

DOOSAN



Aerospace Solution

**MACHINE
GREATNESS™**

Doosan's Solutions for Aerospace Industry

Challenge & Solution

Today, the aerospace industry gives manufacturing companies many challenges. You need to have a capability to make various shaped parts, deal with various materials and show various reference to verify that you are trustful partner of them. Doosan Machine Tools can offer you various solutions to meet these challenges from the experience in the aerospace field.

For Various Shape

Doosan Machine Tools has to meet demands in aerospace industry.

356 Models



Various Solution

For Various Material

Doosan Machine Tools has exceptional solution for difficult-to-material from diverse experience and R&D capability



450
R&D researchers

For Various Reference

Most leading company and their partners choose Doosan Machine Tools



500+
aerospace customers
in the world



Aerospace parts and Machines

Structure Part



BM Series



Body bone



DBC Series



Tail Hanger



DNM Series



Components



PUMA SMX Series



Main Rotor

Engine Part



PUMA VTR Series



Engine case



DHF Series



Blisk



VC630/5AX



Fan blade

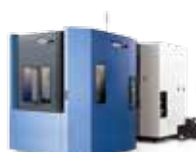
Landing gear Part



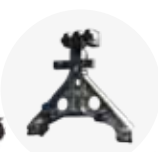
MD/VM/Mynx Series



Pylon



NHP/NHM Series



Support



PUMA V Series



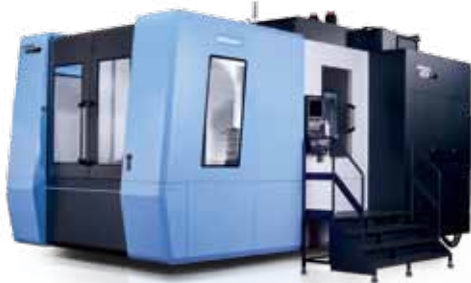
Brake disk



Various Shape

For Complex Shape

Simultaneous 5-axis



DHF Series

Simultaneous 5-axis Horizontal Machining Center

| Model | X / Y / Z travel mm (inch) | Pallet size mm (inch) | A axis |
|----------|--|----------------------------|--------|
| DHF 8000 | 1450 / 1200 / 1500 (57.1 / 47.2 / 59.1) | 800 X 800 (31.5 X 31.5) | 160° |

Max Spindle speed : 6000 r/min



VC, VCF/5AX Series

Simultaneous 5 axis Verical Machining Center

| Model | X / Y / Z travel mm (inch) | Table size mm (inch) | B axis | C axis |
|------------|---|---|--------|--------|
| VC 630/5AX | 650 / 765 / 520 (25.6 / 30.1 / 20.5) | ø630 (ø24.8) | 150° | 360° |
| VCF 850SR | 2000 / 850 / 800 (78.7 / 33.5 / 31.5) | 2500 X 870 [Ø800] (98.4 X 34.3 [Ø31.5]) | 220° | 360° |
| VCF 850LSR | 3000 / 850 / 800 (118.1 / 33.5 / 31.5) | 3500 X 870 [Ø800] (137.8 X 34.3 [Ø31.5]) | 220° | 360° |

Max Spindle speed : VC 630/5AX : 20000 r/min, VCF 850 : 12000 r/min



DNM 5AX Series

Compact Process-intensive 5-axis Machining Center

| Model | X / Y / Z travel mm (inch) | Table size mm (inch) | A axis | C axis |
|-------------|---|-------------------------|--------|--------|
| DNM 200/5AX | 400 / 435 / 500 (15.7 / 17.1 / 19.7) | ø200 (ø7.9) | 150° | 360° |
| DNM 350/5AX | 600 / 655 / 500 (23.6 / 25.8 / 19.7) | ø350 (ø13.8) | 150° | 360° |

Max Spindle speed : DNM 200/5AX: 12000 r/min, DNM 350/5AX: 20000 r/min

Multi Tasking



PUMA SMX Series

Super Multi-tasking Turning Center

| Model | Chuck (inch) | Max Turning diameter mm (inch) |
|-----------------|-----------------|-----------------------------------|
| PUMA SMX 2600S | 10 | 660 (26.0) |
| PUMA SMX 3100ST | 12 | 660 (26.0) |

* For more details, please contact Doosan

For Large Shape

Double Column



BM Series

Multi-purposed Large sized Bridge Type Machining Center

| Model | X / Y / Z travel mm (inch) | Table size mm (inch) | Work piece Weights kg (lb) |
|----------|---|-------------------------------|-------------------------------|
| BM 2035M | 3500 / 2050 / 800 (137.8 / 80.7 / 31.5) | 3500 X 1850 (137.8 X 72.8) | 10000 (22045.9) |
| BM 2740M | 4000 / 2700 / 800 (157.5 / 106.3 / 31.5) | 4000 X 2500 (157.5 X 98.4) | 15000 (33068.9) |

Max Spindle speed : 12000 r/min

| Model | X / Y / Z travel mm (inch) | Max spindle speed (r/min) | B axis | C axis |
|-----------|--|------------------------------|--------|--------|
| BM 2740U* | 4000 / 2500 / 700 (157.5 / 98.4 / 27.6) | 18000 | 220° | 360° |

* U : Universal head



DCM II Series

Five Face Double Column Machining Center

| Model | X / Y / Z / W travel mm (inch) | Width between column mm (inch) |
|---------------|--|-----------------------------------|
| DCM 2760F II | 6250 / 3200 / 700 / 1100 (246.1 / 126.0 / 27.6 / 43.3) | 2700 (106.3) |
| DCM 3280F II | 8250 / 3700 / 700 / 1100 (324.8 / 145.7 / 27.6 / 43.3) | 3200 (126.0) |
| DCM 3780F II | 8250 / 4200 / 700 / 1100 (324.8 / 165.4 / 27.6 / 43.3) | 3700 (145.7) |
| DCM 37100F II | 10250 / 4200 / 700 / 1100 (403.5 / 165.4 / 27.6 / 43.3) | 3700 (145.7) |

Max Spindle speed : 6000 r/min

Boring Mills



DBC Series

Powerful Horizontal NC Boring Machine

| Model | X / Y / Z / W travel mm (inch) | Table size mm (inch) |
|---------------|--|------------------------------|
| DBC 110 II | 2500 / 2000 / 1500 / 550 (98.4 / 78.7 / 59.1 / 21.7) | 1400 x 1800 (55.1 X 70.9) |
| DBC 130S | 2000 / 1500 / 1200 / 600 (78.7 / 59.1 / 47.2 / 23.6) | 1400 x 1600 (55.1 X 63.0) |
| DBC 130L II | 4000 / 2500 / 2000 / 700 (157.5 / 98.4 / 78.7 / 27.6) | 1600 x 1800 (63.0 x 70.9) |
| DBC 160 | 4000 / 2500 / 1600 / 800 (157.5 / 98.4 / 63.0 / 31.5) | 2000 X 2200 (78.7 X 86.6) |
| DBC 250L II * | 4000 / 2500 / 2000 / 500 (157.5 / 98.4 / 78.7 / 19.7) | 1600 x 1800 (63.0 x 70.9) |

* Quill diameter : ø250 mm (ø9.8 inch)

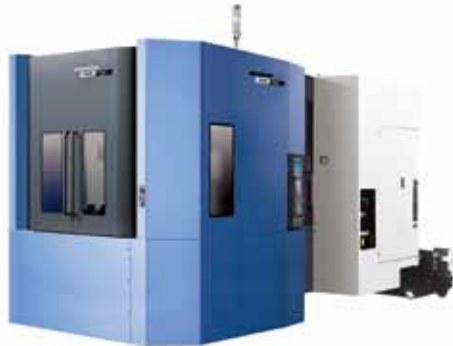
* For more details, please contact Doosan



Various Material

For Aluminum

High Speed and Productivity



NHP 4000/5000 Series

Horizontal Machining Center

| Model | Pallet size mm (inch) |
|----------|--------------------------|
| NHP 4000 | 400 x 400 (15.7 x 15.7) |
| NHP 5000 | 500 x 500 (19.7 x 19.7) |

Spindle Speed / Torque
 STD: 15000 r/min, 230 N-m (303.0 ft-lbs)
 OPT1: 15000 r/min, 303 N-m (223.6 ft-lbs)
 OPT2: 20000 r/min, 221 N-m (163.1 ft-lbs)

| Model | Pallet size mm (inch) |
|----------|--------------------------|
| NHP 5500 | 500 x 500 (19.7 x 19.7) |
| NHP 6300 | 630 x 630 (24.8 x 24.8) |
| NHP 8000 | 800 x 800 (31.5 x 31.5) |

Spindle Speed / Torque
 STD: 10000 r/min, 600 N-m (442.8 ft-lbs)
 OPT1: 6000 r/min, 809 N-m (597.0 ft-lbs)
 OPT2: 15000 r/min, 398 N-m (293.7 ft-lbs)

For Titanium, Inconel

Heavy Duty



NHM Series

Horizontal Machining Center

| Model | Pallet size mm (inch) |
|-----------|--------------------------|
| NHM 5000* | 500 x 500 (19.7 x 19.7) |
| NHM 6300 | 630 x 630 (24.8 x 24.8) |
| NHM 8000 | 800 x 800 (31.5 x 31.5) |

Spindle Speed / Torque
 STD: 6000 r/min, 1732 N-m (1278.2 ft-lbs)
 OPT1: 6000 r/min, 1991 N-m (1469.4 ft-lbs)
 OPT2: 8000 r/min, 1444 N-m (1065.7 ft-lbs)

*NHM 5000 STD: 6000 r/min,
 1034 N-m (763.1 ft-lbs)

| Model | Pallet size mm (inch) |
|---------|---------------------------|
| HM 1000 | 1000 x 1000 (39.4 x 39.4) |
| HM 1250 | 1250 x 1250 (49.2 x 49.2) |

Spindle Speed / Torque
 STD: 6000 r/min, 1989.4 N-m (1468.2 ft-lbs)
 OPT1: 6000 r/min, 3687 N-m (2721.0 ft-lbs)
 OPT2: 8000 r/min, 1410 N-m (1040.6 ft-lbs)



MD/VM Series

Vertical Machining Center

| Model | X / Y / Z travel mm (inch) |
|---------|--|
| MD 6700 | 1300 / 670 / 670 (51.2 / 26.4 / 26.4) |
| VM 750L | 1800 / 750 / 800 (70.9 / 29.5 / 31.5) |
| VM 960L | 2400 / 960 / 800 (94.5 / 37.8 / 31.5) |
| VM 1260 | 2500 / 1260 / 900 (98.4 / 49.6 / 35.4) |

Max Spindle torque : MD series : 958 N-m (707ft-lbs), VM series : 825.9 N-m (609.5ft-lbs)
 Max Spindle speed : MD series : 8000 r/min, VM series : 8000 r/min



PUMAV/VT/VTR/VTS Series

Turret or RAM type Middle-Large Vertical Turning Center

| Model | Chuck (inch) | Max Turning diameter mm (inch) |
|----------------|-------------------|-----------------------------------|
| PUMA V8300/ATC | 15 (18 / 21 / 24) | 830(32.7) |
| PUMA VT900M | 24 | 900 (35.4) |
| PUMA VT1100 | 32 | 1100 (43.3) |
| PUMA VTR1216M | 40 | 1600 (63.0) |
| PUMA VTS1620M | 63 | 2000 (78.7) |

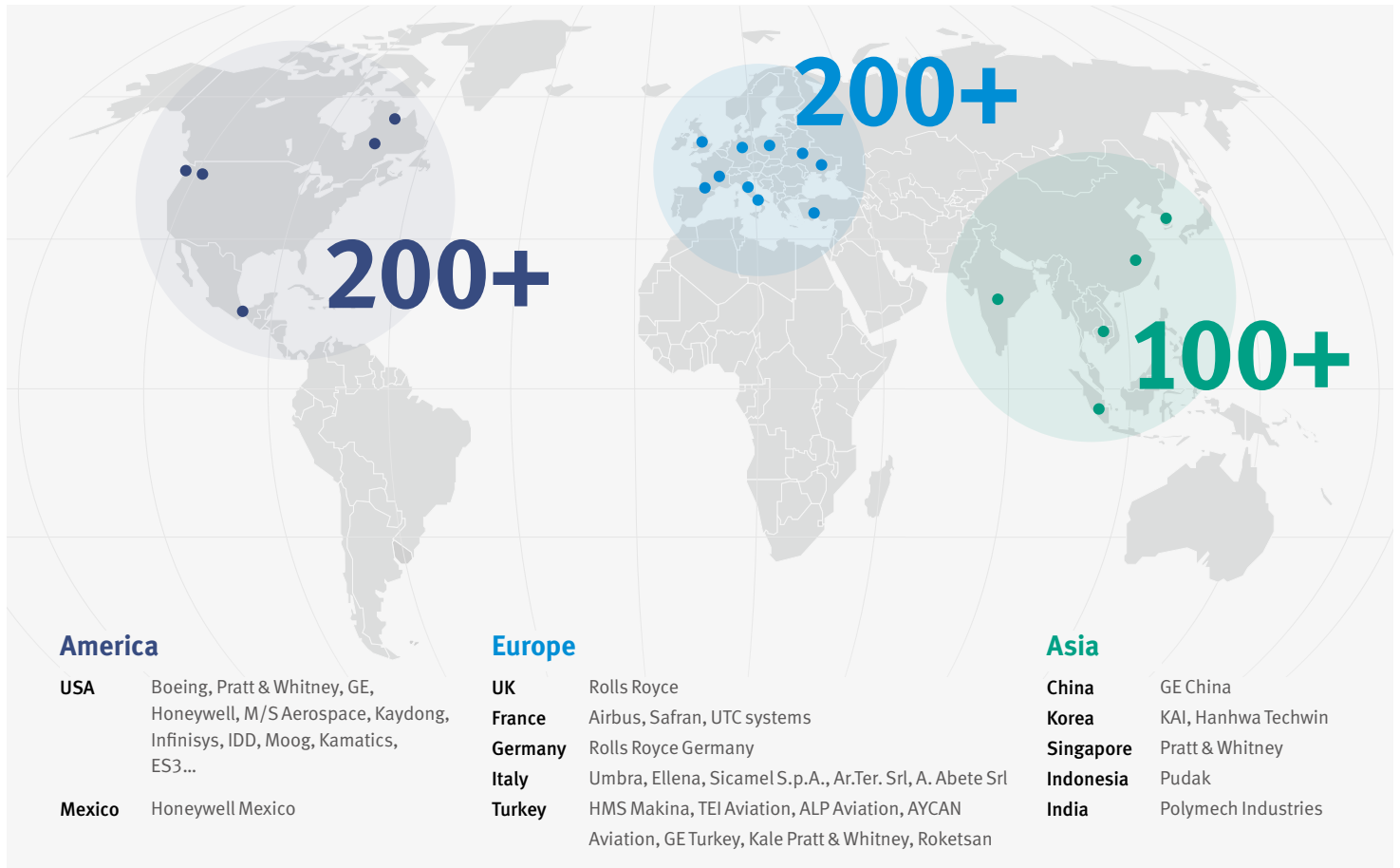
Max Spindle Motor&Torque : PUMA VTR 1216 : 70Kw, 3197 N-m (ft-lbs)

* For more details, please contact Doosan



Various Reference

Global Top tier Customer

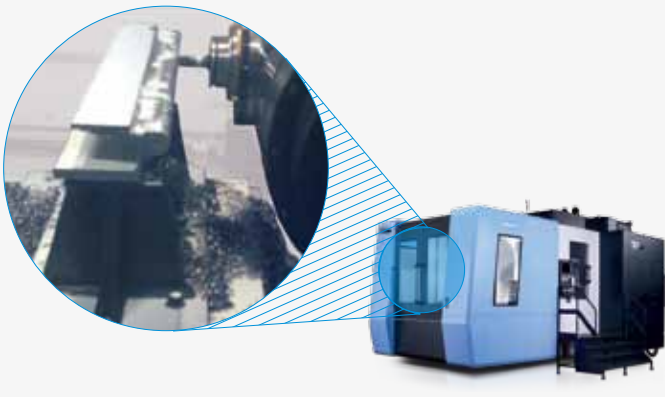


Customer Success Story

DHF 8000, born to cut titanium and inconel

A company (one of biggest aerospace companies in Korea)

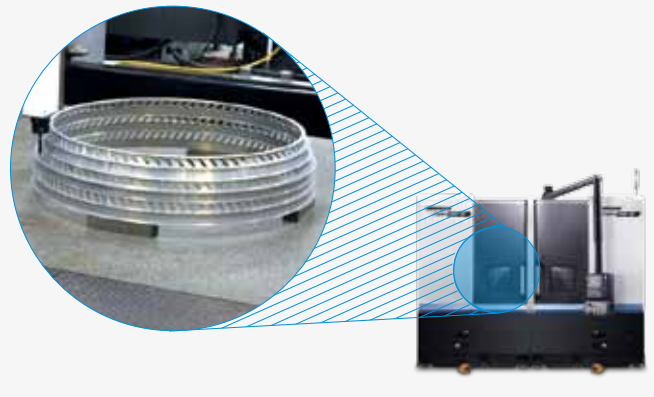
"I had used other company's 5-axis machine to make this part. Though their reputation in the manufacturing sector, sometimes cutting tools were totally broken by the machine because of low rigidity. Now I use DHF8000. This machine has enough power to cut titanium parts and high precision to meet strict regulation of OEM. There are not any issues on this machine by now."



PUMA V8300, Raising your capability

B company (a main supplier to engine manufacturers in USA)

"Reduced cycle time and the flexibility to do complex geometries is our main driving force. The rigidity is really what we matters the most for engine case turning – other suppliers do not have the quality Doosan offers. The ability to go fast on complex parts is important. Time is money and we, as a main supplier to engine tier 1 customers, are very, very aware of that. Also, high accuracy, especially after rebuilding the PUMA V 550(now PUMA V 8300) to factory specs once they re-located the machines, is important as well."



Doosan Machine Tools in the World

In an effort to provide solutions that fit each partners' unique needs, we constantly innovate our thinking, processes, and the way we do business. These optimal solutions lay the foundation for the success of our partners, which adds value to our partners' businesses.

Global Sales and Service Support Network

| Corporations | Dealer Networks | Technical Centers | Service Post | Factories |
|--------------|-----------------|-------------------|--------------|-----------|
| 4 | 164 | 51 | 198 | 3 |

Technical Center: Sales Support, Service Support, Parts Support



Supplying Parts

- Supplying parts without charges
- Supplying parts with charges
- Parts repair

Technical Support

- Supporting machining technology
- Responding to technical inquiries
- Providing technical materials

Field Services

- On-site services
- Installment and trials
- Scheduled maintenance/ Preventive maintenance
- Repairs with/without charges

Training

- Programming / Machine operation
- Maintenance
- Application engineering

Doosan Machine Tools

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* The specifications and information above-mentioned may be changed without prior notice.

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Fire Safety Precautions | There is a high risk of fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting use coolants and modifying the machine without the consent of the manufacturer. Please check the SAFETY GUIDANCE carefully before using the machine.

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