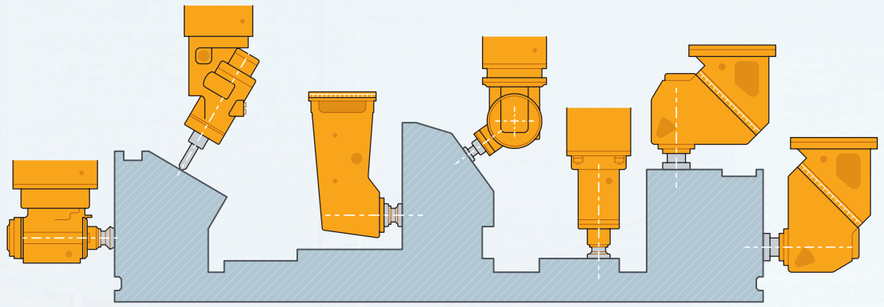
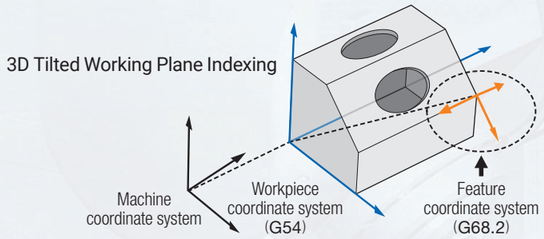
FOUR-STAR

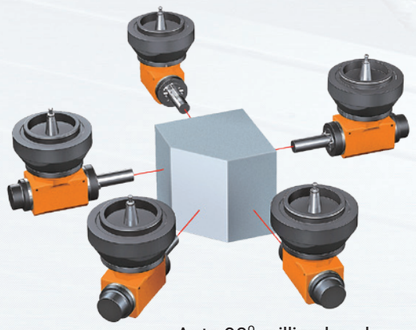
Quality, Credibility, Innovation, Service



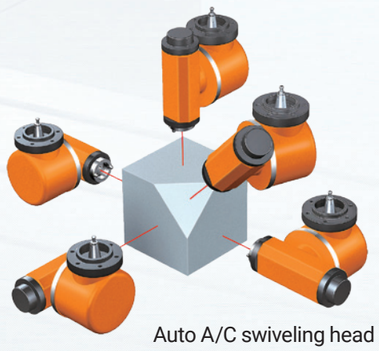
▲ Auto 5 Face machining function

5 Axis Simultaneous milling head ►





Auto 90° milling head



Auto A/C swiveling head

YONG JU PRECISION TECHNOLOGY CO.,LTD.
TEL：+886-47530-879 E-mail：yjpt@fourstarcnc.com
FAX：+886-47530-869 http：//www.fourstarcnc.com
No. 20, Keji Rd., Erlin Township, Changhua County 526004, Taiwan (R.O.C.)

2020. November

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YONG JU PRECISION TECHNOLOGY CO.,LTD.

CNC FIXED TABLE

DOUBLE COLUMNS MACHINING CENTER

HRP • HDT • SD • SDW • GM

www.fourstarcnc.com

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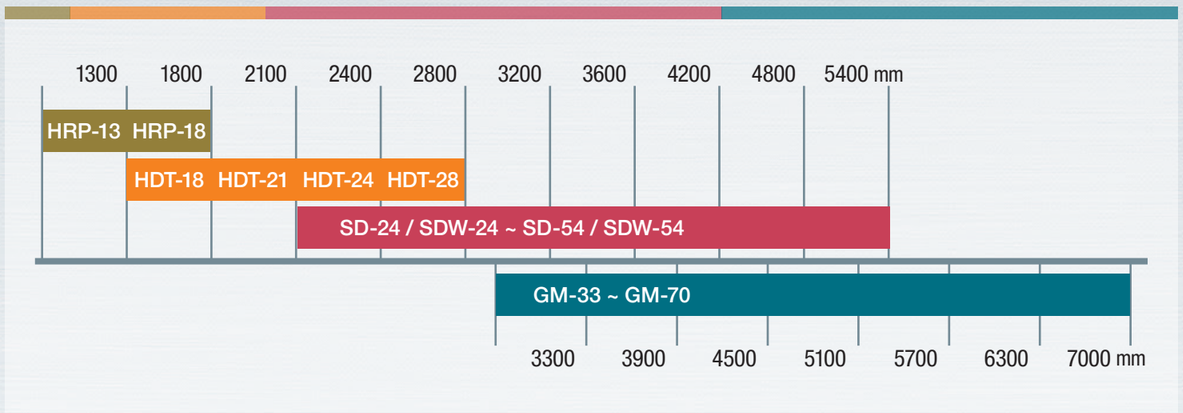
FIXED TABLE

Fixed Cross-Rail (HRP, HDT, SD)

Moving Cross-Rail (SDW, GM)

Distance between Columns



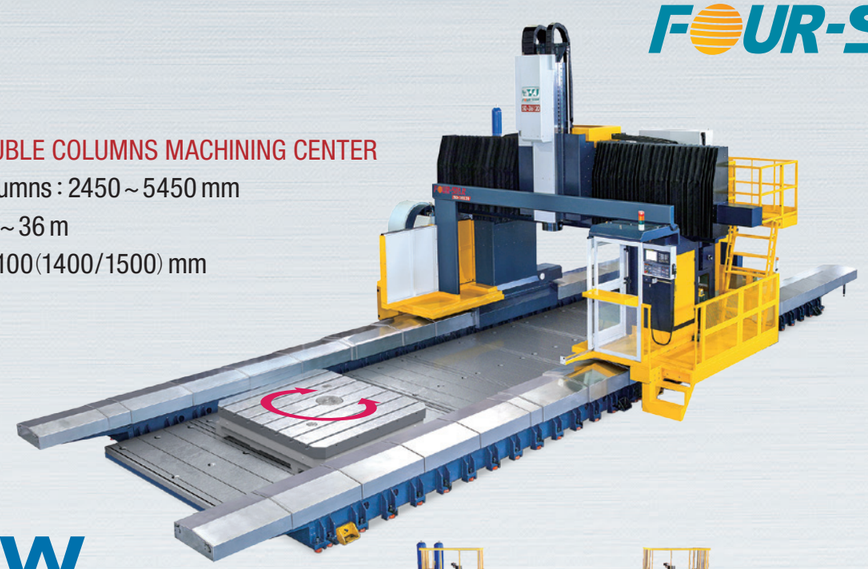
SD

SLIDING DOUBLE COLUMNS MACHINING CENTER

Between Columns : 2450 ~ 5450 mm

X - Travel : 6 ~ 36 m

Z - Travel : 1100(1400/1500) mm



HRP

HIGH RIGID PRECISION DOUBLE COLUMNS MACHINING CENTER

Between Columns : 1350/1850 mm

X - Travel : 2 ~ 20 m

Z - Travel : 800 mm

SDW

W-TYPE SLIDING DOUBLE COLUMNS MACHINING CENTER

Between Columns : 2450 ~ 5450 mm

X - Travel : 6 ~ 36 m

Z - Travel : 800(1100/1400) mm

W - Travel : 1000/1500/2000 mm

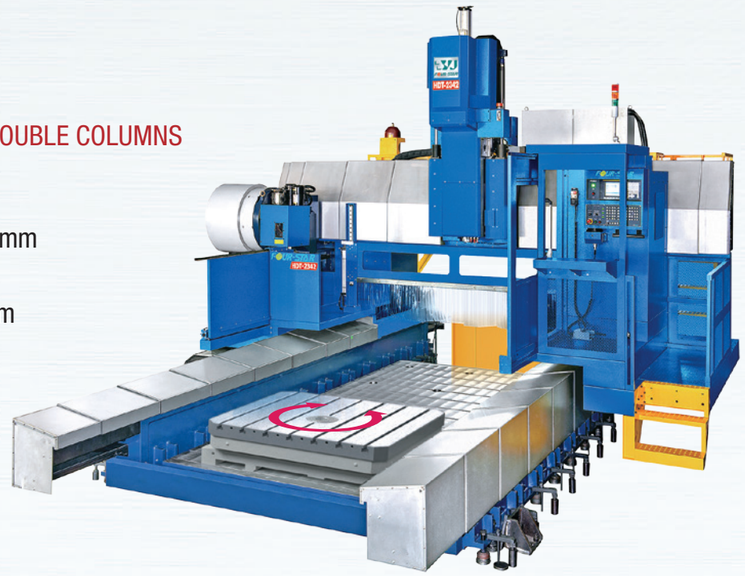
HDT

MEDIUM TRAVELLING DOUBLE COLUMNS MACHINING CENTER

Between Columns :
1850/2150/2450/2850 mm

X - Travel : 2 ~ 20 m

Z - Travel : 800(1100) mm



GM

GANTRY TYPE MACHINING CENTER

Between Walls : 2650 ~ 7050 mm

X - Travel : 6 ~ 36 m

Z - Travel : 1100(1400/1500) mm

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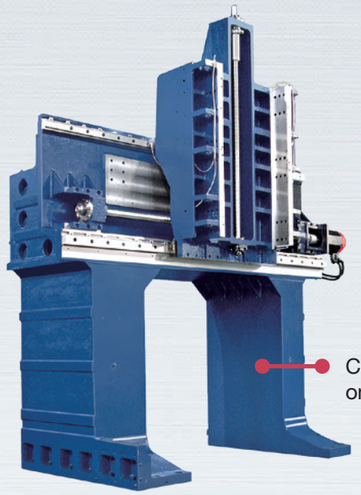
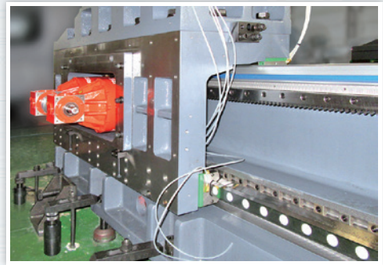
HRP series

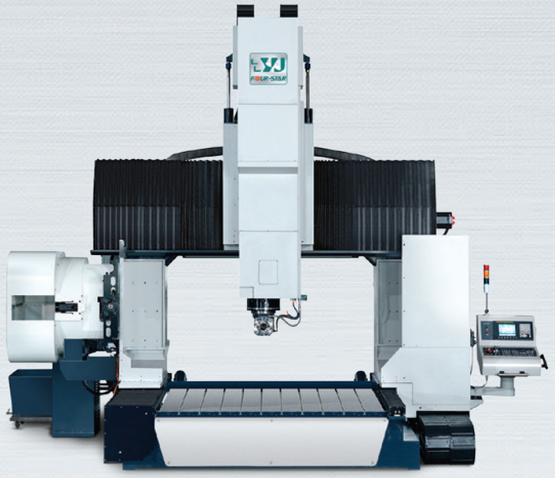
HIGH RIGID PRECISION D.C.M.



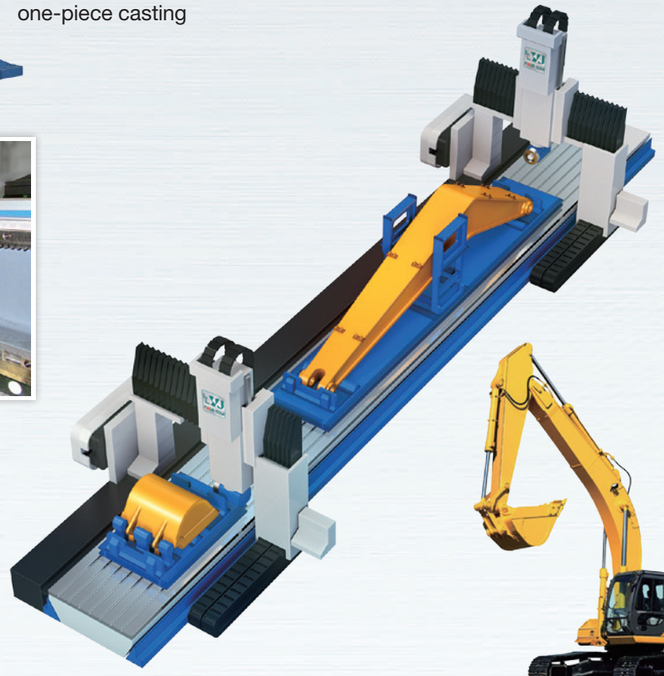
Columns and Beam one-piece casting



▲ X travel by Rack-pinion

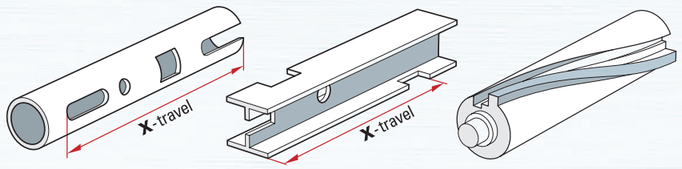


▲ Single Gate model



Twin Gate model ▶

High-efficiency multi-process machining center



Long size complex precision machining

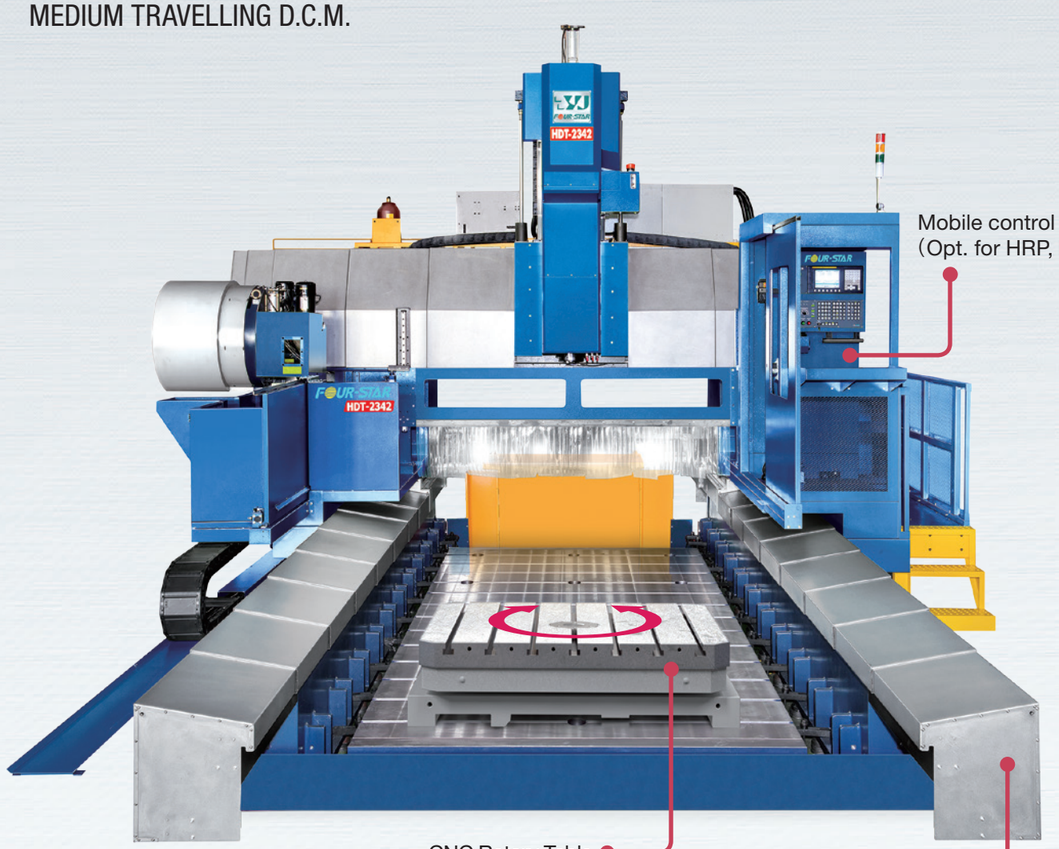
MODEL INFO

HRP - 13 90 - 2G

- Twin gates
- X travel 9 m
- Between Columns 1350 mm
- High Rapid Precision

HDT series

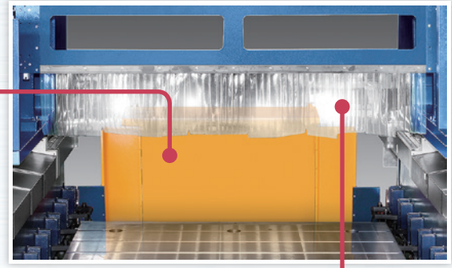
MEDIUM TRAVELLING D.C.M.



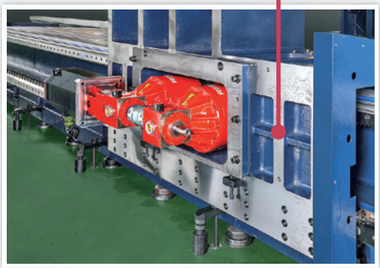
Mobile control room (Opt. for HRP, HDT)

CNC Rotary Table

Auto Head exChanger (AHC)



▲ Coolant protection



▲ X travel by Rack-pinion

MODEL INFO

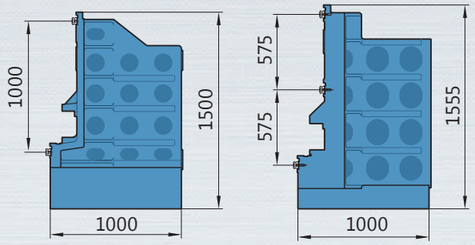
HDT - 24 80 - 5F

- Five Face milling
- X travel 8 m
- Between Columns 2450 mm
- High speed Milling, Drilling & Tapping

SD series

SLIDING DOUBLE COLUMNS MACHINING CENTER

Optimal Rigidity



SD-24/28/32
with 2 guideways

SD-36/42/48/54&GM
with 3 guideways

CROSS RAIL (BEAM)

- Box in box unity casting frame
- Optimum bending section modulus
- Optimum rigidity & damping design

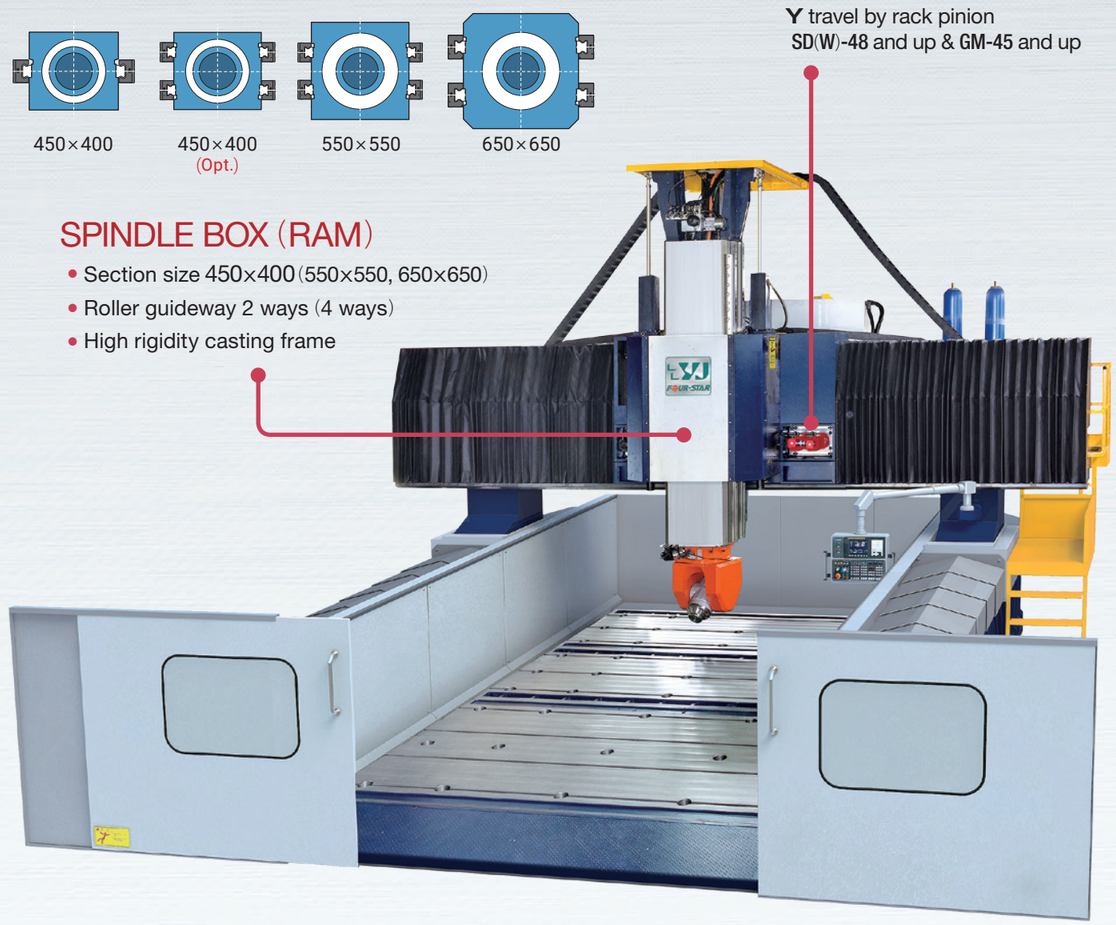
GM series

GANTRY MACHINING CENTER

450×400 | 450×400 (Opt.) | 550×550 | 650×650

SPINDLE BOX (RAM)

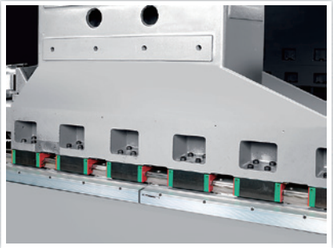
- Section size 450×400 (550×550, 650×650)
- Roller guideway 2 ways (4 ways)
- High rigidity casting frame



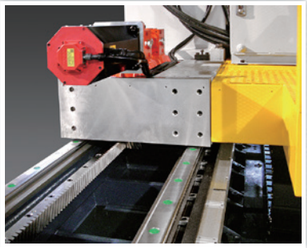
MODEL INFO

SD-42 90-5A

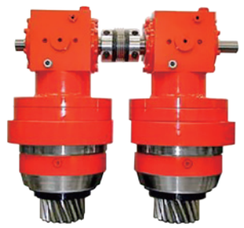
- 5 axis simultaneous head
- X travel 9m
- Between Columns 4250mm
- Sliding Double Columns



Column & Slider one piece casting



X travel by rack-pinion servo control (2 pcs)



Y travel by rack-pinion
SD(W)-48 and up & GM-45 and up

MODEL INFO

GM-63 100-5A

- 5 axis simultaneous head
- X travel 10m
- Between Wail 6350mm
- Gantry type

SDW series

W-TYPE SLIDING DOUBLE COLUMNS MACHINING CENTER

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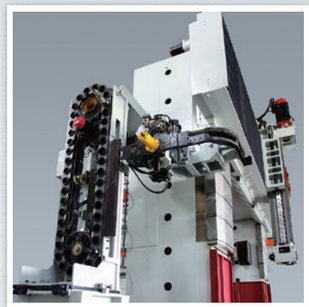
W-type

MEEHANITE®

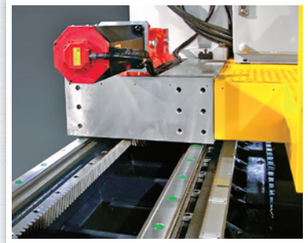
MODEL INFO

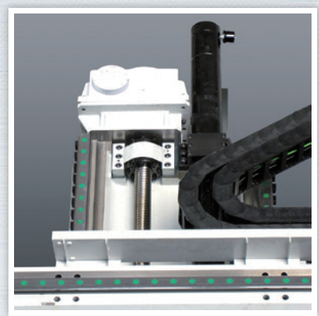
SD W - 48 220-5F

- X travel 22m
- Between Columns 4850 mm
- W type Moving Cross-Rail
- Sliding Double Columns



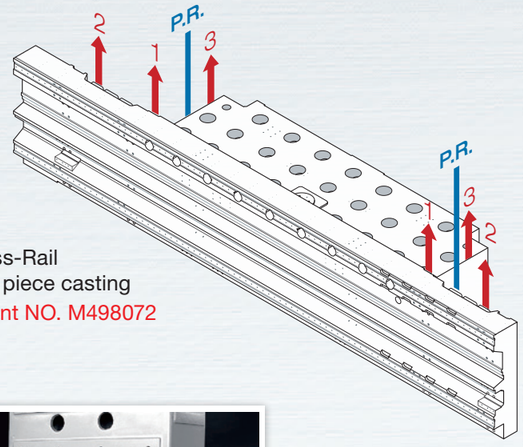
Free position ATC system
Patent NO. M503282





W travel free-position
syn-servo control
Patent NO. M503282

Each column with 3 linear
guide-ways and 1 position rail (P.R.)
Patent NO. M511389



Rack-pinion used on
X travel and Y travel
SD-48 and up

W-2

W-3 (Opt)

W-1

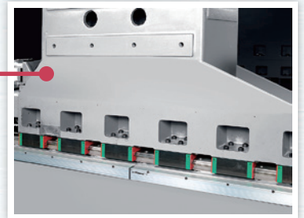
BEAM travel

RAM travel

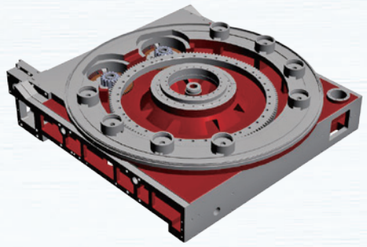
W travel

Z travel

Cross-Rail
One piece casting
Patent NO. M498072



Column & Slider One piece casting



Built-in or Removable rotary table
with worm shaft-gear drive
Diameter : 1m~3m(0.001°)

Horizontal Rotary table
Indexed & Simultaneous
Diameter : 1m~3m(0.001°)

Table height based on specific customerization

1000mm

1085mm

1270mm

Heavy-large-base

CNC FIXED TABLE TYPE MACHINING CENTER

MEEHANITE®

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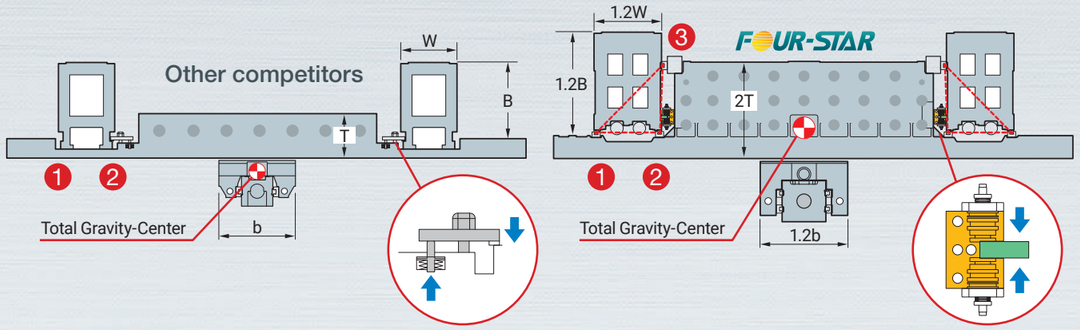
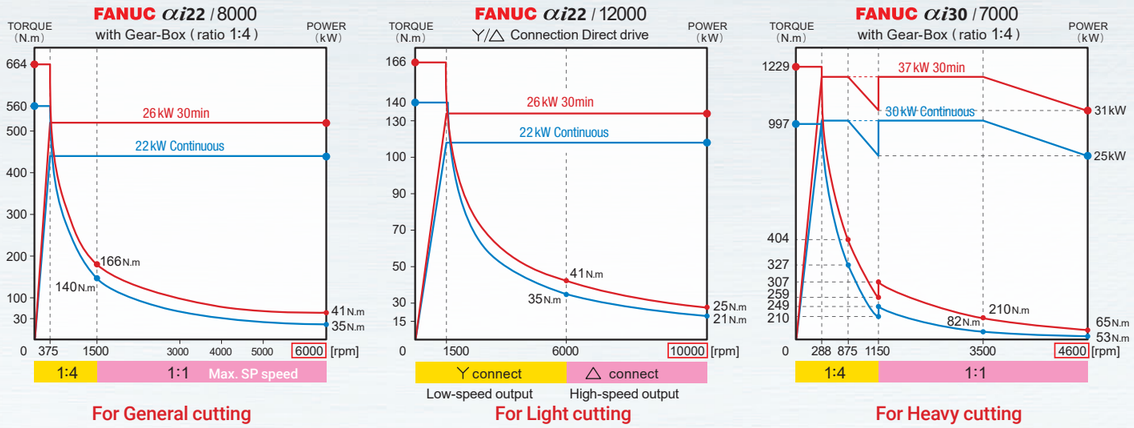
Innovative patented design



10 key points excellent design

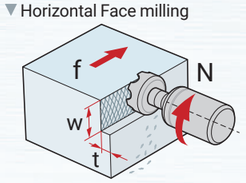
1 Box-in-Box unity cast-iron high rigidity structure.
2 AHC and Column separate independent from ground.
3 Column-base extended & separate with base.
4 Extend Y travel for auto 5F machining space.
5 All linear guideways enhance rigidity and accuracy.
6 Cross-rail positioned by both sides hydraulic clamping.
7 Increase the beam dimension & weight increase rigidity.
8 The optional 4 guideways 550 × 550 ram for heavy cutting.
9 The hydraulic clamping makes the slope of cross-rail 0.01/1000
10 Cross-rail supported by triangular track made gravity-center fall column inside.

Cutting Capability

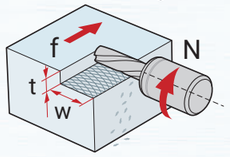


Cutting Record

▼Horizontal Face milling



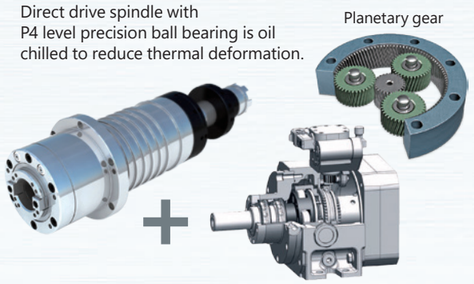
▼Horizontal End milling



Type		Horizontal Face milling	Horizontal End milling
Material		S45C	S45C
Cutter diameter	mm	200	80
Speed	rpm	360	400
Cutting speed	m/min	226	100
Cutter width	mm	180	50
Cutter Depth	mm	5	30
Feed rate	mm/min	1250	600
Rate of metal removal	cc/min	1125	900
Power	kW	22	22
Rate of metal removal/kW	cc/kW	51	41

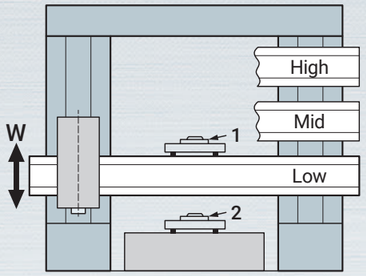
Optimal Efficiency Transmission

Direct drive spindle with
P4 level precision ball bearing is oil
chilled to reduce thermal deformation.

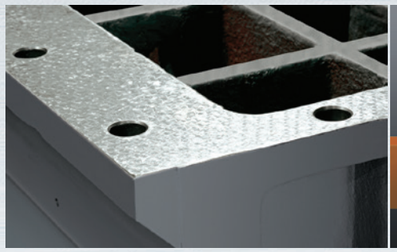


Two speed ratio IN-LINE gearbox
Full enclosure, high power and performance.

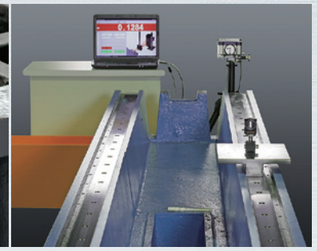
Quality Assurance



▲ High-precision assembly skill.



▲ All mounted surface by precise hand-scraping.



▲ Calibration straightness and flatness by laser.

Special Milling Head (Exchange Type)

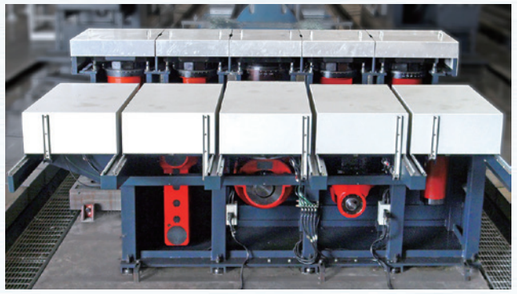
Type	Automatic	Semi-Automatic	Manual
Head exchange	Auto (hydraulic)	Manual (8 bolts)	Manual (8 bolts)
Head indexed	Auto (5°)	Auto (5°)	Manual (5° / free)
Tool clamped	Booster	Booster	Bolt

90° head | Extension head | Extension 90° head | AC swiveling head

Special Milling Head (Fixed Type)

Universal head | 5 Face head (dual tool shank) | 5 Axis simultaneous head

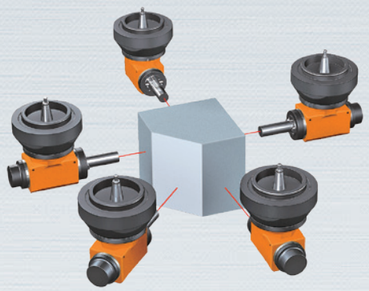
Auto Head exChanger (AHC)



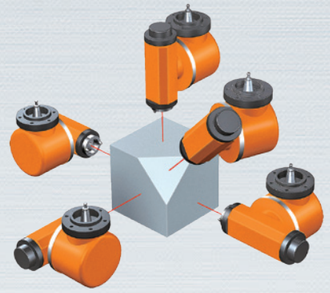
For Auto-Special Milling Head

Auto 5F Milling Function

1. Smart human multi-face machining
2. Coordinate rotation function
3. 3D tilting machining function
4. 3D rigid tapping function
5. 3D manual feed function
6. AICC II high speed high precision
7. Jerk control
8. Tool life management function
9. Tool radius compensation
10. Power failure protection function



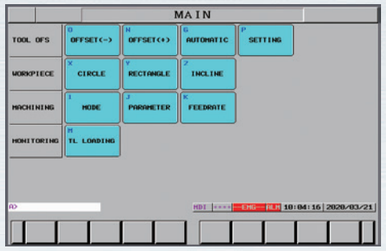
Auto 90° milling head



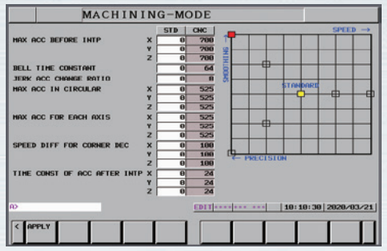
Auto A/C swiveling head

AI-HMI (A.I. Human-Machine Interaction)

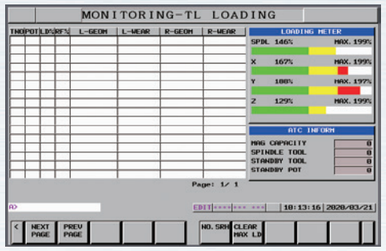
▼ Main screen **MAIN**



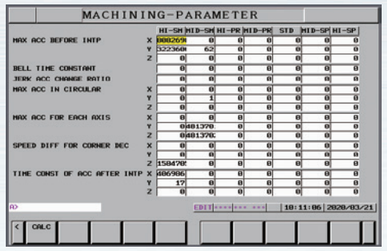
▼ Efficiency machining **EM**



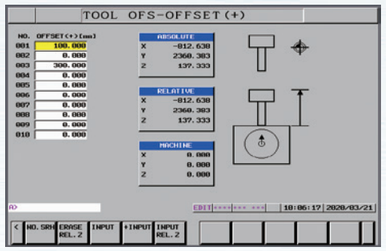
▼ Tool load monitor **TLM**



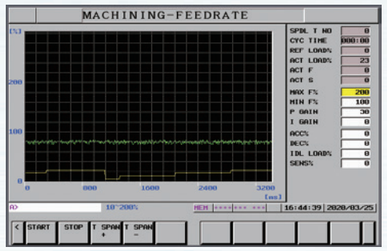
▼ Tuning **EMT**



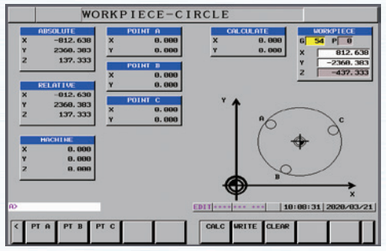
▼ Tool measurement **TM**



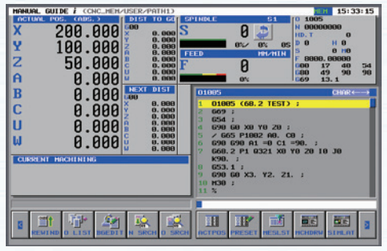
▼ Auto feed control **AFC**



▼ Workpiece center Measurement **WM**



▼ Manual Guide *i* **MG**



FANUC 0iMF & 31iMB Function List

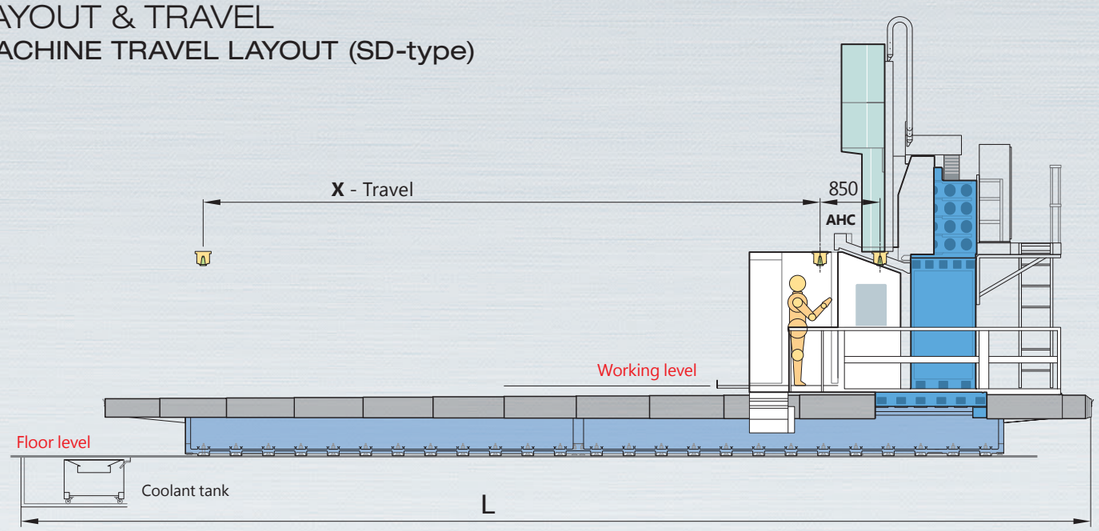
Specifications	0*i*MF	31*i*MB
Max controlled axes number	7	20
Max simultaneous controlled axis	4	4
Tandem / Torque control	○	○
Increment system	○	★
Dual position feedback *1	○	○
Linear scale I/F with absolute address reference mark *1	★	★
HRV2 / HRV3 control	○	○
Inch / metric conversion	○	○
Interlock	○	○
Machine lock	○	○
Emergency stop	○	○
Over travel	○	○
Stroke limit check before move	○	○
Mirror image	○	○
Position switch	○	○
Operation		
MDI operation	○	○
DNC operation	○	○
Program restart	○	○
Retraction for rigid tapping	○	○
Retraction for 3D rigid tapping *2	★	★
Buffer register	○	○
Dry run	○	○
Single block	○	○
Jog feed	○	○
3-dimensional manual feed	★	★
Manual handle interruption	○	○
Incremental feed	○	○
Auxiliary/Spindle speed function		
Auxiliary function	○	○
High-speed M/S/T/B interface	○	○
Spindle override	○	○
Spindle orientation	○	○
Rigid tapping	○	○
Rigid tapping by manual handle	★	★
Interpolation functions		
Nano interpolation	○	○
Positioning	○	○
Exact stop	○	○
Linear interpolation	○	○
Circular interpolation	○	○
Dwell	○	○
Cylindrical interpolation	○	★
Helical interpolation	○	★
Nano smoothing *3	★	★
Jerk control *3	★	★
Tolerance control *3	★	★
Thread cutting, synchronous cutting	○	○
Skip function	○	○
Optional block skip	○	○
Reference position return check	○	○
Editing Operation		
Part program storage size (512KB)	○	○
Part program editing	○	○
Program protect	○	○
Extended part program editing	○	○
Background editing	○	○
Data server editing / operation	○	○
Accuracy compensation function		
Stored pitch error compensation	○	○
Smooth backlash compensation	○	○
Interpolation type straightness compensation	○	○

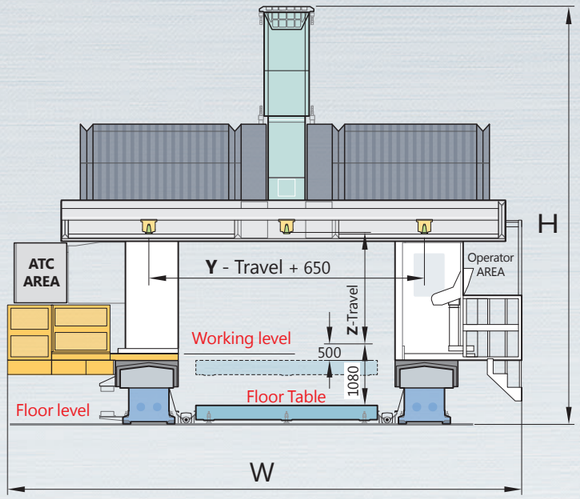
Specifications	0*i*MF	31*i*MB
Guidance function		
Manual Guide *i*	○	○
Program input		
Absolute / incremental programming	○	○
Decimal point programming calculator type	○	○
Polar coordinate command	○	○
Coordinate system setting	○	○
Automatic coordinate system setting	○	○
Workpiece coordinate system	○	○
Addition of workpiece coordinate system	○	○
Programmable data input	○	○
Sub program call	○	○
Custom macro	○	○
Addition of custom macro common variables	○	○
Canned cycles for drilling	○	○
Circular interpolation by R programming	○	○
Scaling	○	○
Automatic corner override	○	○
Tilted work plane indexing (G68.2) *2	○	○
Setting and display		
Parameter setting and display	○	○
Alarm display	○	○
Alarm history display	○	○
Operator message history display	○	○
Operator history display	○	○
Run hour and parts count display	○	○
Multi-language display	○	○
Dynamic display language switching	○	○
Erase CRT screen display	○	○
Self-diagnosis function	○	○
Graphic display	○	○
Machining condition selection function	○	○
Feed function		
Rapid traverse rate	○	○
Rapid traverse override	○	○
Feed per minute	○	○
Federate override	○	○
Jog override	○	○
AI contour control II (AICC II)	400B	200B
Data input/output		
Memory card input / output	○	○
Screen hard copy	○	○
Power Mate CNC manager	○	○
External I/O device control	○	○
Fast data server	○	○
Tool function/Tool compensation		
Tool offset pairs	○	○
Tool offset memory C	○	○
Tool offset	○	○
Tool length measurement	○	○
Automatic tool length measurement	○	○
Tool life management	○	★
Other Function		
Embedded Ethernet	○	○
Fast Ethernet	○	○
PMC system	○	○
PMC function	○	○
I/O Link DI/DO points	○	○
Backlash compensation	○	○
Stored pitch error compensation	○	○

○ Standard ★ Optional accessories function *1 For linear scale. *2 For auto milling head. *3 For mold cutting.

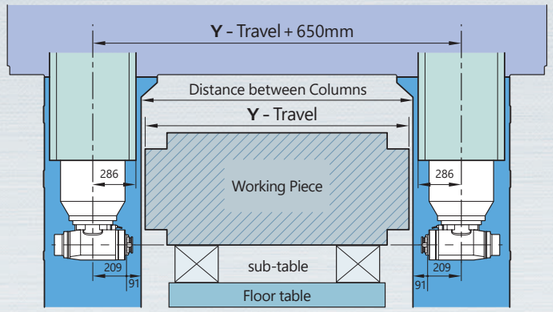
LAYOUT & TRAVEL

MACHINE TRAVEL LAYOUT (SD-type)





▼ Extend Y-travel for auto-5F cutting space



Specification Fixed Table type Double Columns Machining Center

Model		Unit	HRP-13	HRP-18	HDT-18	HDT-21	HDT-24	HDT-28	SD-24 SDW-24	SD-28 SDW-28	SD-32 SDW-32	SD-36 SDW-36	SD-42 SDW-42	SD-48 SDW-48	SD-54 SDW-54
Between Columns		mm	1350	1850	1850	2150	2450	2850	2450	2850	3250	3650	4250	4850	5450
Travel	X-Travel	m	2m ~ 20m Every 1m add						6m ~ 36m Every 1m add						
	Y-Travel	mm	1300	1800	1800	2100	2400	2800	2400	2800	3200	3600	4200	4800	5400
	Z-Travel	mm	800		800(1100)				SD:1100(1400) SDW:1100			SD:1100(1400/1500) SDW:1100(1400/1500)			
	W-Travel	mm			N/A				1500 / 2000 for SDW series						
Table	Table wide	mm	1000		1200	1500	1800		1600	2000	2400	2800	3400	4000	4600
	Table length	m	Table length = X Travel						Table length = X Travel						
Spindle nose to table		mm	220~1020		555~1355				SD:1080~2180(1020~2420) SDW:800~800+Z+W						
Power-speed		kW	22/26 - 6000 rpm						22/26 - 6000 rpm						
Y axis rack-pinion		-	×	×	×	×	×	×	×	×	×	×	×	○	○
ATC Capcity		pcs			24 pcs				32 pcs						
X/Y/Z/W Feed rate G00		m/min			15/15/12				12/12/10/1			10/10/10/1			
Cutting speed		mm/min			5~7000				5~6000						
Machine size	Length	m	6.5m ~ 23.5m Every 1m add						13.5m ~ 43.5m Every 1m add						
	Width	m	4.5		5.9	6.2	6.5		6.5	6.9	7.3	7.7	8.1	8.5	8.9
	Height	m	4.6		4				SD:6.5 / SDW:7.2						
Machine Weight (app.)		ton+/m	18+2		20+1.5	22+2	24+2.5		50+2	53+2.3	56+2.5	60+3	65+3.3	70+3.5	75+3.8

ⓘ Specifications subject to change without notice.

GM-33	GM-39	GM-45	GM-51	GM-57	GM-63	GM-70
3350	3950	4550	5150	5750	6350	7050
6m ~ 36m Every 1m add						
2600	3200	3800	4400	5000	5600	6300
1100(1400/1500)						
N/A						
2800	3400	4000	4600	5200	5800	6500
Table length = X Travel						
500~500+Z						
22/26 - 6000 rpm						
×	×	○	○	○	○	○
32 pcs						
15/10/10						
5~7000		5~6000				
15m ~ 45m Every 1m add						
8.3	8.9	9.5	10.1	10.7	11.3	12
5.4						
65+5/m	68+2/m	70+2.5/m	75+3/m	80+3.5/m	85+4/m	90+4.5/m

Standard Accessories

1. FANUC 0iMF + 10.4" LCD
2. Spindle and Gear-box cooler
3. Spindle air blast
4. Cutting coolant system
5. Auto lubrication system
6. Rigid tapping
7. Electric cabinet heat exchanger
8. Program end alarm lamp
9. Ethernet / USB / RS232 interface
10. Planetary gearbox H/L ratio
11. Air / Water cleaning equipment
12. Twin spiral type chip remover
13. Steel belt chip conveyor with cart
14. Working lamp & Tool kit
15. Operator / Maintenance manual
16. X axis steel telescopic cover
17. All axis linear guideway
18. Arm type ATC with tool magazine
19. ATC auto door
20. Foot switch for tool away
21. Leveling screw + foundation bolt
22. Mobile operator room
23. Maintenance ladder
24. X-travel by rack-pinion with linear scale
25. Y-travel by rack-pinion with linear scale (Y ≧ 4.8m)
26. X&W travel by synchronize servo control with two linear scales

Optional Accessories

1. SIEMENS or HEIDENHAIN Controller
2. Twin gate / Twin bridge / Twin ram
3. 30/37kW + GTP 2G300 (max.4500rpm)
4. Linear scale (HEIDENHAIN/FAGOR)
5. CTS 20~70 bars (for main spindle)
6. Tool length measurement
7. Work piece measurement
8. CNC rotary table (index or simultaneous)
9. Y axis steel telescopic cover
10. Transformer
11. Oil skimmer
12. Built in spindle (12000~20000rpm)
13. Y/△ Wide range spindle motor direct drive
14. RAM 450mm × 400mm with 4 guideways
15. Heavy duty RAM 550mm × 550mm
16. Heavy duty RAM 650mm × 650mm
17. 90° milling head (Auto, Semi auto, Manual)
18. Extension head (Auto, Manual)
19. 90° extension milling head (Auto, Manual)
20. AC swiveling milling head (Auto, Manual)
21. AHC system (for auto milling head)
22. Five face milling head (Fixed type)
23. Five / Four axis Simultaneous head (TRAMEC/KESSLER)