

MODEL: CM-2816
COMPACT HIGH SPEED MACHINING CENTER



The JUPITER CM-2816 Compact Machining Center is a high performance, premium machine tool, designed to feature maximum capacity and performance in many demanding industries. The compact footprint, yet powerful platform satisfies Mold & Die, Medical, Automotive and many other critical applications.

The CM series is engineered in a unique “C” frame design for an excellent foundation. High Precision 30mm roller linear guides are used with robust Ø32mm pre-tensioned **C1** class ball screw for reliable accuracy on X/Y/Z Axes.

High precision Big Plus #40 or BBT30 with two face clamping for rigid machining and reduced tool wear.

Our artisans still perform precision hand scraping of each section for near perfect alignment resulting in positioning accuracy of .0002” (.006mm) and repeatability of .00015”(.004mm).

Automatic thermal cooling is an available option for spindle, headstock, ball screws and motors to achieve consistent high accuracy with maximum reliability.

Price Includes:

Standard Features

Fanuc 0iMF CNC Control System 10.4" TFT Color LCD
Manual Guide *i*, Conversation Editing, Nano Interpolation, Embedded Ethernet, Rigid Tapping
Max Spindle Power 17.5 HP (13kW), Max Torque 30 Ft. lbs (41.4Nm)
Fanuc α Spindle Motor and α Servo Motors with Absolute Positioning Encoder
Fanuc β Amplifier
Travel of X / Y / Z: 27.5" / 15.75" / 17.7" (700 / 400 / 450mm)
Rapid Rate X / Y / Z: 2,362 / 2,362 / 2,362ipm (60 / 60 / 60m/min)
Table Size: 33.46" X 16.1" (850 X 410mm)
BBT #30 Direct Coupled Spindle
15,000 rpm Spindle Oil Chiller
Automatic Tool Changer: 21 Tools Turret Type ATC
Roller Linear Guide
C1 Class Ball Screw
Remote MPG
Automatic Centralized-Hybrid Grease Lubrication
System Flood Coolant System
52 US Gallons (200 Liters) Coolant Tank
LED Work Light
Safety Vision Panel
Auto Power Off M30 (M80)
Machine Status Light
Coolant Gun
Air Purge for Spindle
Cutter Air Blast and Side Coolant Nozzle with Solenoid Control
Spindle Coolant Nozzles

Spindle Technology

Model	CM-2816		
Spindle Code	12C	15C	24C
Transmission	Coupling	Coupling	Coupling
Max Speed	12,000rpm	15,000rpm	24,000rpm
Bearing	<<>>	<<>>	<<>>
Lubrication	Grease	Grease	Grease or Air/Oil
Spindle Peak Output	13kW, 82.8Nm	13kW, 41.4Nm S3-15%	11kW, 17.5Nm S3-15%



Reliable spindle & headstock



Standard Dual Contact Faces BBT or HSK

Machine Accuracy

	ISO 10791-2 STANDARD JUPITER ACCURACY		
Straightness full stroke	X	0.02	0.008
	Y	0.015	0.008
	Z	0.015	0.008
Squareness	X-Y	0.02 / 500	0.008 / 500
	Y-Z	0.02 / 500	0.008 / 500
	X-Z	0.02 / 500	0.008 / 500
Positioning Accuracy	X	0.02	0.006
	Y	0.016	0.006
	Z	0.016	0.006
Repeatability	X	0.008	0.004
	Y	0.006	0.004
	Z	0.006	0.004
Spindle run-out on table		0.02 / 300	0.01 / 300
Spindle run-out	At base	0.01	0.004
	At 300mm	0.02	0.008
Circularity	CW	-	0.008
	CCW	-	0.008

* Proper foundation and environmental controls are required

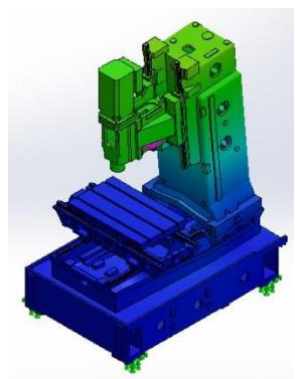
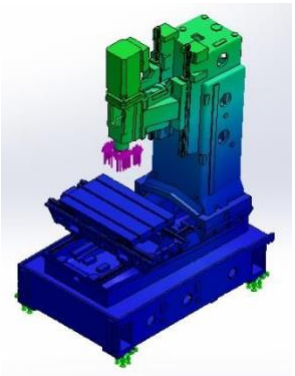
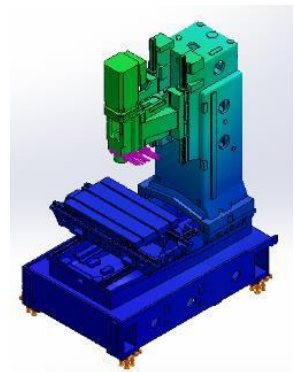
Machine Specifications

Specifications		15C
Work Capacity		
X-axis Travel	mm (inch)	700 (27.56)
Y-axis Travel	mm (inch)	400 (15.75)
Z-axis Travel	mm (inch)	450 (17.72)
Spindle Nose to Table	mm (inch)	130 - 580 (5.12- 22.83)
Spindle Center to Column	mm (inch)	437 (17.20)
Worktable		
Table Area	mm (inch)	850 x 410 (33.46 x 16.14)
Max. Work Piece Weight	kg (lb.)	300 (661)
T-Slot (Number x Width x Pitch)	mm (inch)	3 x 14 x 125 (3 x 0.55" x 4.92)
Spindle		
Spindle Taper		BBT #30
Spindle Speed	rpm	15,000
Spindle Motor (S3 15%)	kW (hp)	13 (17.4)
Spindle Torque (S3 15%)	Nm (ft./lb.)	41.4 (30)
Transmission		
		Direct Driven / Direct Coupling
Spindle Lubrication		Grease
Spindle Cooling		Chilled Oil
Spindle Nose		#30
Spindle Stiffness	Kgf /um	10
Spindle Retention Knob Force	Kgf	300-350
Spindle Run Out @Nose	mm (inch)	0.001 (0.00004)
Spindle Run Out @300mm	mm (inch)	0.006 (0.00024)
Automatic Tool Changer		
ATC Type		Turret Type
Tool Capacity		21
Max. Tool Diameter	mm (inch)	75 (2.95)
Without Adjacent Tool	mm (inch)	150 (5.91)
Max. Tool Length	mm (inch)	200 (7.87)
Max. Tool Weight	kg (lb.)	3 (6.6)
Tool Change Time (C to C)	sec	3.5
Method of Tool Selection		Random - Shortest Path

Specifications		15C
Motion		
Rapid Traverse X/ Y/ Z	m/min	60/60/60
Max Acceleration X/Y/Z	G	1/ 1/ 1
Cutting Feedrate	mm/min (ipm)	1 -15,000 (0.04 - 591)
Transmission		Direct
Axial Motor (X Axis)	kW / HP	2.5 (3.35)
Axial Motor (Y Axis)	kW / HP	2.7 (3.62)
Axial Motor (Z Axis)	kW / HP	2.7 (3.62)
Ball Screw Diameter / Pitch	mm (inch)	32 / 16 (1.26 / 0.63)
Positioning Accuracy*	mm (inch)	0.006 (0.0002)
Repeatability Accuracy*	mm (inch)	0.004 (0.00015)
Guide Ways		
Type (All Axes)		Roller Linear Guide Ways
Way Size (X axis)	mm (inch)	(2) sets – 30 (1.18)
Way Size (Y axis)	mm (inch)	(2) sets – 30 (1.18)
Way Size (Z axis)	mm (inch)	(2) sets – 30 (1.18)
Blocks on Guide Ways (X/Y/Z)		4 / 4 / 4
Axial Thrust Force (X Axis)	N / lbf	3141 / 706
Axial Thrust Force (Y Axis)	N / Kg f	4712 / 1,059
Axial Thrust Force (Z Axis)	N / Kg f	4712 / 1,059
Coolant System		
Coolant Tank Capacity	L (gal)	200 (52.84)
Nozzle Coolant & Flush Pump	Bar (psi)	3.5 (50.76)
General		
Floor Space (w/o chip conveyor)	mm (inch)	W: 2,100 (82.68) x D: 2,891 (113.82)
Height	mm (inch)	2,435 (95.87)
Weight	kg (lb.)	3,400 (7,496)
Power Requirements		
Electrical	220V	3 Phase / 20 KVA/ 60 Hz
Air		6 bar / 5 CFM @ 100 psi

Complete Finite Elements Analysis (FEA) and Rigid Structure

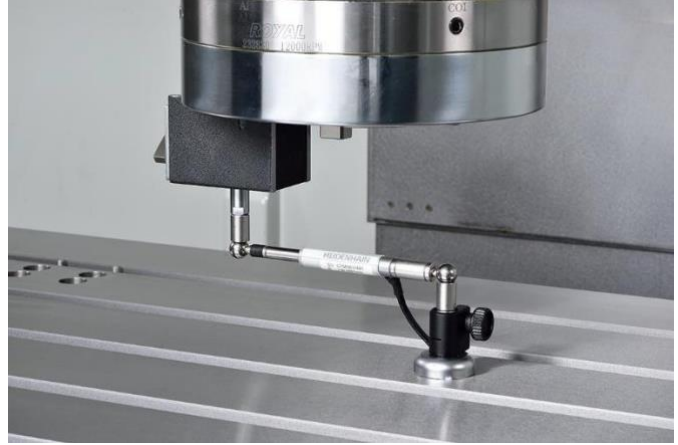
FEA Techniques are used to analyze structure deformation, stress and cutting forces to assure an optimum structure. A low gravity center base with 6 leveling screws assure stability during machining. Independent tool change support of the side-mount option provides less vibration, no bending, increased stability and robust reinforcement to column and headstock. The castings include an enhanced symmetrical rib design for vibration and thermal displacement. With a column width of 710 mm, depth 415 mm, saddle width 349 mm, height 166 mm the structure stiffness of this model better the competition at 2.5 kgf/um.



* Shown with optional side-mount toolchanger

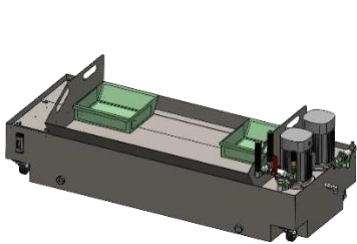
Inspection and Alignment

Complete machine tests and laser calibration are done on every machine. Geometric accuracy is laser verified (Straightness, Perpendicularity, Flatness, and Squareness). Finally, circularity is checked by ball-bar in 3 planes.

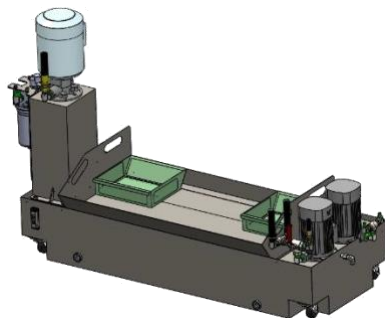


Coolant Tank

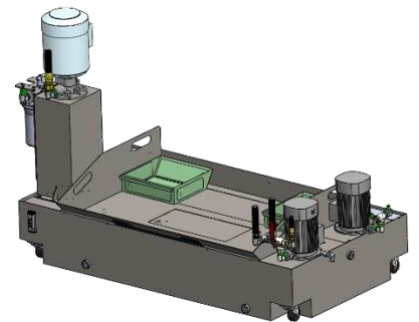
A 200 Liters coolant tank is used to prevent heat in the coolant from transferring to the machine base casting. Chip conveyor is an option.



Standard 200L Coolant Tank
Optional Coolant Flush



Option CTS and Coolant Flush
200L Coolant Tank



Option CTS and Coolant Flush
260L Coolant Tank



Turret Style ATC (Standard)

Fast servo turret type ATC with 21 tools standard.

Simultaneous clamp/unclamp and tool selection with spindle positioning for fast 1.6s tool change times

Unique planetary gear set for smooth and vibration free tool changes



Prep for Thru-Spindle Coolant

Improve your bottom line.

Jupiter Machining Centers come prepared for 1,000psi (70bar) thru-spindle coolant.

Increase performance in all pocketing and drilling applications.

Add an optional Jupiter high-pressure pump to fit your application.

Central Automatic Greased Lubrication

Automatic centralized greased lubrication is provided to all roller guide ways and ball screws. Grease lubrication is more environmentally responsible and cost effective than oil lubrication. The very thin grease film is retained on the surface of guide ways and ball screws. Additionally, grease will not pollute water-base coolant and requires no oil skimmer to separate oil from the water-based coolant, extending the life of your coolant.

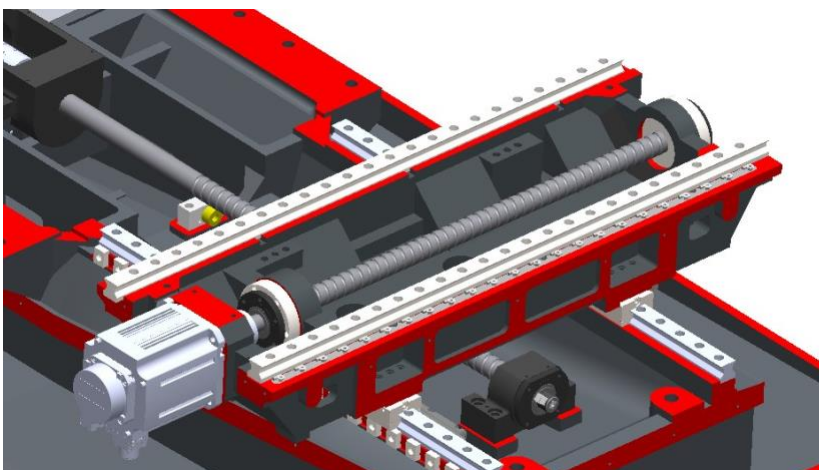
Portable MPG

A hand-held "Manual Pulse Generator" (MPG) lets each axis move in increments of x1, x10 or x100 for easy fixture or part alignment.



Ball Screws and Axis Drives

Each axis is driven by high precision **C1** class ballscrews. All ballscrews are centered between the guideways. Ballscrews are pre-tensioned and supported at each end with angular contact thrust bearings. All axes are connected directly to A.C. digital servo drive motors without the use of gears or belts to eliminate backlash.



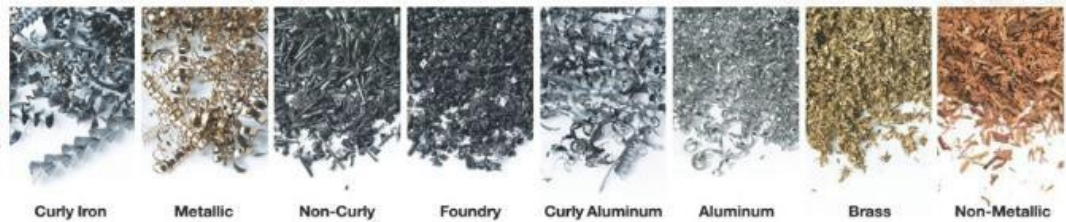
Coolant Gun and Air Gun

A convenient handheld coolant and air gun is provided for cleaning the work-piece and/or the inside of the machine enclosure. Coolant chip pan with coolant flush from the rear and sides provide efficient chip flushing.

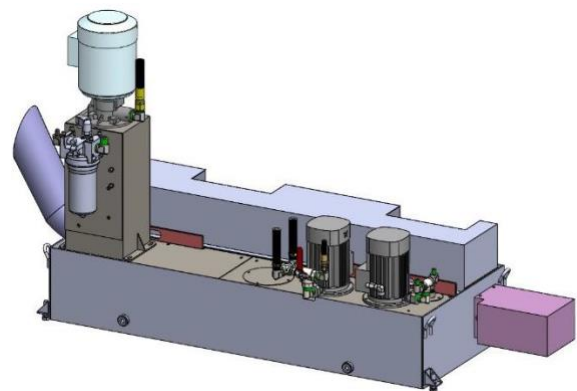
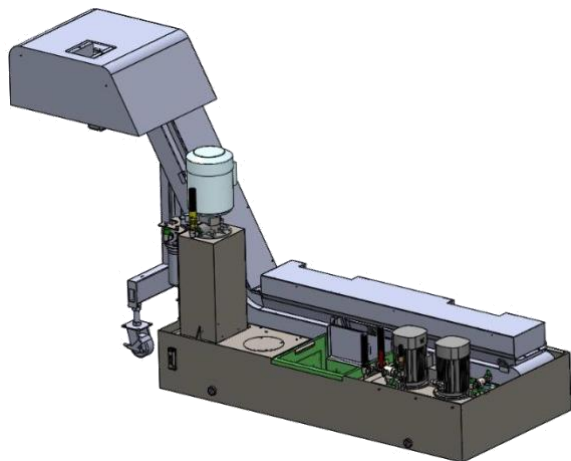
Chip Conveyor Option

Different types of chip conveyors are optional and can be chosen based on customer's application.

Select a Suitable Conveyor by Different Chip Types



Conveyor Type	Curly Iron	Metallic	Non-Curly	Foundry	Curly Aluminum	Aluminum	Brass	Non-Metallic
Steel Belt Chip Conveyor Standard Model								
Scraper Type Chip Conveyor Standard Model Suitable for Dry Chips under 60mm								
Precision Model Suitable for Chips between 2-60mm								
Magnetic Model Suitable for Chips between 2-60mm								
Precision Magnetic Model Suitable for Chips between 2-60mm								
Drum Type Chip Conveyor For Tiny Chips								
Dual Belt Type Chip Conveyor For All Kinds of Chips								
Magnetic Conveyor For Magnetically Attracted Chips								





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