

3-AXIS VERTICAL GENERAL MACHINING CENTER

# DEM 4000



# DEM 4000

DEM series is a vertical machining center for 3-axis general machining with high rigidity structure. The model is designed very suitable for basic performance necessary for cutting processing.

## CONTENTS

### Product Overview

### Basic Information

- 04** Basic Structure
- 04** Spindle
- 05** Magazine
- 06** High Rigidity Structure  
Design Improves  
Reliability
- 06** Optimal Design  
Considering Customer's  
Environment

### Detailed Information

- 07** Standard / Optional  
Specifications
- 08** Peripheral Equipment
- 09** Fanuc i Plus
- 10** Mitsubishi M80B
- 11** Power | Torque
- 11** Table Dimensions
- 12** External Dimensions
- 14** Machine Specifications

### Customer Support Service

- 15** Customer Support and  
Services
- 15** Global Network



### FAITHFUL TO THE BASICS



DEM 4000 has high rigidity structure for excellent basic cutting performance, High speed belt spindle of 8000 r/min, cam type, ATC magazine is adopted

### NC SYSTEM WITH WIDE RANGE OF SPECIFICATIONS



DEM 4000 has Fanuc and Mitsubishi CNC each CNC is optimized for the machine high performance.

### BEST CAPACITY IN CLASS



DEM 4000 has a table size of 650 x 400 mm, 400 kg allowable specification.



# BASIC STRUCTURE

Apply high rigidity structure cutting performance for basic cutting.

## Travel distance

### X-axis

**550** mm (21.7 inch)

### Y-axis

**400** mm (15.7 inch)

### Z-axis

**450** mm (17.7 inch)

## Rapid traverse

### X-axis

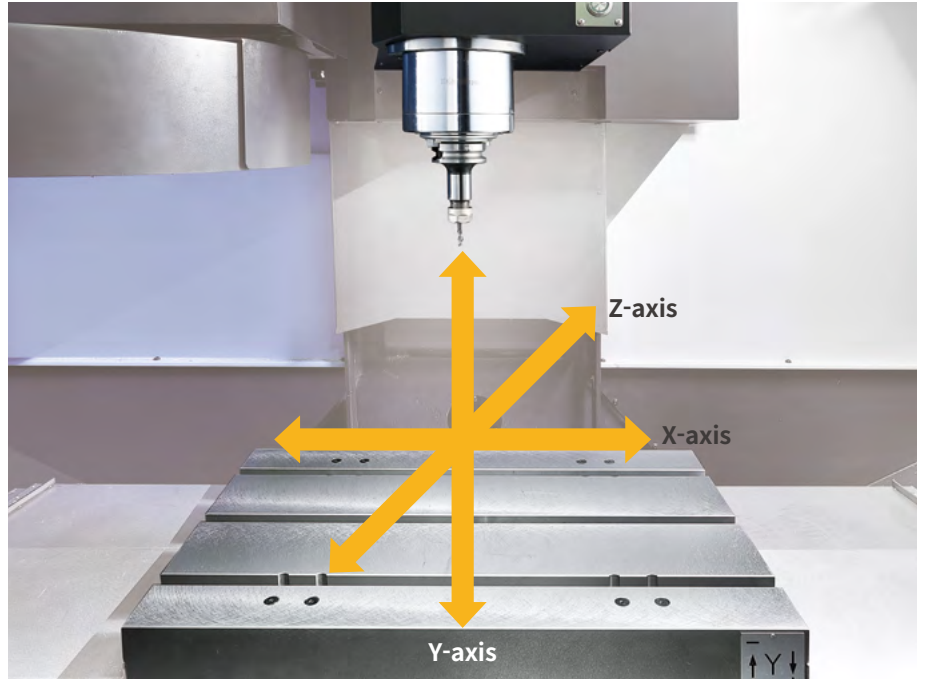
**24** m/min (944.9 ipm)

### Y-axis

**24** m/min (944.9 ipm)

### Z-axis

**24** m/min (944.9 ipm)



# SPINDLE

High speed belt spindle is applied.

## Max. spindle speed

**8000** r/min

## Max. spindle motor power

**7.5** kW (10.1 Hp)

## Max. spindle torque

**47.7** N.m (35.2 ft-lbs)



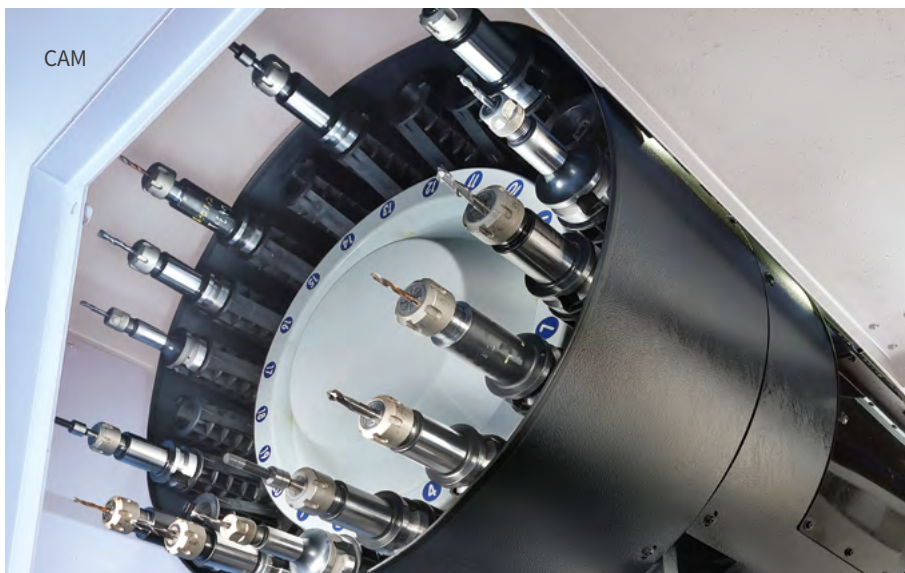
# MAGAZINE

From cam type to armless various magazine types are applied.

## Magazine

**20** ea (CAM)

{16 ea (ARMLESS) **OPTION**}

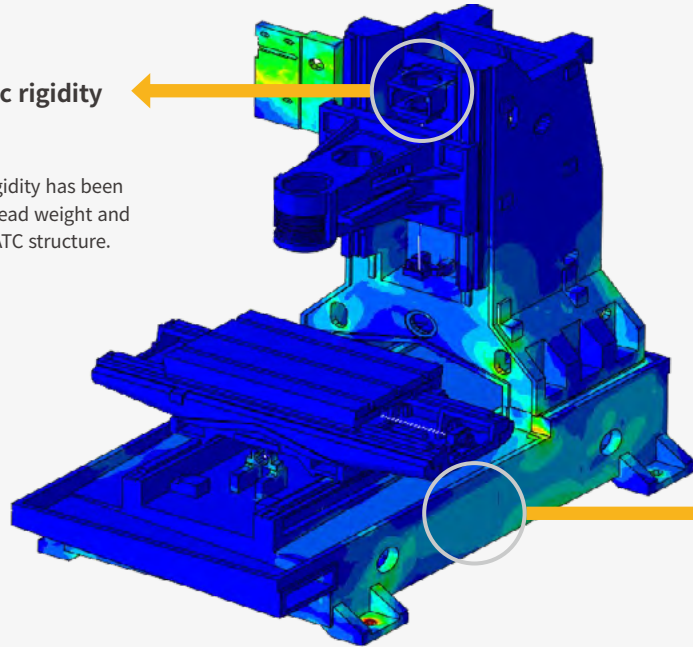


# HIGH RIGIDITY STRUCTURE DESIGN IMPROVES RELIABILITY

Improved machine structure and increased rigidity through FEM analysis provide stable machining conditions.

## Enhanced dynamic rigidity against vibration in X/Z directions

The systems dynamic rigidity has been enhanced by reducing head weight and modifying the bed and ATC structure.



Enhanced dynamic rigidity the bed structure

# OPTIMAL DESIGN CONSIDERING CUSTOMER'S ENVIRONMENT

Easier equipment operation by achieving compact size considering installation in apartment-type factories or places with limited space.

## Width

**2200** mm (86.6 inch)

## Length

**1875** mm (73.8 inch)

## Height

**2317** mm (91.2 inch)

## Distance to table

**840** mm (33.1 inch)



# STANDARD | OPTIONAL SPECIFICATIONS

A range of options is available to suit individual requirements.

Description	Features		DN Solutions Fanuc i Plus	Mitsubishi M80B	
Spindle	MAX. SPINDLE SPEED	8000 R/MIN	●	●	
	Tool	TOOL SHANK TYPE	BT40	●	●
CAT40			○	○	
DIN40			○	○	
Coolant	TOOL STORAGE CAPACITY	20 EA	●	●	
		16 EA	○	○	
Coolant	FLOOD	0.16(0.12) MPa / 0.4 kW	●	●	
	TSC	2.0/1.9MPa(1.5kW)	○	○	
Chip pan, Chip Conveyor & Bucket	CHIP PAN		●	●	
	CONVEYOR	SCREW(AUGER) TYPE CONVEYOR	○	○	
ACCESSORIES	AUTO. WORKPIECE MEASUREMEN	RENISHAW / OMP60	○	○	
		RENISHAW / OMI-2T_ONLY	○	○	
		RENISHAW / OMI-2T_OMP60	○	○	
		RENISHAW / OMI-2T_OMP60_OTS	○	○	
	AUTO TOOL LENGTH MEASUREMEMT	RENISHAW / TS27R	○	○	
		RENISHAW / OMI-2T_OTS	○	○	
	COOLANT GUN		○	○	
	AIR GUN	-	○	○	
	CALIBRATION BLOCK	-	○	○	
	PNEUMATIC FIXTURE INTERFACE	A LINE_1 PAIR		○	○
		A LINE_2 PAIR		○	○
		A LINE_3 PAIR		○	○
	TEST BAR	BT 40	○	○	
	ADDITIONAL GREASE PACK	GREASE PACK_1EA		○	○
		GREASE PACK_2EA		○	○
GREASE PACK_3EA			○	○	
RAISING BLOCK	150 mm (5.9 inch)		○	○	
	200 mm (7.9 inch)		○	○	
	300 mm (11.8 inch)		○	○	
Water soluble Coolant Chiller**		○	○		
FLOOD COOLANT(2)	TANK CAPACITY	100 L	○	○	
	PUMP MOTOR POWER	1.1 kW	○	○	
	FILTRATION	20 (TANK SCREEN FILTER)	○	○	
	MAX. PRESSURE 60Hz(50Hz)	1.0(0.75)	○	○	
	MAX. FLOWRATE 60Hz(50Hz)	20(20)	○	○	
CONVEYOR	HINGED PLATE TYPE CONVEYOR	-	○	○	
	SCRAPER TYPE CONVEYOR	-	○	○	
BUCKET	TYPE / CAPACITY	ROTATION TYPE / 220	○	○	
4TH AXIS PREPARATION CABLING FOR SERVO/1-PNEUMATIC PIPING		FACTORY READY MADE	○	○	
4TH AXIS WITH CNC R.TABLE		Ø250 mm (Ø9.5 inch)	○	○	
		DEPENDS ON THE TABLE	○	○	
ANCHORING		J-BOLT	○	○	

\*Please contact your DN Solutions representative for detailed machine information.

\* When using a semi-synthetic type or synthetic type, contact our sales representative or service center in advance.

\*\* Technical consultation is mandatory for the chilling of non-water soluble coolant

● Standard ○ Optional X N/A



**Fire Safety Precautions**

There is a high risk of fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting the controlled and careful use of coolants and modifying the machine without the consent of the manufacturer. Always check the SAFETY GUIDELINES carefully before using the machine.

# PERIPHERAL EQUIPMENT

## 4-axis Auxiliary device Interface/Pneumatic Jig Line

- 4-axis Auxiliary device Interface
- Pneumatic jig line



• DEM 4000 ecommendation Rotary Table : Ø200 Auxiliary axes controller

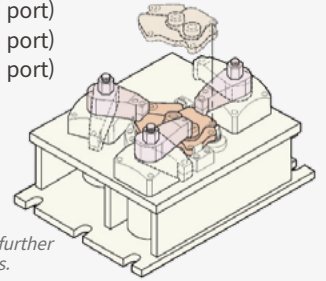
### Checklist for pneumatic lines for work clamping

Pneumatic line for jig  P/T  A/B

Customer requirements \_\_\_\_\_ L/min at \_\_\_\_\_ MPA

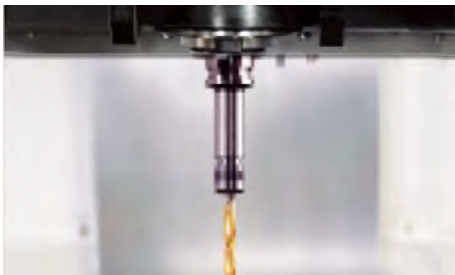
Number of jig ports

- 1pair (2-PT 1/4" port)
- 2pair (4-PT 3/8" port)
- 3pair (6-PT 1/4" port)



• Please contact us for further detailed specifications.

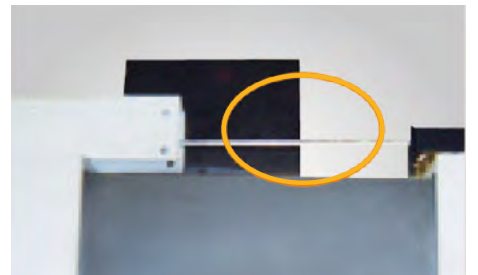
### Through-spindle coolant system



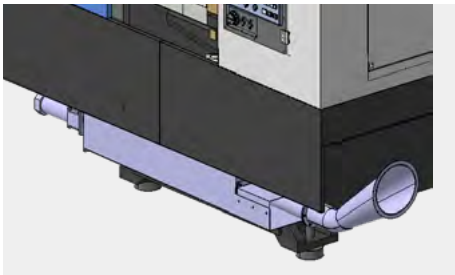
### Raised column(150mm)



### Auto Door



### Chip conveyor



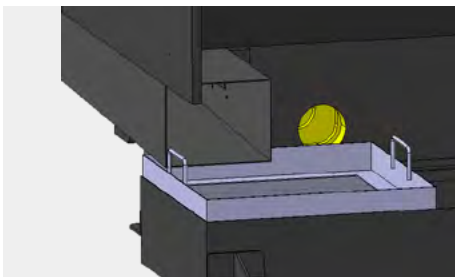
### Auto tool measurement device



### Auto tool measurement device



### Chip box



### Oil Skimmer



# DN SOLUTIONS FANUC i PLUS

DN Solutions Fanuc i Plus maximizes customer productivity and convenience.

## 10.4" Screen + New OP

DN Solutions Fanuc i Plus' operation panel enhances operating convenience by incorporating common-design buttons and layout. It features a Qwerty keyboard for fast and easy data input and operation.

## DN Solutions Fanuc i Plus

- 10.4 inch color display
- Intuitive and user-friendly design

## USB and PCMCIA card QWERTY keyboard

- EZ-Guide i standard
- Ergonomic operator panel
- 2MB Memory
- Hot keys



## iHMI touchscreen OPTION

iHMI provides an intuitive interface that uses a touchscreen for quick and easy operation.

## Range of applications

Providing various applications related to planning, machining, improvement and utility, for customer convenience.



## NUMERIC CONTROL SPECIFICATIONS



Division	Specifications	DEM 4000
		DN Solutions Fanuc i Plus
Controlled axes		3 (X,Y,Z)
Simultaneously controlled axes		4 axes
Additional controlled Axis	Add 1 Axis (5th Axis)	X
Fast data server		X
Memory card input/output		●
USB memory input/output		●
Large capacity memory(2GB)*2	Note *2) Available Option only with 15" Touch LCD (iHMI Only)	X
Embedded Ethernet		●
Fast Ethernet		○
Enhanced Embedded Ethernet function		●
DNC operation	Included in RS232C interface.	●
DNC operation with memory card		●
Workpiece coordinate system	G52 - G59	●
Addition of workpiece coordinate system	G54.1 P1 X 48 (48 pairs)	●
Tool number command		T4 digits
Tilted working plane indexing command	G68.2 TWP	X
AI contour control I	G5.1 Q_, 40 Blocks	●
AI contour control II	G5.1 Q_, 200 Blocks	X
AI contour control II	G5.1 Q_, 600 Blocks	X
AI contour control II	G5.1 Q_, 1000 Blocks	X
High smooth TCP		X
EZ Guidei (Conversational Programming Solution)		○
iHMI with Machining Cycle	Note *1) Only with 15" Touch LCD standard	X
EZ Operation package		X
CNC screen dual display function		X
FANUC MTConnect		⊗
FANUC OPC UA		⊗
Display unit	10.4" color LCD	●
	15" color LCD	X
	15" color LCD with Touch Panel	X
Part program storage size & Number of registerable programs	640M(256KB)_500 programs	X
	1280M(512KB)_1000 programs	X
	2560M(1MB)_1000 programs	X
	5120M(2MB)_1000 programs	●
	10240M(4MB)_1000 programs	X
	20480M(8MB)_1000 programs	X
	2560M(1MB)_2000 programs	X
	5120M(2MB)_4000 programs	X
	10240M(4MB)_4000 programs	X
	20480M(8MB)_4000 programs	X

# CONVENIENT OPERATION

Mitsubishi M80B

## Provide an easy-to-use environment

- 15-inch wide display screen
- Touch screen  
(Can be operated while wearing gloves)

## Mitsubishi M80B Features

- USB & SD card available
- SD Card slot allows memory expansion up to 32GB
- QWERTY keyboard applied
- Easy to add buttons when optional
- Newly designed operator panel for ease of use
- Maximum reading (M80B standard)
  - High speed high precision control 1 : 337 BLOCK
  - High speed and high precision control 2 : 675 BLOCK



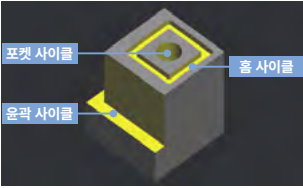
## Conversational convenient function



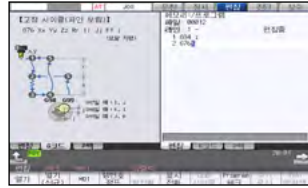
TOUCH SCREEN



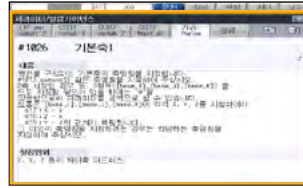
NVAI MILL



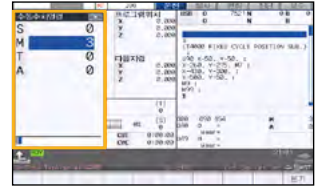
3D SOLRID PROGRAM CHECK



G-CODE Guidance



ALARM / PARAMETER Guidance



Manual Numerical Command Function

## NUMERIC CONTROL SPECIFICATIONS

MITSUBISHI

Division	Item	Specifications	DEM 4000	
			M80B	
Controlled axis	Number of Basic Control Axes (NC Axes)	3 ( X,Y,Z )		X,Y,Z
	Number of Simultaneous Contouring Control Axes			4 axes
Input/Output Functions and Devices	Front-side SD Card I/F [Up to 32GB]		●	
	Ethernet I/F		●	
	Display Unit-side Data Server I/F		●	
	Front-side USB Memory I/F [Up to 32GB]		●	
Operation	High-speed Simple Program Check		●	
	Workpiece Coordinate System Selection (6 Sets)		●	
Program input	Extended Workpiece Coordinate System Selection (48 Sets)	G54.1P1 to P48		●
	Tool number command			T2 digits
	High-speed Machining Mode I (G05P1) Maximum [kBPM]		●	16.8
Feed Function	High-speed Machining Mode II (G05P2) Maximum [kBPM]		●	67.5
	High-accuracy Control (G61.1/G08)		●	
	SSS Control		●	
	Tolerance Control		●	
	High-speed High-accuracy Control I (G05.1Q1) Maximum [kBPM]	337 BLOCK	●	33.7
	High-speed High-accuracy Control II (G05P10000) Maximum [kBPM]	675 BLOCK	●	67.5
	High-speed High-accuracy Control III (G05P20000) Maximum [kBPM]	1350 BLOCK		X
Operation Guidance Function	Smooth Fairing			X
	Ethernet Connection		●	
	Simple Programming (NAVI MILL/LATHE)		●	
Network	G code Guidance		●	
	CC-Link Connection		●	
Others	Display unit	10.4" color LCD with Touch Panel	●	
	Part program storage size & Number of registerable programs	1280M(500KB)_1000 programs		●

# POWER | TORQUE

## DEM 4000

Max. spindle speed

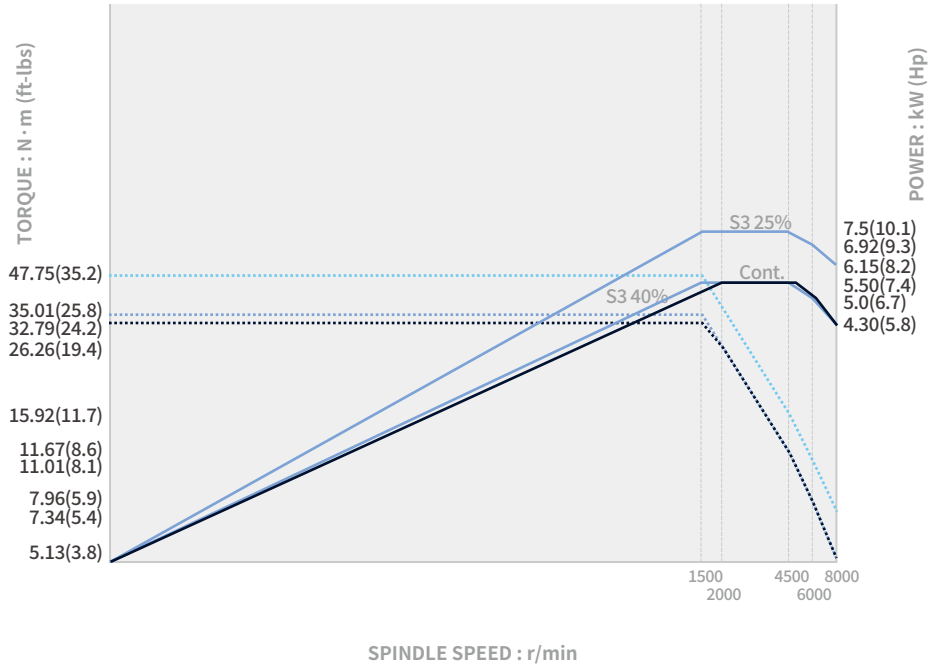
**8000** r/min

Max. spindle power

**7.5** kW  
(10.1 HP)

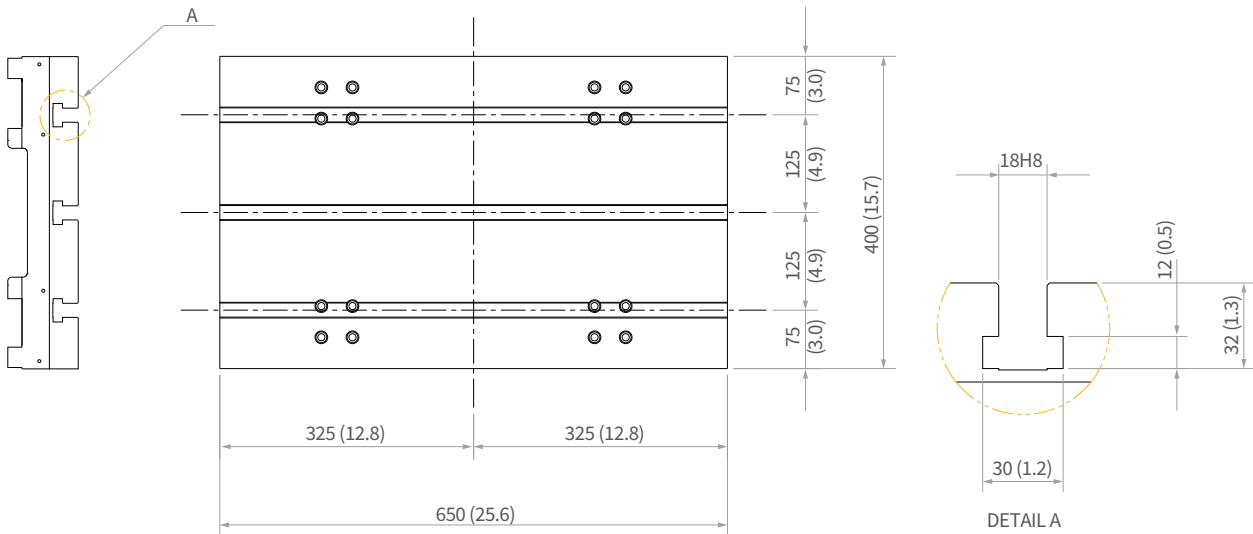
Max. Spindle torque

**47.75** N·m  
(35.2 ft-lbs)



# TABLE DIMENSIONS

Unit : mm (inch)

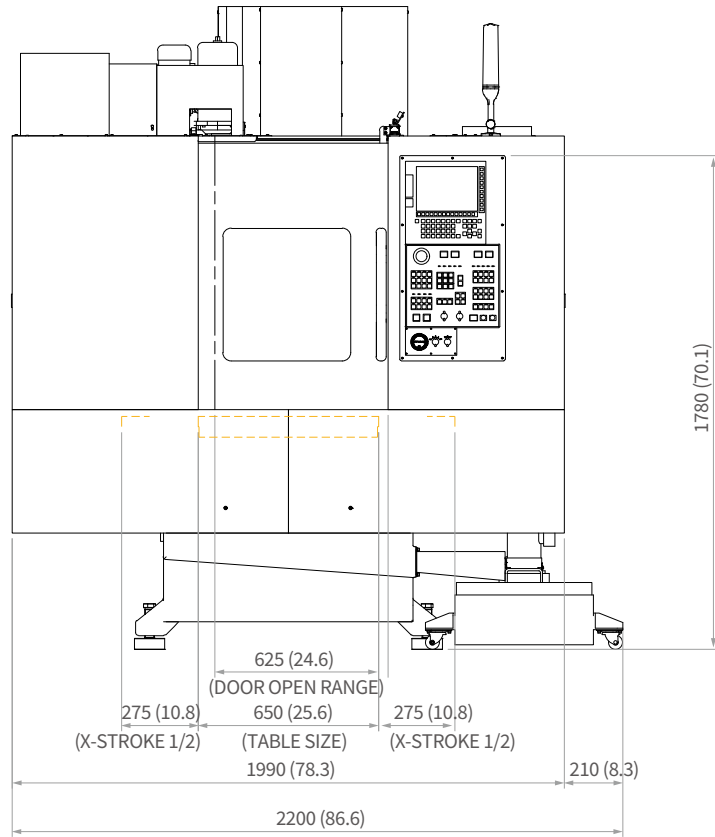


# EXTERNAL DIMENSIONS

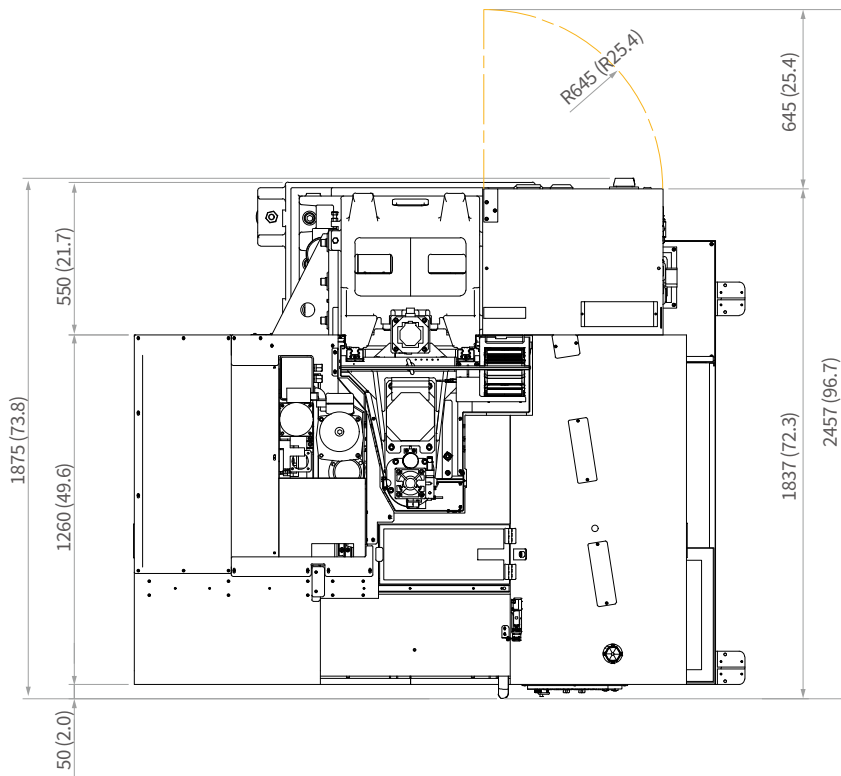
DEM 4000\_CAM Type\_ISO #40-20Tool

Unit : mm (inch)

FRONT



TOP

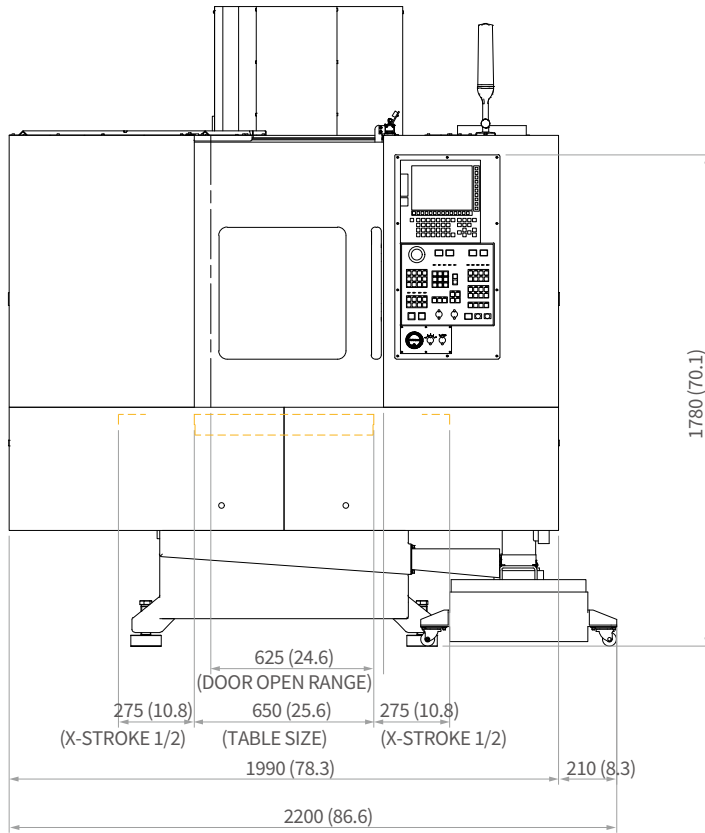


# EXTERNAL DIMENSIONS

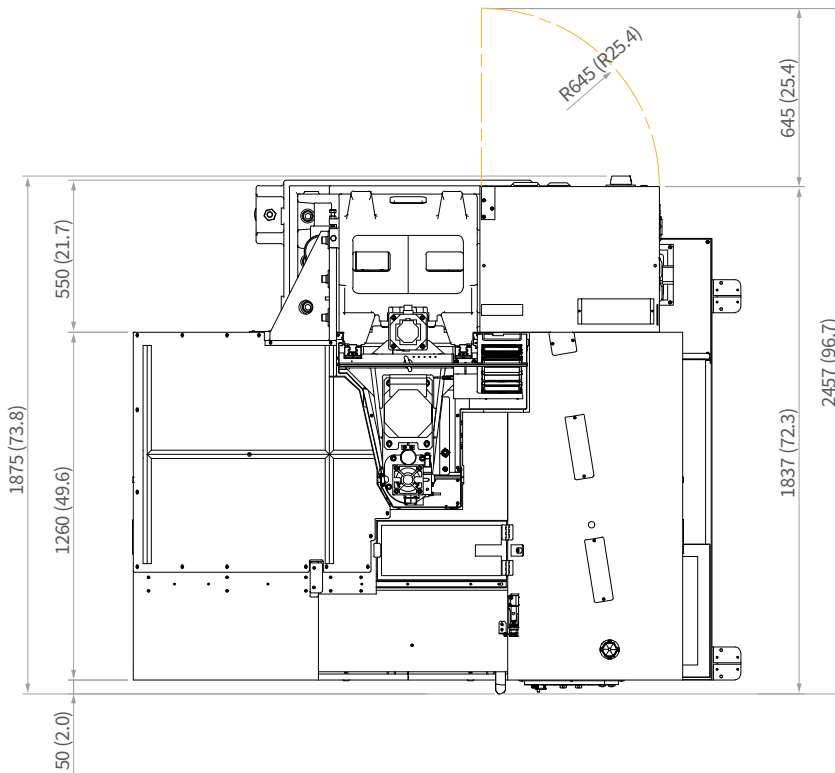
DEM 4000\_Armless Type\_BT40-16Tool

Unit : mm (inch)

FRONT



TOP



\* Some peripheral equipment can be placed in other places.

# MACHINE SPECIFICATIONS

Description			Unit	DEM 4000	
				DN Solutions Fanuc i Plus	Mitsubishi M80B
Travel	Stroke	X axis	mm (inch)	550 (21.7)	
		Y axis	mm (inch)	400 (15.7)	
		Z axis	mm (inch)	450 (17.7)	
	Height Spindle to Table		mm (inch)	120 ~ 570 (4.7~22.4)	
Feedrate	Rapid traverse	X axis	m/min (ipm)	24 (944.9)	
		Y axis	m/min (ipm)	24 (944.9)	
		Z axis	m/min (ipm)	24 (944.9)	
	Cutting feed		m/min (ipm)	12000 (472441.0)	
Table	Table size		mm (inch)	650 X 400 (25.6 X 15.7)	
	Max. Load		kg (lb)	400 (881.8)	
	Table type			T-SLOT (3-125 x 18H8)	
Spindle	Max speed		r/min	8000	
	Spindle taper			ISO #40, 7/24 TAPER	
	Max power		kW (Hp)	7.5 (10.1)	
	Max torque		N·m (ft·lbs)	47.7 (35.2)	
Automatic Tool Changer (ATC)	CAM type	Capacity	ea.	20	
		select type		MEMORY RANDOM	
		Max diameter	mm (inch)	80 {125}* (3.1 {4.9}*)	
		Max length	mm (inch)	300 (11.8)	
		Max weight	kg (lb)	8.0 (17.6)	
		T-T-T	sec	1.6	
		C-T-C	sec	4.0	
	Armless Type	Capacity	ea.	16	
		select type		Fix	
		Max diameter	mm (inch)	80 {125}* (3.1 {4.9}*)	
		Max length	mm (inch)	300 (11.8)	
		Max weight	kg (lb)	8.0 (17.6)	
		T-T-T	sec	5.7	
		C-T-C	sec	7.7	
Power consumption			kVA	20.5	18.6
Machine size			W	2200 (86.6)	
			L	1875 (73.8)	
			H	2317 (91.2)	
Machine weight			kg (lb)	3100 (6834.2) (CAM TYPE) 2900 (6393.3) (ARMLESS TYPE)	

# RESPONDING TO CUSTOMERS **ANYTIME, ANYWHERE**

## DN SOLUTIONS GLOBAL NETWORK

**66** COUNTRIES | **140** + SALES NETWORKS | **3** FACTORIES | **6** REGIONAL HQS



## CUSTOMER SUPPORT AND SERVICES

### WE'RE THERE FOR YOU WHENEVER YOU NEED US.

We help our customers operate at maximum efficiency by providing them with a range of tried, tested and trusted services - from pre-sales consultancy to post-sales support.



#### FIELD SERVICES

- On-site service
- Machine installation and testing
- Scheduled preventive maintenance
- Machine repair service



#### PARTS SUPPLY

- Supplying a wide range of original DN Solutions spare parts
- Parts repair service



#### TRAINING

- Programming, machine setup and operation
- Electrical and mechanical maintenance
- Applications engineering



#### TECHNICAL SUPPORT

- Supports machining methods and technology
- Responds to technical queries
- Provides technical consultancy



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