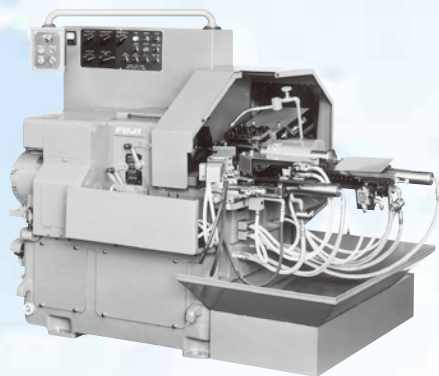


Reading trends and nurturing trust.

FUJI opened its doors in 1959 in the midst of Japan's transition from light to heavy industry, and since then has been meeting market needs for high precision manufacturing equipment. Embracing the rapid advances in motorization, Fuji was quick to recognize the window of opportunity existing in machine tools for the automotive industry, and established a reputation for providing durable and reliable machines to the industry. Presently, Fuji continues to develop space and labor saving production lines, integrating unprecedented technology to meet the demands of the industry.



(FS single purpose hydraulic lathe)

Headquarters

At Fuji's headquarters, Surface mount equipment and LCD equipment are designed and developed.



Fujioka plant

At Fujioka Plant, Machine tool equipment is designed and manufactured.



Okazaki plant

At Okazaki Plant, Surface mount technology equipment is manufactured.



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P&T MACHINERY INTERNATIONAL CO., LTD.
NANJING WUYUE MACHINE CO., LTD.
Kunshan Safety-Ctrl Development Equipment Co.,Ltd
Washin Tsusho Machinery Corporatio
Thailand Siam Samut Co., Ltd.,
India Proteck Machinery PVT. Ltd.

ISO 9001
ISO 14001
Headquarters/ Okazaki Plant/ Fujioka Plant

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FUJI MACHINE MFG. CO., LTD.
<http://www.fuji.co.jp>





Ultimate 2 spindle CNC lathe with
Fuji's expertise in turning and automation.

High Speed / Space Saving Design



FUJI Turning

Continuous Improvement
Parallel Front Facing Spindles
High Speed, Highly Rigid, Space Saving Design
Fuji built high speed robot and peripheral devices
Fuji engineered work holding / Optional Auto Gauging

Index

- 03 **Rigidity**
- 05 **Speed**
- 06 **Space**
- 07 **System**
- 09 **Operation**
- 11 **Options**

High Rigidity

Robust Structure

■ CSD200

Max. O.D. cutting stock **4mm**

Max. Grooving width **5mm**

■ CSD400/CSS400

Max. O.D. cutting stock **7mm**

Max. Grooving width **10mm**

■ CSD300/CSS300

Max. O.D. cutting stock **7mm**

Max. Grooving width **7mm**

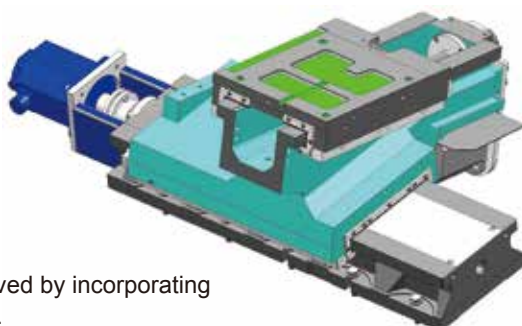
Material	Cutting speed (m/min)	Feed speed (mm/rev)
S45C	150	0.3
Material	Cutting speed (m/min)	Feed speed (mm/rev)
S45C	100	0.1

The above-mentioned data is actual values, but not a performance guarantee.

Highly Rigid Slides

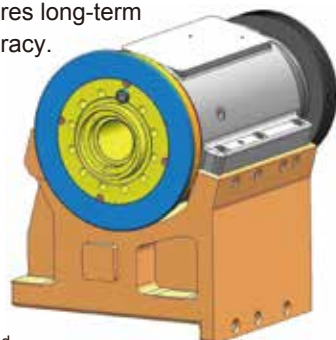
The CSD 300/400 utilizes box way construction in both x and z axis.
The compact CSD200 utilizes linear roller ways in both axis and long type slide for z axis for high rigidity.

Ball screw rigidity has been improved by incorporating a 3 x 3 row x axis support bearing.



Zero-center Type Headstock

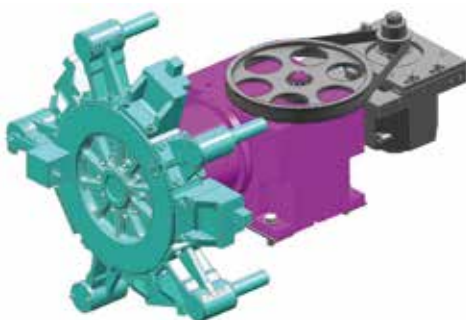
The zero-center type headstock has a thermally symmetrical design, which keeps thermal displacement to the absolute minimum. The air purge mechanism of the headstock completely protects the headstock against cutting oil and chips. This mechanism, along with grease lubrication, assures long-term processing accuracy.



※CSD200 is not included.

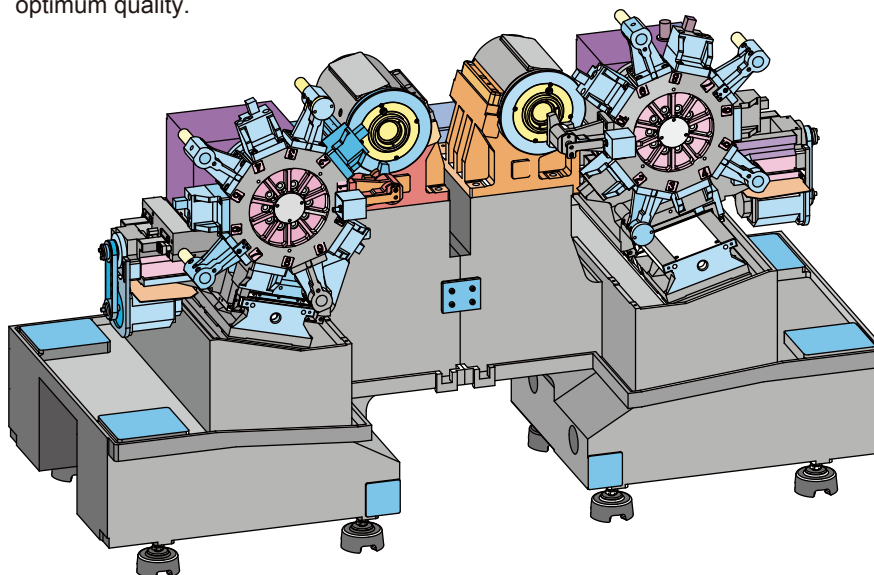
High Speed Indexing Turret

Cam type turret with high speed indexing by servo motor. Turret clamps by 3 piece hydraulic coupling eliminating cutting vibration to the lowest possible level.



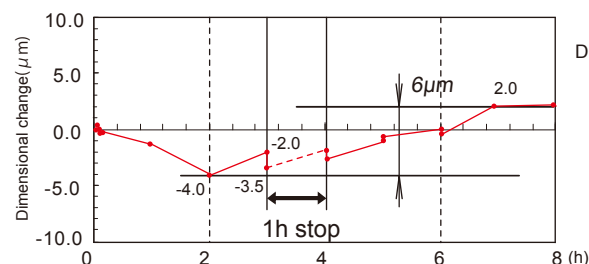
Column

The thermally stable and space saving design bed is equipped with zero-center type headstock and high speed turret, ensuring optimum quality.



Excellent Thermal Displacement Properties

■ CSD200



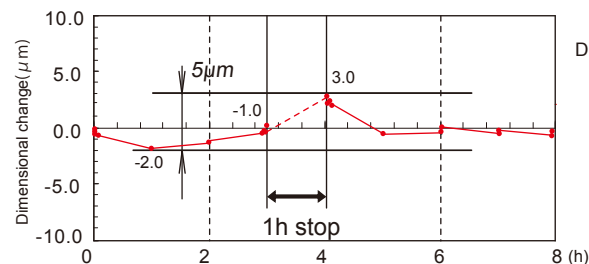
Dimensional change after 8h running

6.0μm

Dimensional change after 1h stop

1.5μm

■ CSD300/CSS300



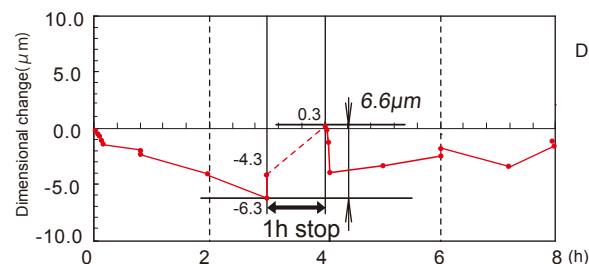
Dimensional change after 8h running

5.0μm

Dimensional change after 1h stop

4.0μm

■ CSD400/CSS400



Dimensional change after 8h running

6.6μm

Dimensional change after 1h stop

4.6μm

The above-mentioned data is actual values, but not a performance guarantee.

Optimal Bed Configuration

Fuji engineered bed is designed to be highly rigid while minimizing thermal displacement. In this design, both the feedback of the latest CAE analysis and the actual result are optimized.



Heat analysis



Static rigidity analysis

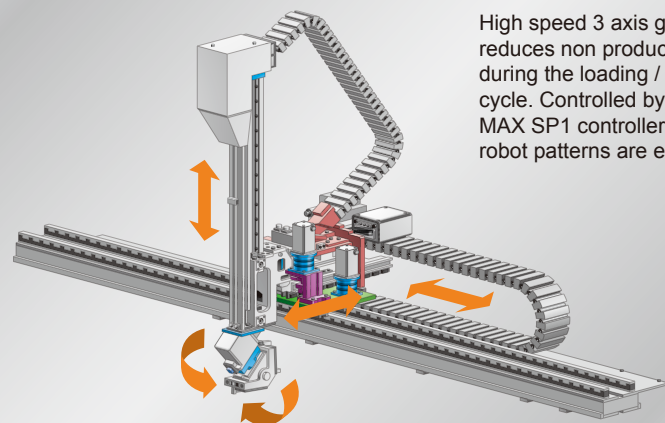


Dynamic rigidity analysis

Amazing Speed

Fastest Robot in its class

High Speed 3 axis Gantry Robot



High speed 3 axis gantry robot reduces non productive times during the loading / unloading cycle. Controlled by the FUJI MAX SP1 controller, high speed robot patterns are ensured.

Swivel Head Robot Chuck



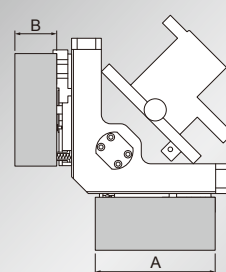
Non productive time reduction utilizing the swivel head design.

Fastest Robot in its class

		CSD200 (CSD200 Dual-G)	CSD300 (CSS300)	CSD400 (CSS400)
Carrying capacity	kg	3+3	5+5	15+15
Max. traverse speed	m/min	180	165	135
Max. up/down speed	m/min	150	120	75
Max. front/back speed	m/min	70	70	50
Min. tact time	sec	19.0 (11.0)	21.2 (13.0)	36.2 (21.0)

The above-mentioned data is actual values, but not a performance guarantee.

Robot Chuck

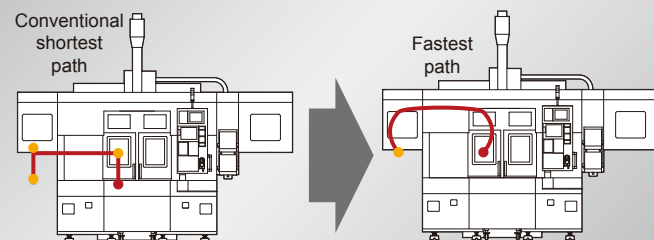


	Work size (A×B)
CSD200	Φ120mm×60mm
CSD300	Φ200mm×100mm
CSD400	Φ300mm×150mm
CSS400	

Class 300/400 utilizes hydraulic robot chucks – yielding better grip for faster robot traverse speeds.

MAX SP1 Robot Controller

Simultaneous multi axis control.



Auto routing for fastest path. Non productive time is reduced approximately 20% by instructing just the target positions. Rapid acceleration /deceleration moves are eliminated.

Easy Teaching



Robot teaching becomes simplified with the graphic interface and panel PC combined into one pendant. With the MAX SP1, by instructing the target positions, the most efficient robot path is calculated automatically.

Smooth ECO

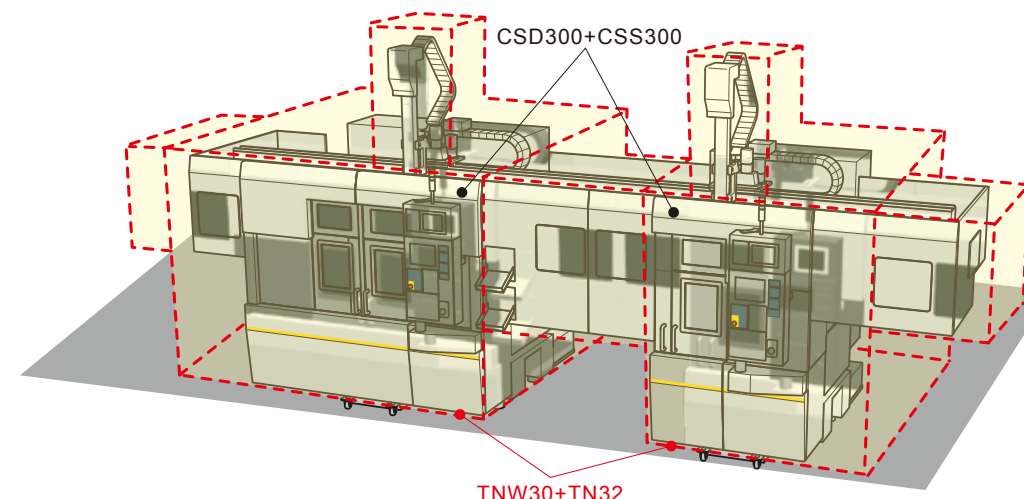


In addition to faster robot speed, an added benefit is it's energy saving operation. Electric consumption of the robot can be reduced by up to 35% automatically by the speed of the robot matching the tact time of the line.

Optimal Space

Reduction of Floor Space

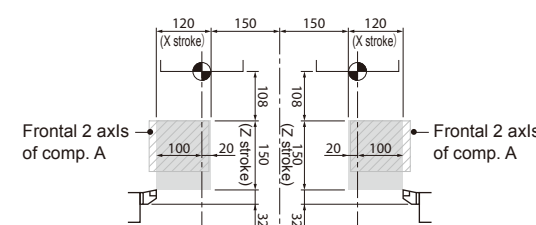
Compared with our conventional machine : 80%



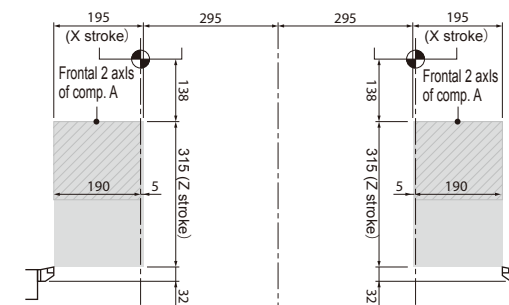
In comparison, front facing spindle designs can save up to 80% of the floor space as compared to opposing spindle designs.

Optimal Machining Space

CSD200

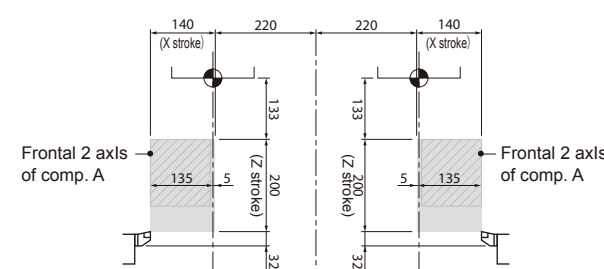


CSD400 CSS400

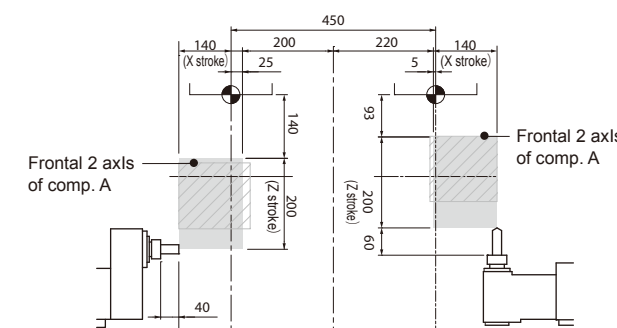


※ CSS400 will be right axis.

CSD300 CSS300



CSD300R



System Layout

Flexible machine configuration with various optional devices.

Work Stocker

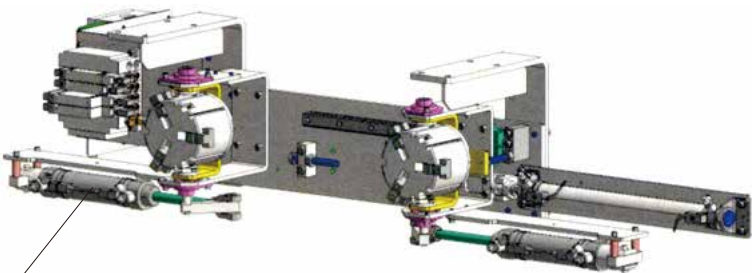
10/12/20 pallet work stockers available.



		MP5-20	MP5-30	MP5-40
Pallet quantity	pcs	20	12	10
Work size	mm	Φ120	Φ203	Φ300
Max. stacking height	mm	345	325	315
Max. load (pallet)	kg	25	40	50

Work Turn Over Device

Enables front and back machining on the same machine. Residing in the robot traverse area, the turn over station has no influence on cycle time.



Safety Fence

Provide a full-cover type safety fence as an option.



Auto Gauge

Placed on the side of the machine, this device ensures part quality by gauging specific process dimensions and automatically feeding back this information to the NC for dimensional compensation.



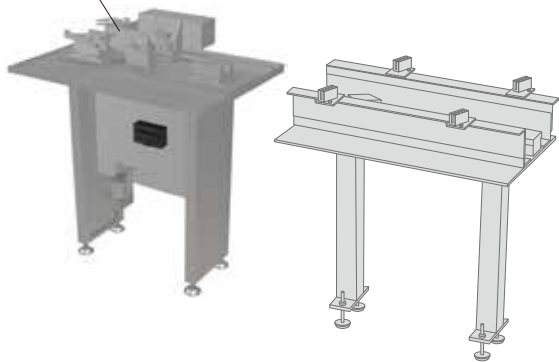
Work Chute

The robot periodically takes out the workpiece and puts it in the quality check chute. This chute is also used to discharge autogauging and seating confirmation NG parts.



Parts Turn Over / Parts Shift Device

Parts shift device to automatically transfer parts to the next robot, or Parts turn over device to present the parts in the correct orientation for the next process.



Conveyor

Transfer the work between machines in a fully automated way.

User Friendly Operation

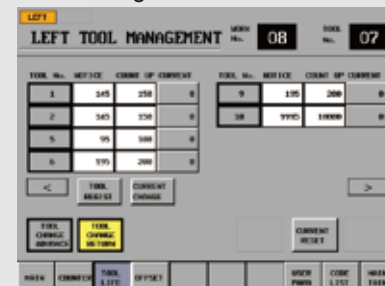
Touch Panel for Machine (NC)

FUJI CANVAS

Tool Management

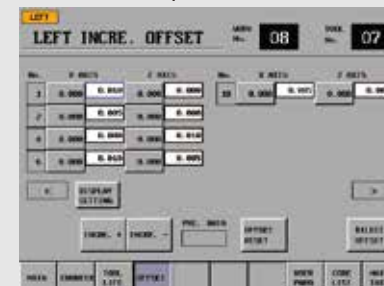
Display only necessary information for quick and intuitive operation.

Tool management screen



Put the tools being in use together on a screen. Give a forecast before the counter value reaches the tool life setting value.

Constant compensation screen



Use a constant as the compensation value. Perform the addition or subtraction by simple operation.

FUJI CANVAS

Quality Control Support

Records of production information, offset history, and Load Detecting Function support your quality control.

Offset records



A tool wear tendency and a offset history can be confirmed by the offset transition.

Alarm message screen



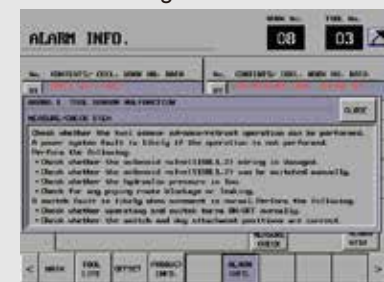
Confirm the abnormal load detection caused by a tool breakage during the machining *optional function.

Operation navigation screen



Display necessary conditions for each machine operation.

Alarm message screen



Display the method to recover from alarms, instead of referring to the manual.

Operation Navigation

Support quick operation by navigating necessary operations on the screen.

Touch Panel for Robot (MAX)

Production Information

Cycle time history



Confirm the cycle time history, machining time as well as robot load / unload time.

Counter screen



Confirm the production counter and quality check counter.

Guidance Function

Robot and peripheral unit information



Confirm automation alarms by visual screen and message navigation.

I/O status screen



Convenient to check the I/O status with name display.

Teaching Setting

Safety area setting screen



Calculate the fastest path automatically by setting the movable safety area, instead of setting each motion point.

Operaton panel for CS series automatic lathe



For spindle (L) For spindle (R)

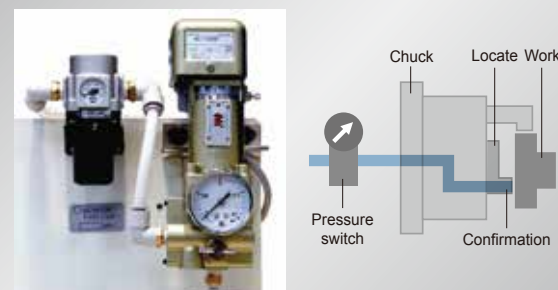
The frequently used buttons which adopt push button switch, were prepared for the left and right spindle separately. It enables quick operation without changing the button selection.

Various Options

Fuji prepares various options in the CS series for making full use of the machine and provides it's customers with an optimum production system.

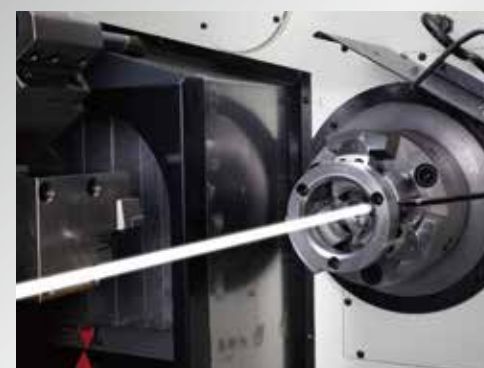


Air Confirmation



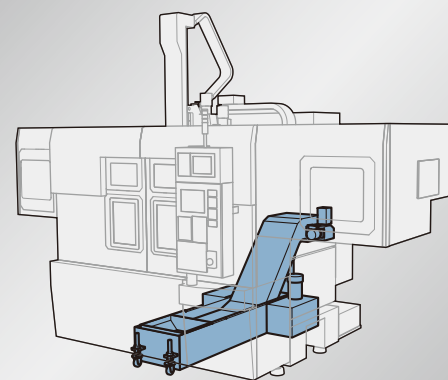
Confirms that the part is securely up against the locates. If air confirmation is not made the cutting process does not begin.

Through Spindle Coolant



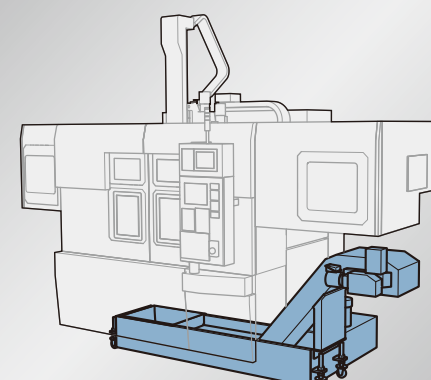
Coolant can be directed through the spindle for the clearing of chips in ID turning.

Chip Conveyor



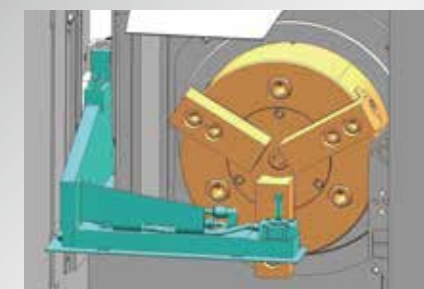
Single chip conveyor. Hinge, scraper or magnetic conveyors available.

Chip Conveyor (side exit)



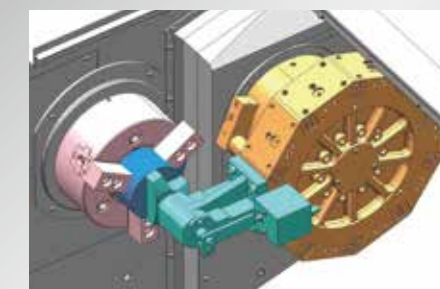
Side exit conveyor can be ordered for floor layouts where rear exit does not work.

Tool detector



This single unit performs three tasks: Automatic tool compensation. Tool damage detection and tool setting. An air blower is provided near the sensor to prevent inaccuracies due to trapped chips.

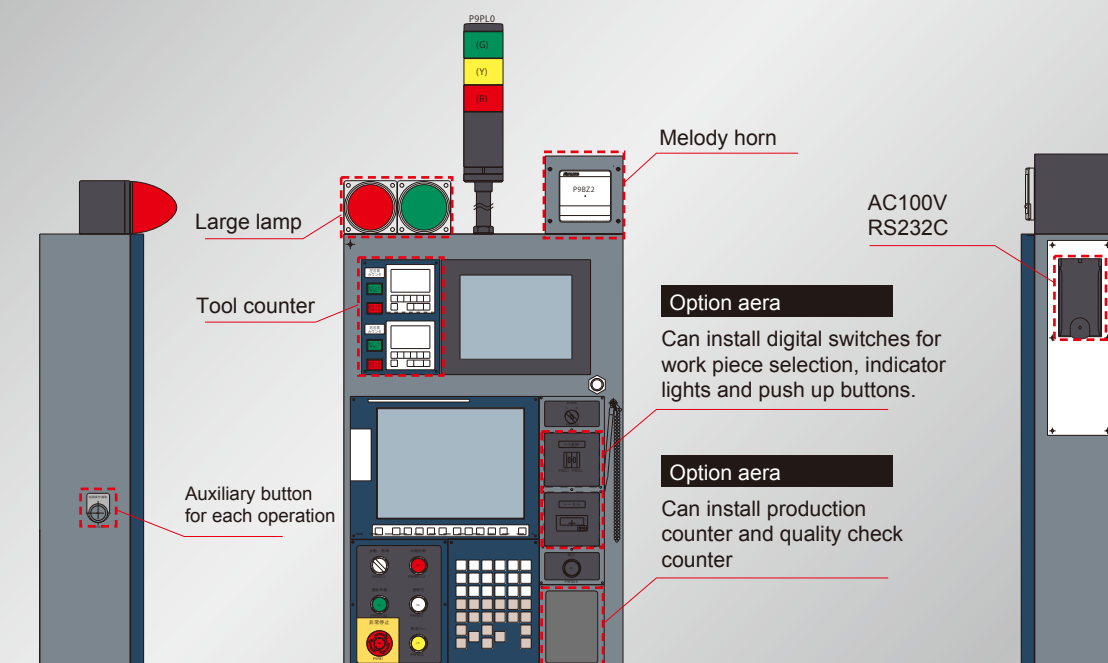
Work Pusher



Work pusher device can be installed on the turret to push the part into the chuck utilizing z axis on the turret slide. This ensures that the work piece is up against the locates. When used in conjunction with air confirmation a stable process is achieved.

Operation Panel Option

Installation space is reserved for option on the operation panel; therefore it is possible to add various options as customers required.



Other Options

- ☐ Mist collector
- ☐ Control panel cooler
- ☐ Chip crusher
- ☐ Andon system
- ☐ Dust collector
- ☐ Medium pressure coolant
- ☐ Oil separator

CS SERIES

CSD200

- 2 spindle and 2 turret lathe
- Chuck size : 6~8inch
- Max. work size : $\Phi 120\text{mm} \times 60\text{mm}$
- Max.load : 3kg+3kg



CSD200

- 2 spindle and 2 turret lathe (Dual-Gantry)
- 2 gantry robots



CSD400

- 2 spindle and 2 turret lathe
- Chuck size : 10~12 inch
- Max work size : $\Phi 300\text{mm} \times 150\text{mm}$
- Max.load : 15kg+15kg



CSS400

- 1 spindle and 1 turret lathe



CSD300 CSD300R

- 2 spindle and 2 turret lathe
- Chuck size : 8~10inch
- Max. work size : $\Phi 200\text{mm} \times 100\text{mm}$
- Max.load : 5kg+5kg



Live tool specification

	CSD300R
Max. clamping tool dia.	$\phi 16$ [mm]
Number of station	10 [position]
Spindle speed	Max.4000 [min-1]
Spindle motor	2.7kw [3.7HP]

Performance (Drill/Tapping)

	Drill	Tapping
Max. Cut dia (ϕ)	$\phi 16$ [mm]	M12 $\times$ 1.75 [mm]
Spindle speed	50 [m/min]	10 [m/min]
Cutting speed	1000 [min-1]	265 [min-1]
Cutting feed	0.21 [mm/rev]	464 [mm/min]



CSS300

- 1 spindle and 1 turret lathe

Machine Specifications

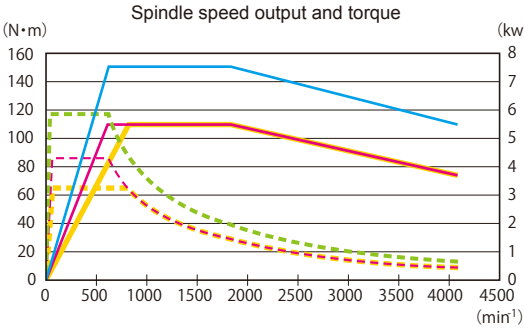
			CSD200 / CSD200 Dual-G	CSD300·CSD300R / CSS300	CSD400 / CSS400
Machine specifications	Work size	mm	$\Phi 120 \times 60$	$\Phi 200 \times 100$	$\Phi 300 \times 150$
	Max swing dia	mm	$\Phi 250$	$\Phi 310$	$\Phi 420$
	Spindle dia.	mm	80	100	120
	Spindle nose		A2-5	A2-6	A2-8
	Spindle bore	mm	42	56	67
	Spindle speed	min ⁻¹	Max. 4000	Max. 4000	Max. 2220
	Spindle motor (Cont. /15 Min)	kW	5.5 / 7.5	Max. 3630 *1 *2	15 / 18.5
				7.5 / 11	
				11 / 15 *1 *2	
	Number of tool station	station	8	10	12
	Chuck size	inch	6~8	8~10	10~12
	Slide stroke	X-axis mm	120	140	195
		Z-axis mm	150	200	315
	Rapid traverse	X-axis m/min	24	24	24
		Z-axis m/min	24	24	24
	Feed setup unit	X-axis mm	0.001	0.001	0.001
		Z-axis mm	0.001	0.001	0.001
	Servo motor	X-axis kW	1.2	1.2	1.8
		Z-axis kW	1.2	1.2	1.8
				1.8 *1 *2	
	CNC control		FANUC 0i-TD	FANUC 0i-TD FANUC 32i-B *2	FANUC 0i-TD
Robot specifications	Power capacity	KVA	40/40	50/29	64/36
				60 *1/34 *1	
				56 *2	
	Robot type		LX-30S	LX-30H	LX-30B
	Carrying capacity	kg	3 + 3	5 + 5	15 + 15
Machine size	Robot controller		MAX-SP1-SRV	MAX-SP1-SRV	MAX-SP1-SRV
	Floor space >>> Footprint	mm x mm	1900 x 2150	2260 x 2150 / 1260 x 2150	2720 x 2360 / 1490 x 2360
	Machine height	mm	3045 (Robot included)	3240 (Robot included)	3715 (Robot included)
	Machine weight	kg	4500 / 5000	5500 / 3500	7500 / 4500

*1 North America *2 CSD300R

Spindle Output Characteristics

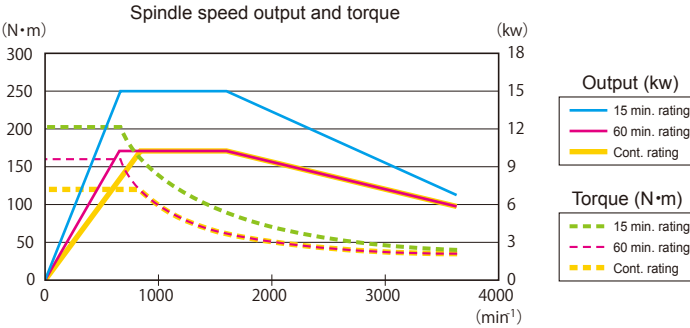
CSD200

Standard spec. (Max. speed 4000min⁻¹)



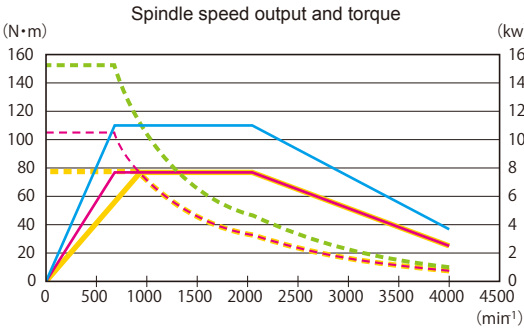
CSD300R/North America CSD300

Standard spec. (Max. speed 3630min⁻¹)

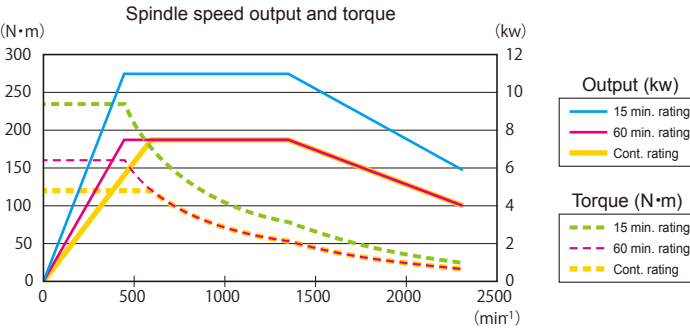


CSD300/CSS300

Standard spec. (Max. speed 4000min⁻¹)

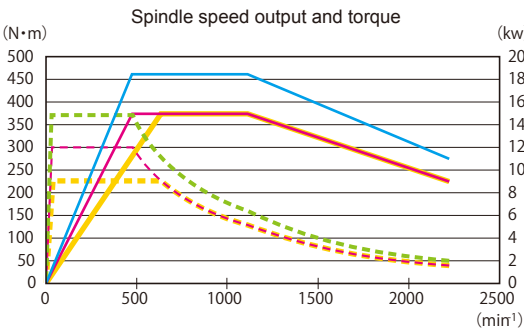


Optional spec. (Max. speed 2310min⁻¹)

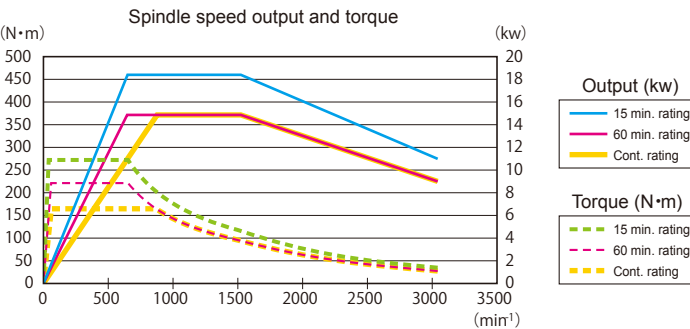


CSD400/CSS400

Standard spec. (Max. speed 2220min⁻¹)

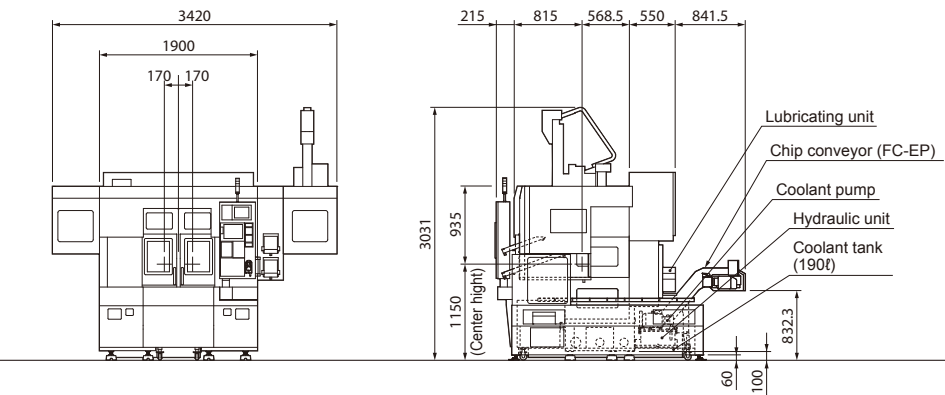


Optional spec. (Max. speed 3000min⁻¹)

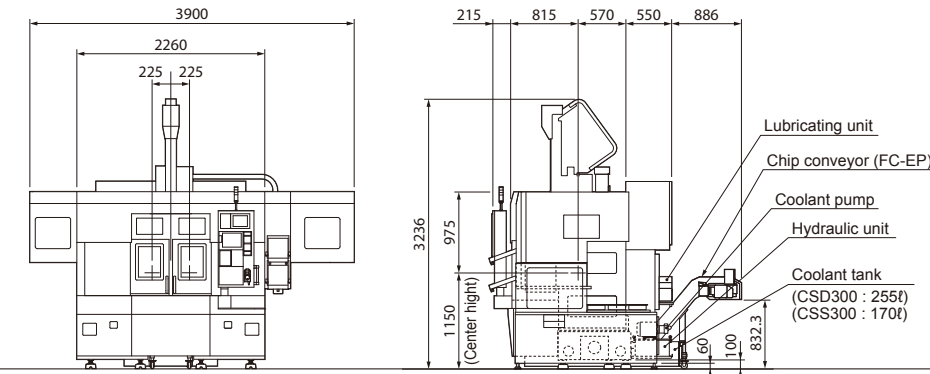


Machine Overview [mm]

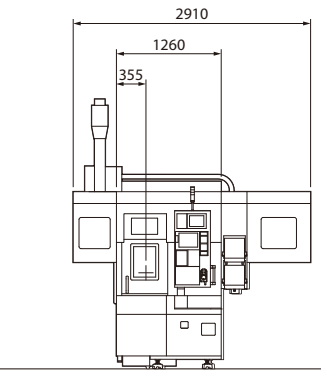
CSD200



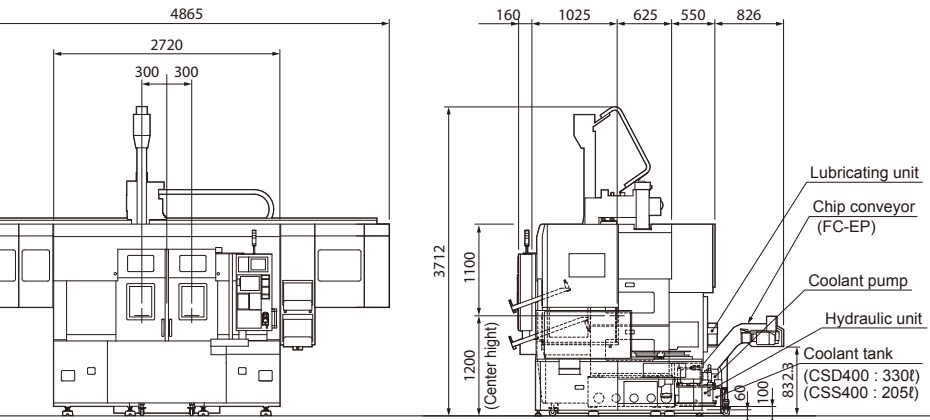
CSD300



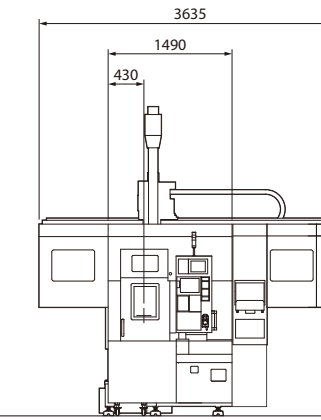
CSS300



CSD400

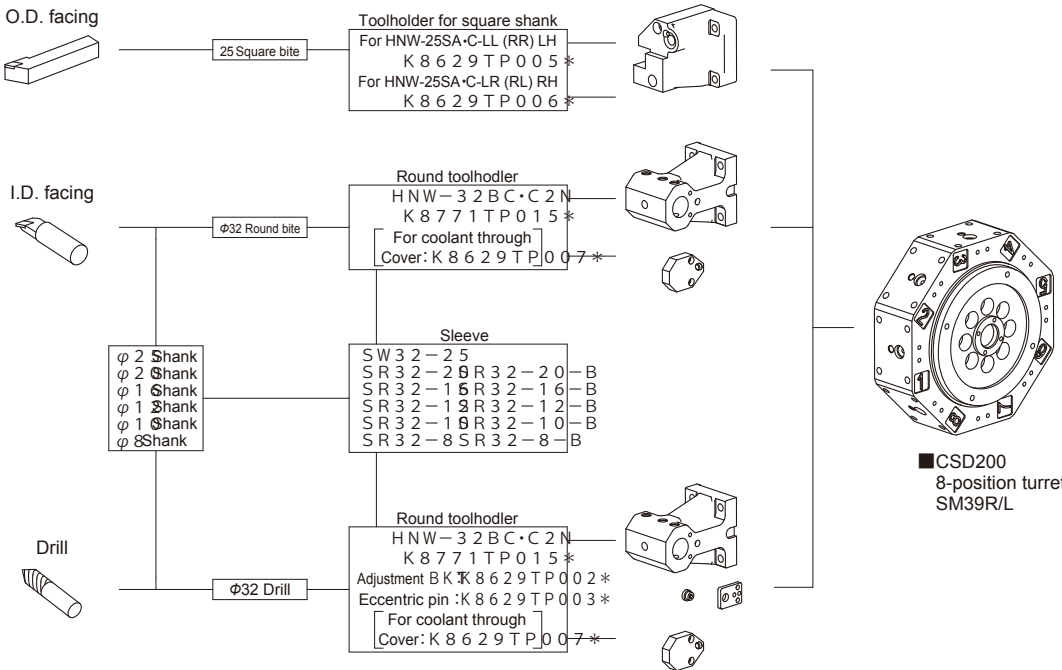


CSS400

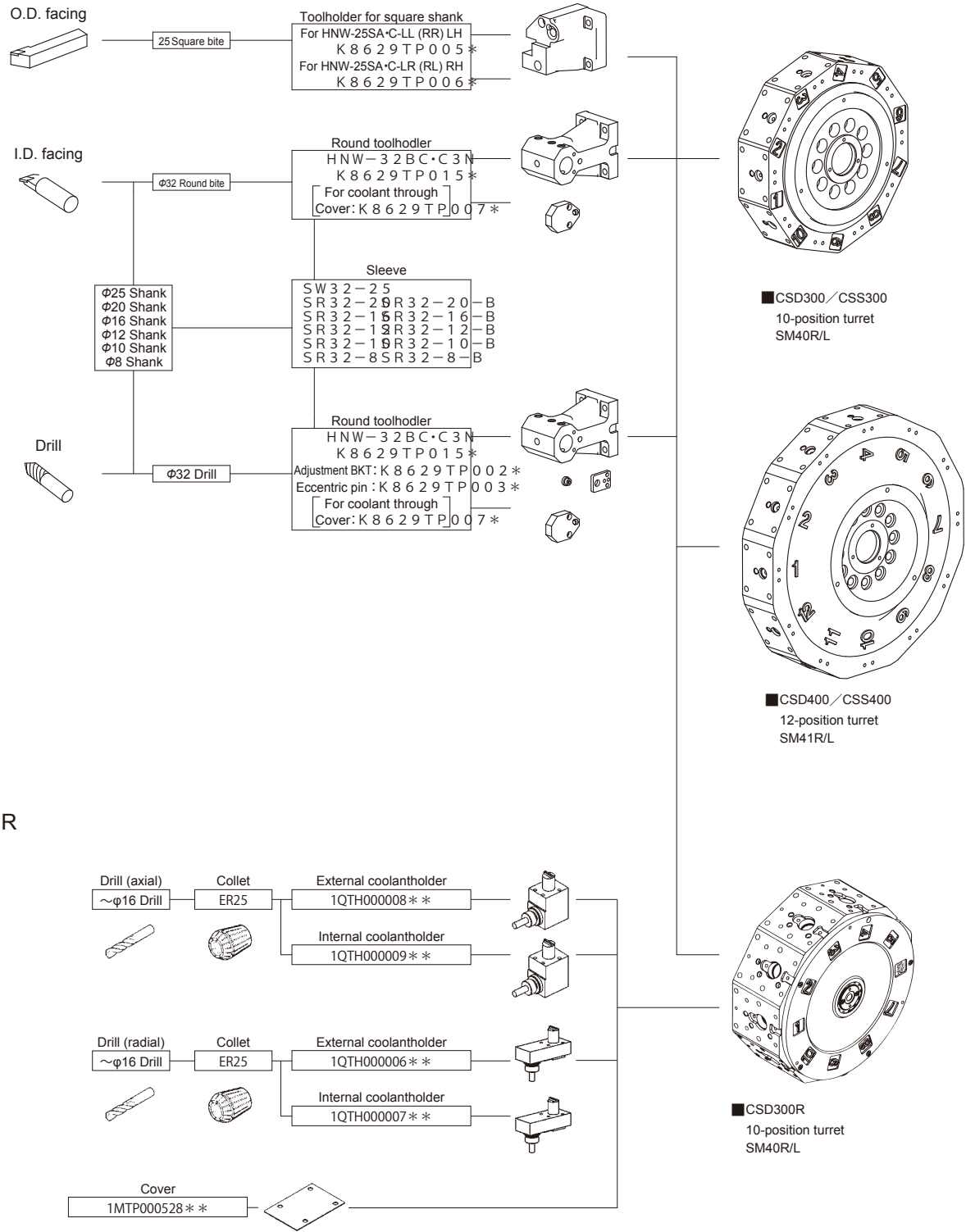


Tooling system

CSD200



CSD300•400
CSS300•400



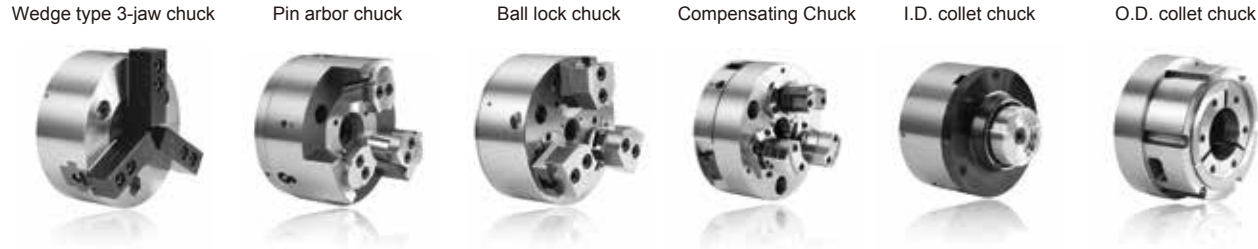
CSD300R

FUJI Spindle Chuck

Besides the machine tools, FUJI offers the chuck and tooling solution too. Special customized chucks are also available. Please feel free to contact us.

Standard chuck

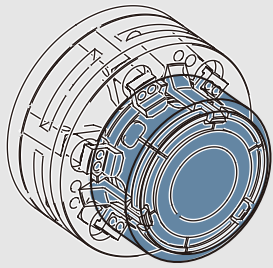
FUJI provides with self-designed and self-produced chuck in standard specification.



Special chuck

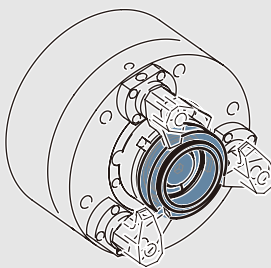
FUJI's experienced technical team offers customers the best chuck solution with rich know-how.

I.D. collet chuck with anti-vibration clamps



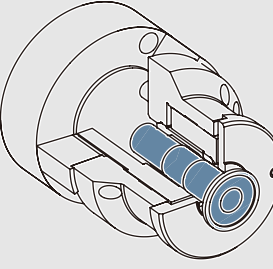
For the O.D. machining of the deep bowl type work piece, clamp the depth of internal diameter of the work piece securely with I.D. collet, and fasten the work piece with anti-vibration clamps. Work piece wrap can be avoided by the compensation from the anti-vibration clamps.

S collet chuck with fingers



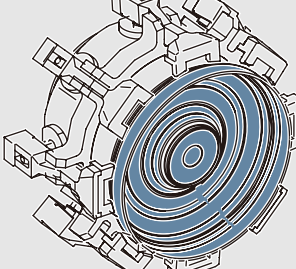
Perform the end face clamping basing on the internal diameter of the work piece. Hold the internal diameter with collet, and clamp the end face of the work piece with fingers. Then the collet unclamps and moves back for I.D. machining.

O.D. collet chuck with chips outlet



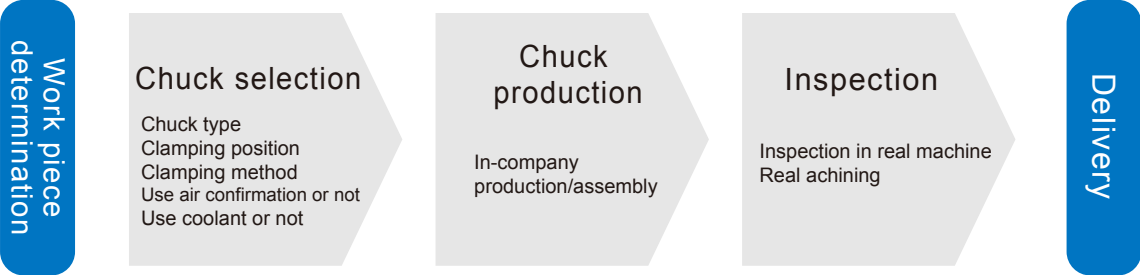
Fix a chips outlet in the O.D. collet chuck, for disposing the chips which interferes with the clamping for long shaft work piece. By clamping the work piece securely with double taper, the chuck can ensure the rigidity of the work piece.

I.D. collet chuck with anti-vibration clamps



Equipped with anti-vibration clamps, this special chuck can prevent the vibration during the O.D. machining of thin sheet type work piece. Clamp the internal diameter of the work piece with collet securely, and fasten the periphery with the anti-vibration clamps. Work piece wrap can be avoided by the compensation from the anti-vibration clamps, which are driven by built-in air cylinder.

The order-to-delivery of special chuck



NC Specifications

Axis Control	CSD	CSS	Feed Function	Rapid traverse rate	Tool Functions	Tool offset counts :128 (CSD) 99 (CSS)		
	Controlled systems	2		1		Feed per minute	99 (CSD300R)	
	Controlled axes	2×2		2		Feed per revolution	Tool position offset	
		3×2		*2		Tangential speed constant control	Tool geometry/wear offset	
	Simultaneously controlled axes	2 (X,Z)×2	2 (X,Z)	Cutting feedrate clamp		Tool life management		
		3 (X,Z,C)×2	1	Automatic acceleration/deceleration		Tool offset value counter input		
	Controlled spindle axes	1×2	*2	Rapid traverse bell-shaped deceleration		Radius/tool nose R offset		
		2×2	*2	Feedrate override		Direct input of tool offset value measured		
	Least input increment (X-ais dia.)	0.001mm		Jog override		Tool offset memory common for part systems *1		
	Flexible feed gear			Override cancel	Operational Function	Part program storage : 1Kbyte 2500m (CSD) 512Kbyte 1280m (CSS)		
	HRV2 control			Manual per revolution feed		Number of registerable programs : 800 2 systems total(CSD) 1000 2 systems total(CSD300R) 400 (CSS)		
	Inch/metric conversion			Programming		Tape code	EIA/ISO Auto recognition	
	Interlock			Label skip		Parity check	Control in/out	
	Machine lock			Optional block skip		: 1 block		
	Emergency stop			Max. programmable value		: ±9-digit		
	Overtravel			Program number		: O4-digit		
	Stored stroke check 1			Sequence number		: N5-digit		
	Mirror image			Absolute/incremental programming	Setting/ Display	Status display		
	Follow-up			Decimal point programming/		Clock function		
	Servo OFF/mechanical handle			pocket calculator type decimal point programming		Current position display		
	Chamfering ON/OFF			Input unit 10 times multiply		Program comment display		
	Backlash compensation			Diameter/radius programming	Parameter setting and display			
	Backlash compensation for each rapid traverse and cutting feed			Rotary axis designation	Self-diagnosis function			
	Position switch			Rotary axis roll-over	Alarm display			
	Unexpected disturbance detection			Coordinate system setting	Alarm history display			
Operation	Automatic operation			Automatic coordinate system setting	Operator message history display			
	MDI operation			Coordinate system shift	Operator history display			
	Program number search			Direct input of coordinate system shift	Help funtion			
	Sequence number search			Workpiece coordinate system	Run hour and parts count display			
	Prevention of operator errors			G code system A/B	Actual cutting feedrate display			
	Buffer register			G code system A *2	Actual spindle speed and T code display			
	Dry run			G code systemA/B/C	Optional system name display *1			
	Single block			Optional chamfering/corner R	Operating monitor screen			
	JOG feed			Programmable data input G10	System configuration screen			
	Manual reference position return			Programmable parameter input	Servo information screen			
	Reference position setting without DOG			Sub program call	Spindle information screen			
	Reference position setting with mechanical stopper			Custom macro	Servo adjustment screen			
	Reference position return speed setting			Addition of custom macro common variables 600	Spindle adjustment screen			
	Reference position shift			Macro variables common for part systems *1	Servo waveform display			
	Manual handle feed 1 machine			Interruption type custom macro	Periodic maintenance screen			
	Incremental feed			Canned cycles	Maintenance information screen			
	Interpolation	Positioning		XG00	Auxiliary and Spindle Functions	M Function : M3-digit S Function : S4-digit T Function : T4-digit	Data Input/Output	Reader/Punch Interface : ch1
		Exact stop mode		XG61				External data input
Tapping mode			XG63	Memory card input/output				
Cutting mode			XG64	USB memory input/output				
Exact stop			XG09			Communications	Embedded ethernet	
Linear interpolation			XG01	High-speed M/S/T/B interface				
Circular interpolation			XG02/G03	Blocking control *1	Display	10.4" color LCD with touch panel		
Dwell			XG04	Multiple command of auxiliary function				
Polar coordinate interpolation				Spindle serial output				
Cylindrical interpolation				Spindle override				
Threading/synchronous cutting			XG32	Spindle orientation				
Multiple threading				Rigid Tapping *2				
Continuous threading				CS Contour Control *2				
Skip			XG31					
Reference position return			XG28					
Reference position return check			XG27					
2nd reference position return			XG30					

A previous arrangement may be necessary depending on the specifications.

*1 Except CSS
*2 CSD300R Only
*3 Except 300R

	CSD	CSD300R	CSS
*1	○	○	×
*2	×	○	×
*3	○	×	○

The above mentioned drawing is a system equipment with options.