Slant Bed CNC Lathe

Model: SL251HA

Features

SL251HA CNC horizontal lathe is a two-axis, semi-closed-loop CNC machine tool. The machine tool, electricity, liquid integrated layout, using a fully enclosed protective cover, pull the door to the left, the console is located on the right side of the fixed protective cover, in line with ergonomic design, make the operation more convenient. Each servo feed axis adopts high-speed and silent ball screw, and the elastic coupling is directly connected, which has fast moving speed, low noise, high positioning accuracy and high repetitive positioning accuracy. The servo motor is equipped with an absolute encoder without accumulated error and requires no memory. There is no need to find a reference point and the position information will not be lost after the power is cut off. The machine has strong functions, high precision, reasonable layout, beautiful appearance, easy operation and convenient maintenance.

Machine specifications

Item	SL251HA
Capability	
Max. swing over bed	Φ550mm(21.6")
Max. swing over saddle	Φ370mm(14.5")
Max. turning diameter	Φ360mm(14.2")
Max. machining length	410mm(16.1")
Bar capacity	Φ44mm(1.7"）
Spindle	
Spindle motor output power	7.5/11kW
Spindle nose	A2-6
Max. spindle speed	5000rpm
Spindle bore diameter	Φ56mm(2.2")
Chuck size	8" inch (Hydraulic hollow)
X/Z axis travel	
X-axis travel	240mm(9.5")
Z-axis travel	430mm(16.9")
Rapid traverse of X-axis	24m/min(945 IPM)
Rapid traverse of Z-axis	30m/min(1181 IPM)
Turret	
Number of tool	8
Turing tool size	25x25mm
Max. boring tool diameter	Φ40mm
Tailstock (optional)	
Hydraulic tailstock center	MT5(live center)
Quill diameter	100mm
Quill travel	100mm
Accuracy	
Positioning accuracy (X/Z-axis)	0.006/0.006mm
Repeatability (X/Z-axis)	0.004/0.004mm
Others	
Power capacity	25 kVA
Machine dimension (L x W x H)	3605x1790x1820mm
Net weight	3500kg

Equipments

Item 01	Descriptions	
01.01	FANUC Oi TF	
01.02	5000rpm belt drive spindle (FANUC servo motor)	
01.03	8 position hydraulic turret (refer to follow turret information)	
01.04	8'' hollow hydraulic chuck with 1 set soft jaw	
01.05	Solid hydraulic cylinder	
01.06	Hydraulic system	
01.07	Air conditioner of electrical cabinet	
01.08	Auto chip conveyer & chip chart	
01.09	Auto oil lubrication system	
01.10	Tri-color light	
01.11	Air gun	
01.12	Door lock switch	
01.13	Lighting lamp	
01.14	Full enclosure splash guard	
01.15	Telescopic covers	

Optionals

Item 02	Descriptions	Note
02.01	SIEMENS 828D 240	
02.02	Shop turn	
02.03	FANUC 0I TF 1 with β MOTOR	
02.04	FANUC 0I TF 1 with α MOTOR	
02.05	Manual guide 0I	
02.06	Manual guide I	for FANUC TF1
02.07	DATA SERVE 2GB	for FANUC TF1
02.08	10.4" touch screen of FANUC controller	
02.09	15" screen of FANUC controller	Only for FANUC 1 controller
02.10	15" touch screen of FANUC controller	Only for FANUC 1 controller
02.11	15" touch screen of SIEMENS controller	
02.12	Tool setter RENISHAW	Manual plug type
02.13	Tool setter RENISHAW	Auto swing type
02.14	Auto parts catcher	Swing type
02.15	M30 auto power off	
02.16	Scraping chip conveyor for aluminums cutting	
02.17	Magnetic chip conveyor	

02.18	THK linear way and ball screw	
02.19	Oil mister collector	
02.20	Auto-door (pneumatic control)	
02.21	2 year FANUC warranty	
02.22	2 year Siemens warranty	
02.23	CE standard	
02.24	380V 50HZ/415V 50 HZ /220V 60 HZ	
02.25	Transformer	
02.26	Voltage stabilizer	
02.27	Grease lubrication instead of oil	
02.28	Bar feeder interface	
02.29	Auto bar feeder 26mm diameter, 3000mm length	
02.30	Auto bar feeder 65mm diameter, 1500mm length, DH65L	
02.31	Auto bar feeder 65mm diameter, 1250mm length, DH65	
02.32	Hydraulic tailstock	
02.33	Hydraulic spring clamping tail stock (added on the hydraulic tail stock)	Tail stock body clamp by hydraulic spring
02.34	Servo tail stock (turning length 415mm)	Programmable, ball screw and linear way
02.35	Live center M#5	
02.36	Fixed center M#4	Optional
02.37	8 position servo turret, 25X25, 80mm center height	LioShing,
02.38	12 position servo turret, 25X25, 100mm center height	LioShing,
02.39	12 position servo turret, 20X20, 80mm center height	LioShing,
02.40	10 position hydraulic turret, 20X20, 80mm center height	LioShing, Long delivery time, working range change
02.41	12 position hydraulic turret, 20X20, 80mm center height	LioShing, working range change
02.42	12 position hydraulic turret, 25X25, 100mm center height	LioShing, working range change
02.43	U drilling tool holder with coolant through 1.5bar/10 bar	
02.44	Boring tool holder	
02.45	Boring tool holder sleeve (16, 20, 25)	
02.46	End face turning tool holder	
02.47	End face turning tool holder installation block	
02.48	Spindle bearing FAG instead of NSK	
02.49	Hydraulic steady rest (20—120mm)	Not equipped with the servo tail stock

02.50	8” hollow cylinder, 5000rpm	
02.51	10” solid chuck, 4000rpm	
02.52	10” solid cylinder, 4000rpm	
02.53	10” hollow chuck, 4200rpm	
02.54	10” hollow cylinder, 4200rpm	
02.55	Hydraulic collet chuck	
02.56	Collet	
02.57	Soft jaw of 8” chuck	
02.58	Hard jaw of 8” chuck	
02.59	Soft jaw of 10” chuck	
02.60	Hard jaw of 10” chuck	
02.61	Manual 8” chuck	Change hydraulic chuck to manual chuck
02.62	Manual 10” chuck	Change hydraulic chuck to manual chuck
02.63	A2-6 spindle bore 65mm, bar capacity 51mm, 4000rpm	Include hollow 8” chuck and cylinder
02.64	A2-6 spindle bore 76mm, bar capacity 65mm, 4000rpm	Include hollow 10” chuck and cylinder
02.65	Spindle bearing FAG instead of NSK, 5000rpm (when bigger spindle bore 65mm, bar capacity 51mm)	Include hollow 8” chuck and cylinder
02.66	11/15KW spindle motor β	
02.67	15/18.5KW spindle motor β	
02.68	Change to inverter spindle motor, 4000rpm	
02.69	Air conditioner of electrical cabinet	
02.70	High pressure coolant 1MPa	
02.71	High pressure coolant 2MPa	
02.72	Proximity switch	
02.73	Electric switch for door	
02.74	Coolant tank coolant level sensor	
02.75	Remove chip conveyer	
02.76	CNC controller book manuals	
02.77	Left side chip conveyer	Change backside to right side
02.78	Water gun	
02.79	MPG	
02.80	High pressure coolant 5MPa through turret (8 position)	
02.81	Two stage hydraulic pressure valve	

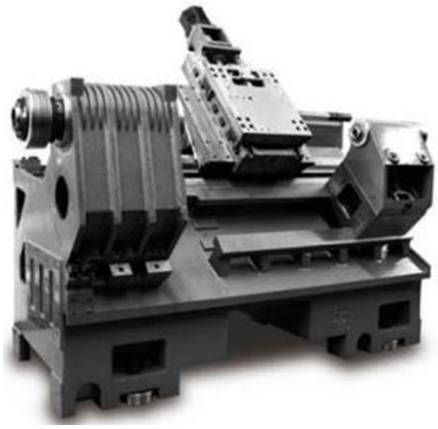
Construction

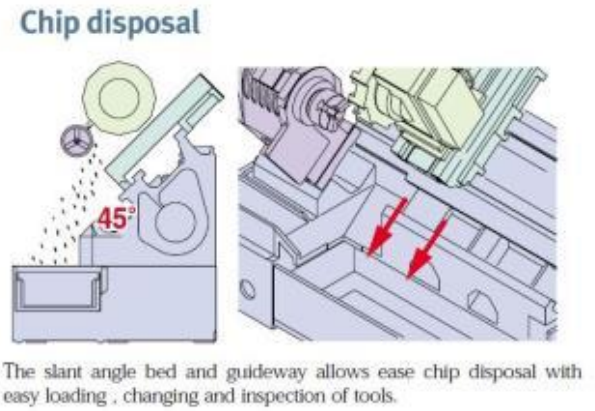
Integral

Machine tool for the machine, electricity, liquid integrated layout, 45 ° overall inclined bed, with a compact structure, high rigidity, smooth chip, easy to operate, etc.; rail type for the rolling guide, drive parts using high-speed silent ball screw, With fast speed, less heat, high positioning accuracy of the advantages of machine tools for the whole closed protection, automatic chip removal, automatic lubrication, automatic cooling.

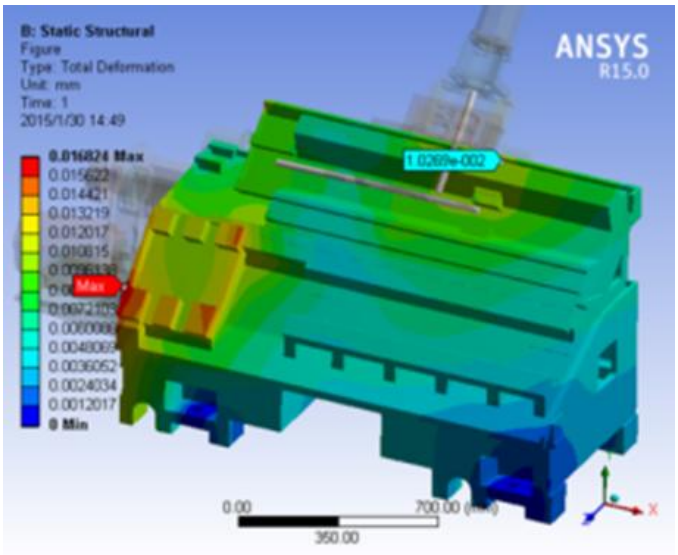
Bed

the whole resin sand and gray cast iron bed, the casting structure by the finite element analysis and optimization, casting by the second aging treatment, with high rigidity and high stability; finishing high precision gantry machining center processing, high geometric accuracy ; Inclined bed layout, with high rigidity, compact structure, smooth chip, easy to operate the advantages of bed guide rail for the rolling guide, the friction coefficient is small, moving fast, high positioning accuracy.



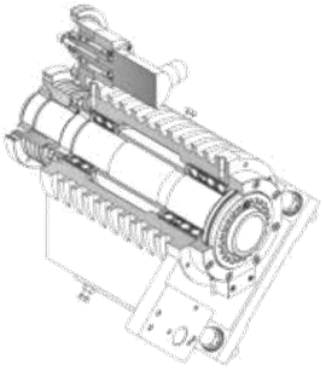


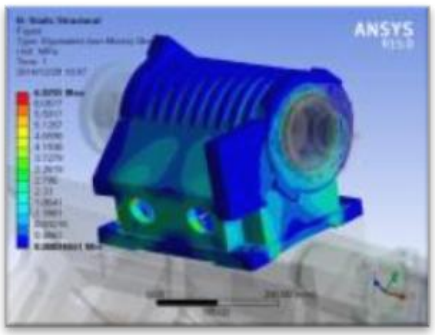
The slant angle bed and guideway allows ease chip disposal with easy loading , changing and inspection of tools.

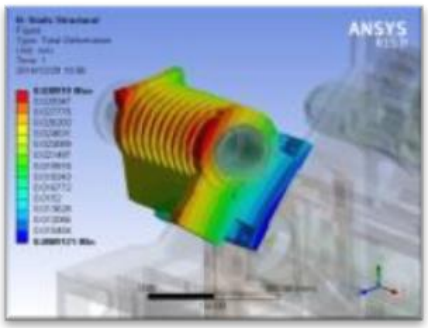


Spindle

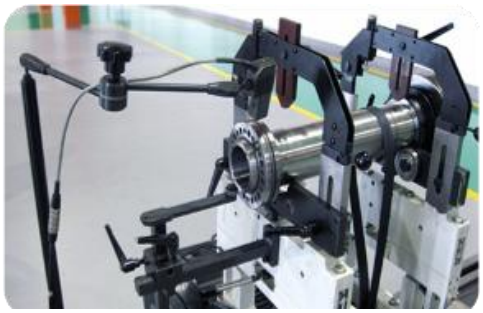
Spindle motor with FANUC servo motor, belt speed drive; Spindle bearings imported high precision angular contact ball bearings, high speed, high precision rotation, low temperature rise. High-rigidity spindle components, the former support the use of 70 series angular contact ball bearings, carrying capacity, suitable for no caged frame support cantilever cutting; spindle components in the constant temperature environment assembly, and strict balance of the adjustment.



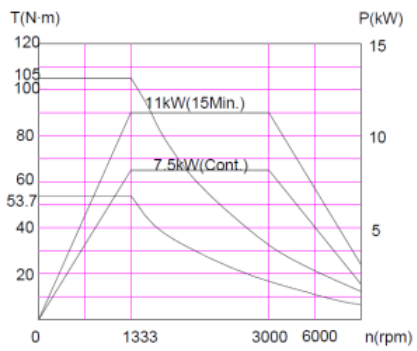




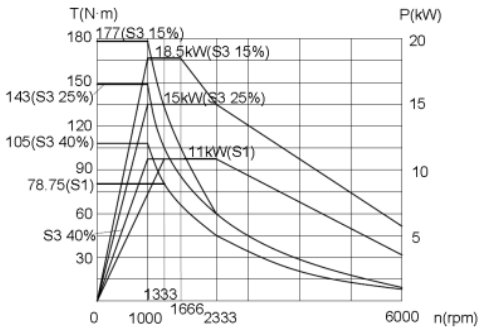
Spindle precision grinding; Dynamic Balance Test; Spindle warm-up Test;



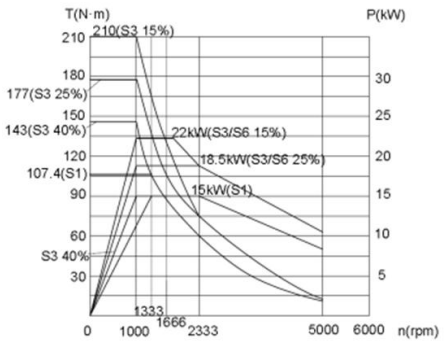
Spindle power and torque



7.5//11Kw



optional: 11/15kW

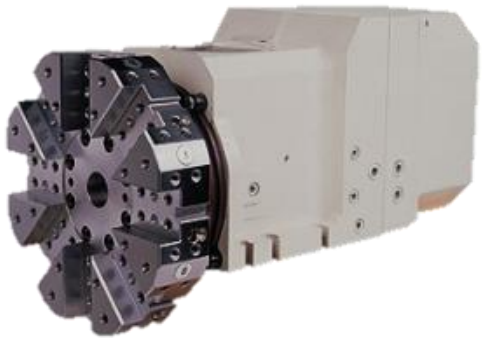


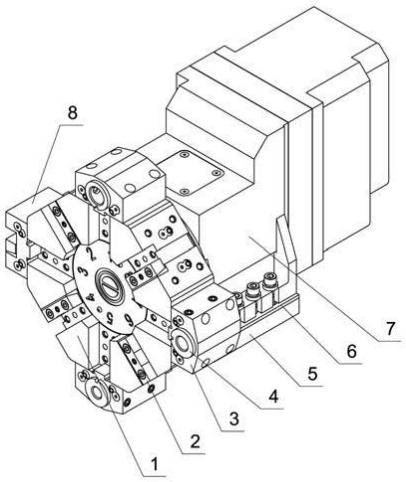
15/18.5kW

Turret

High reliability hydraulic turret with quick tool change and high stability.

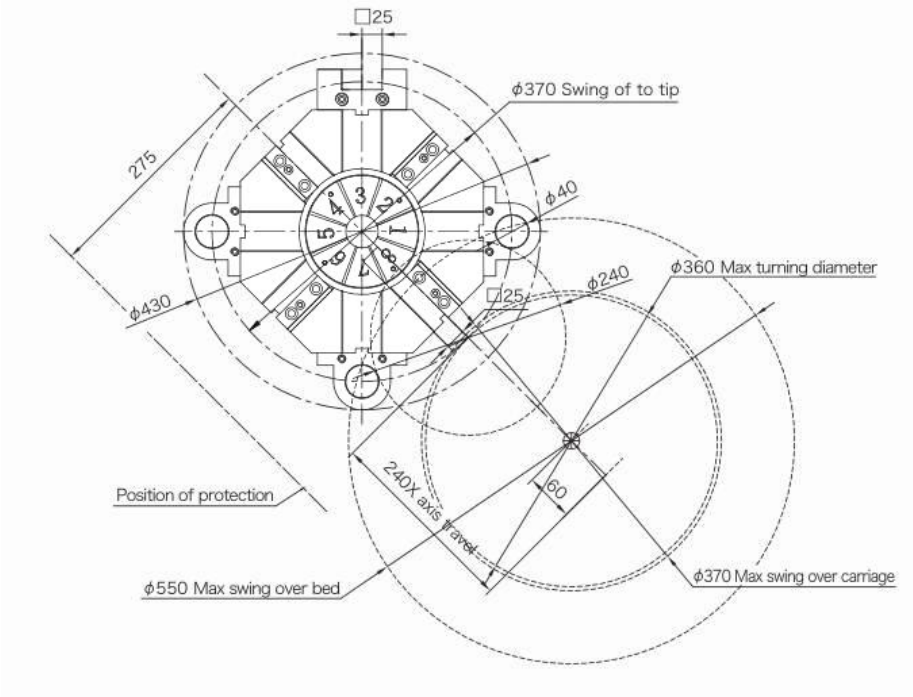
Item		Qty
Tool holder	25×25 End face tool holder	1
	φ40 boring tool holder	3
	Cylindered tool block	5
	End face tool block	1
Boring sleeve	φ32	1
	φ25	1
	φ20	1



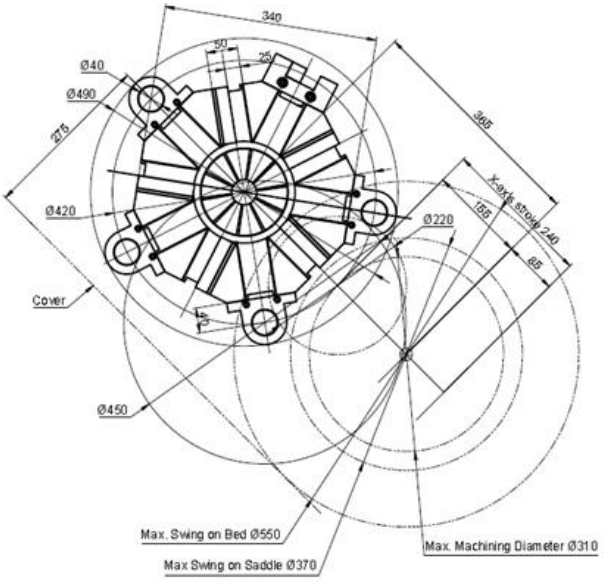


1. Tool disc;
2. Press block;
3. Boring tool holder;
4. Boring tool sleeve;
5. Cooling nose;
6. Position adjust pad;
7. Turret body;
8. End face tool holder.

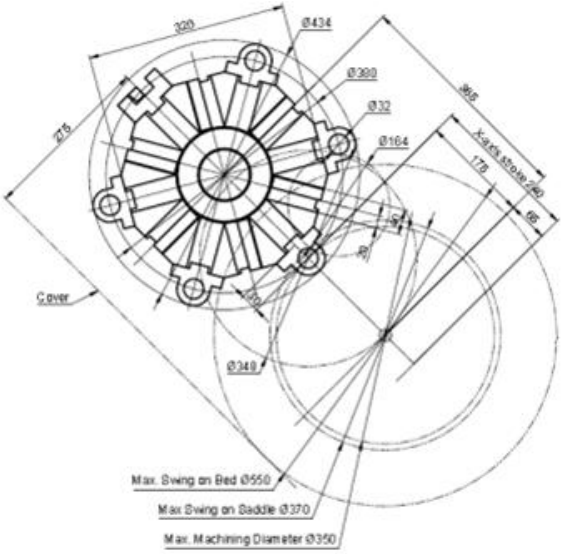
Turret interference chart



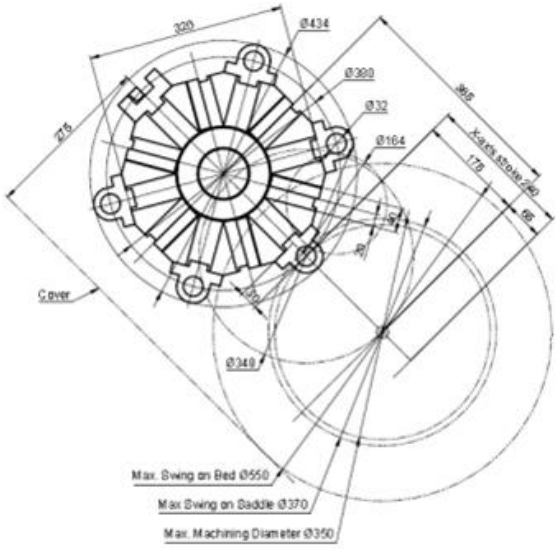
Optional turret interference chart



10T LIOSHING Hydraulic



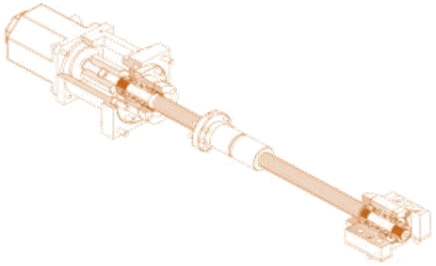
12T LIOSHING Hydraulic/Servo
(Height of Center:80mm)



12T LIOSHING Hydraulic/Servo
(Height of Center:80mm)

Ball screws

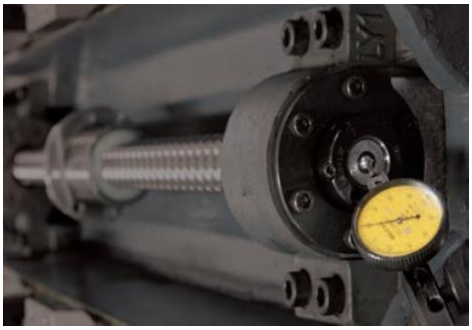
βiSc series AC servo motor, high-speed silent ball screw, flexible coupling directly connected, moving fast, positioning accuracy and repeat positioning accuracy; built-in absolute encoder, no cumulative error, no memory, no need to find a reference point , The location information is not lost after power is removed. Double nut and C3 level high accuracy ball screws.



Screw diameter x pitch: 32x8/32x10

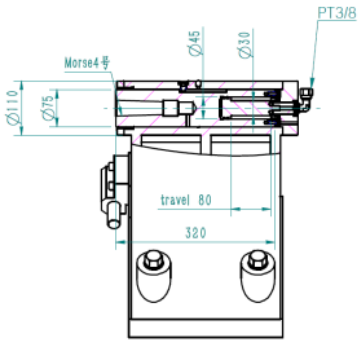
C3 level 0.008mm/300mm

The ball screw adopts the pre-load process, which effectively reduces the back lash in the ball screw and helps reduce the heat transfer and friction. This improves the accuracy and strengthens the rigidity and heat deformation resistance



Hydraulic tailstock (option)

The machine features a hydraulic tailstock that can be activated by the program, or controlled via the standard foot switch. The tailstock features an MT5 taper, and provides up to 6.5kN of thrust



Chuck and cylinder

Standard configuration: 8 inch hollow chuck. Other chuck and cylinder with different sizes are optional.

Chip removal

Equipped with a chain-type chip conveyor

Typical options

Renishaw tool measurement

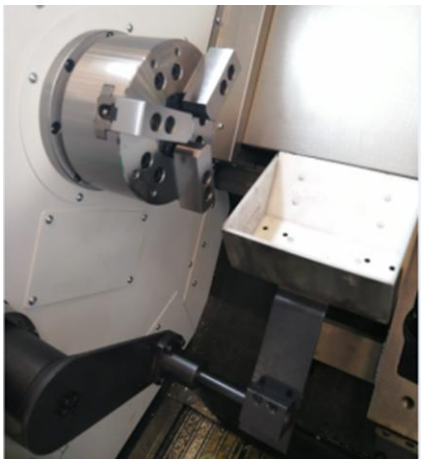
Hydraulic steady rest

Bar feeder

Servo tail stock

Oil mist collector

Part catcher



Typical application



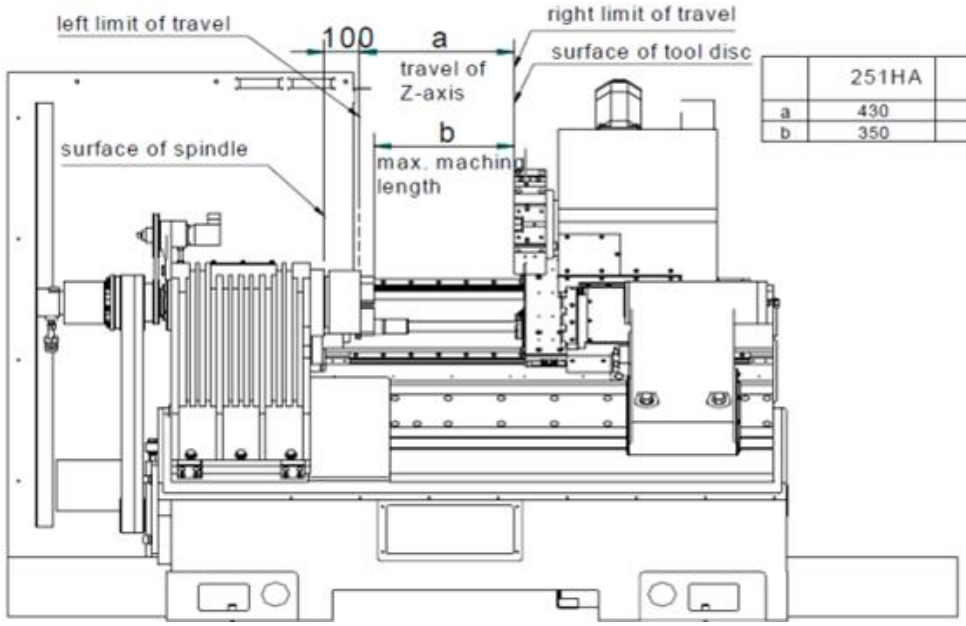




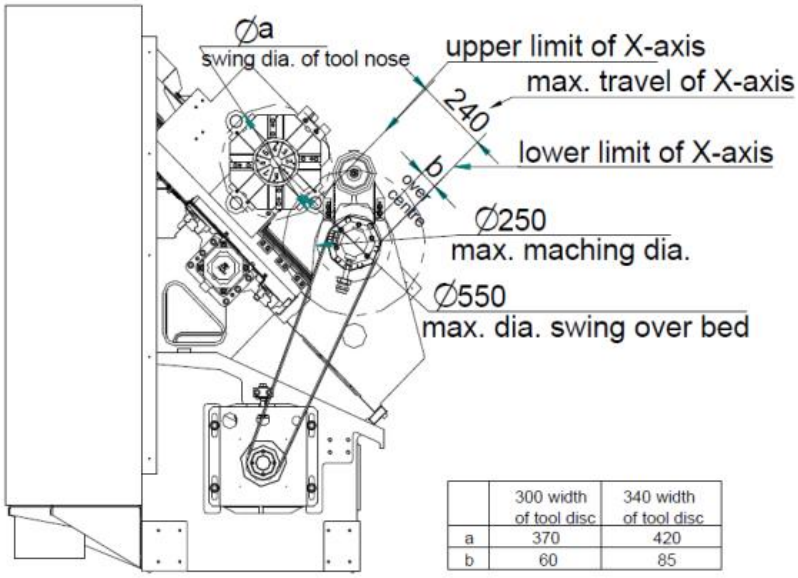





Work range

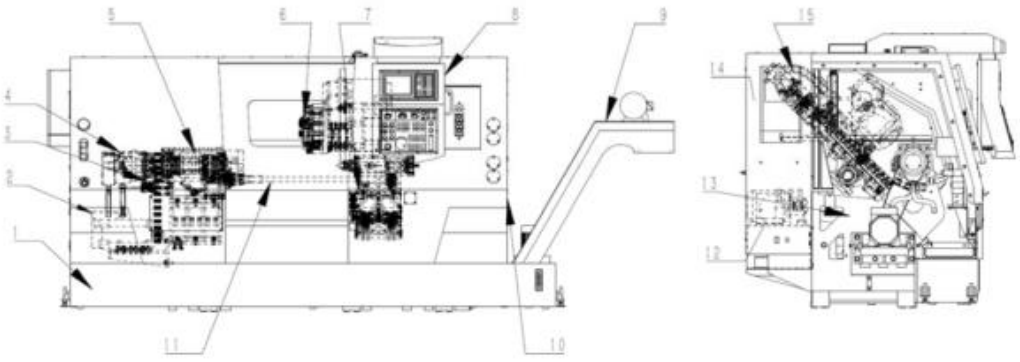


	251HA	253HA
a	430	830
b	350	750



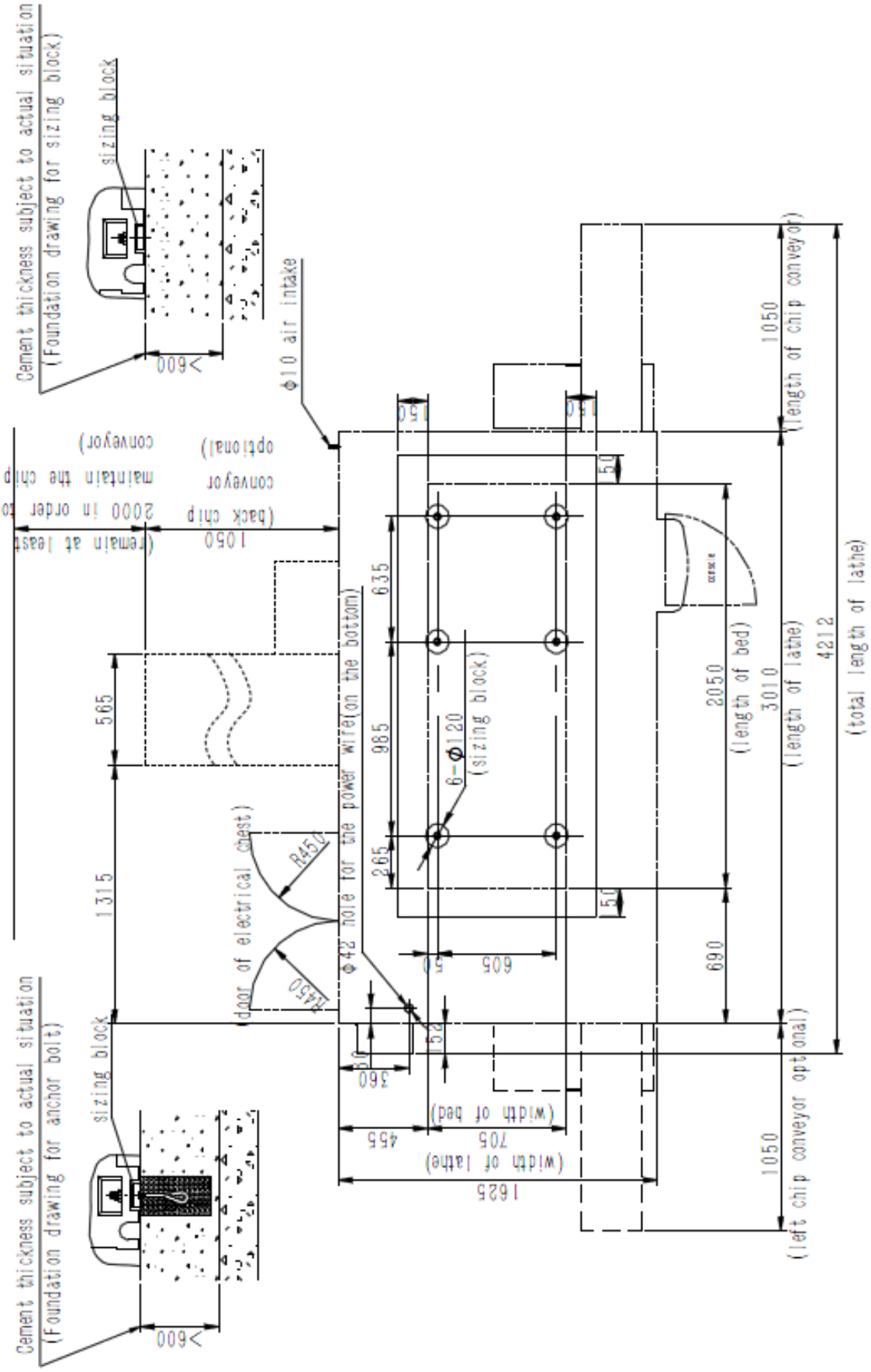
	300 width of tool disc	340 width of tool disc
a	370	420
b	60	85

Layout



1—Cooling syetem;2—Motor device;3—;4—Chuck/cylinder; 5—Headstock;6—Powered turret;7—Tailstock;8—Control panel; 9—Chip conveyor;10—Protective clothing;11—Z axis drive ;12—Hydraulic system;13- bed;14- Electrical chest;15- Carriage;

Foundation drawing



FANUC 0i TF controller specification

● Standard○ Optional X N/A

Specification				0I-TF Plus	
				Type 1	Type 5
1	Controlled axis	Controlled axes		4	4
2		Axis control by PMC		●	●
3		Torque control		●	●
4		Inch/metric conversion		●	●
5		Stored limit check before move		●	●
6		Unexpected disturbance torque detection function		●	●
7		Position switch		●	●
8	Operation	DNC operation with memory card		●	●
9		Handle interruption		●	●
10		Manual handle retrace		○	○
11	Interpolation functions	Nano interpolation		●	●
12		Linear interpolation		●	●
13		Circular interpolation		●	●
14		Helical interpolation		○	X
15		Thread cutting, synchronous cutting		●	●
16		Thread cutting retract		●	●
17		Continuous threading		●	●
18		High-speed skip	Input signal is 8 points.	●	●
19		2nd reference position return	G30	●	●
20	Feed function	AI contour control I		○	○
21		AI contour control II		○	X
22		Rapid traverse block overlap		●	●
23	Program input	Optional block skip	9 pieces	●	○
24		Absolute/incremental programming	Combined use in the same block	●	●
25		Diameter/Radius programming		●	●
26		Automatic coordinate system setting		●	●
27		Workpiece coordinate system	G52 - G59	●	●
28		Chamfering/Corner R		●	●
29		Custom macro		●	●
30		Addition of custom macro common variables	#100 - #199, #500 - #999	●	●
31		Interruption type custom macro		●	○
32		Canned cycle		●	●
33		Multiple repetitive cycles		●	●
34		Multiple repetitive cycles II	Pocket profile	●	●
35		Canned cycle for drilling		●	●
36		Coordinate system shift		●	●
37		Direct input of coordinate system shift		●	●

38		Pattern data input		●	○
39	Operation Guidance Function	Manual Guide i		○	X
40		Manual Guide 0i		○	○
41	Auxiliary/ Spindle speed function	Constant surface speed control		●	●
42		Rigid tap		●	●
43		Arbitrary speed threading		○	○
44		Tool offset pairs	128-pairs	●	●
45		Tool offset pairs	200-pairs	○	X
46		Tool radius/Tool nose radius compensation		●	●
47		Tool geometry/wear compensation		●	●
48		Automatic tool offset		●	○
49		Direct input of offset value measured B		●	○
50		Tool life management		●	●
51	Accuracy compensation function	Backlash compensation for each rapid traverse and cutting feed		●	●
52		Stored pitch error compensation total value input		○	○
53	Editing operation	(Specify total of part program storage size of each path.) Number of registerable programs	2Mbyte	●	●
			expansion 1 : Max. 1000 programs	●	●
54		Playback		●	●
55	Data input/ output	Fast data server		○	X
56		External data input		●	●
57		Memory card input/output		●	●
58		USB memory input/output		●	●
59		Automatic data backup		●	●
60	Interface function	Embedded Ethernet		●	●
61		Fast Ethernet		○	○
62	Others	Display unit	10.4" color LCD	●	●
63	Robot interface	Robot interface with PMC I/O module		○	○
64		Robot interface with PROFIBUS-DP/PROFINET-DP		○	○

Siemens controller specification

● Standard ○ Optional X N/A

No.	Item		Spec.	S828D		
				SW24x	SW26x	SW28x
1	Controlled axis	Controlled axes	2 axes	X,Z	X,Z	X,Z
2		Additional controlled axes		5	6+2	10+2
3		Least command increment	0.001mm (0.0001 inch)	●	●	●
4		Least input increment	0.001mm (0.0001 inch)	●	●	●
5		Travel to fixed stop with Force Control		○	○	○
6	Interpolation & Feed Function	Reference point return	G75 FP=1	●	●	●
7		2nd reference point return	G75 FP=2	●	●	●
8		Inverse time feedrate	G93	●	●	●
9		Helical interpolation		●	●	●
10		Polynomial interpolation		X	X	X
11		Spline interpolation (A, B and C splines)		○	○	○
12		Separate path feedrate for roundings and chamfers		●	●	●
13		Acceleration with Jerk limitation		●	●	●
14		Compressor for 3-axis machining COMPCAD		X	X	X
15		Temperature compensation		●	●	●
16		Look Ahead, recorded part program blocks:	Turning	1	1	1
17						
18		Look Ahead, IPO blocks, buffered:	Turning	1	1	1
19						
20		Cartesian point-to-point (PTP) travel		●	●	●
21		TRANSMIT/cylinder surface transformation		○	○	○
22	Spindle Function	Tapping with compensating chuck/rigid tapping		●	●	●
23	Tool Function	Tool radius compensations in plane		●	●	●
24		Number of tools/cutting edges in tool list		128/256	256/512	768/1536
25		Tool length compensation		●	●	●
26		Operation with tool management		○	○	○
27		Tool list		●	●	●
28		Replacement tools for tool management		○	○	○
29		Monitoring of tool life and		●	●	●

		workpiece count				
30		Manual measurement of tool offset		●	●	●
31		Magazine list		●	●	●
32	Programming & Editing Function	Number of levels for skip blocks 2		●	●	●
33		Number of levels for skip blocks 10		○	○	○
34		Program/workpiece management	On additional plug-in CF card	●	●	●
35			On USB storage medium (e.g. disk drive, USB stick)	●	●	●
36			On network drive	○	○	○
37		Program editor	Programming support for cycles program(Program Guide)	●	●	●
38			CNC editor with editing functions: select, copy, delete	●	●	●
39			Programming graphics/free contour input (contour calculator)	●	●	●
40			ShopTurn Machining step programming	○	○	○
41		Technology cycles for drilling/milling		●	●	●
42		Pocket milling free contour and islands stock removal cycle		○	●	●
43		Residual material detection		○	○	○
44		Access protection for cycles		○	○	○
45		Programming support can be extended, e.g. customer cycles		●	●	●
46		2D simulation		●	●	●
47		3D simulation, finished part		○	○	○
48	OTHERS FUNCTIONS (Operation, setting & Display, etc)	Switchover: inch/metric		●	●	●
49		Manual measurement of zero/work offset		●	●	●
50		Automatic tool/workpiece measurement		●	●	●

51		Reference point approach, automatic/via CNC program		●	●	●
52		Execution from USB or CF card interface on operator panel front		●	●	●
53		Execution from network drive		○	○	○
54		10.4" color display		●	●	●
55		15.0" color display		○	○	○
56		Alarms and messages		●	●	●
57		Automatic measuring cycles		○	○	○