HYUNDAI
MOTOR GROUP

XF Series

XF6300 | XF8500

HYUNDAI WIA 5-Axis Vertical Machining Center

THE WORLD BEST

When it comes to 5-axis machine tool technology, people tend to consider a product made in Japan, Germany and Switzerland to be the best.

In the past this may have been true, that is up until now.

Introducing the XF series. The Best 5-axis Vertical Machining Center in the World.

TECH CUBE, HYUNDAI WIA Europe Technical Center

In our determination to develop machine tools that deliver unrivalled satisfaction to our customers, and our unwavering commitment to grow into the world's best machine tool company, HYUNDAI WIA have established a technical support center in Germany.

Through its new European Technical Center, HYUNDAI WIA will not only enhance technical support for its European clients but also run a variety of marketing campaigns on the continent with the aim of growing into the leading machine tool brand in the entire European market.

Notably, the company will staff the R&D Center with world-class researchers who will take the lead in promoting the technological enhancement by developing new machine tools that far surpass the performance of existing machine tools in Europe.

HYUNDAI WIA is now set to become a global player.

Cutting Edge Technology

The XF series 5-axis vertical machining center in the world-best level, developed by HYUNDAI WIA Europe R&D Center. XF series are a perfect blend of machine and technology to realize the ultimate performance in composite machining and mold machining with the highest quality possible resultant of its cutting-edge design features such as the monoblock type bed structure, X/Z axis box-in-box structure, etc.

XF SERIES

ITEM		XF6300	XF8500
Table size	mm(in)	Ø630 (Ø24.8")	Ø850 (Ø33.5")
Max. load capacity	kg (lb)	600 (1,323)	1,000 (2,205)
Spindle speed	rpm	15,000 [24,000/40,000]	15,000 [9,000/24,000/30,000]
Spindle power (Max/Cont.)	kW (HP)	31/25 (41.6/33.5) [26/20 (35/27)] [26/18 (35/24)]	31/25 (41.6/33.5) [42/31 (56.3/41.6)] [26/20 (35/27)] [120/80 (160.9/107.3)]
No. of tools	ea	34 [68, 102]	
Travel (X/Y/Z)	mm(in)	650/600/500 (25.6"/23.6"/19.7")	850/920/600 (33.5"/36.2"/23.6")
Rapid traverse rate (X/Y/Z)	m/min (ipm)	60/60/60 (2,362/2,362/2,362)	45/45/45 (1,772/1,772/1,772)

XF8500

XF6300

THE INNOVATION

People ask: "How could machine tool be so innovative?"

The appearance of HYUNDAI WIA's XF series may look like an ordinary machine tool. However, XF series ares designed with a high-tech monoblock type bed structure, box-in-box type structure and other advanced features to differentiate it from standard machine tools.

High accuracy and productivity are achieved through its innovative structure.

Applications & Parts

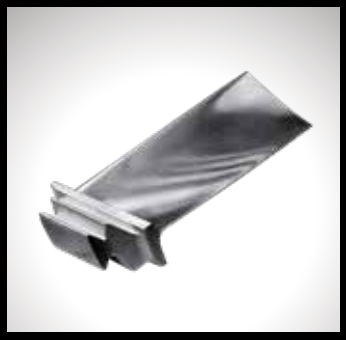
VACUUM PUMP ROTOR

IMPELLER

MOUNTING SHELL

HOUSING, GEAR BOX

HOUSING, ELECTRIC MOTOR



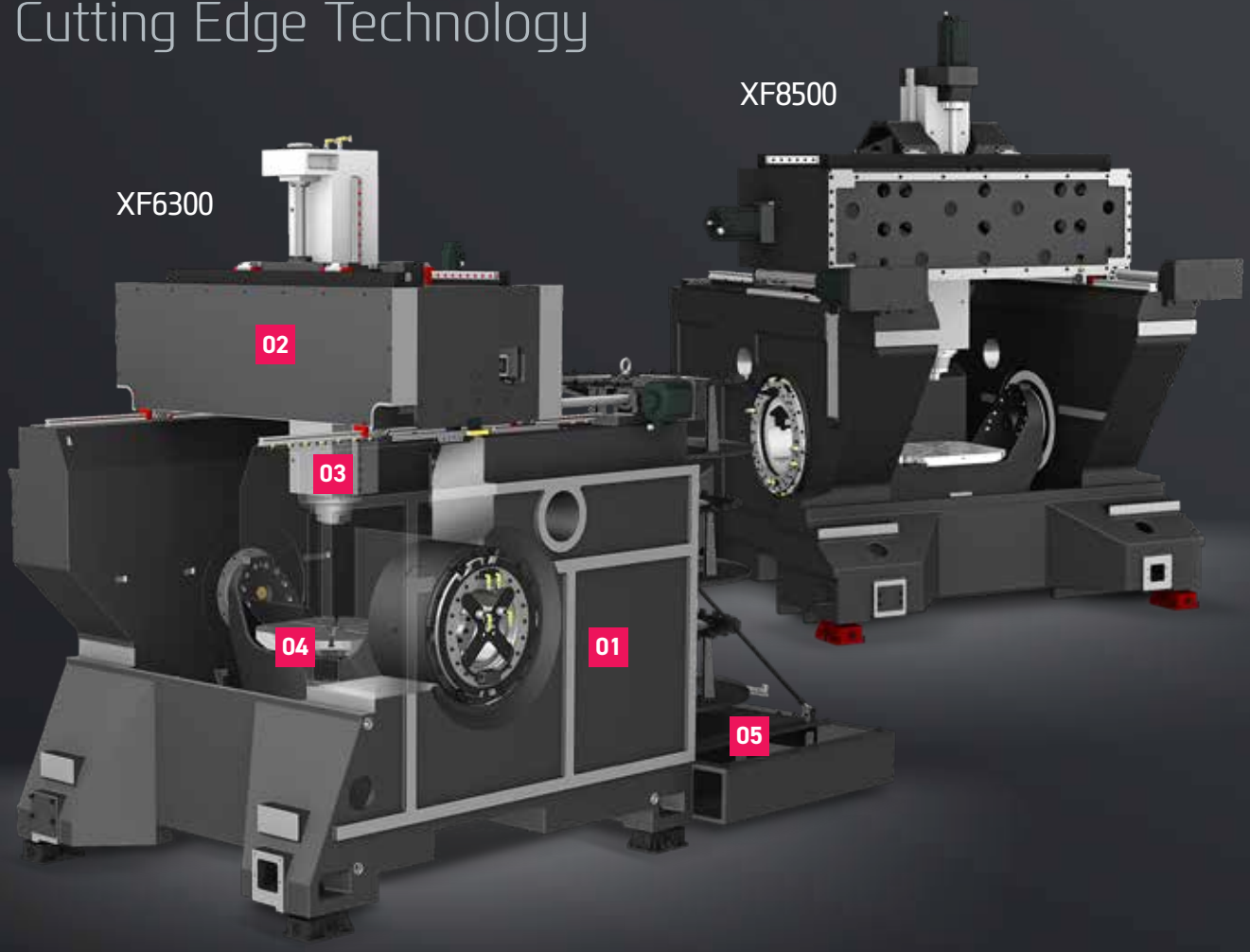
BLADE, COMPRESSOR

HOUSING, ENGINE

TIRE MOLD

XF SERIES

Cutting Edge Technology



XF6300

❖ HEIDENHAIN TNC640 Rapid traverse rate (X/Y/Z) : **50/50/50** m/min (**1,967/1,967/1,967** ipm)

60/60/60 m/min (2,362/2,362/2,362 ipm)
Rapid traverse rate (X/Y/Z-axis)

70/110 r/min
Rapid traverse rate (A/C-axis)

650/600/500 mm (25.6″/23.6″/19.7″)
Travel (X/Y/Z-axis)

150/360 deg
Travel (A/C-axis)

XF8500

45/45/45 m/min (1,772/1,772/1,772 ipm)
Rapid traverse rate (X/Y/Z-axis)

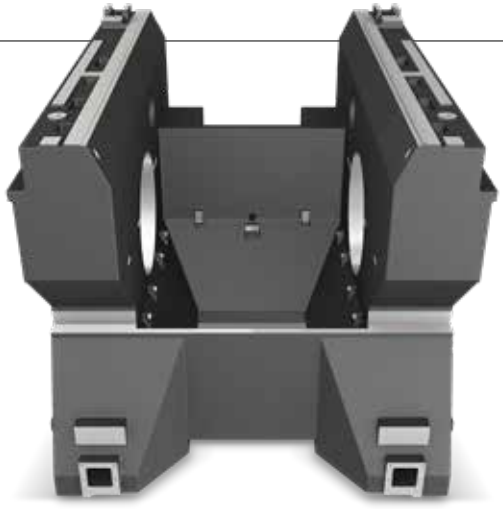
50/100 r/min
Rapid traverse rate (A/C-axis)

850/920/600 mm (33.4″/36.2″/23.6″)
Travel (X/Y/Z-axis)

150/360 deg
Travel (A/C-axis)

Basic Features

01

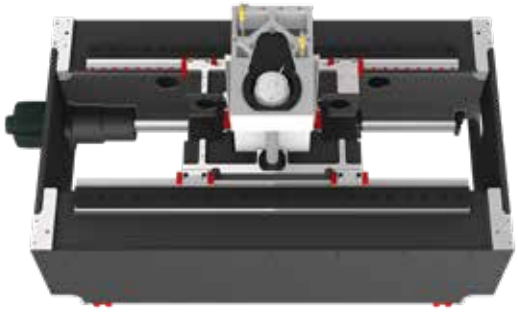


Column/Bed All-in-One Structure

XF series are designed with an integrated one piece column-bed structure provides superior stability when compared with separate structures.
The All-in-One structure delivers high rigidity and excellent vibration absorption providing exceptional performance and superior surface finishes.

‹Monoblock Structure›

02



Box-in-Box Structure (X/Z Axis)

The pusher(head body) in the saddle of X-axis, which surrounds the spindle cartridge, is desinged with box-in-box type. This thermal equilibrium structure helps minimize thermal deformation.

03

Built-In Spindle

The built-in spindle minimizes spindle vibration, enabling outstanding performance in a high-precision cutting environment such as mold products.

04

DDM Tilting Rotary Table

The DDM rotary table is designed to embody highly accurate high speed simultaneous 5-axis motion which allows for the machining of complex prismatic parts with superior accuracy and surface finishes.

05

Rack Type Magazine

A single step rack type magazine of 34 tools is provided as a standard.
2 step 68 tools and 3 step 102 tools featured as an option.

XF6300 :
Twin Arm ATC

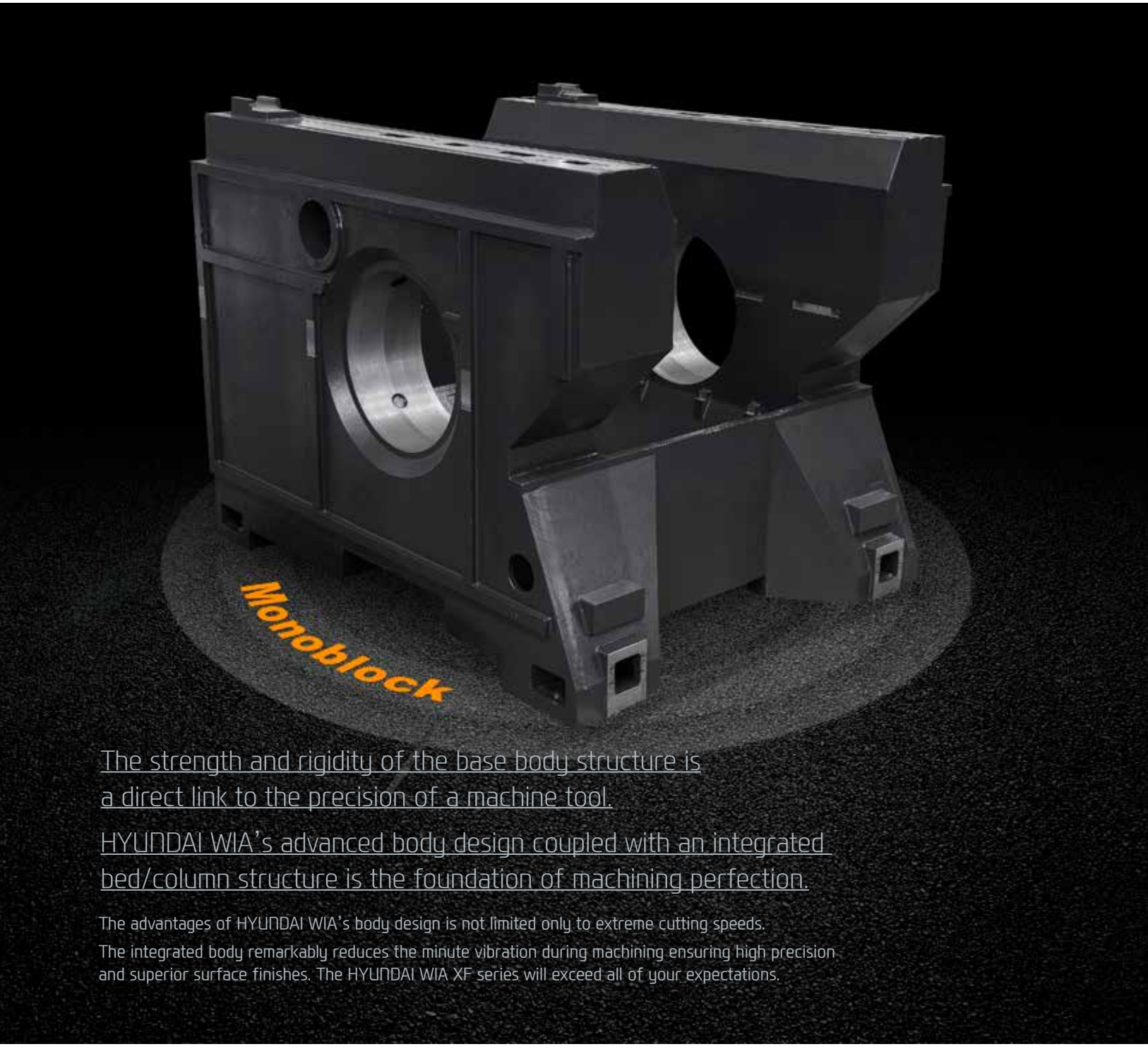
XF8500 :
Pickup Type ATC [Opt. Twin Arm]

01

XF Series

Body Structure

High-Precision & Speed 5-Axis Vertical Machining Center

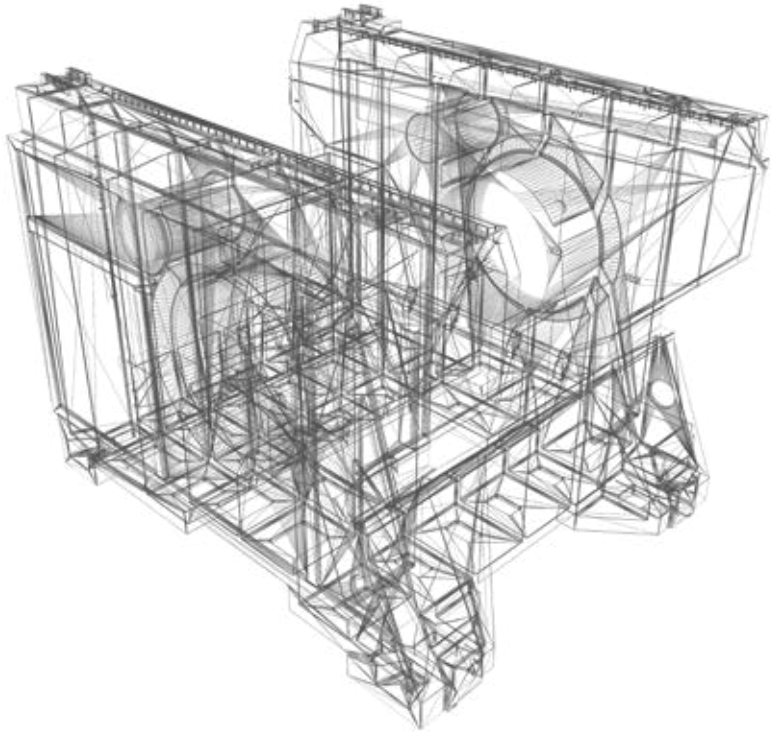


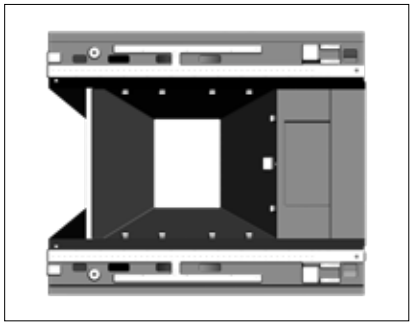
The strength and rigidity of the base body structure is a direct link to the precision of a machine tool.

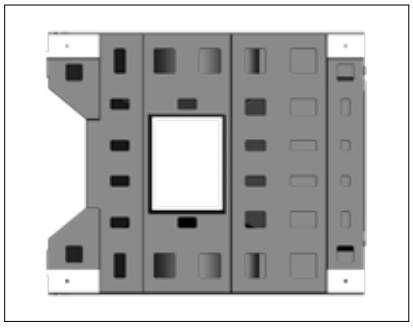
HYUNDAI WIA's advanced body design coupled with an integrated bed/column structure is the foundation of machining perfection.

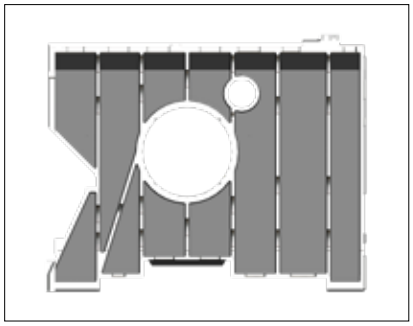
The advantages of HYUNDAI WIA's body design is not limited only to extreme cutting speeds.

The integrated body remarkably reduces the minute vibration during machining ensuring high precision and superior surface finishes. The HYUNDAI WIA XF series will exceed all of your expectations.









Optimal Structural Analysis (FEM)

The XF series are designed to be the optimum structure through HYUNDAI WIA's exclusive structural analysis.

Column / Bed All-in-One Structure (Rigidity has improved by 130%)

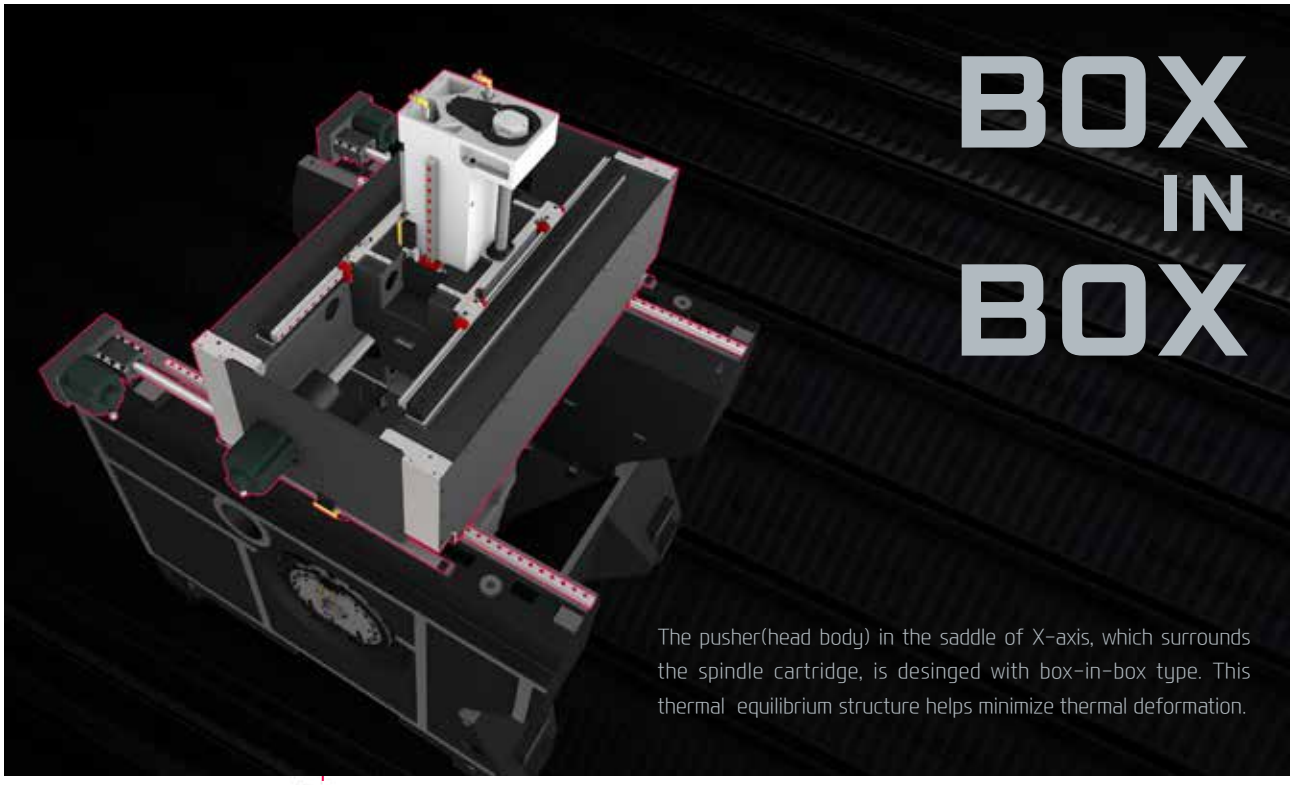
The XF series are designed with an integrated one piece column-bed structure providing superior stability when compared with separate structures. The All-in-One structure delivers high rigidity and excellent vibration absorption providing exceptional performance and superior surface finishes.

- The monoblock design and integrated bed/column structure provides high rigidity ensuring outstanding dynamic characteristics
- Highly rigid structure without holes on the side wall and a minimal number holes are required on the top and bottom top area
- Casting rib structure optimized for high rigidity
- The integrated rotary table A-axis/column structure ensures high rigidity and superior precision
- The bed structure's agronomical design allows for easy access to the work area

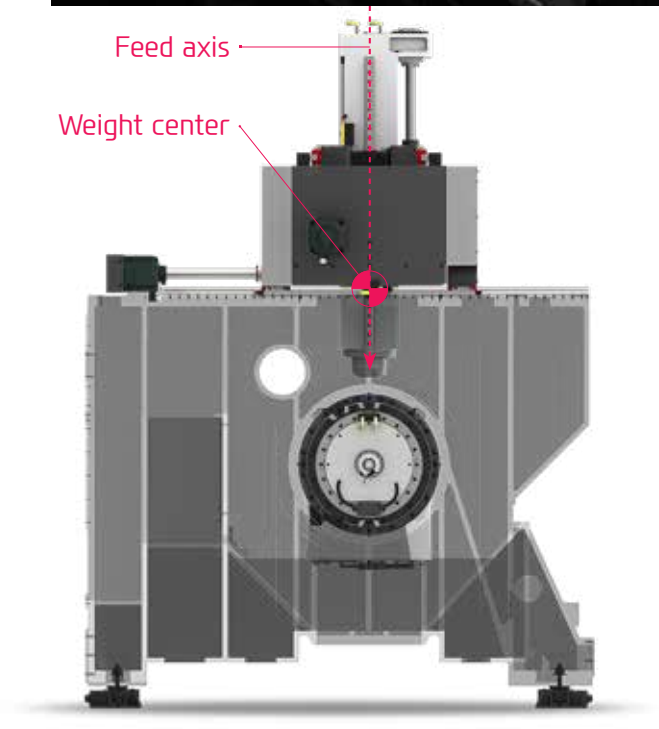
02 Slideway Features

XF Series

High-Precision & Speed 5-Axis Vertical Machining Center



The pusher(head body) in the saddle of X-axis, which surrounds the spindle cartridge, is desinged with box-in-box type. This thermal equilibrium structure helps minimize thermal deformation.



Symmetric Structure of Z-axis

Vibration and thermal displacement during travel can be minimized by symmetric structure of Z-axis where travel axis is aligned with the weight center of spindle.

Y-axis Double Ballscrew Structure

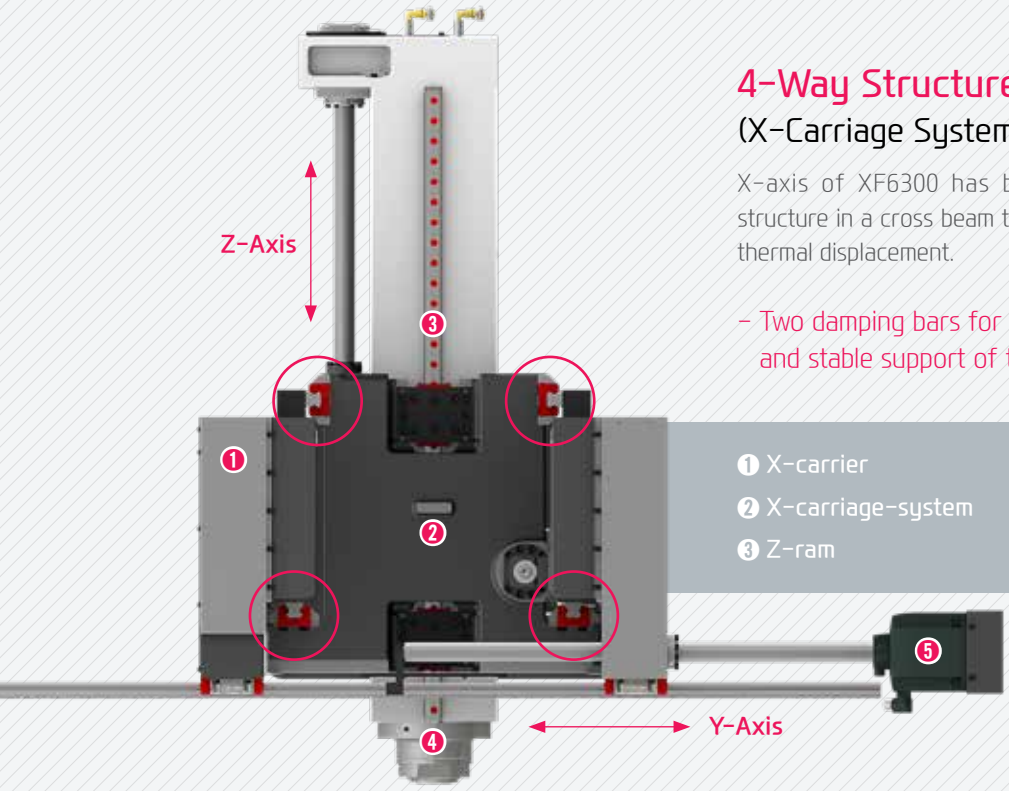
The Y-axis is driven by two ball screws and feed motors to provide unprecedented speed, accuracy, stability, and acceleration than general purpose machines.

XF6300

650/600/500 mm (25.6"/23.6"/19.7")
Travel (X/Y/Z)

XF8500

850/920/600 mm (33.4"/36.2"/23.6")
Travel (X/Y/Z)



4-Way Structure on X Axis
(X-Carriage System)

X-axis of XF6300 has box-type saddle design with 4-way structure in a cross beam to realize improved strength and minimal thermal displacement.

- Two damping bars for the X and Z axis slide providing rigid and stable support of the ram

1. X-carrier
2. X-carriage-system
3. Z-ram
4. Spindle
5. Drive for Y-carriage-system

High-Speed Roller LM Guideway

The XF series features **roller type LM guideway** to reduce non-cut time with faster acceleration while providing high rigidity.

Feed Axis Acceleration/Deceleration (X/Y/Z axis)

XF6300 – 1.0G/0.8G/1.0G XF8500 – 0.6G/0.6G/0.8G

❖ Acceleration/deceleration is slightly different when you choose HEIDENHAIN NC.

High-Precision Linear Scale (Standard)

The XF series are equipped with linear scales on all axis providing high precision positioning accuracy and compensates for ball screw thermal displacement ensuring extremely precise machining.

In addition, the **absolute type linear scale** is installed in close proximity to the ball screw of each axis. During operation an added benefit is not being require to home the machine.

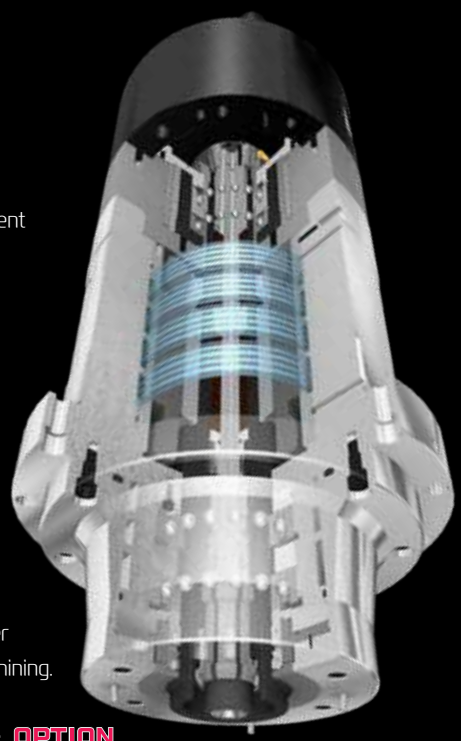
03
XF Series

Built-in Spindle

Long Lasting High Accuracy & Excellent Performance
5-Axis Vertical Machining Center

Built-in Spindle

The built-in spindle minimizes spindle vibration, enabling outstanding performance in a high-precision cutting environment such as mold products.



Spindle Cooling

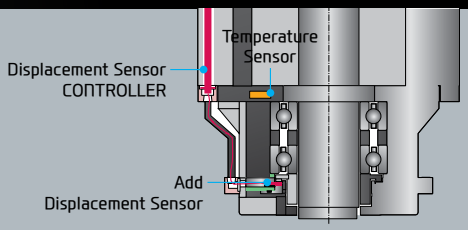
Spindle temperature is controlled by the use of a spindle oil chiller. This ensures consistent spindle temperature which minimizes thermal displacement.

HSK-A63 : 9K, 15K, 24K | HSK-E40 : 30K, 40K

HSK Tool Holder

HSK tool holder is untilized for precise positioning with less expansion in the spindle taper during high speed rotation. This ensures an excellent level of precision for die mold machining.

Through Spindle Coolant {20/30/70 bar (290/435/1,015 psi)} OPTION



Spindle Heat Displacemnt Sensor

By attaching a hardware heat displacement sensor to the spindle cartridge, the amount of thermal displacement generated during machining is directly recognized and corrected by the displacement amount.

Heat Displacement Sensor Calibration + Displacement Sensor Calibration

Spindle

ITEM	**Speed** r/min	**Power** (Max./Cont.) kW (HP)	**Torque** (Max./Cont.) N·m (lbf·ft)	**Tool Holder**
XF8500	9,000	42/31(56.3/41.6)	175/130 (129/95.9)	HSK-A63
XF6300 | XF8500	15,000	31/25 (41.6/33.5)	153/123 (112.8/91)	HSK-A63
XF6300 | XF8500	24,000	26/20 (35/27)	85.9/66.5 (63.4/49)	HSK-A63
XF8500	30,000	120/80 (160.9/107.3)	38.2/25.5 (28.2/18.8)	HSK-E40
XF6300	40,000	26/18 (35/24)	9.9/6.9 (7.3/5)	HSK-E40

04
XF Series

Tilting Rotary Table

Super Quality & Productivity
5 Axis Vertical Machining Center

Mill-Turn Table

Unlike turning centers, where the spindle rotates, on machining centers the tool rotates and machining takes place.
Hence, even for high performance 5-axis machining centers turning operation has to be separated.
However, by utilizing the table turning function on XF Series, both turning & machining center operations can be implemented.
You can experience complete turning of tough materials from rough cutting to finish cutting with max 800rpm high torque DDM high speed table.

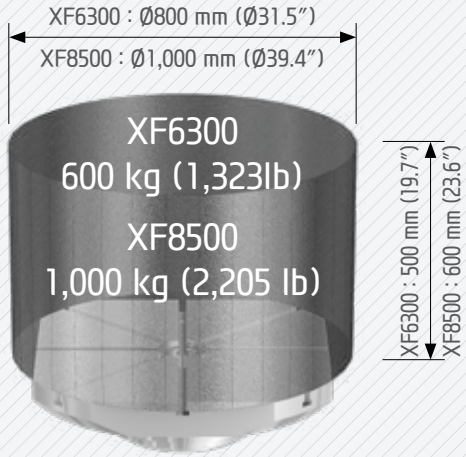
XF6300		XF8500	
500	kg (1,102 lb) Max. Load Capacity	700	kg (1,543 lb) Max. Load Capacity
800	r/min C-axis Speed	600	r/min C-axis Speed

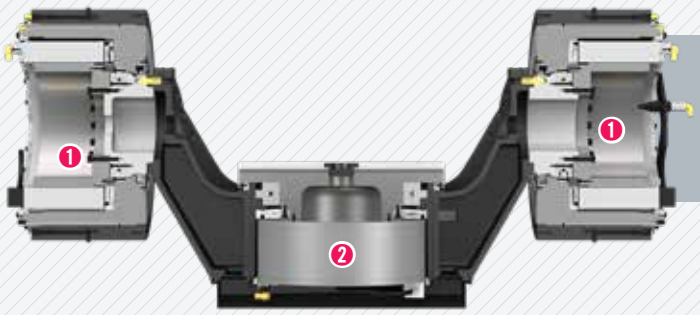
DDM Tilting Rotary Table

The XF series has a **tilting rotary table** is designed to embody highly accurate high speed simultaneous 5-axis motion which allows for the machining of complex prismatic parts with superior accuracy and surface finishes.

The direct drive system utilizes **direct drive motor (DDM)** delivering high precision and high speed for improved productivity. The integrated **A-axis housing/column** design ensures high rigidity.

❖ The XF series may cause some interference in the machining area.
Please check the interference area chart on page 36 of the catalog.





DDM TABLE (Simultaneous 5-Axis)

❶ A-axis built-in motor (tandem type)

❷ C-axis built-in motor

- **A/C indexing angle** : +30°~-120°/360°
- **XF6300 A/C indexing speed** : 70/110 rpm
- **XF8500 A/C indexing speed** : 50/100 rpm

A/C-Axis Rotary Scales Standard

Scale integrated YRTM bearing is assembled directly to the C-axis rotary table providing high precision positioning accuracy and repeatability

- **A-axis** : Rotary Scales (5 sec. precision)
- **C-axis** : YRTM Bearing (Scale embedded bearing)

05 ATC & Magazine

XF Series

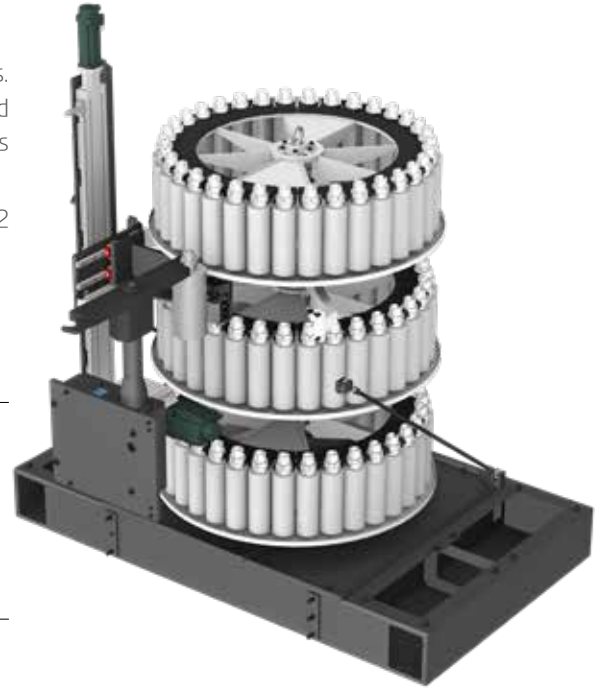
High-Precision & Speed 5-Axis Vertical Machining Center

ATC & Tool Magazine

Tool change time (chip-to-chip) of 4.5 seconds is the best in its class. The rack type tool change mechanism was developed to add unprecedented extra-large capacity tool for vastly complex 5 axis machining applications.

A single step rack magazine of 34 tools is provided standard. 68 and 102 tool capacity are optional.

‹XF8500 : Multi Step Rack Type Magazine & TWIN ARM ATC - Option›

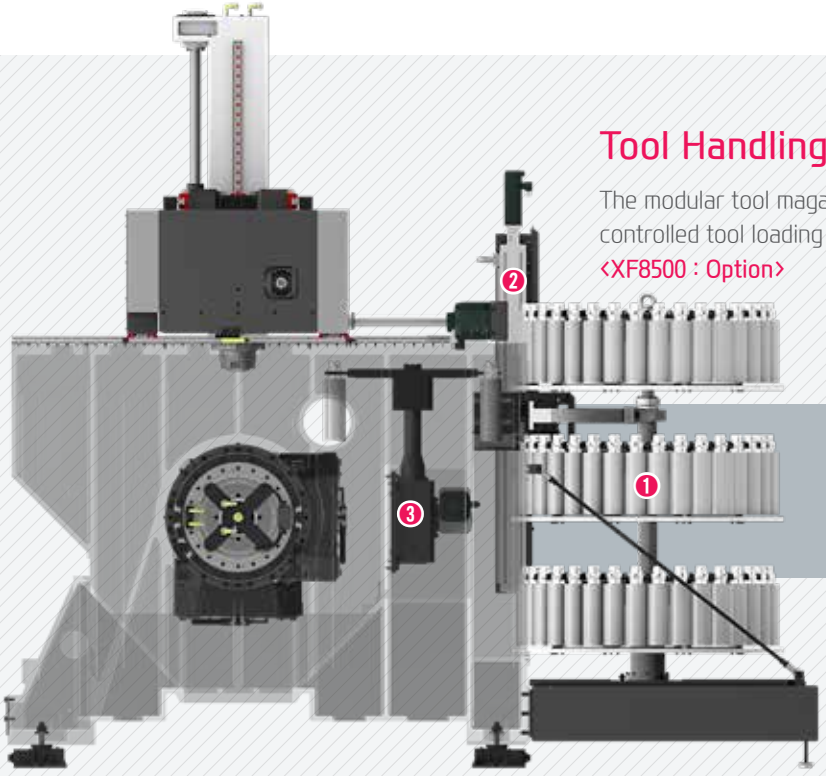


Rack Type Magazine

34 [68, 102] ea
No. of tools

4.5 sec
Tool change time (C-C)

❖ C-C : XF6300 - 3kg (6.6lb) tool base



Tool Handling System (2-Axis Loading)

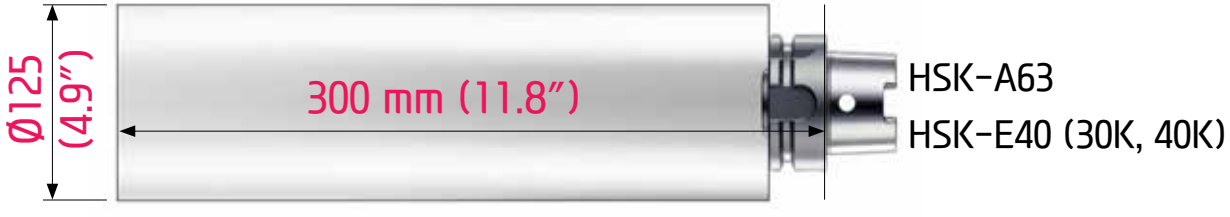
The modular tool magazine of XF6300 is designed as a 2-axis controlled tool loading system for quick tool change.
<XF8500 : Option>

1. Rack Type Tool Magazine
2. Tool Handling System
3. ATC (Twin Arm)

Magazine

The tool magazine and machining area are completely separated by a shutter door to prevent coolant and chip contamination out of the tool storage area maintaining high precision and cleanliness. Minimal tool change distance between the tool changer and work area permits for a rapid tool change.

In addition, collision is avoided regardless of A-axis position eliminating the need for homing of A-axis.



- **Max. Tool Dia.** (W/T Adjacent Tool) : Ø90/Ø125 (Ø3.5″/Ø4.9″)
- **Max. Tool Length** : 300 mm (11.8″)
- **Max. Tool Weight** : 8 kg (17.6 lb) [**40K** : 1.5 kg (3.3 lb)]

FAST & DYNAMICS & CONVENIENCE

- Highest level of acceleration and deceleration (FAST): Acc./Dec. time–1G
- High performance built–in 15, 000 rpm spindle (DYNAMIC) supplying 153 N·m (113 lbf·ft) of torque : Breaking the mold regarding high speed spindle and high torque
- The 22″ monitor allows for easy viewing and accessibility through its ergonomic design (CONVENIENCE)

Those are just some of the values that the XF series pursues.

06 SIEMENS Controller

XF Series

The Powerful CNC Platform for Machine Tools

SINUMERIK ONE

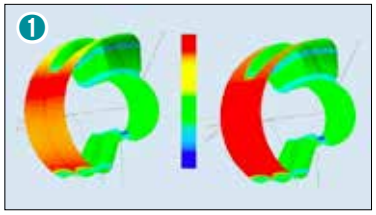
SINUMERIK ONE is the latest SIEMENS controller with enhanced machining quality and productivity.

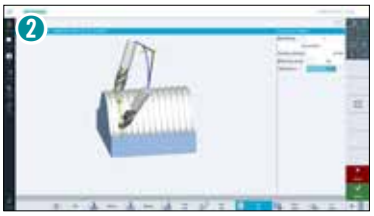
ITEMS	SINUMERIK 840D	SINUMERIK ONE	REMARKS
5-axis Machineing Time	202 sec	192 sec (5% dec.)	Siemens internal evaluation
3-axis Machineing Time	934 sec	840 sec (10% dec.)	Siemens internal evaluation
NCK Performance (CPU)	100%	150 % (50% inc.)	Block cycle time (NCU 730 vs 1760)
PLC Performance (Logic)	20 ~ 40 ms	5 ~ 7 ms (75% inc.)	Logic bit program type (NCU 730 vs 1760)

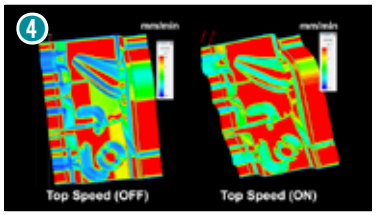
Various Software

Compared to SINUMERIK840D SL, SINUMERIK ONE provides various software as standard which helps to enhance high quality machining and user convenience.

ITEMS	840D SL	SINUMERIK ONE	REMARKS
❶ Advanced Surface	Std.	Std.	Machining accuracy assistance
❷ Top Surface	Opt.	Std.	Compsurf (Cycle832)
❸ Top Speed Plus	N/A	Std.	Machining accuracy enhance, cycle time decrease
❹ DXF Reader (P56)	Opt.	Std.	DXF cad file run on cnc
❺ EES (Execution external storage)	Opt.	Std.	External program usage without executing extcall







High Performance External Storage

Compared to SINUMERIK840D SL, SINUMERIK ONE can utilize high performance external storage, which able fast program in/output. Furthermore, data storage is possible without the use of buffer battery, which prevents data loss due to buffer battery discharge.

ITEMS	840D SL	SINUMERIK ONE	REMARKS
Program Memory (10 MB)	Std.	Std.	Program size
Buffer Battery	Std.	Unnecessary	Battery change unnecessary
USB 2.0 (2ea)	Std.	-	
USB 3.0 (2ea)	N/A	Std.	Speed upgrade from USB 2.0

07 HEIDENHAIN

XF Series

TNC Contouring Control with Drive System

HEIDENHAIN

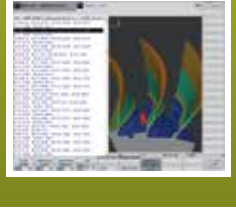
The TNC 640 is compact and easy to read.

The TNC 640 is a versatile contouring control system that can control a 19-inch screen and up to 18 axis.

Its flexible workshop-friendly programming functions, Heidenhain interactive programming and offline programming, allow the user to create the optimal machining environment.

dynamic + precision

Portable Handwhee ››



Perfect 5-Axis Machining

- Powerful motion control shows its strength in 5-axis machining
- ADP (Advanced Dynamic Prediction) for high surface quality and contour accuracy
- Interpolation turning / hobbing of external gears

Detailed Simulation

- PDF files, drawings, etc. can be opened directly on the control
- high resolution, finely detailed 3D simulation function
- 0.5ms block processing time / 21G of storage
- Calculates the geometry ahead of time in order to adjust the feed rate (5,000 blocks).

HW-MCG (Machine Guidance)

NC S/W for various user conveniences such as machine control, maintenance, monitoring and etc.

Common Function

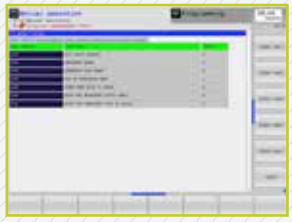
M-code List | Operation Status | Work Count | Working ratio |
| I/O Monitor | Cycle Time Monitoring | Working Time |
| Machine Option List | Macro Guide |

M-code List
M code search & guide function

Operation Status
Program history managing function

Work Count
Managing work count & lifespan

Working ratio
Power/Running/Machining/ Spindle/Alarm Time



I/O Monitor
Sensor & sol. valve status monitoring

Working Time
Particular program block analysis

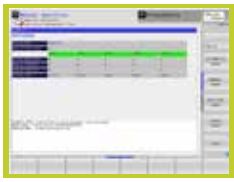
Cycle Time Monitoring
Alarm function according to C/T

Macro Guide
Macro manual for Hyundai WIA S/W

Machine Option List
Machine option list searching & setting

HW-TDC
HYUNDAI WIA Thermal Displacement Compensation

- Thermal displacement compensation designed to minimize machining deviations caused by changes in the external.
- Overcooling control when the main spindle stops.
- Direct compensation by the displacement sensor.
- Same HMI structure as FANUC/SIEMENS for operational convenience.



HW-WARMUP
HYUNDAI WIA Tool Monitoring

- Main spindle stop time check → automatic setting of warm-up time.
- Interlock disables the machining cycle if warm-up is not performed.
- Customer machining program in the warm-up auto mode.
- Automatic warm-up logic when the cycle start begins.
- Same HMI structure as FANUC/SIEMENS for operational convenience.

08 User Convenience

XF Series

Various Devices for User Friendly

Large 22″ Touch-type Monitor

The XF series adopts a 22″monitor for improved visibility of SIEMENS's main NC functions including shop mill and 3D simulation.

22 inch
Monitor size

120 deg
Indexing angle

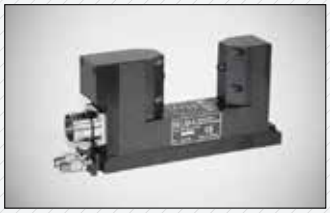
1,450 mm (57″)
Height From the screen center

Ergonomic Operation Panel

The XF series are designed to be 1,450mm (57″) high for ease of operation while setting up and running a workpiece.

In addition, the PC keyboard ensures user convenience.

Precision System



Auto Tool Measuring Device

Renishaw (NC4) / BLUM (Laser Control Micro Compact)

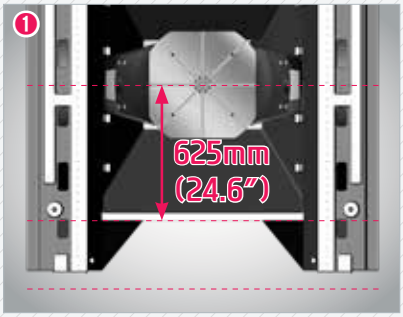
Tool lengths and diameters can be set automatically using the optional tool setter. This can also be used to monitor attrition and detect broken tools.

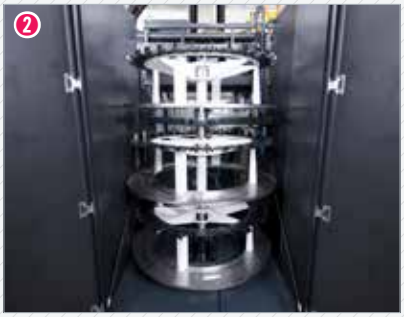
Auto Pivot Compensation

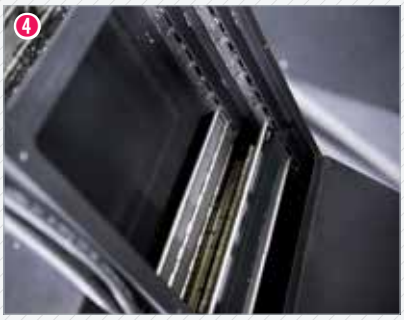
It can be easily self-calibrate the A-axis and C-axis displacement due to processing conditions and surroundings are always able to maintain a high accuracy.

<Pivot Compensation software (HW-TPC) : Std. Probe & Datumball : Opt.>

Convenience







❶ Improved Accessibility to Table

The short distance (**XF6300** : 625mm [24.6″], **XF8500** : 805mm [31.7″]) between the front of bed and the center of table facilitates easy workpiece and fixture setup.

❷ Convenient Tool Change

The magazine cabinet located at the rear of the machine simplifies tool change.

❸ Separate Coolant Tank

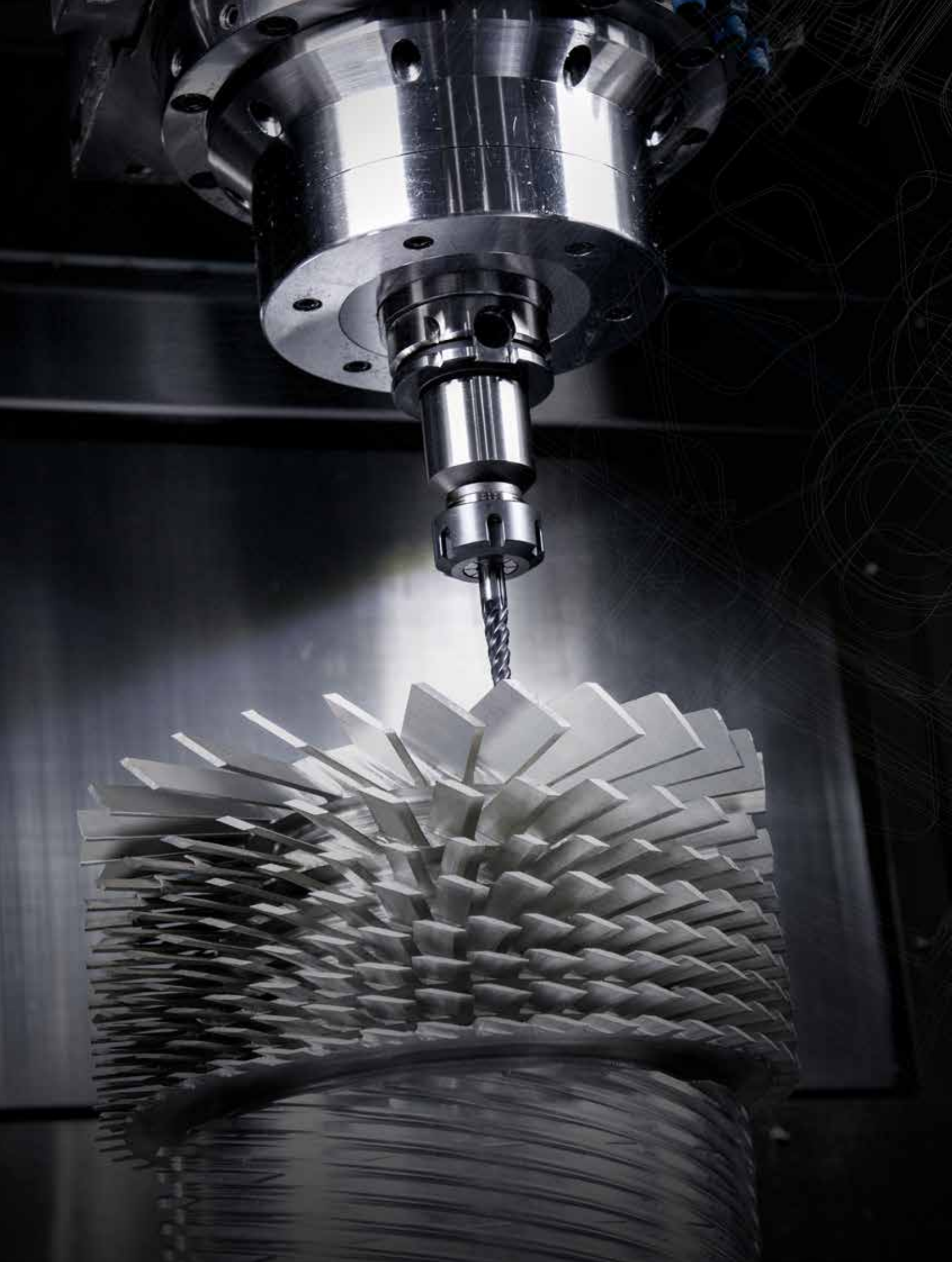
A coolant tank holding up to 1,200 ℓ [317 gal] (optimal capacity: 800 ℓ [211 gal]) is provided.
The coolant tank is a separated from the heat source not allowing heat to be transferred to the machine, resulting in precision improvement.

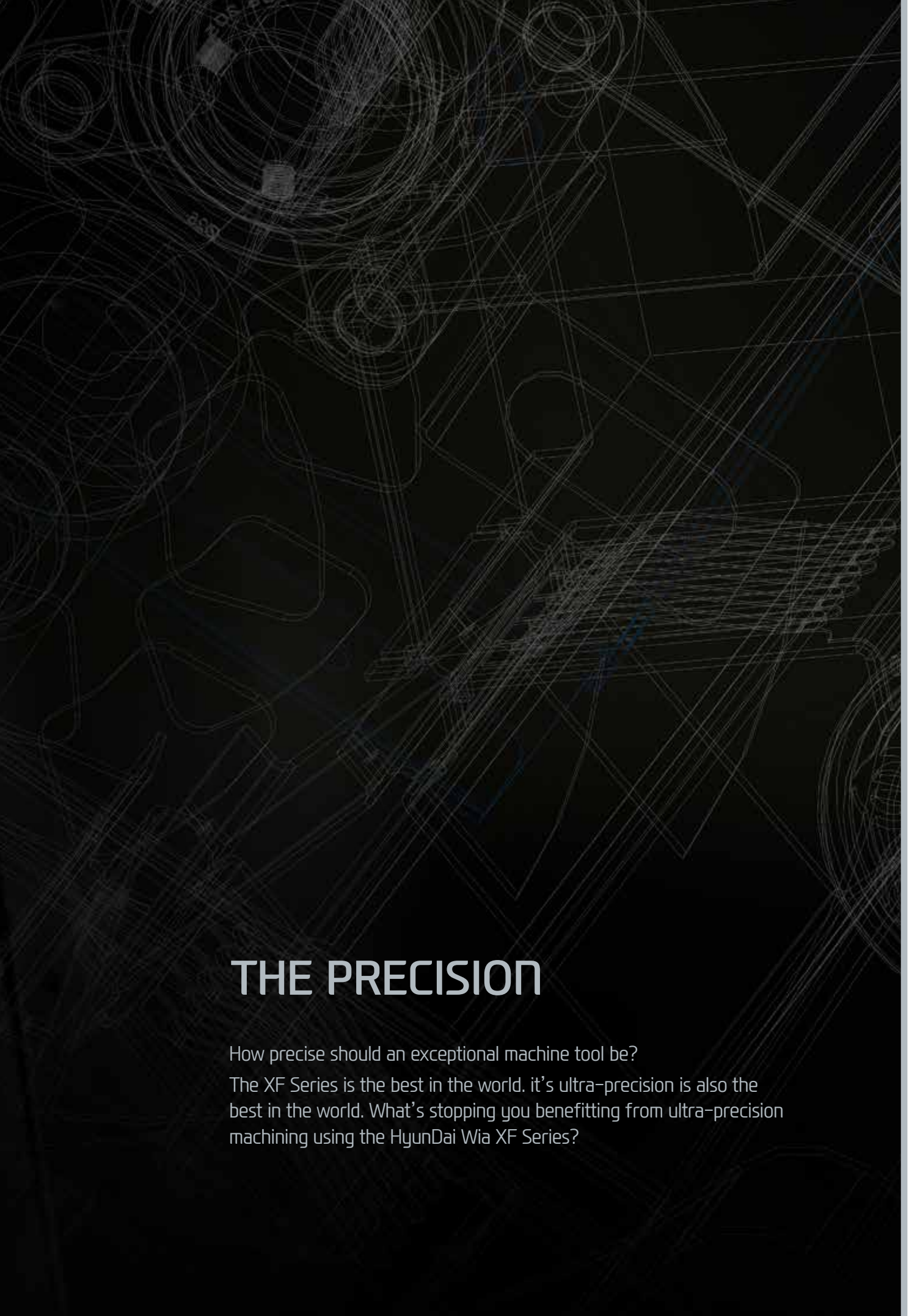
❹ Wedge Wire Chip Conveyor (Integrated Scraper and Hinge Type) OPTION

A combined structure of a scraper type chip conveyor and hinge type rail allows general chips and fine chips to be disposed of at all times.

❺ Devices Centralization

The design of centralized air and lubrication devices makes maintenance convenient.





THE PRECISION

How precise should an exceptional machine tool be?

The XF Series is the best in the world. it's ultra-precision is also the best in the world. What's stopping you benefitting from ultra-precision machining using the HyunDai Wia XF Series?

SPECIFICATIONS

Standard & Optional

● : Standard ○ : Option ☆ : Prior Consultation – : Non Applicable

Spindle		XF6300	XF8500
9,000 rpm	Bulit-in	–	○
15,000 rpm	Bulit-in	●	●
24,000 rpm	Bulit-in	○	○
30,000 rpm	Bulit-in	–	○
40,000 rpm	Bulit-in	○	–
Spindle cooling system		●	●
ATC			
ATC extension	34	●	●
	68	○	○
	102	○	○
Tool shank type	HSK A63	●	●
	HSK T63	○	○
	HSK E40 (30K, 40K)	●	●
U-center	D'andrea	☆	☆
Table & Column			
Tap type table		☆	☆
T-slot table		●	●
DDM NC rotary table (simultaneous 5 axis)		●	●
Gear NC rotary table((3+2 axis machining suggest)		○	–
* Mill-turn table		○	○
Coolant System			
Std. coolant (flood coolant)		●	●
Bed flushing coolant		●	●
Through spindle coolant {25 ℓ (6.6 gal)}	20bar (290 psi)	○	○
	30bar (435 psi)	○	○
	70bar (1,015 psi)	○	○
Shower coolant		☆	☆
Gun coolant		○	○
Air gun		○	○
Cutting air blow		●	●
Tool measuring air blow		●	●
Air blow for automation		☆	☆
Thru MQL device (without MQL)		☆	☆
Coolant chiller (Sub tank)		☆	☆
Power coolant system (for automation)		☆	☆
Chip Disposal			
Coolant tank	Embeded (470 ℓ)	○	○
	Separate Type {1,200 ℓ (317 gal)}	●	●
Chip conveyor (Wedge wire type)	Left	○	○
	Right	☆	☆
Special chip conveyor (Drum filter)		☆	☆
Chip wagon	Standard (180 ℓ [47.5 gal])	○	○
	Swing (200 ℓ [52.8 gal])	○	○
	Large Swing (290 ℓ [76.6 gal])	○	○
	Large Size (330 ℓ [87.2 gal])	○	○
	Customized	○	○
Electric Device			
Call light & buzzer	3color : ■ ■ ■ B	●	●
Work light		●	●
Electric cabinet light		○	○
Remote MPG		●	●
3 axis MPG		○	○
Electric circuit breaker		○	○
AVR (Auto voltage regulator)		☆	☆
Transformer (220V/380V)	70/10KVA	●	●
Auto power off		●	●
ETC			
Tool box		●	●
Customized color	Need for Munsel No.	☆	☆
CAD & CAM software		☆	☆

Safety Device		XF6300	XF8500
Collision avoidance Protect MyMachine		●	●
Total Splash Guard		●	●
Door Interlock		●	●
Controller			
SIEMENS SINUMERIK ONE		●	●
HEIDENHAIN TNC640		○	○
S/W - SIEMENS			
Dialogue Program (HW-DPRO)		○ (Only for 3+2 axis)	
DNC software (HW-eDNC)		○	○
Machine Monitoring System (HW-MMS Cloud)		☆	☆
Machine Monitoring System (Customer Installation : HW-MMS Edge)		☆	☆
Smart S/W		☆	☆
S/W - HEIDENHAIN			
Advanced function set 1		●	●
Advanced function set 2		●	●
DCM collision		●	●
KinematicOpt		●	●
Display step		○	○
DXF converter		○	○
AFC : Adaptive Feed Control		○	○
KinematicComp		○	○
CTC : Cross Talk Compensation		○	○
PAC : Position Adaptive Control		○	○
LAC : Load Adaptive Control		○	○
ACC : Active Chatter Control		○	○
AVD : Active Vibration Damping		○	○
Measuring Device			
Auto work measuring device		○	○
Tool monitoring (OMARTIVE/MARPOSS)		○	○
Auto tool measuring device (Laser)	Renishaw	●	●
	BLUM	○	○
Linear scale	X/Y/Z axis	●	●
Rotary scale	A/C axis	●	●
Coolant level sensor (only for chip conveyor)		●	●
Environment			
Control air conditioner (SAMIK/RITTAL)		●	●
ECO energy (hydraulic device/chip conveyor shaving mode)		●	●
Dehumidifier (SAMIK)		○	○
Oil mist collector (MORE/YHB/YOUNGPOONG)		☆	○
MQL (minimal quantity lubrication)		☆	☆
Fixture & Automation			
Auto door		○	○
Auto shutter (only for automatic system)		○	○
Sub operation pannel		☆	☆
External M code 4ea		○	○
Automation interface		☆	☆
I/O extension (In & out)	16 contact	○	○
	8 contact	○	○
Hyd. Device			
Std. hyd. unit	100bar (1,450 psi)/ 4 ℓ (1 gal)	●	●
Center type hyd. supply unit	2×2(4 port)	○	○
Hyd. unit for fixture	50bar (725 psi)	☆	☆
	Customized	☆	☆

* Basic components of mill turn table : 15,000rpm spindle only, HSK-T63 tool shank, TLM for turning, Safety window

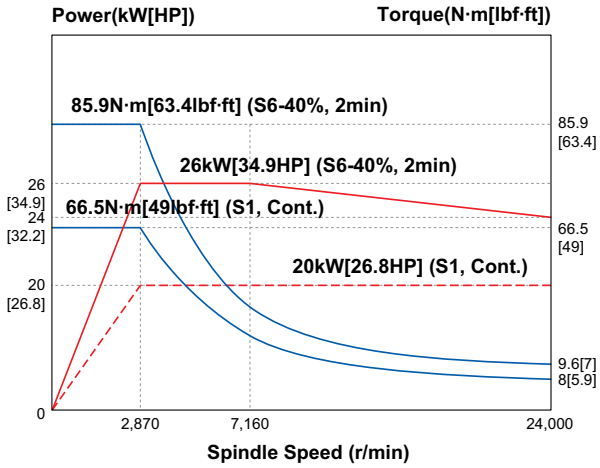
Specifications are subject to change without notice for improvement. ※ Mold Package (HWM AILL IN ONE SIEMENS II) Std. - Mdynamics (SINUMERIK ONE)

Spindle Output/Torque Diagram

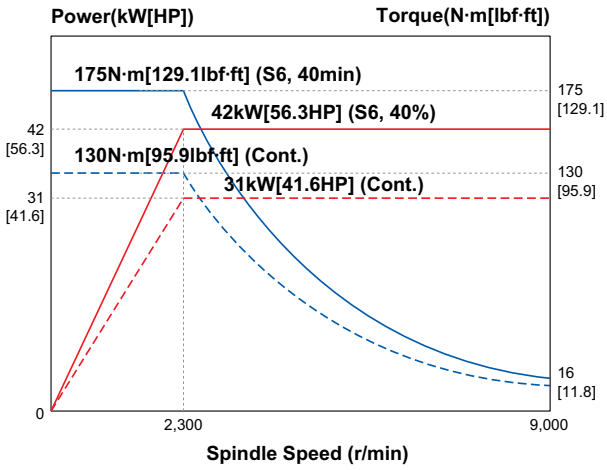
XF6300 Spindle		
Std.	15,000 rpm	HSK-A63
Opt.	24,000 rpm	HSK-A63
	40,000 rpm	HSK-E40

XF8500 Spindle		
Std.	15,000 rpm	HSK-A63
Opt.	9,000 rpm 24,000 rpm	HSK-A63
	30,000 rpm	HSK-E40

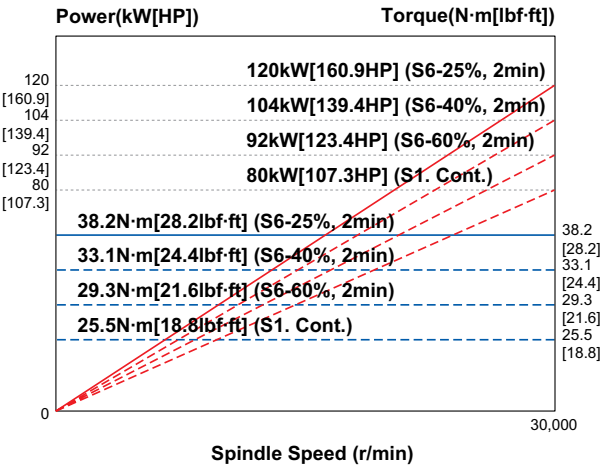
Spindle 24,000 rpm



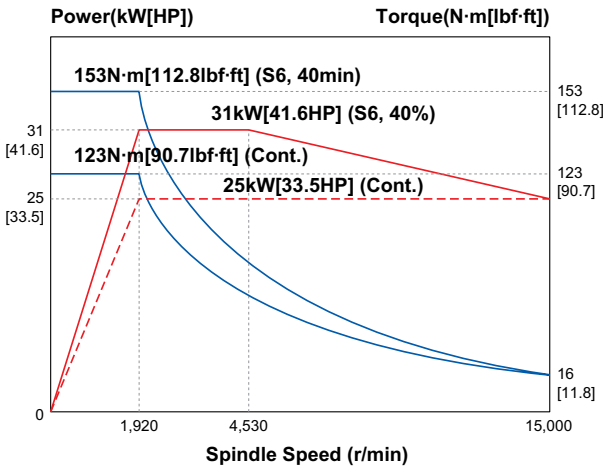
Spindle 9,000 rpm



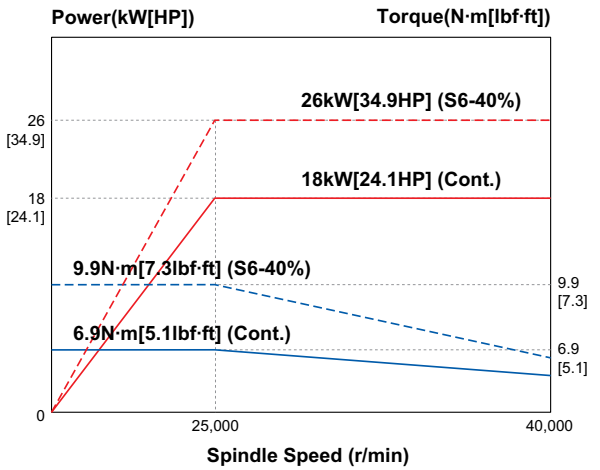
Spindle 30,000 rpm



Spindle / Mill Turn Tbale 15,000 rpm



Spindle 40,000 rpm



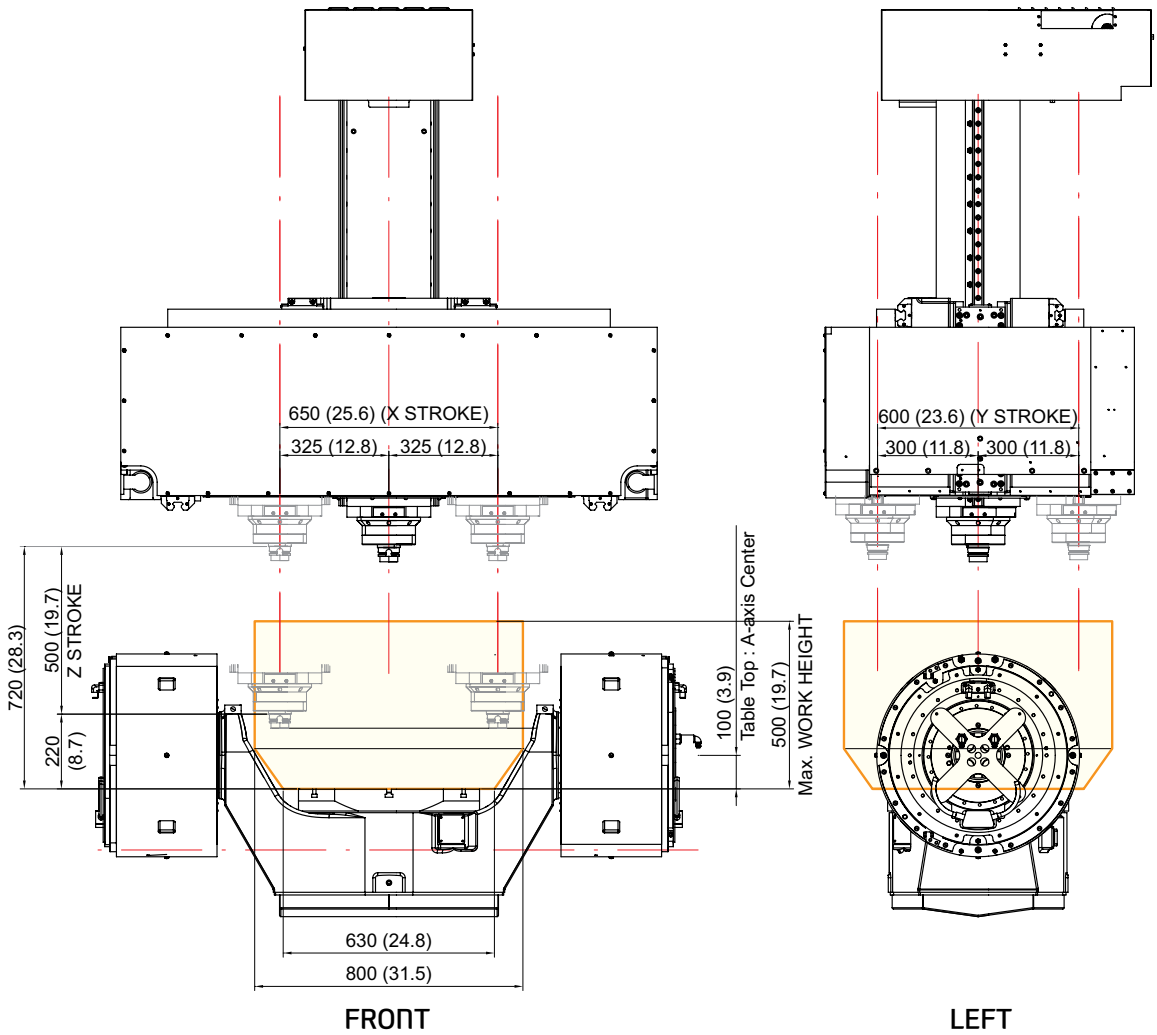
SPECIFICATIONS

Spindle & Table Travel Range

unit : mm (in)

XF6300

Tilting : A-axis 0°

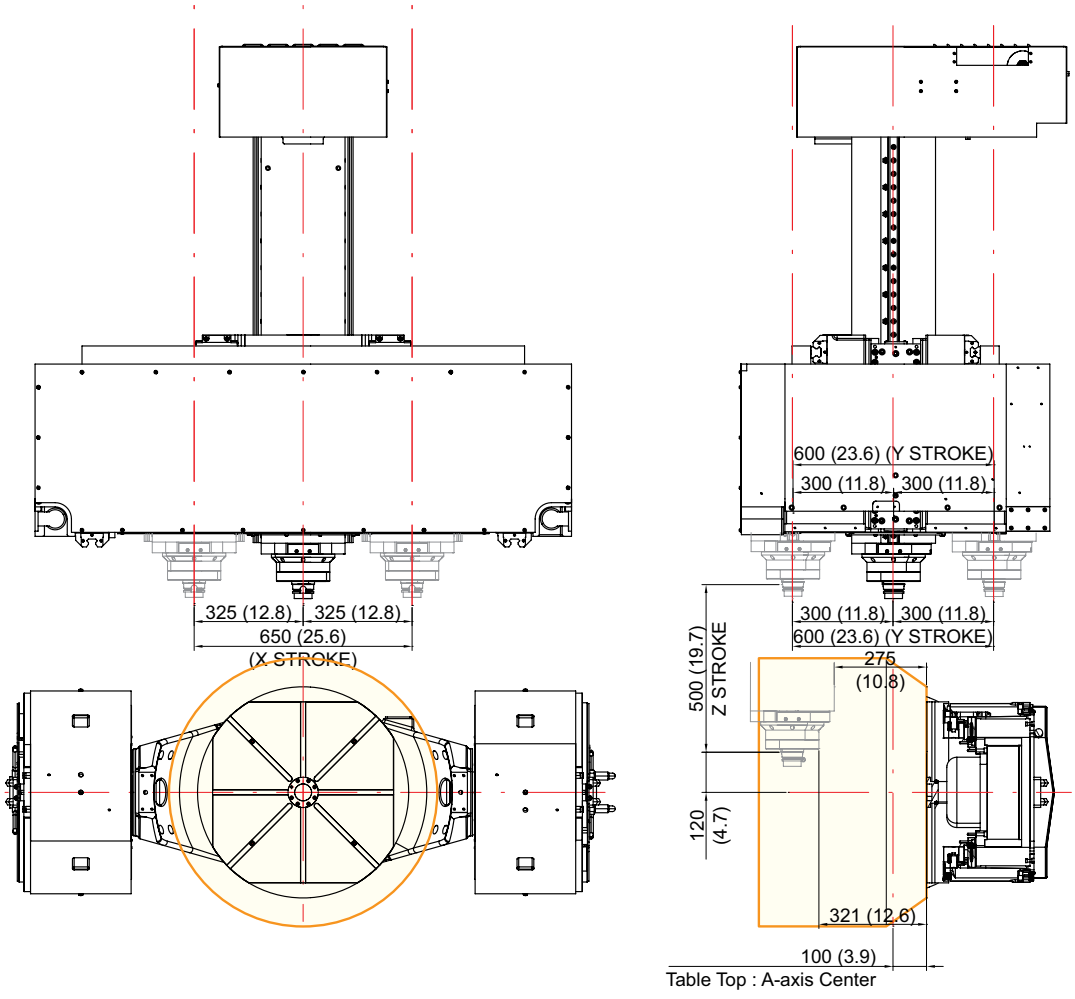


Spindle & Table Travel Range

unit : mm (in)

XF6300

Tilting : A-axis -90°



FRONT LEFT

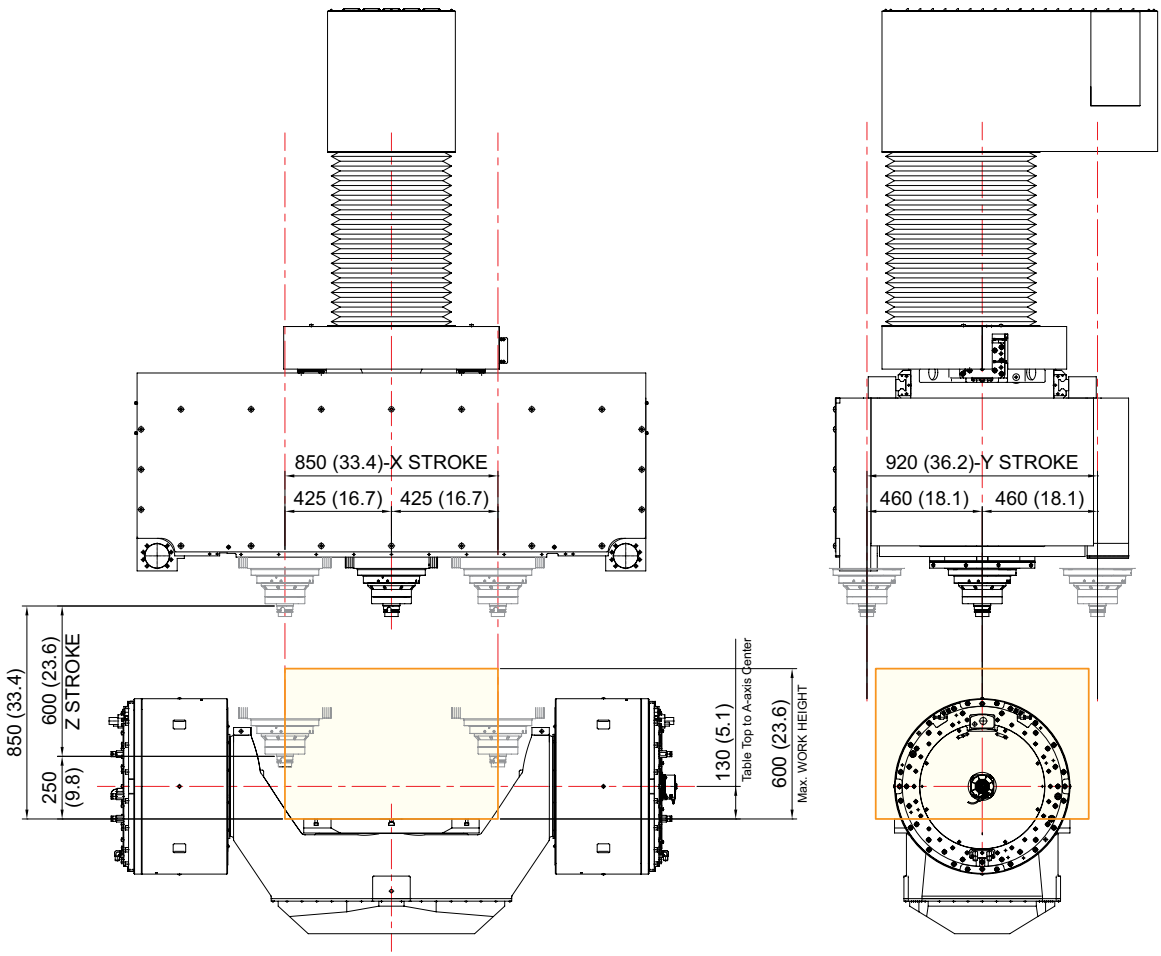
SPECIFICATIONS

Spindle & Table Travel Range

unit : mm (in)

XF8500

Tilting : A-axis 0°



FRONT

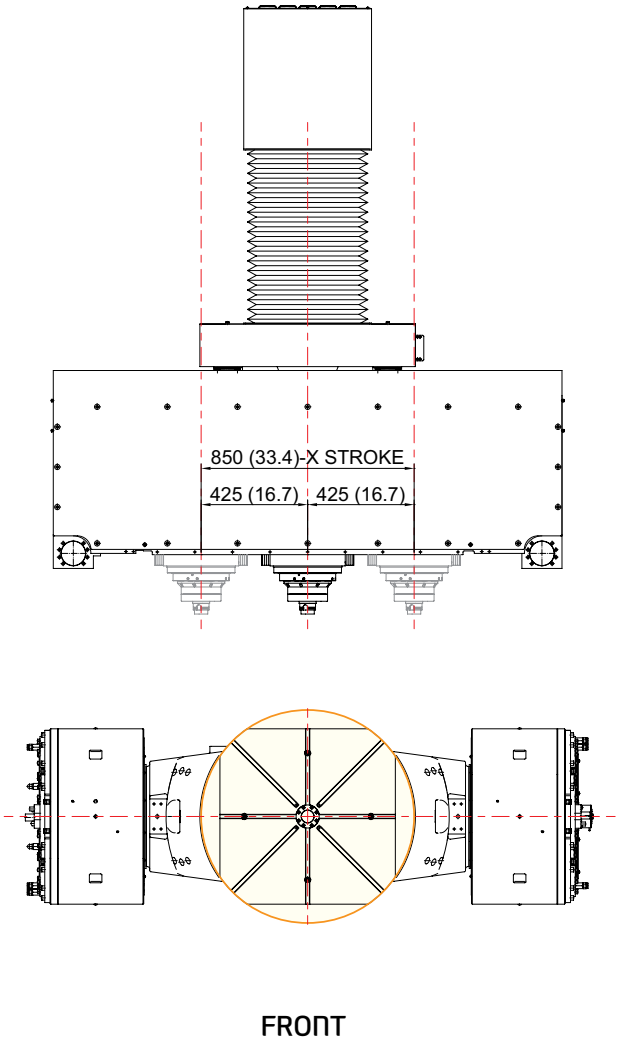
LEFT

Spindle & Table Travel Range

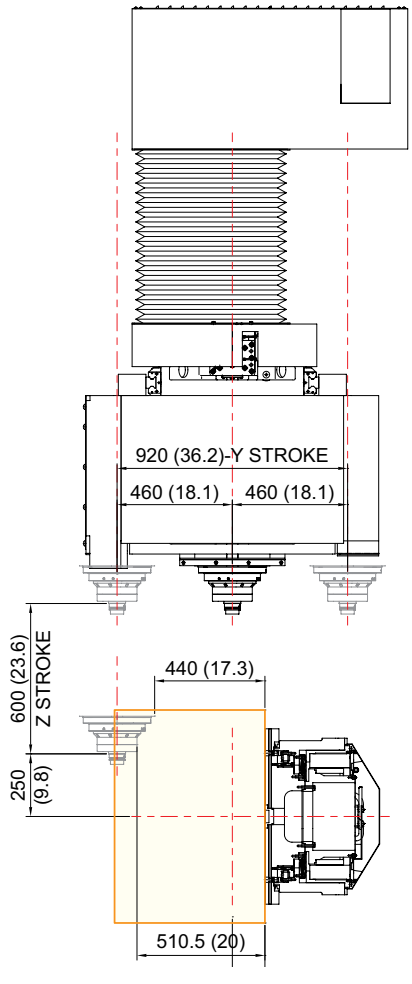
unit : mm (in)

XF8500

Tilting : A-axis -90°



FRONT

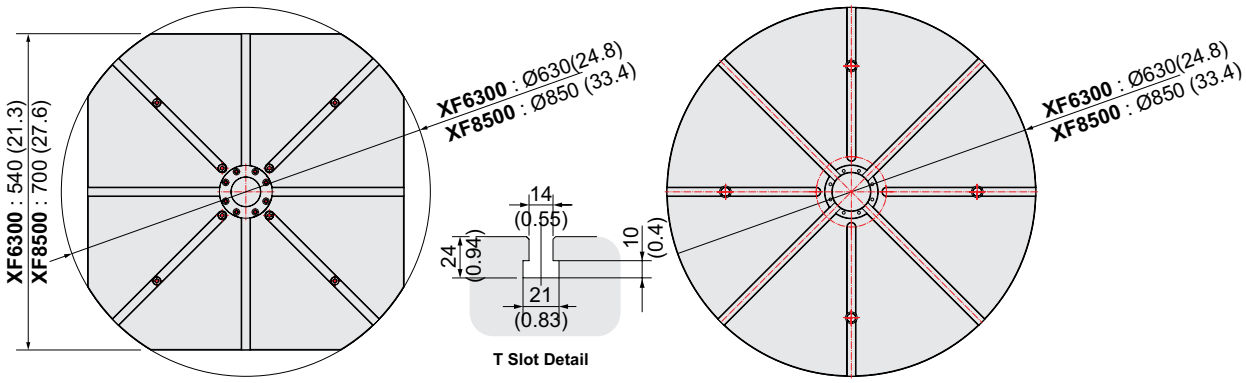


LEFT

SPECIFICATIONS

Table Dimensions

unit : mm (in)



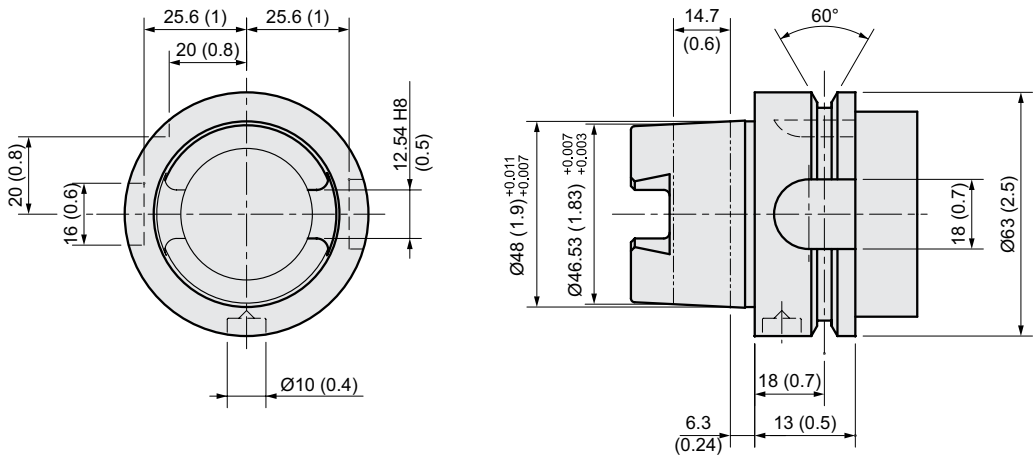
Std. Table

Mill-turn Table

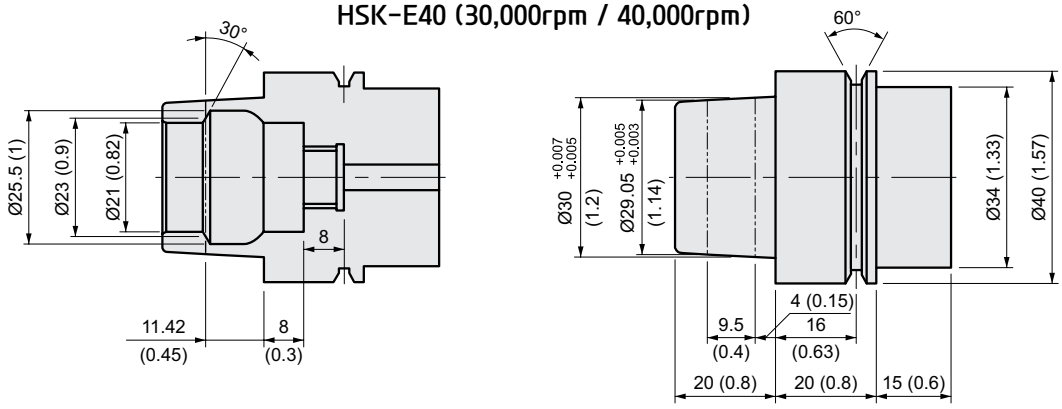
Tool Shank

unit : mm (in)

HSK-A63 (9,000rpm / 15,000rpm / 24,000rpm)



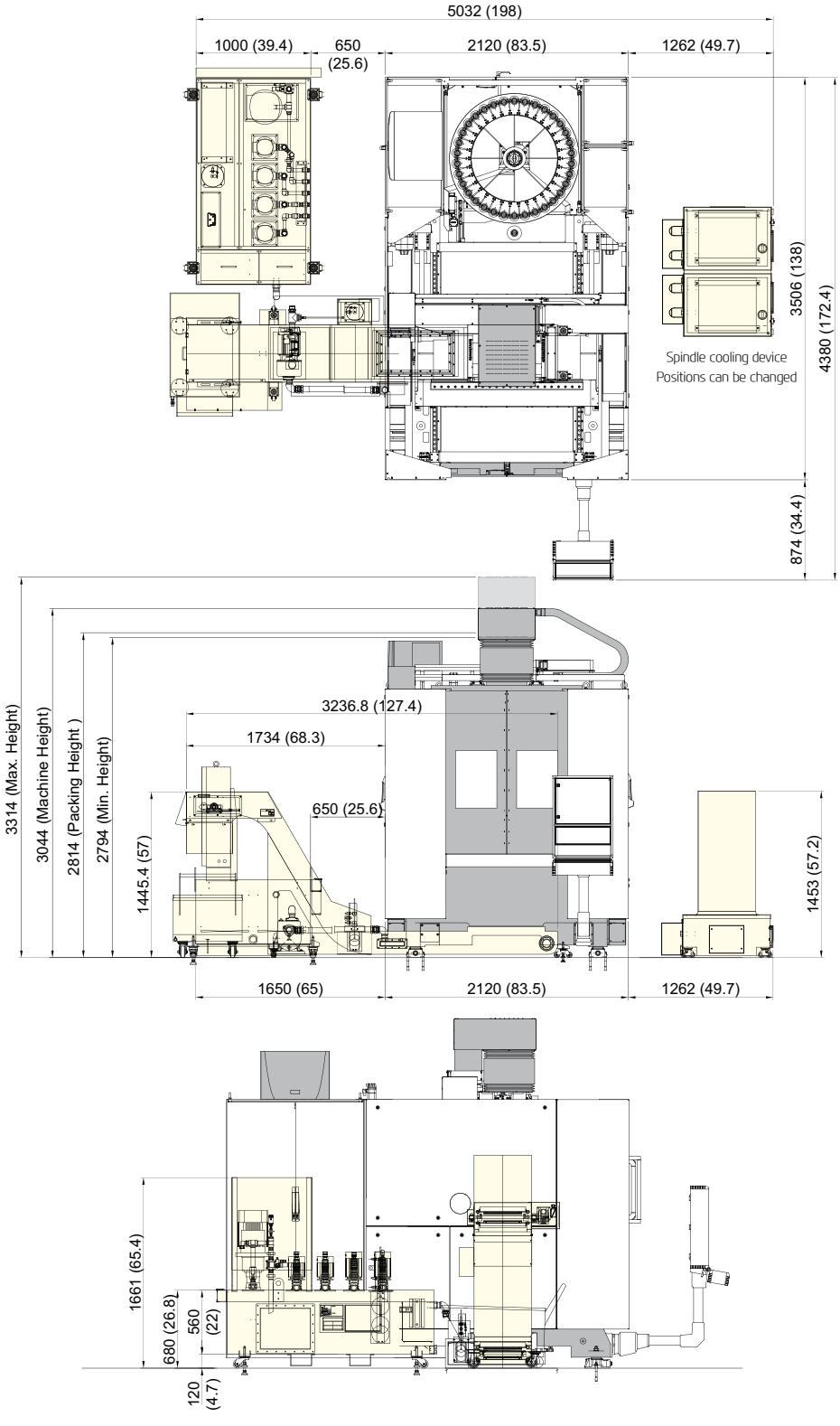
HSK-E40 (30,000rpm / 40,000rpm)



External Dimensions

unit : mm (in)

XF6300

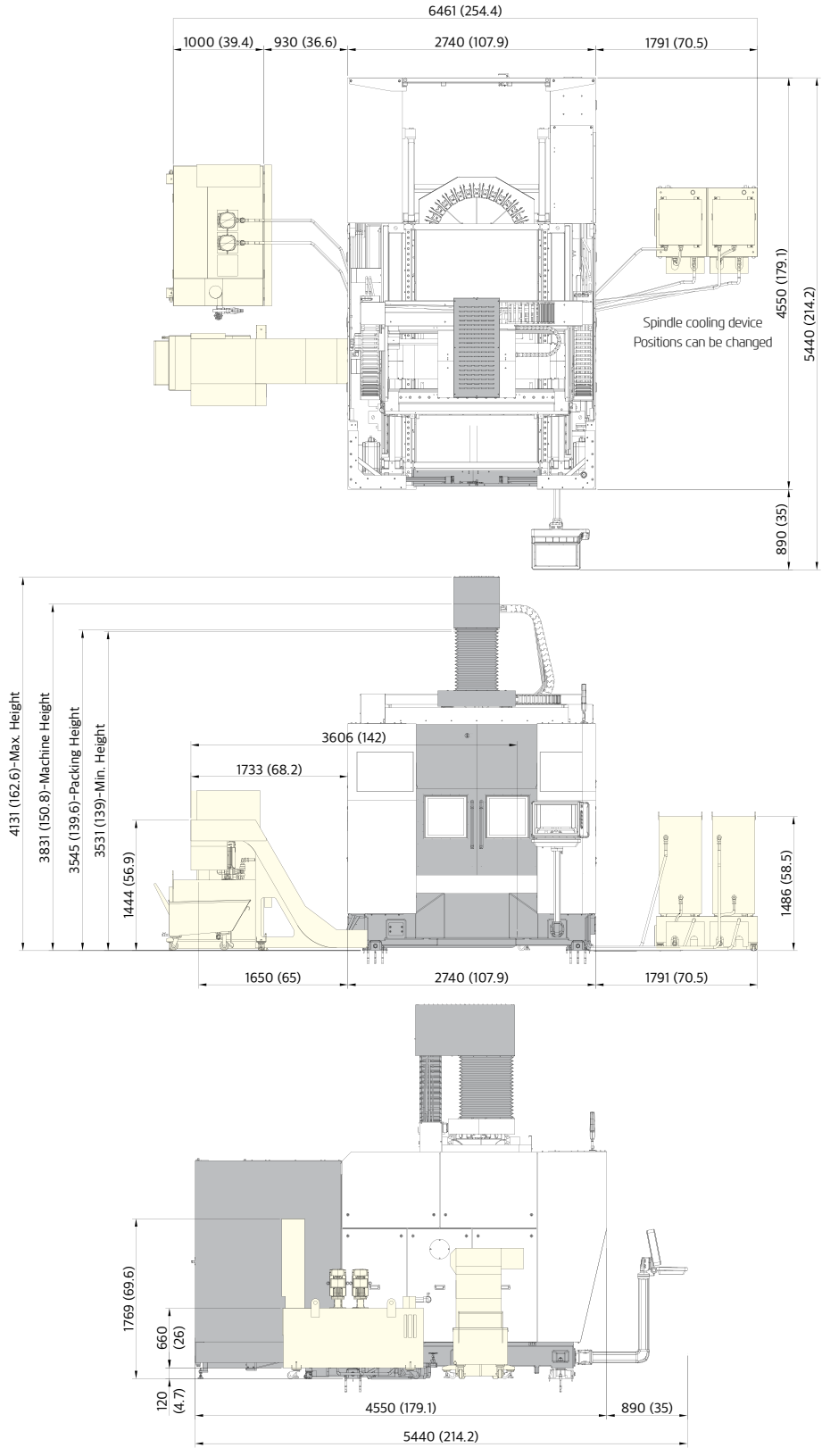


SPECIFICATIONS

External Dimensions

unit : mm (in)

XF8500



SPECIFICATIONS

Specifications

[ ] : Option

MODEL				XF6300
TABLE	Table Size		mm(in)	Ø630 (Ø24.8″)
	Maximum Load Capacity		kg(lb)	Max. 600 (1,323)
	※Max. Macining Height(IxH)		mm(in)	Ø800×500 (Ø31.5″x19.7″)
	Table Driving Method		mm(in)	DDM [GEAR]
MILL TURN TABLE (Opt.)	Table Size		mm(in)	Ø630 (Ø24.8″)
	Maximum Load Capacity		kg(lb)	500 (1,102)
	Maximum Speed	A/C Axis	r/min	70/800
	Table Driving Method		-	DDM
SPINDLE	Spindle Taper		-	HSK-A63 [40K : HSK-E40] [Turn Mill : HSK-T63]
	Spindle Speed		r/min	15,000 [24,000] [40,000]
	Spindle Power Output (Max./Cont.)		kW(HP)	31/25 (41.6/33.5) [26/20 (35/27)] [26/18 (35/24)]
	Spindle Torque (Max./Cont.)		N·m(lbf·ft)	153/123 (112.8/91) [85.9/66.5 (63.4/49)] [9.9/6.9 (7.3/5)]
	Spindle Driving Method		-	BUILT-IN
FEED	Travel	X/Y/Z Axis	mm(in)	650/600/500 (25.6″/23.6″/19.7″)
		A/C Axis	deg	150° (-30°~+120°)/360°
	Distance from Table Top to SP. Nose		mm(in)	220 (8.7″) ~ 720 (28.3″)
	Rapid Traverse Rate	X/Y/Z Axis	m/min(ipm)	SIEMENS SINUMERIK ONE : 60/60/60 (2,362/2,362/2,362) [HEIDENHAIN TNC640 : 50/50/50 (1,967/1,967/1,967)]
		A/C Axis	r/min	DDM : 70/110 [Gear : 25/50]
	Slide Type		-	ROLLER GUIDE
ATC	Number of Tools		ea	34 [68, 102]
	Tool Shank		-	HSK-A63 [40K : HSK-E40] [HSK-T63]
	Max. Tool Dia. (W/T Adjacent Tool)		mm(in)	Ø90/Ø125 (Ø3.5″/Ø4.9″)
	Max. Tool Length		mm(in)	300 (11.8)
	Max. Tool Weight		kg(lb)	8 (17.6) [40K : 1.5 (3.3)]
	Tool Change Time	C-C	sec	4.5
TANK CAPACITY	Coolant Tank		ℓ (gal)	1,200 (317) {Propriety Capacity : 800 (211.3)}
	Lubricating Tank		ℓ (gal)	2 (0.5)
	Hydraulic Tank		ℓ (gal)	4 (1)
POWER SUPPLY	Electric Power Supply		KVA	73
	Thickness of Power Cable		mm^2	AC 380V : OVER 50, AC 220V : OVER 70
	Voltage		V/Hz	380, 220/50, 60
MACHINE	Floor Space (L×W)		mm(in)	5,032×4,380 (198″×172.4″)
	Machine Size (L×W)		mm(in)	2,120×4,380 (83.5″×172.4″)
	Height		mm(in)	3,044 (119.8″)
	Weight		kg(lb)	11,000 (24,251)
CNC	Controller		-	SIEMENS SINUMERIK ONE [HEIDENHAIN TNC640]

※ If the machining area exceeds Ø630 × 400(Ø24.8″x15.7″), some interference may occur. Please also check the interference area on page 36 of the catalog.
Specifications are subject to change without notice for improvement.

SPECIFICATIONS

Specifications

[ ] : Option

MODEL				XF8500
TABLE	Table Size		mm(in)	Ø850 (Ø33.4″)
	Maximum Load Capacity		kg(lb)	1,000 (2,205)
	※Max. Macining Height(IxH)		mm(in)	Ø1,000×600 (Ø39.4″x23.6″)
	Table Driving Method		mm(in)	DDM
MILL TURN TABLE (Opt.)	Table Size		mm(in)	Ø850 (Ø33.4″)
	Maximum Load Capacity		kg(lb)	700 (1,543)
	Maximum Speed	A/C Axis	r/min	50/600
	Table Driving Method		-	DDM
SPINDLE	Spindle Taper		-	HSK-A63 [30K : HSK-E40] [HSK-T63]
	Spindle RPM		r/min	15,000 [9,000] [24,000] [30,000]
	Spindle Power Output (Max./Cont.)		kW(HP)	31/25 (41.6/33.5) [42/31(56.3/41.6)] [26/20 (35/27)] [120/80 (160.9/107.3)]
	Spindle Torque (Max./Cont.)		N·m(lbf·ft)	153/123 (112.8/91) [175/130 (129/95.9)] [85.9/66.5 (63.4/49)] [38.2/25.5 (28.2/18.8)]
	Spindle Driving Method		-	BUILT-IN
FEED	Travel	X/Y/Z Axis	mm(in)	850/920/600 (33.4″/36.2″/23.6″)
		A/C Axis	deg	150° (+30°~-120°)/360°
	Distance from Table Top to SP. Nose		mm(in)	250~850 (9.8″~33.4″)
	Rapid Traverse Rate	X/Y/Z Axis	m/min(ipm)	45/45/45 (1,772/1,772/1,772)
		A/C Axis	r/min	50/100 (DDM)
	Slide Type		-	ROLLER GUIDE
ATC	Number of Tools		ea	PICK UP : 34 [TWIN ARM : 68, 102]
	Tool Shank		-	HSK-A63 [30K : HSK-E40] [HSK-T63]
	Max. Tool Dia. (W/T Adjacent Tool)		mm(in)	Ø90/Ø125 (Ø3.5″/Ø4.9″)
	Max. Tool Length		mm(in)	300 (11.8)
	Max. Tool Weight		kg(lb)	8 (17.6) [30K : 1.5 (3.3)]
	Tool Change Time	C-C	sec	6.8
TANK CAPACITY	Coolant Tank		ℓ (gal)	1,200 (317) {Propriety Capacity : 800 (211.3)}
	Lubricating Tank		ℓ (gal)	2 (0.5)
	Hydraulic Tank		ℓ (gal)	4 (1)
POWER SUPPLY	Electric Power Supply		KVA	98
	Thickness of Power Cable		mm^2	AC 380V : OVER 50, AC 220V : OVER 70
	Voltage		V/Hz	380, 220/50, 60
MACHINE	Floor Space (L×W)		mm(in)	4,907x5,440 (193.2″x214.2″)
	Machine Size (L×W)		mm(in)	2,740x5,440 (107.9″x214.2″)
	Height		mm(in)	3,831 (150.8)
	Weight		kg(lb)	21,000 (46,297)
CNC	Controller		-	SIEMENS SINUMERIK ONE [HEIDENHAIN TNC640]

※ If the machining area exceeds Ø850× 600(Ø33.4″x23.6″), some interference may occur. Please also check the interference area on page 38 of the catalog.

Specifications are subject to change without notice for improvement.

SIEMENS SINUMERIK ONE

[ ] : Option ☆ Needed technical consultation

Controlled axis / Display / Accuracy Compensation	
Control axis	8 axis (X1, Y1, Z1, A1, C1, WR, WD, WL)
Simultaneously controlled axis	Max. 5 axis
Least setting Unit	X, Y, Z axis : 0.001 mm (0.0001 inch),
	B, C, A axis : 0.001 deg
Least input increment	X, Y, Z axis : 0.001 mm (0.0001 inch),
	B, C, A axis : 0.001 deg
Inch / Metric changeover	G70 (inch) / G71 (metric)
Interlock	All axis / Each axis
Machine lock	All axis
Backlash compensation	
Pitch error compensation	
Feedforward control (Torque control)	
LCD / MDI	22 inch color LCD (With Touch panel)
Keyboard	QWERTY full keyboard
Stored stroke check	Over travel
Operation	
Automatic operation (Memory)	
MDI operation	
Program restart	
Program check function	Dry run / Program check / Machine lock
Single block	
Block search	Block search
Reposition	
Working area limit	Working area limitations
Interpolation functions	
Positioning	G00
Linear interpolation	G01
Circular interpolation	Circular interpolation CW (G02)
	Circular interpolation CCW (G03)
Exact position stop	Single block exact stop (G09)
	Exact stop G60 (G601, G602, G603)
Dwell	Dwell (G04)
Reference position return	Return to reference point
	Return to 2nd reference point
Helical interpolation	
Spline interpolation	Non-uniform rational B splines
Compressor (Improving machining quality)	Compcad / Compcurv (Cycle 832)
Feed function / Acc. & Dec. control	
Manual feed	Rapid traverse
	Jog
	Manual handle
	Reference position return
Cutting Feed command	Direct input F code
Feedrate override	0 ~ 120% (☆ 0 ~ 200%)
Rapid traverse override	1%, 25%, 50%, 100%
Feed per minute	G94
Feed per revolution	G95
Look-ahead block	3,000 block (With Mdynamics)
Program input	
ISO correspondence	G291(ISO)/G290 (SIEMENS)
	(ISO G Code system-A)
Optional block skip	8 ea (0~7)
Absolute / Incremental program	G90 / G91
Program stop / end	M00, M01 / M02, M30
Maximum command unit	± 999,999.999 mm, ± 99,999.9999 inch
Plane selection	X-Y : G17, X-Z : G18, Y-Z : G19
Workpiece coordinate system	G54 ~ G57, G505~G549
	G500 (Basic frame - setable zero offset)
	G53 (Work offset non modal)
	G153 (basic frame non modal)
Sub program call	16 folds nested
G code preventing buffering	STOPRE
Drilling/Milling cycle	with programing support
☆ Turning Cycle	with programing support
User cycle	

Auxiliary function / Spindle speed function	
Auxiliary function	M Code 4 digit
Spindle speed function	S Code 5 digit
Spindle override	0% ~ 120%
Spindle orientation	SPOS
Rigid tapping	
Autometic mode Interchange	Spindle / Axis mode
Constant surface speed control	G96, G97
Spindle speed limitation	LIMS
Tool function / Tool compensation	
Tool function	Tool number & Tool name
Tool life management	
Tools in tool list	1,500 ea
Cutting Edges in tool list	3,000 ea
Tool radius compensation	ISO (G40, G41, G42)
Geometry / Wear compensation	
Measurement of tool length	
Tool management function	
Editing function	
Part program storage size	10MB
External Strorage devices	USB
Background editing	
Extended part program editing	Copy, move and change of NC program
Memory card program edit	
Data input / output & Interface	
I/O interface	USB memory interface
	Embedded Ethernet memory interface
Screenshot	
Built-in PC	Industrial PC (IPC427E)
Setting, display and diagnosis	
Self-diagnosis function	
History display & Operation	Alarm & Operator message & Operation
Run hour / Parts count display	
Regular maintenance screen	
Actual speed display	
Display of spindle speed / T code	
Graphic display	
Operating monitor screen	Spindle / Servo load etc.
Multi language display	Support 7 languages Chinese, English, French, German, Italian, Korean, Spanish
LCD Screen Saver	Screen saver & Motion sensing
Function	
ShopMill	Machining step programming for milling
3D simulation	
Real time simulation	

Option	
Multi language display	☆ 20 Support languages : Inquiry need

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SPECIFICATIONS

HEIDENHAIN TNC640 Standard

Axis	
Controlled axis	10 Axis (Max. 18 Axis)
Simultaneously controllable axis	5 Axis.
Rotary Controlled axis	3 Axis (Max. 3 Axis)
Least command increment	0.0001 mm / 0.0001 ° (Option : 0.00001 mm / 0.00001 °)]
Display unit	19-inch color TFT (Option : 15-inch color TFT)]
Program memory	21GB (SSDR solid state disk)
Block processing time	0.5 ms
Path interpolation time	3 ms
Fine interpolation time	0.2 ms
Position controller time	0.2 ms
Speed controller time	0.2 ms
Current controller time	100 us (5000 hz)
Encoder	Absolute EnDat 2.2
Commissioning and diagnostics	
Data interface	Ethernet 2x1000 BASE-T
	4xUSB 3.0
Machine Function	
Look ahead	5,000 Block
HSC filters	
Switching the traverse ranges	
User Function	
Program input	HEIDENHAIN conversational
	DIN/ISO
Position entry	Nominal position for lines and arcs in Cartesian / Polar coordinates
	Incremental / absolute dimensions
	Display / entry in mm or inch
Tool compensation	Tool radius in th working plane and tool length
	Radius-compensated contour for up o 99 blocks (M120)
	3-diemensional tool-radius compensation for changing tool data without having to recalculate an existing program
Tool tables	Multiple tool tables with any number tools
Cutting data	Automatic calculation of spindle speed, cutting speed, feed per tooth / revolution
Constant contour speed	Relative to the path of the tool center
	Relative to the tool's cutting edge
Parallel operation	Creating program with graphical support while another program is being run
3D machining	Motion control with smoothed jerk
	3D tool compensation through surface normal vectors
	Tool Center Point Management (TCPM)
	Keeping the tool normal to the contour
	Tool radius compensation normal to the tool direction
	Manual traverse in the active tool-axis
Rotary table maching	Programming of cylindrical contours as if in two axis
	Feed rate in distance per minute
Contour elements	Straight line
	Chamfer
	Circular path
	Circle center
	Circle radius
	Tangentially connecting circular arc
	Corner rounding
FK free contour programming	in HEIDENHAIN conversational format with graphic support for workpiece drawings not dimensioned for NC
Program jumps	Subprograms
	Program section repeats
	Calling any program as a subprogram
Coordinate transformation	Datum shift, rotation, mirror image, scaling factor (axis-specific)
Q parameters programming with variables	Mathematical functions
	Logical operations
Q parameters programming with variables	Calculating with parentheses
	Absolute value of a number, constant π, negation, truncation of digits
	Functions for calculation of circles
	Functions for text processing

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SPECIFICATIONS

HEIDENHAIN TNC640 Standard

User Function	
Fixed cycle	Drilling, tapping, rigid tapping
	Peak drilling, reaming, boring, centering
	Milling internal and external threads
	Clearing level and oblique surfaces
	Multioperation machining of straight and circular slots
	Multioperation machining of rectangular and circular pockets
	Cartesian and polar point patterns
	Contour train, contour pocket
	Contour slot with trochoidal milling
	Engraving cycle
Programming aids	Calculator
	Complete list of all current error messages
	Context-sensitive help function for error
	TNCguide : The integrated help system
	Graphic support for programming cycles
CAD viewer	Display of CAD data formats on th TNC
Teach-In	Actual positions can be transferred directly into the NC program
Test grphics Display modes	Graphic simulation
	Plan view /projection in 3planes /3D view
	Magnification of details
3D line graphics	For verification of programs created offline
2D pencil-trace graphics	2D pencil-trace graphics
Program-run graphics display moded	Graphic simulation during real-time maching
	Plan view /projection in 3planes /3D view
Machining time	Calculation of machining time in the Test Run operating mode
Machining time	Display of the current maching time in the Program Run operating modes
Returning to the contour	
Datum management	One table for storing reference point
Datum tables	Multiple datum tables for storing workpiece-specific datums
Language	English / German / Korean / French / Italian / Spanish / Portuguese / Swedish / Danish / Finnish / Dutch /
	Polish / Hungarian / Russian / Chinese / Chinese_Trad /Slovenian / Norwegian / Czech / Romanian / Slovak / Turkish
Interpolation	
Linear	5 Axis
Circular	3 Axis
Spline	(Max. 5 Axis)
Helical	
Cylinder surface	
Rigid tapping	

HEIDENHAIN S/W OPTION (As a standard)	
Advanced function set 1	1. Rotary table machining / 2. Coordinate transformations / 3. Interpolation
Advanced function set 2	1. 3-D machining / 2. Interpolation
DCM : Dynamic Collision Monitoring	Manual / automatic collision monitoring for safety machining operation
Kinematic Opt	Easy calibration of rotary axis

HEIDENHAIN S/W OPTION (Customer Option)	
Display step (micron control)	Linear axis : 0.1 µm (std) → 0.01 µm (with option #23) / Angular axis : 0.0001° (std) → 0.00001° (with option #23)
DXF converter	Importing contours and machining options from DXF files
AFC : Adaptive Feed Control	Controls the feed rate depending on the machine situations
Kinematic comp (3-D spatial compensation)	Improves machine accuracy by compensation of geometry errors
CTC : Cross Talk Compensation	Compensation of position errors through axis coupling to improve quality and accuracy
PAC: Position Adaptive Control	Position-dependent adaptation of control parameters
LAC : Load Adaptive Control	Adjust the parameters of the feedforward control to the current mass of the workpiece
ACC : Active Chatter Control	Reduces chattering during heavy cutting to decrease tool mark and machine load
AVD : Active Vibration Damping	Vibration damping by adjusting of the jerk for better surfaces

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2024-02 004.028 ENG