool tip path accuracy during complex and irregular curved surface machining.

Five-axis milling head (TTFE3)

Outline Diagram



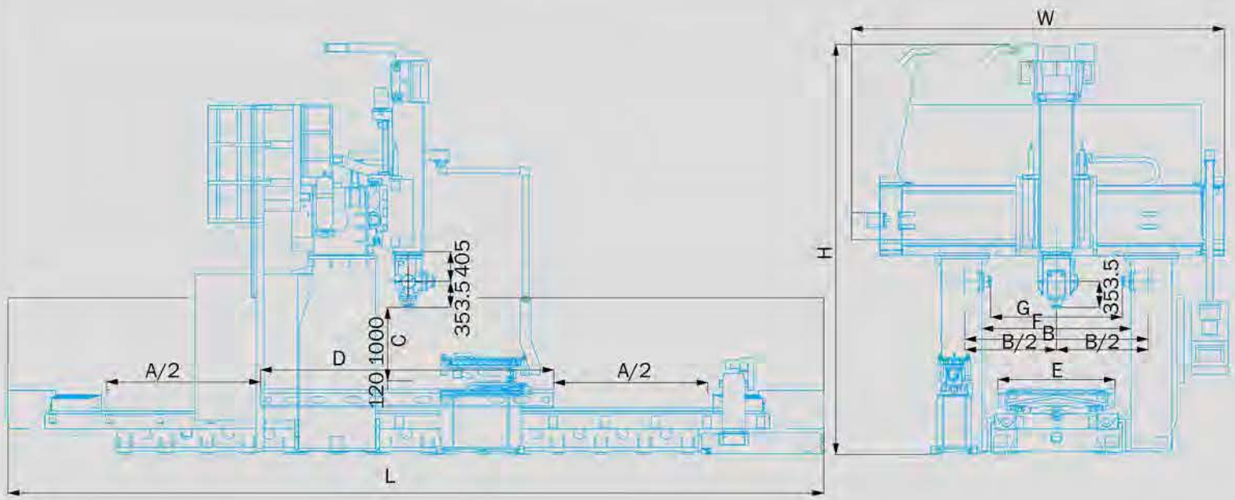
Power Torque Diagram



HELIOS Outline Dimension drawing

Size code	FG-2725-5A / FG-3225-5A / FG-4225-5A	FG-3230-5A / FG-4230-5A / FG-5230-5A
A(X-axis Travel)	2700 / 3200 / 4200	3200 / 4200 / 5200
B(Y-Axis Travel)	2500	3000
C(Z-Axis Travel)	1000	
D(Table length)	2500 / 3000 / 4000	3000 / 4000 / 5000
E(Table width)	1600	2000
F(Distance between two columns)	2000	2500
G(Max. distance when spindle is horizontal)	1796	2296
L(Machine Length)	7990 / 8990 / 11125	8990 / 11125 / 12550
W(Machine Width)	4900	5450
H(Machine Height)	5590	5600

Unit:mm



MACHINE SPECIFICATION

MODEL		FG-2725-5A	FG-3225-5A	FG-4225-5A	FG-3230-5A	FG-4230-5A	FG-5230-5A
Travel							
X-axis	mm	2700	3200	4200	3200	4200	5200
Y-axis	mm	2500			3000		
Z-axis	mm	1000					
Spindle nose to table surface	mm	120 ~ 1120					
Distance from spindle 90° centerline to table surface	mm	473 ~ 1473					
Distance between two columns	mm	2000			2500		
table							
Table size (X direction)	mm	2500	3000	4000	3000	4000	5000
Table size (Y direction)	mm	1600			2000		
T slot size (quantity x size x distance)	mm	7×22mm×200mm			9×22mm×200mm		
Max. table load	kg	9000	10000	12000	12000	15000	18000
Spindle							
Spindle motor	kw	35/49 (S1/S6-40%)					
Spindle speed	rpm	12000					
Spindle taper		HSK-A63					
Spindle maximum torque	Nm	120/170 (S1/S6-40%)					
Spindle diameter	mm	70					
head							
B/C axis travel	deg.	B= +120°~ -95°, C= ±200°					
B/C axis resolutuon	deg.	0.001°(Continuously)					
B axis working torque (S1/S6)	Nm	450 / 630					
C axis working torque (S1/S6)	Nm	450 / 700					
B/C clamping torque	Nm	3750 / 2700					
Feedrate							
Rapid feedrate X / Y / Z	M/min	20/20/12		15/15/12	15/15/12		
B swing speed/C rotation speed	deg./sec.	B=50 , C=180					
Cutting speed (X, Y, Z)	mm/min	1-10000					
Tool magazine							
Tool number	pcs	32 (Opt. 40 , 60)					
Max. tool diameter/ w./w.o. adjacent tool	mm	Ø80 / Ø150					
Max. tool length	mm	300					
Max. tool weight	kg	8 (Average tool weight 6kg, total weight 160kg)					
Accuracy (VDI/DGQ 3441)							
Positioning accuracy P (X, Y, Z)	mm	0.023	0.025	0.030	0.025	0.030	0.035
Repeatability accuracy Ps (X, Y, Z)	mm	0.018	0.020	0.025	0.020	0.025	0.030
B/C axis positioning accuracy P	arcsec	14					
B/C repeatability accuracy Ps	arcsec	8					
Power capacity	kVA	80KVA(380±10%Vac,3phase 50/60Hz)			100KVA(380±10%Vac,3phase 50/60Hz)		
Air pressure required	kg/cm²	6					
Tank capacity	L	550			660		
Machine length L	mm	7990	8990	11125	8990	11125	12550
Machine width x high W x H	mm	4900×5590			5450×5600		
Machine weight	kg	25000	30000	35000	35000	40000	47000

◎ The company reserves the right to change the mechanical specifications, accessories and appearance without prior notice.

Standard Accessories

- Three-axis optical scales
- A/C axes Renishaw rotary optical encoders
- Automatic lubrication system
- Chip conveyor and cart
- Rigid tapping
- Electrical cabinet air conditioner
- Tool clamp unclamp foot pedal switch
- Coolant system
- Leveling bolt and Leveling pad
- Inspection report
- Mechanical operation manual and system instruction book

Optional Accessories

- Spindle 15000 rpm
- Spindle 18000 rpm
- Coolant through spindle(CTS)
- Magazine 40 tool, 60 tool
- Auto tool length measurement device
- Auto workpiece measurement device
- Five-axis anti-collision protection function
- Five-axis rotary center error compensation function (RTCP)

- **Optional controller**

SIEMENS 840DSL
HEIDENHAIN TNC640
FAGOR
FANUC