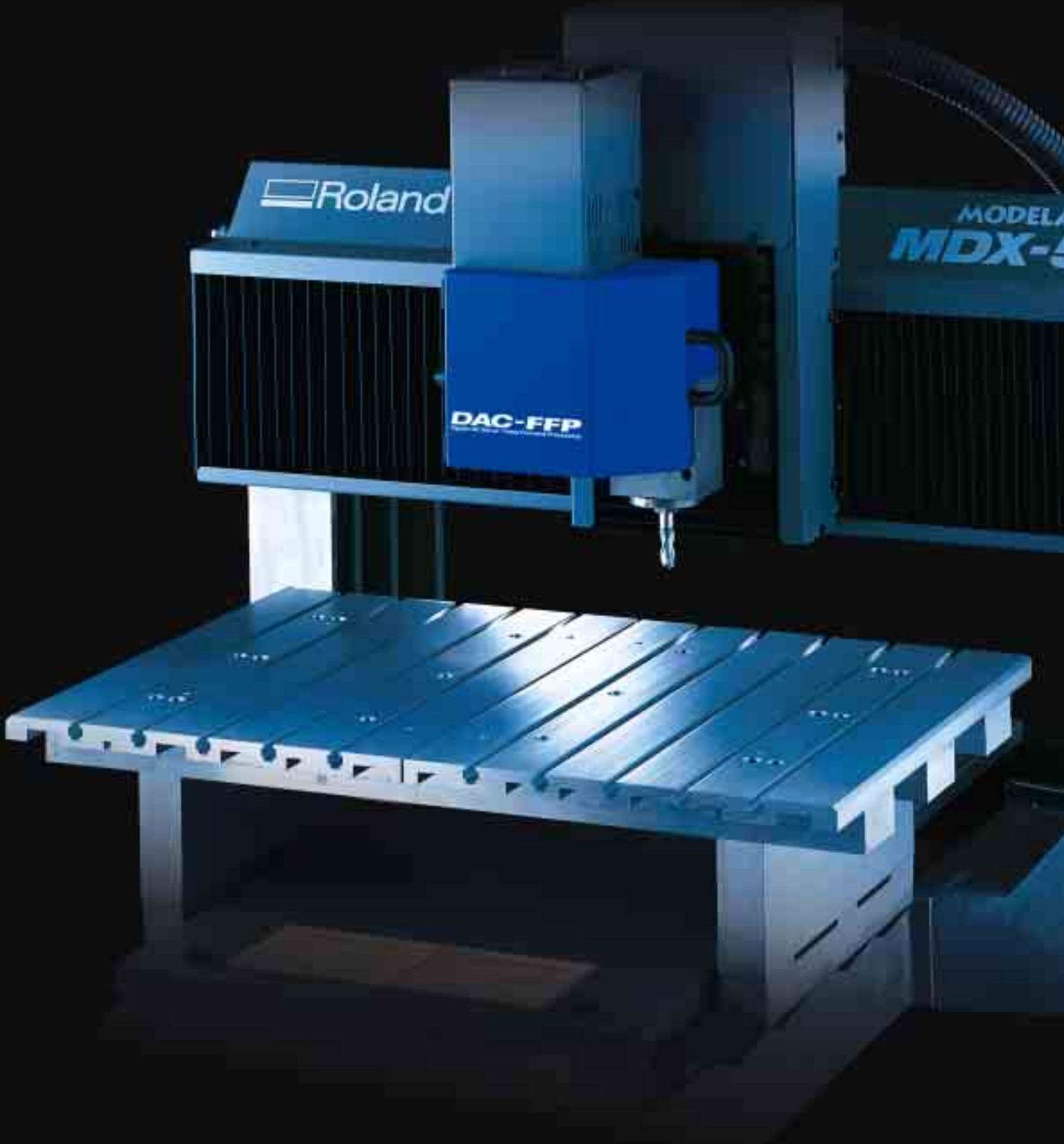**3D Milling & Engraving Machine**

MDX-500

Introducing the MDX-500

MDX-500 with optional cover

One Machine: Two Personalities

With the high-torque spindle installed, the MDX-500 is a rapid prototyping and mold-making machine for easily milling light metals like aluminum, brass and copper. Replace the high-torque spindle with a high-speed spindle and the MDX-500 engraves names, logos and images in 3D on materials such as chemical wood or acrylic for signs and awards.

Designed for both CNC milling and 3D engraving, the MDX-500 is a major addition to Roland's proven line of 3D products. It is a heavy-duty milling machine with the power to handle a wide variety of materials and the precision to perform the most delicate of operations. AC Servo motors on each of the X, Y, and Z axes make this machine a powerful and reliable performer in any machine shop, design office, or sign shop. The MDX-500 is perfect for product design, trial production, small lot production, 2D/3D engraving, 3D signs, reliefs, dies, molds, and much more. Now engineers, designers and signmakers can see their work come to life quickly with a few simple steps. The MDX-500 comes with a 3D software suite that makes it a complete solution.

MDX-500 Features

- 3D milling and engraving in one machine
- Supports industry standard GCODES
- Built-in safety features
- Versatile software suite included
- Mills wide range of materials

Milling

Choose the high-torque spindle and the MDX-500 is ideal for rapid prototyping, small lot production, or producing dies and molds.

Product design

Rapid prototyping

Small lot production

Spindle

With the high-torque spindle installed, the MDX-500 is perfect for milling metals such as aluminum, brass and copper at a rate of 3,000 to 12,000 rpm.

Software

▮ MODELA Player

With the included MODELA Player software, the MDX-500 accepts DXF or STL files created by commercial CAD/CAM packages.

▮ Virtual MODELA

Also included is Virtual MODELA which simulates designs and machining time.

MODELA Player

Virtual MODELA

Roland

Engraving

Roland

Choose the high-speed spindle and the MDX-500 is perfect for 2D and 3D engraving, 3D signs and reliefs, even when milling a curved surface. You can capture the finest detail in ABS, chemical wood, modeling wax, and acrylic or other resins.

Control board

Awards

3D signs

Spindle

With the high-speed spindle installed, the MDX-500 can engrave finely finished letters and lines. With a rotation speed between 5,000 and 20,000 rpm, the MDX-500 engraves acrylic, brass, plastic and wood.

Software

▍ **3D Engrave**

Included with the MDX-500 is a full suite of software. 3D Engrave allows you to design 3D letters and engrave them onto 3D curves.

▍ **Dr.Engrave**

Also included is Dr. Engrave, a 2D engraving software program for creating nametags and nameplates.

3D Engrave

Dr.Engrave

High Power and High Speed

The MDX-500 is the only machine in its class with AC Servo motors and Feed Forward Processing.

DAC : Digital AC Servo motors on the X-, Y- and Z-axes deliver high speed and high torque necessary for smooth and steady milling. The result is a motor life cycle of 20,000 hours and greatly reduced heat. The MDX-500's spindle motor is a high power, DC brushless motor which further eliminates motor maintenance concerns.

FFP : Feed Forward Processing is a predictive technology that anticipates tool path. The result is higher torque, greater accuracy, faster speed and increased energy efficiency.

A Total Solution

The MDX-500 includes all of the following powerful, easy-to-use software programs:

MODELA Player is a CAM software application that allows uniform 3D scaling, selection of milling direction and automatic generation and display of the tool path. It accepts DXF and STL files exported from commercially available CAD/CAM software.

Virtual MODELA enables simulation of finished shapes and estimates production time. To reduce time and materials, it also simulates a suitable milling/engraving depth before the actual process has begun.

MODELA 3D TEXT turns any Windows True Type font into a 3D relief.

MODELA 3D DESIGN makes it possible to intuitively create 3D shapes, called "objects." An object is created by taking a predefined shape, such as a cylinder or sphere and using control rods, called "reference lines," to modify the basic shape into the final design. The software also allows adding color to the created shapes.

3D Engrave adds thickness to a flat (2D) graphic to create a 3D form which you can then engrave. You can also import a PIX file from a Roland 3D scanner for creating 3D designs.

Dr. Engrave features an automatic layout function that allows you to import your CSV formatted database for faster engraving output. Dr. Engrave quickly and easily imports your data and lays out your job optimally to fit the material.

Enhanced Connectivity

The MDX-500 supports industry standard GCODES which provide connectivity with a wide variety of commercial 3D, CAD/CAM software.

Safety Features

The MDX-500 incorporates a number of safety features to ensure carefree operation whether in a machine shop or office location.

- A large, conveniently located emergency stop switch enables you to shut down the machine instantly at the push of a button.
- The spindle cover door includes a safety switch that prevents the machine's operation when open.
- An optional safety cover is available which makes the cutting mechanism inaccessible during operation.
- The cover also cuts down noise and simultaneously prevents swarf and dust produced during machining from entering the surrounding environment.

MDX-500 SPECIFICATIONS

	MDX-500
T-slot (XY) table size	21-5/8" x 14-1/8" (550 mm x 360 mm)
Max.cutting area	19-5/8" (X) x 12-15/16" (Y) x 4-1/8" (Z) (500 mm (X) x 330 mm (Y) x 105 mm (Z))
XYZ motor	AC servo motor
Feed rate	X,Y,Z-axis:Max. 3-3/8"/sec. (85 mm/sec.)
Acceleration	0.3G, 0.1G, 0.05G
Software resolution*	[When RML-1 has been selected] 0.01 mm/step (0.00039") [When NC codes has been selected] 0.001 mm/step (0.000039")
Mechanical resolution	0.001 mm/step
Spindle motor	DC brushless motor Max.400 W (with high-torque spindle)
Revolution speed	[High torque spindle] 3000 ─12000 rpm [High speed spindle] 5000 - 20000 rpm (Variable manually or by the command set)
Tool chuck	Collet and Cutter holder system
Acceptable shank diameter	3 mm - 10 mm
Positioning accuracy	±0.00394"(0.1 mm) / 11-13/16"(300mm) (Under no-load conditions)
Repeat accuracy	±0.00197" (0.05 mm) (Under no-load conditions)
Origin-point reproducibility (when the power is switched on/off)	±0.00315" (0.08 mm)
Possible table load weight	[0.3G] 26.5 lb.(12 kg) or less [0.05G] 33.1lb.(15 kg) or less
Interface	Parallel (in compliance with the specification of Centronics) Serial (under RS-232C standard)
Buffer size	2 MB Replot buffer : [RML-1] 2 Mbyte [NCcodes] Max.2 Mbyte (end-user setting)
Instruction system	RML-1 (mode1,mode2) or NCcodes supported by the MDX-500 (Selectable through display operation)
Power consumption	6.5 A / 117 V 3.5 A / 220 - 230 V 3.5 A / 240 V
Dimensions	29-1/8"(W) x 33-1/16"(D) x 26-3/8"(H) [740 mm (W) x 840 mm (D) x 670 mm (H)]
Weight	202.8 lb. (92 kg)
Operation temperature	41-104 F° (5 - 40 C°)
Operation humidity	35 ─ 80 % (no condensation)
Accessories	T-slot clamps : 4, Spanner : 1, Z0 position sensor : 1, Power cord : 1, Key connector : 1, Belt for high torque spindle: 1, USER'S MANUAL : 3 (1 Setup & Maintenance, 2 Cutting Using the Included Software, 3 Cutting Using NC codes), NCcode PROGRAMMER'S MANUAL : 1, Roland Software Package CD-ROM : 1

*The measurement unit for positioning coordinates is 0.01 mm/step(0.00039").

■ MDX-500 PACKAGES

MDX-500E Engraving Machine Package

Name	Description
MDX-500	3D/Milling/Engraving Machine
ZS-500SH	High speed Engraving Spindle
ZAD-500S	Vacuum Adaptor for ZS-500-SH
ZA-500	Table Spacer

MDX-500M Milling Machine Package

Name	Description
MDX-500	3D/Milling/Engraving Machine
ZS-500T	High speed Milling Spindle
ZAD-500T	Vacuum Adaptor for ZS-500-T
ZA-500	Table Spacer

■ OPTIONS

Milling Options

Name	Model No.	Description
High Torque Spindle Unit	ZS-500T	Dia. 6 mm collet included. (Life cycle : every 5,000 hours)
Collet	ZC-5030	Dia. 3 mm, 1 pce.
	ZC-5032	Dia. 3.175 mm (1/8"), 1 pce.
	ZC-5040	Dia. 4 mm, 1 pce.
	ZC-5050	Dia. 5 mm, 1 pce.
	ZC-5060	Dia. 6 mm, 1 pce.
	ZC-5063	Dia. 6.35 mm (1/4"), 1 pce.
	ZC-5080	Dia. 8 mm, 1 pce.
	ZC-5100	Dia. 10 mm, 1 pce.
Collet Set	ZC-500T	Dia. 3, 3.175 (1/8"), 4, 5, 6, 6.35 (1/4"), 8, 10 mm,1 pce. each
Collet & Cutter Holder Set	ZC-500TE	Dia. 6.35 mm (1/4"), 4.36 mm (11/64"), 1 pce. each
Vacuum Adapter	ZAD-500T	For ZS-500T

Engraving Options

Name	Model No.	Description
High Speed Spindle Unit	ZS-500SH	Dia. 4.36 mm collet and cutter holder included. (Life cycle : every 1,500 hours)
High Speed Spindle Unit (for replacement)	ZS-500S	For replacement of ZS-500SH (Life cycle : every 1,500 hours)
Collet	ZC-23-6.35	Dia. 6.35 mm (1/4"), 1 pce.
Collet Set	ZC-23	Dia. 3,4,5,6 mm (1/8"), 1 pce.each
Vacuum Adapter	ZAD-500S	For ZS-500SH

Milling and Engraving Options

Name	Model No.	Description
Vacuum Table	ZV-500A	Mountable area : 500 mm (X) x 330 mm (Y) (19-5/8" (X) x 12-15/16" (Y))
Center Vise	ZV-500C	Chuck for Engraving plates : 152 mm (X) x 135 mm (Y) (5-15/16" (X) x 5-5/16" (Y)) Chuck for Cylinders : 90 mm (X) x 130 mm (Y) (3-1/2" (X) x 5-1/16" (Y))
Table Spacer	ZA-500	Materials that need the Table Spacer : less than 50 mm (1-15/16") The height of the Table Spacer : 80 mm (3-1/8")
Safety Cover	ZBX-500	900 mm (W) x 790 mm (D) x 810 mm (D) / 52 kg (35-7/16" (W) x 31-1/8" (D) x 31-15/16" (H) / 114.6 lb.)

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RDGA-MDX-500