

# MODELA PRO II MDX-540/540S

| Specifications   | MDX-540S  | MDX-540   |
|--|---|---|
| Cuttable material  | Resins such as chemical wood and modeling wax, Light metals   |   |
| X, Y, and Z operation strokes                              | 500 (X) x 400 (Y) x 155 (Z) mm (19.6 (X) x 15.7 (Y) x 6.1 (Z) in.)  |   |
| Distance from spindle nose to table                        | Maximum 254 mm (10 in.)   |   |
| Table size   | 550 (W) x 420 (D) mm (21.7 (W) x 16.5 (D) in.)  |   |
| Loadable workpiece weight                                  | At acceleration of 0.2 G: maximum 12 kg (26 lb.), 0.1 G: 20 kg (44 lb.), 0.05 G: 20 kg (44 lb.)   |   |
| XYZ-axis drive system                                      | AC servo motor, 80 W  | AC servo motor, 60 W  |
| Operating speed  | Maximum 7.5 m/min (295 in./min)   |   |
| Acceleration   | 0.2 G, 0.1 G, 0.05 G  |   |
| Software resolution  | RML-1 mode: 0.01 mm (0.0004 in.), NC-code mode: 0.001 mm (0.00004 in.)  |   |
| Mechanical resolution                                      | 0.001 mm (0.00004 in.)  |   |
| Positioning accuracy                                       | ±0.1 mm/300 mm (±0.004 in./12 in.), under no-load conditions  |   |
| Repeat accuracy  | ±0.02 mm (±0.0008 in.), under no-load conditions  | ±0.05 mm (±0.002 in.), under no-load conditions                     |
| Origin reproducibility (when the power is switched on/off) | ±0.02 mm (±0.0008 in.)  | ±0.05 mm (±0.002 in.)   |
| Spindle motor  | Brushless DC motor, maximum 400 W   |   |
| Spindle speed  | 400 to 12,000 rpm; 400 to 3,000 rpm for positioning and centering   |   |
| Cutting tool chuck   | Collet method, maximum tool diameter: 10 mm (0.4 in.)   |   |
| Control command sets                                       | RML-1 and NC codes  |   |
| Interface  | USB (compliant with Universal Serial Bus Specification Revision 1.1)  |   |
| Power supply   | Voltage and frequency: AC 100 to 120 V/220 to 240 V ±10%, 50/60 Hz; Required power capacity: 7 A (100 to 120 V)/4 A (220 to 240 V)  |   |
| Power consumption  | Approx. 700 W   |   |
| Acoustic noise level                                       | During operation (when not cutting): 65 dB (A) or less, During standby: 40 dB (A) or less   |   |
| Dimensions   | 765 (W) x 955 (D) x 858 (H) mm (30.1 (W) x 37.6 (D) x 33.8 (H) in.)   | 745 (W) x 955 (D) x 858 (H) mm (29.3 (W) x 37.6 (D) x 33.8 (H) in.) |
| Weight   | 102 kg (225 lb.)  |   |
| Operating temperature                                      | 5 to 40°C (41 to 104°F)   |   |
| Operating humidity   | 35 to 80% (no condensation)   |   |
| Included items   | Handy panel, Power cord, Tool sensor, Sensor cable, Nut, Nut wrench, Wrench(24mm), Hexagonal wrench, Roland Software CD-ROM, SRP Player CD-ROM, User's Manual, Roland Software Guide, SRP Player Installation and Setup Guide, NC Code Reference Manual |   |

| Automatic Tool Changer (ZAT-540) Specifications |   |
|---|---|
| Number of tools housed                          | 4   |
| Maximum tool length                             | 110 mm (4.3 in.)  |
| Maximum tool diameter                           | 10 mm (0.4 in.)   |
| Maximum tool weight                             | 350 g (0.77 lb.)  |
| Tool-holder format                              | Taper shank: JBS4002 15T 7/24 taper. Pull stud: JBS4002 15P (45°) special   |
| Tool-selection method                           | Direct-changing type, fixed-address specification   |
| Compatible compressed air                       | 0.7 to 1.0 MPa, 50 L/min or higher  |
| Spindle speed                                   | 400 to 12,000 rpm; 400 to 3,000 rpm for positioning and centering   |
| Weight  | 6.8 kg (15 lb.) (total weight including spindle, magazine, control box, etc.)   |
| Included items                                  | Control box, Magazine unit, ATC spindle, Air cylinder, Base plate, Z-origin sensor, Spacer, Cap screws, Plastic screws, Hexagonal wrenches, Retaining bands, Cable retainers, User's Manual |

\*When this unit is installed, the X-axis operation stroke of the MDX-540S and MDX-540 are as follows: \*Standard table, no rotary axis unit: 400 mm (15.7 in.)  
 \*Standard table, rotary axis unit present: 270 mm (10.6 in.)/325 mm (12.7 in.) (with expanded X-axis operation stroke) \*T-slot table, no rotary axis unit: 400 mm (15.7 in.)  
 \*T-slot table, rotary axis unit present: 203 mm (7.9 in.)/258 mm (10.1 in.) (with expanded X-axis operation stroke)

| Rotary axis unit (ZCL-540) Specifications       |  |
|---|--|
| Supported workpiece                             | Resins (metal not supported)   |
| Maximum angle of rotation                       | ±2,147,483.647° (±5,965.23 turns)  |
| Loadable workpiece size **                      | Items within the range of a 90 mm (3.5 in.) in radius from the center of the rotary axis by 371 mm (14.6 in.) long. The actual cuttable range is smaller than this.  |
| Workpiece thickness holdable by workpiece chuck | 15 to 100 mm (0.6 to 3.9 in.)  |
| Loadable workpiece weight                       | Maximum 5 kg (11 lb.), maximum moment of inertia: 0.02 kgm <sup>2</sup><br>Center drill used: Maximum 1.5 kg (3.3 lb.)   |
| Control method                                  | Simultaneous 4-axis control  |
| Feed rate                                       | Maximum 20 rpm   |
| Software resolution                             | RML-1 mode: 0.1°, NC-code mode: 0.01°  |
| Mechanical resolution                           | 0.002°   |
| Static precision                                | Backlash: 0.05°, Eccentricity: 0.3 mm (0.012 in.) or less  |
| Dimensions                                      | 720 (W) x 100 (D) x 195 (H) mm (28.3 (W) x 3.9 (D) x 7.7 (H) in.)  |
| Weight  | 6.5 kg (14.5 lb.) (total weight including drive unit, tailstock, base plates, etc.)  |
| Included items                                  | Drive unit, Tailstock, Base plates, Live center, Center drill, Y-origin sensor, Z-origin sensor, Spacer, Origin-detection pin, Cap screws, Plastic screws, T-slot nuts, Hexagonal wrenches, Retaining bands, User's Manual |

\*\* When the T-slot table is installed, the length is 297 mm (11.7 in.)  
 \* When this unit is installed, the X-axis operation stroke of the MDX-540S and MDX-540 are as follows: \*Standard table, no ATC unit: 285 mm (11.2 in.)/325 mm (12.7 in.) (with expanded X-axis operation stroke) \*Standard table, ATC unit present: 270 mm (10.6 in.)/325 mm (12.7 in.) (with expanded X-axis operation stroke) \*T-slot table, no ATC unit: 218 mm (8.5 in.)/258 mm (10.1 in.) (with expanded X-axis operation stroke) \*T-slot table, ATC unit present: 203 mm (7.9 in.)/258 mm (10.1 in.) (with expanded X-axis operation stroke)

| System requirements: Roland SRP Player |   |
|--|---|
| OS                                     | Windows® 8.1/10 (32/64-bit)<br>Windows® 7 Ultimate / Professional (32/64 bit) |
| CPU                                    | Pentium® 4 recommended  |
| RAM                                    | 1GB or more recommended (2GB or more recommended for Windows® 8 or later)     |
| Free hard-disk space                   | 20MB or more recommended  |

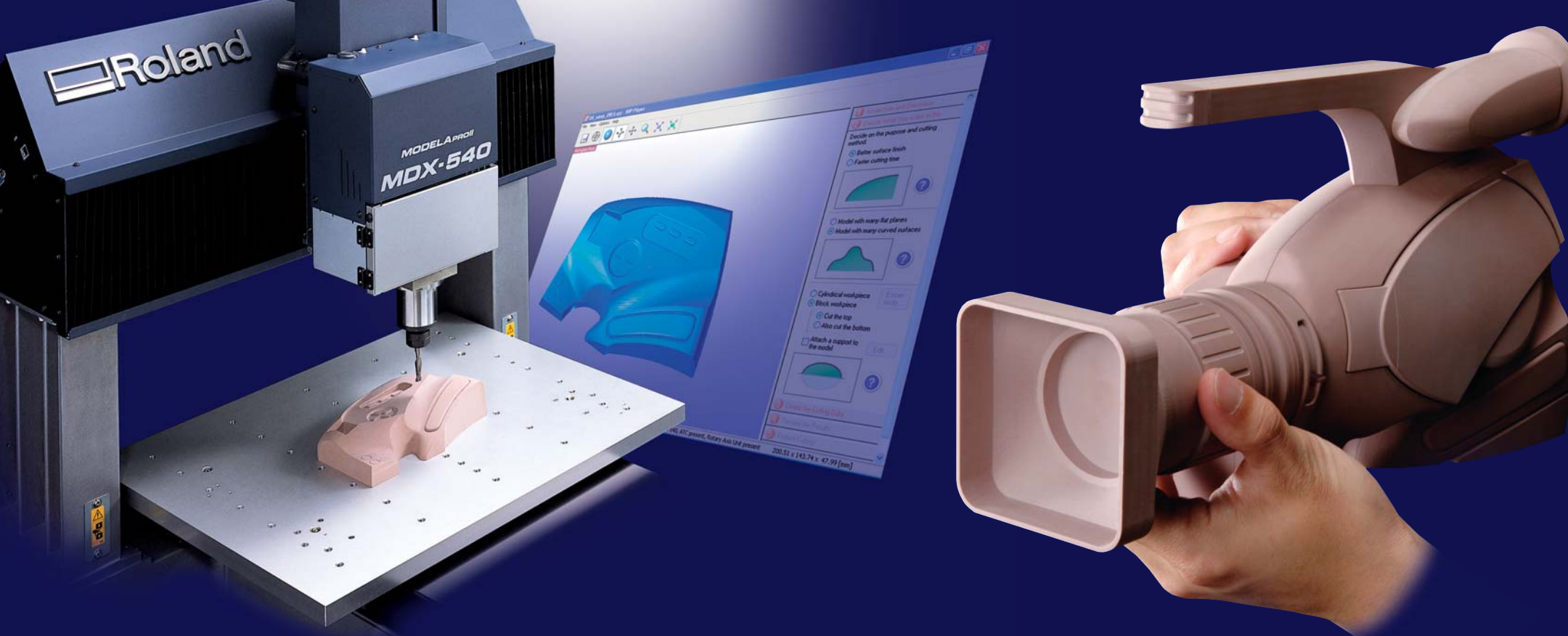
| Options                     | Model    | Description   |
|-----------------------------|----------|---|
| High Precision Spindle Unit | ZS-540TY | For replacement   |
| Automatic Tool Changer      | ZAT-540  | Refer to the specifications   |
| Rotary Axis Unit            | ZCL-540  | Refer to the specifications   |
| T-Slot Table                | ZTT-540  | 550 (W) x 420 (D) x 35 (H) mm, 9 kg [21.7 (W) x 16.5 (D) x 1.4 (H) in., 20 lb.]     |
| Safety Cover                | ZBX-540E | 1042 (W) x 1030 (D) x 978 (H) mm, 68 kg [41 (W) x 40.6 (D) x 38.5 (H) in., 150 lb.] |

## The DGSHAPE Brand Promise

DGSHAPE is the brand name of the 3D business unit spun off from Roland DG with the core mission: "make innovation, make life better." DGSHAPE delivers digital technologies that bring ideas to life, revolutionize business processes, and shape a better future. Our goal is to fuse human creativity with digital workflows to provide exceptional value across multiple endeavors, from individual craftsmanship to manufacturing, healthcare and beyond.

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# Create Precision Models and Prototypes Quickly and Easily In Your Office Environment Using Roland SRP Technology

## MODELA PRO II MDX-540 Features:

- Precision benchtop milling machine produces high-quality parts and models using Roland DG's Subtractive Rapid Prototyping (SRP) technology
- Advanced S models utilizing higher accuracy ballscrews available for even greater precision
- Simple on-screen menus and operation panel make setup and production easier than ever
- Cutting area of 500 (X) x 400 (Y) x 155 (Z) mm (19.6 (X) x 15.7 (Y) x 6.1 (Z) in.) accommodates larger prototypes
- Advanced software optimizes your 3D CAD data for flawless molds and parts
- In-house milling shortens the design/development cycle and lowers product development costs



The MDX-540 mills even the most intricate details.

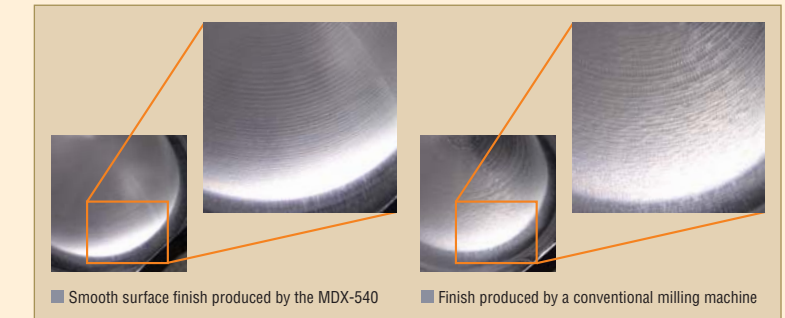
Generate smooth curves and surfaces without handwork.



## Unmatched Quality and Performance

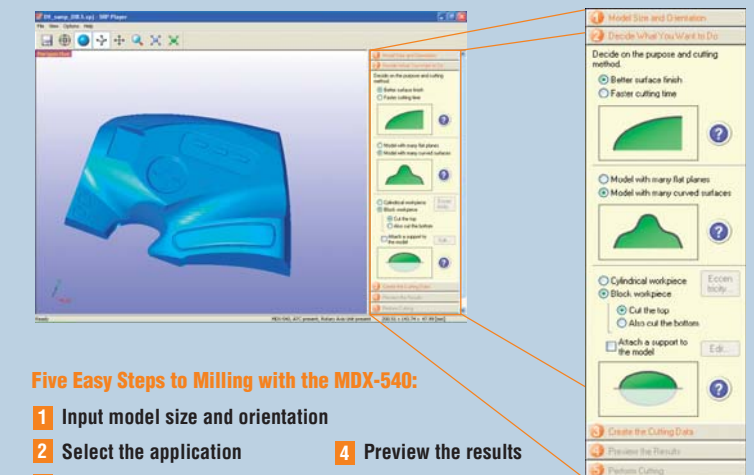
The new MDX-540 features numerous upgrades including a more rugged body design, faster arithmetic processing, improved smoothing functions, a streamlined worktable and more. Nearly every part and feature have been upgraded for superior all-around performance. Curved and rounded surfaces are smoother than ever for flawless finishes every time. The MDX-540 features a combination of Digital AC Servo motors and Feed Forward Processing (DAC-FFP) commonly used in larger, more expensive NC machines. This advanced technology ensures optimum torque and speed throughout the production process for powerful, high-speed milling.

\*Milling quality may vary depending on software resolution, materials used and other criteria.



## SRP Player Advanced, Easy-To-Use Software

The introduction of Roland DG's MODELA PRO II and SRP Player software allow even novices to operate the MDX-540 for professional results. Every MDX-540 comes equipped with Roland SRP Player, which was developed exclusively for the MDX-540. Simply enter the required information into five setting groups and SRP Player does the rest, automatically determining the best tools and other details required to generate the optimum tool path. To prevent costly and time-consuming errors, SRP Player allows you to preview your job on-screen to confirm the cutting path for quality results every time.



### Five Easy Steps to Milling with the MDX-540:

- 1 Input model size and orientation
- 2 Select the application
- 3 Determine the cutting data
- 4 Preview the results
- 5 Produce the model

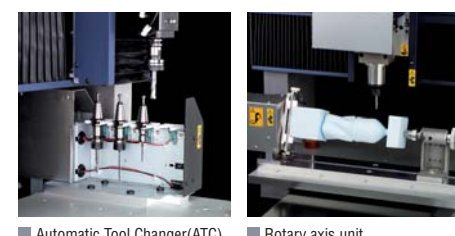
## User-Friendly Operation

Designed from the ground up for ease of use, the MDX-540 features a handy control panel that simplifies the setup and production processes by strategically grouping the most commonly used settings. Using a jog-dial, you can quickly and easily reposition tools and adjust spindle speeds without interrupting the milling process. For other settings, simply access the MDX-540's on-screen operation panel featuring clear, easy-to-navigate icons.



## Powerful Options for High Production Demands

Four powerful options let you build on your MDX-540 for even greater performance and unattended operation. These include an Automatic Tool Changer (ATC), rotary axis unit, T-slot table and safety cover. The optional ATC holds up to four tools while the rotary axis unit facilitates 360 degree and multiple-surface cuts.



## Able to Mill a Wide Variety of Materials

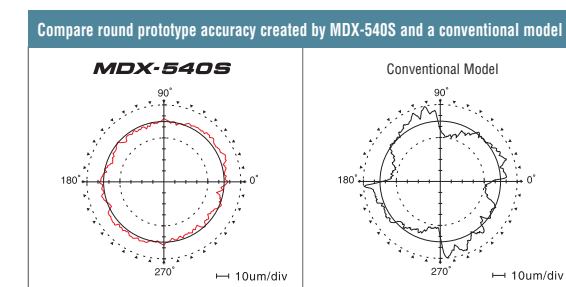
With the MDX-540, you can produce molds and parts for small lot production quickly and inexpensively from a wide range of materials, including chemical woods, resin, ABS and non-ferrous metals such as aluminum, brass and copper.\*

\* The MDX-540 cannot mill light metals with the rotary axis unit.



## "S" Models for Precision Applications

S models offer high quality milling for snap-fit prototypes, smooth surface finishes and other advanced applications. S models feature precision ballscrews that achieve repeat accuracy up to  $\pm 0.02$  mm ( $\pm 0.0008$  in.) and minimize cutting marks.



Comparison results were obtained by milling acrylic cylinders with 40mm radius and 30mm height using both an MDX-540S and a conventional mill.

# MODELA PRO II



Photo: MDX-540 and safety cover

Standard SRP Model  
**MDX-540**  
Precision SRP Model  
**MDX-540S**

