

TWIN SPINDLE

Vertical Machining Centers



GEMINI MINI SERIES

GEMINI Jr.

GEMINI Jr. XL

GEMINI XL

GEMINI 460 XL

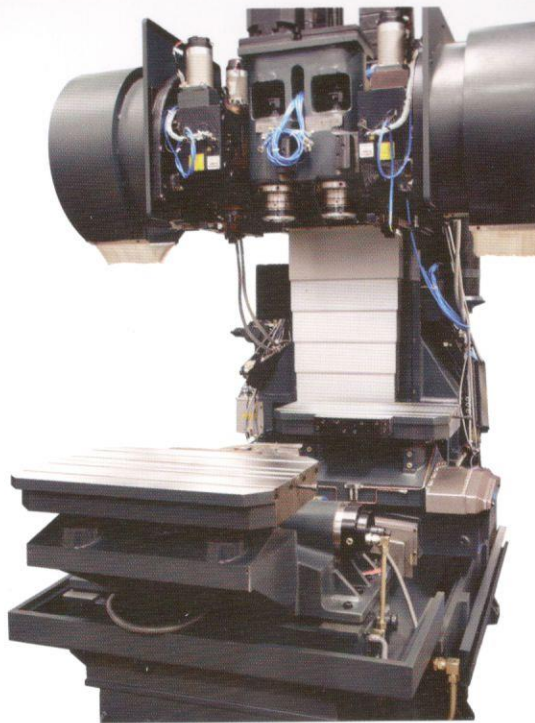
GEMINI MAX

Twin Spindle Vertical Machining Centers

The new era has seen continuous demand from the customers to improve machine accuracies, productivity in terms of machining cycle time and need for automation interface. To meet the demands of the customers AMS has developed few special machining centers.

With the increase in input costs including infrastructure and man power costs, machine tool users have become more cautious in the resource utilization. These conditions have led to development of the twin spindle machines "Gemini" where the productivity of the machine is nearly double to that of single spindle machines with similar specifications.

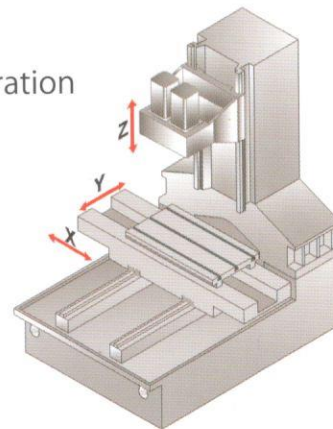
The twin spindle machines are also advantageous as they occupy lesser floor space as compared to two similar machines together and can be operated by a single operator or by a single robot. The machines are built on sturdy structures to house the two spindles which are precisely assembled to obtain high accuracies. The twin spindle machines have gained popularity in the auto-component manufacturing industry due to its suitability for high volume production and structural rigidity.



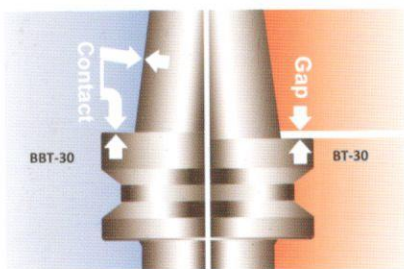
High Speed Spindle

AMS Gemini Machines equipped with high rigid, high speed spindle with quadruplex back to back arrangement, optimally pre loaded and grease lubricated. The spindle are dynamically balanced to perform better. Spindles with BT30, BT40 & BT50 are available as standard. HSK A63 & A100 tapered spindles are offered as options. The Gemini-mini is available with BBT-30 spindle as well.

Axes Configuration

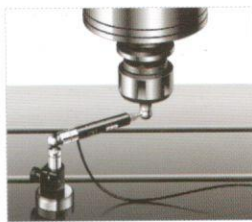


BBT-30 Spindles



BBT is a spindle system that provides dual contact between the spindle face and the flange face of tooling. BBT greatly increase tool rigidity, reduce run out and add significant productivity to machining applications. The unique tool holding technology increases surface contact with the tool holder, maximizing rigidity and clamping pressure. There is a significant advantage in tool life, accuracy and cutting capability when compared to standard tool holders.

Quality & Inspection



The machine geometric accuracies are fully inspected to assure the highest accuracy standards. The high precision laser unit is applied for inspecting positioning accuracy & repeatability & ball bar tester to inspect the geometric error & ensures superior circular accuracy through parameter adjustment.



Cutting inspection

Heavy cut & NAS test before shipment, each AMS machine is subject to cutting tests which are combined with proper parameter adjustments to guarantee the best possible cutting quality.

Automatic Tool Changer



Gemini Jr, Gemini XL, Gemini 460, Gemini Mini and Gemini Max are with 20 x 2 tool automatic tool changer as standard feature.

Centre distance between spindles

Gemini mini S	: CD 250 mm
Gemini mini L	: CD 360 mm
Gemini jr. / jr. XL	: CD 250 mm
Gemini XL / Max	: CD 400 mm
Gemini 460	: CD 460 mm

Accuracy

	VDI DGQ 3441	ISO 230-2
Positioning	0.015 mm	0.010 mm
Repeatability	± 0.005 mm	± 0.003 mm



Automatic pallet changer

The automatic pallet changer system on the machine reduces unproductive time during machining. Machining can be carried out on one pallet, while the other can be used for preparation (seating and clamping of work-pieces etc.).

Rotary type pallet changer option is available on some of the Gemini models.

Rotary Pallet Changer	Gemini Mini S	Gemini Mini L	Gemini Jr./Jr. XL	Gemini XL	Gemini 460 XL
Pallet size (mm)	600 x 400	800 x 400	700 x 450	800 x 450	920 x 450
Max. load on pallet (Kgf.)	200	200	300	350	300
Pallet changing time (Sec.)	10	10	10	12	12
Machine (width x depth)	2500 x 4100	3000 x 4100	2500 x 3800	3200 x 4200	3200 x 4200

Coolant system



Std. Coolant tank



Grundfos or Wanner Pump

Through coolant increases tool life, allows higher cutting speeds, and clears chips during deep hole drilling. Two systems are available.

1. CTS with Grundfos Pump (21 bar pressure)
2. CTS with Wanner Pump (50 bar pressure).

Coolant Tank:

Large capacity chip tray, reliable & trouble free, convenient & easy to maintain

CNC Control System Options



Fanuc 0iMATE MD / 0iMD



Siemens 828D

Fanuc 0iMF is standard for Gemini Series
Siemens 828 is optional for Gemini mini Series

Chip Conveyor

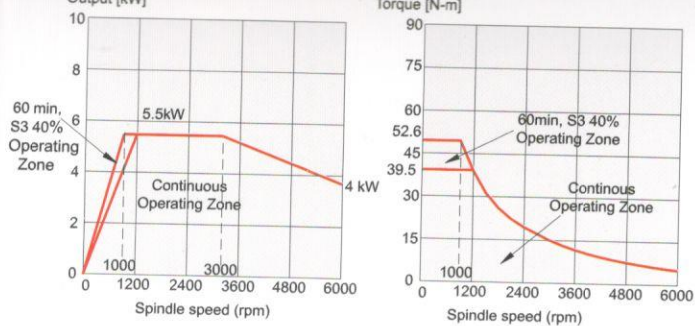


Removing chips is very important in terms of productivity & environmental protection. AMS provides various chip handling systems for better work environment. Coil conveyor & screw conveyor also offered

	Al Chips	Cast Iron Chips	Steel (Short Chips)
Scraper	✓	✓	
Slat cum scraper	✓	✓	✓
Magnetic		✓	✓

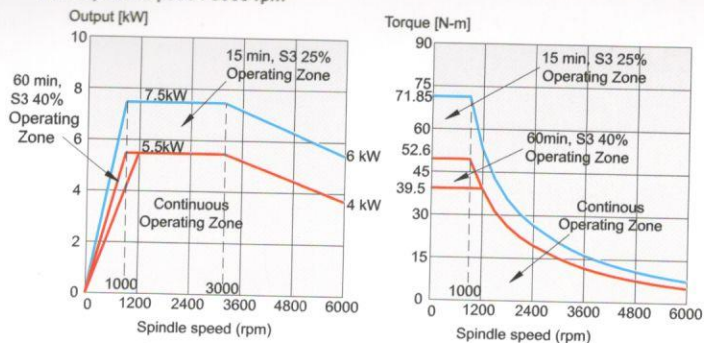
GEMINI MINI S & GEMINI MINI-L

Make : Fanuc, Rated Power : 11 kW (5.5 kW per spindle)
Max. Spindle Speed : 8000 rpm



GEMINI Jr.

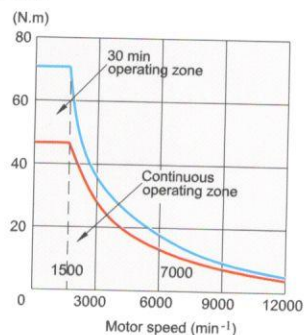
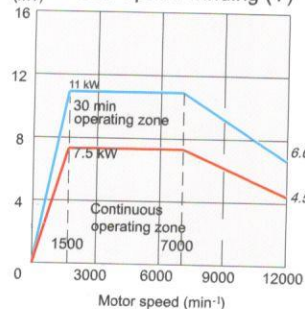
Make : Fanuc, Rated Power : 7.5/5.5 kW
Max. Spindle Speed : 6000 rpm



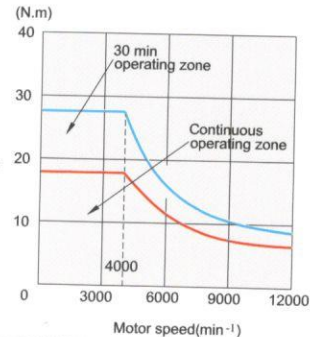
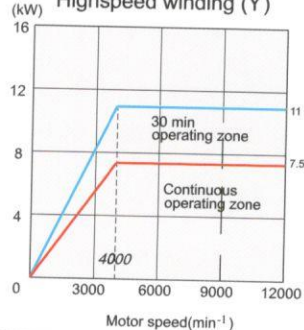
GEMINI-XL

Make : Fanuc, Rated Power : 11/7.5 kW
Max. Spindle Speed : 12000 rpm

Low speed winding (Y)

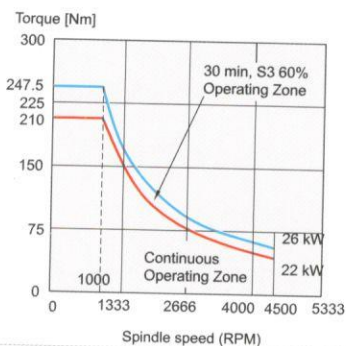
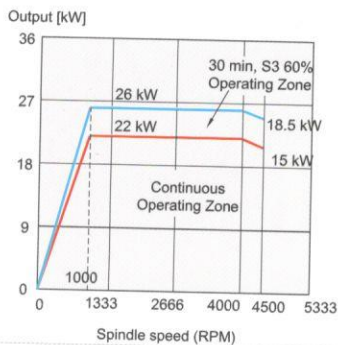


Highspeed winding (Y)

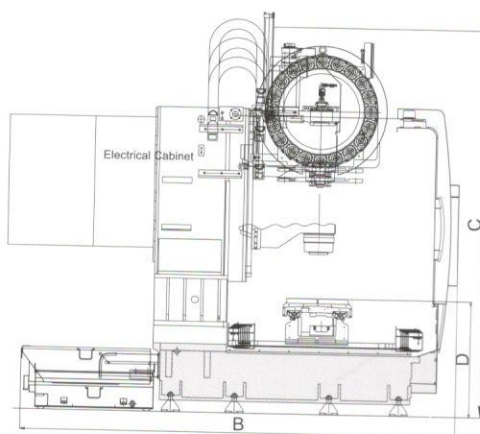
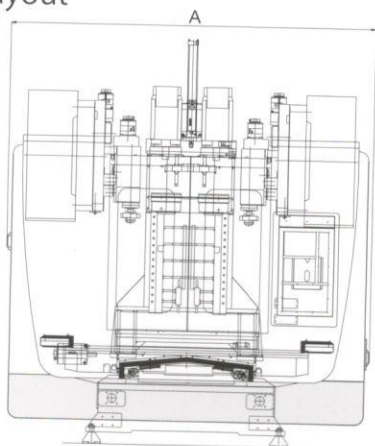


GEMINI-MAX

Make : Fanuc, Rated Power : 26 / 22 kW
Max. Spindle Speed : 4000 rpm



Machine Layout



	A (width)	B (depth)	C (height)	D
Gemini Mini s	2000	2950	3100	960
Gemini Mini l	2200	2950	3100	960
Gemini Jr	2000	3100	3450	975
Gemini Jr XL	2000	3100	3450	975
Gemini XL	2300	3600	3450	985
Gemini 460 XL	2400	3600	3450	985
Gemini Max	3000	4200	3800	985

		Gemini Mini - S	Gemini Mini - L	Gemini Jr	Gemini Jr XL	Gemini XL	Gemini 460 XL	Gemini Max
CAPACITY								
Longitudinal travel (X - Axis)	mm	400	600	500	500	600	600	750
Headstock travel (Y - Axis)	mm	400	450	450	450	450	450	500
Cross travel (Z - Axis)	mm	500	500	600	600	600	600	600
Spindle face to table top	mm	190 - 690	160-660	125 - 725	125 - 725	145 - 745	145 - 745	285-885
Distance between two spindles	mm	250	360	250	250	400	460	400
Distance from floor to table top	mm	960	960	975	975	985	985	985
TABLE								
Table size	mm x mm	800 x 400	1100 x 450	900 x 450	900 x 450	1200 x 480	1200 x 480	1400 x 520
T - slot Table	size	M 12@100 P	M 12@90 P	M 12@100 P	M 12@100 P	M 12@100 P	M 12@100 P	M 16@100 P
Max. load on Table	kgf	350	250	500	500	500	500	1000
SPINDLE & AXES								
Spindle taper		7 / 24 No.30	7 / 24 No.30	7 / 24 No.40	7 / 24 No.40	7 / 24 No.40	7 / 24 No.40	7 / 24 No.50
Spindle speed - Std.	rpm	60 - 6000	60 - 6000	80 - 8000	80 - 8000	80 - 8000	80 - 8000	40-4000
- Opt.		80 - 8000	80 - 8000		100-10000	100-10000	100-10000	
Spindle power	kW	11	11	7.5 / 5.5 (2)	7.5 / 5.5 (2)	7.5 / 5.5 (2)	7.5 / 5.5 (2)	26 / 22 (2)
Spindle power - Opt	kW				11 / 7.5 (2)	11 / 7.5 (2)	11 / 7.5 (2)	
Rapid traverse - X / Y / Z	m/min	50 / 50 / 40	50 / 50 / 40	24 / 24 / 24	50 / 50 / 40	50 / 50 / 40	50 / 50 / 40	40 / 40 / 40
Feed rate	mm/min	1 - 10000	1 - 10000	1 - 10000	1 - 10000	1 - 10000	1 - 10000	1 - 10000
Guideway Type		LM	LM	LM	LM	LM	LM	LM
ACCURACY -- As per ISO 230-2								
Positioning accuracy	mm	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Repeatability	mm	± 0.003	± 0.003	± 0.003	± 0.003	± 0.003	± 0.003	± 0.003
AUTOMATIC TOOL CHANGER								
Tool change system		Twin Arm	Twin Arm	Twin Arm	Twin Arm	Twin Arm	Twin Arm	Twin Arm
Tool storage capacity - Std.	Nos.	20 (2)	20 (2)	20 (2)	20 (2)	20 (2)	20 (2)	20 (2)
Pull stud		DIN 69872 / MAS 403	DIN 69872 / MAS 403	DIN 69872 / MAS 403	DIN 69872 / MAS 403	DIN 69872 / MAS 403	DIN 69872 / MAS 403	DIN 69872 / MAS 403
Max. tool dia with adjacent pockets full / empty	mm	63	63	80	80	80	80	125
Max. tool length	mm	200	200	250	250	250	250	350
Max. tool weight	kgf	3	3	8	8	8	8	15
Chip to chip time**	sec	3.9	3.9	5.9	4	4	4.1	6
Tool shank type - Std.		BT-30	BT-30	BT-40	BT- 40	BT- 40	BT - 40	BT- 50
- Opt.		BBT-30	BBT-30		HSK A63	HSK A63	HSK A63	HSK A100
CNC System - Std. FANUC		0iMF	0iMF	0iMF	0iMF	0iMF	0iMF	0iMF
- Opt. Siemens		828 D	828 D	-	-	-	-	-
Power supply (Basic Machine)	kVA	23	25	25	25	40	40	80
Basic machine weight	kgf	5200	5500	6000	6000	7500	7500	10500

** Valid for standard specifications *All specifications are subject to change without prior notice

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