Moving Cross-Rail Double Columns Machining Center

FDW series

5 Face milling head
5 Axis Simultaneous milling head
5A head machining

Quality, Credibility, Innovation, Service

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www.fourstarcnc.com

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FDW series
Moving Cross-Rail DCM

Specification
Between Columns: 1850/2150/2450/2850/3250/3650/4250mm

X - travel: 2200–6000mm
Y - travel: 1800–2400mm
Z - travel: 800/1100mm
W - travel: 1000/1500/2000mm

Auto 5 Face milling
Y travel (including ATC + AHC)
X axis travel 6000mm
Distance between columns 3650mm
W type moving cross-rail
Fixed Double Columns

High precision machining

MODEL INFO
FD-W-36 60+5F

W travel (1000–2000mm)

ATC
AHC
CNC Rotary Table

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FDW series
Moving Cross-Rail DCM

Dual Synchronous servo control (Patent NO. M503282)

Embeded CNC Rotary Table
(Indexed/Simultaneous 0.001°)

Extend column base

FDW - 18/21/24

FDW - 28/32/36/42

Dia. 800~2000

Triangular rigid supporting made ◫ gravity-center falls column inside.
(Patent NO. M498072)

Servo synchronous located & Hydraulic clamping
(Patent NO. M511389)

Box-in-box unity cast-iron frame
(Patent NO. M498072)

Moving Cross-Rail Any position located

Slope of Cross-Rail 0.01/1000

High

Mid

Low

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

FDW - 18/21/24

FDW - 28/32/36/42

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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.

Planetary gear

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.

Quality Assurance

High-precision assembly skill.
All mounted surface by precise hand-scraping.
Calibration straightness and flatness by laser.

Special Milling Head (Exchange Type)

<table>
<thead>
<tr>
<th>Type</th>
<th>Automatic</th>
<th>Semi-Automatic</th>
<th>Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head exchange</td>
<td>Auto (hydraulic)</td>
<td>Manual (8 bolts)</td>
<td>Manual (8 bolts)</td>
</tr>
<tr>
<td>Head indexed</td>
<td>Auto (5°)</td>
<td>Auto (5°)</td>
<td>Manual (5° / free)</td>
</tr>
<tr>
<td>Tool clamped</td>
<td>Booster</td>
<td>Booster</td>
<td>Bolt</td>
</tr>
</tbody>
</table>

C axis

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

Auto Head exChanger (AHC)

Special Milling Head (Fixed Type)

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

For Auto-Special Milling Head

Cutting Capability

FANUC 

For General cutting

For Light cutting

For Heavy cutting

Cutting Record (from FDW-2432)

Face cutting S45C
Ø150mm, 350 rpm, t=8mm
600mm/min, SP load 70%
X axis load 28%, RMS 32μ

Drilling S45
Ø48mm, 1200rpm, h=100mm
30mm/min, Z axis load 80%,
tolerance ±0.1mm

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.

Cutting Space

Enlarge Cutting Space

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**SHMI (Smart Human-Machine Interaction)**

- **Main screen MAIN**
- **Efficiency machining EM**
- **Tool load monitor TLM**
- **Tool measurement TM**
- **Workpiece measurement WM**
- **Dialogue guideline DG**

**Auto 5F milling head**

**Auto 90° milling head**

**Auto A/C swiveling head**

### FANUC 0iMF & 31iMB Function List

<table>
<thead>
<tr>
<th>Specifications</th>
<th>0iMF</th>
<th>31iMB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max controlled axes number</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Max simultaneous controlled axes</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Tandem / Torque control</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Increment system C</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Dual position feedback</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Linear scale UF with absolute reference mark</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Linear scale IF with absolute reference mark</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>HRVC / HRVS control</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Inch/metric conversion</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Interlock</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Machine lock</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Emergency stop</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Over travel</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Stroke limit check before move</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Mirror image</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Position switch</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Retraction for rigid tapping</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Retraction for 3D rigid tapping</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Buffer register</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Dry run</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Single block</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Jog feed</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>3-dimensional manual feed</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Manual handle interruption</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Incremental feed</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Auxiliary/Spindle speed function</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Auxiliary function</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>High-speed M/S/T/B interface</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Spindle override</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Spindle orientation</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Rigid tapping</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Rigid tapping by manual handle</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

### Interpolation functions

- Nano interpolation | ○ | ○ |
- Positioning | ○ | ○ |
- Exact stop | ○ | ○ |
- Linear interpolation | ○ | ○ |
- Circular interpolation | ○ | ○ |
- Dwell | ○ | ○ |
- Cylindrical interpolation | ○ | ○ |
- Helical interpolation | ○ | ○ |
- Nano smoothing | * | * |
- Jerk control | * | * |
- Tolerance control | * | * |
- Thread cutting, synchronous cutting | ○ | ○ |
- Skip function | ○ | ○ |
- Optional block skip | ○ | ○ |
- Reference position return check | ○ | ○ |

### Editing Operation

- Part program storage size +3 | ○ | ○ |
- 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 | ○ | ○ |

### Other Function

- Embedded Ethernet | ○ | ○ |
- Fast Ethernet | ○ | ○ |
- PMC system | ○ | ○ |
- PMC function | ○ | ○ |
- U/O Link X/00 points | ○ | ○ |
- Backlash compensation | ○ | ○ |
- Stored pitch error compensation | ○ | ○ |

- Standard
- Optional accessories function
- For linear scale
- For auto milling head
- For mold cutting

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### Standard Accessories

1. FANUC iMCP + 10.4” LCD
2. Spindle cooler
3. Spindle air blast
4. NZ Counter balancing system
5. Dual stage H/L planetary gearbox
6. Independent auto lubrication system
7. Program and alarm lamp
8. Rigid tapping
9. Electric cabinet heat exchanger
10. USB/RS232/Ethernet interface
11. Coolant system
12. Dual spiral type chip remover
13. Metal belt chip conveyor with cart
14. Chain type ATC 32pcs
15. Semi-enclosure splash guard (FDW-18/21/24)
16. Open type splash guard (FDW-28/32/36/42)
17. Tool length measurement
18. ATC auto door
19. Foot switch for tool away
20. Working lamp
21. Leveling screw + foundation bolts
22. Air/water cleaning equipment
23. W axis linear scale (2 pcs)

### Optional Accessories

1. X travel 3m / 8m / 9m / 18m
2. Mitsubishi / Siemens / Heidenhain Controller
3. High speed Spindle (8000-20000rpm)
4. Coolant Through Spindle (CTS)
5. 90° milling head (Auto, Semi-auto, Manual)
7. AC x velving milling head (Auto, Manual)
8. AHC system (for auto milling head)
9. Toggle head stand (for semi-auto / Manual milling head)
10. Five face milling head (Fixed type)
11. Universal milling head (Fixed type, Manual)
12. 5 axis simultaneous milling head
13. Y travel extend 650mm (for Auto SF machining)
14. Transformer
15. X, Y, Z axis linear scale
16. Tool selection Random shortest direction / M24 P3.0 - 45°
17. Cooling thru tool holder device
18. Full enclosure splash guard
19. Tool kit & Operator's manual
20. Oil skimmer
21. Spindle power 30/37kw with gearbox
22. Heavy duty RAM 550x550 (FDW-28 and up)

### Machine Layout & Dimension

<table>
<thead>
<tr>
<th>Item Unit</th>
<th>FDW-18</th>
<th>FDW-21</th>
<th>FDW-24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>FDN-182</td>
<td>FDN-1832</td>
<td>FDN-1842</td>
</tr>
<tr>
<td>Distance between columns (mm)</td>
<td>1850</td>
<td>2150</td>
<td>2450</td>
</tr>
<tr>
<td>Length (mm)</td>
<td>3000</td>
<td>3000</td>
<td>5000</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>2000</td>
<td>2000</td>
<td>2000</td>
</tr>
<tr>
<td>Maximum Table Load (ton)</td>
<td>12</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>T slot Width+Rhs+Ns (mm)</td>
<td>22 x 150 x 9</td>
<td>22 x 150 x 11</td>
<td>22 x 150 x 13</td>
</tr>
<tr>
<td>X-axis (mm)</td>
<td>2200</td>
<td>3200</td>
<td>5200</td>
</tr>
<tr>
<td>Y-axis (mm)</td>
<td>1800</td>
<td>2100</td>
<td>4000</td>
</tr>
<tr>
<td>Z-axis (mm)</td>
<td>800 (1100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W-axis (mm)</td>
<td>1000 (opt.1500)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nose to table (mm)</td>
<td>120-1820</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ram Size (mm)</td>
<td>650 x 400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taper / Power / Speed rpm/kW</td>
<td>BBT50 - 22/26kW - 6000rpm with 2 stage gearbox</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feedrate Cutting (m/min)</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-axis (m/min)</td>
<td>15</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Y-axis (m/min)</td>
<td>15</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Accuracy Positioning ±0.015/full travel ; Positioning ±0.015/full travel ±0.003 ; Slope of cross-rail 0.01/1000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity / Dia (mm)</td>
<td>32 tools , max. dia Ø125 (Full tool) / Ø220 (Adjacent empty)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Length / Weight (mm/Kg)</td>
<td>400 mm / 20 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tool magazine (Random shortest direction) M24 P3.0 - 45°</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine size Length (m)</td>
<td>7.2</td>
<td>9.2</td>
<td>11.2</td>
</tr>
<tr>
<td>Width (m)</td>
<td>5.1</td>
<td>5.4</td>
<td>5.7</td>
</tr>
<tr>
<td>Height (m)</td>
<td>5.1 (6.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine Weight (±10%) (ton)</td>
<td>40</td>
<td>44</td>
<td>48</td>
</tr>
</tbody>
</table>

All data will change based on the actual situation without notice.