

Southwestern Industries, Inc.

# DPM RX3 Bed Mill Specifications with the ProtoTRAK RMX Control

## Machine Specifications

- Table Size – 50" x 10"
- T-Slots (number x width x pitch) - 3 x .63" x 2.48"
- Travel (X, Y, Z axis) – 31.5" x 17" x 25.5"
  - **Note** – if way covers are removed you can ~2" of additional travel at top
- Quill Diameter - 3 15/16"
- Maximum Quill Travel - 5"
- Spindle Taper – 40 Taper
- Spindle Speed Range - 40-600, 300-5000
- Spindle Center to Column Face – 20.5"
- Spindle Motor Power – 5 HP
- Power requirements – 200 - 240V; 3P; 35A
- Maximum Weight of Workpiece - 1320 lbs.
- Height of table from bottom of bed – 36.75"
- Max spindle nose to table – 25.81"
- Min height – 87.5"
- Max height – 96.75"
- Width of machine including table – 73.5"
- Length with electric box door closed – 76.63"
- Overall width incl full table traverse – 102.25"
- Overall length with electrical door open – 96.63"
- Footprint of Machine - 24" x 43.31"
- Weight net / shipping lbs. - 4100 / 4400
- Rapid traverse X, Y, Z - 250 IPM on X, Y and Z with Mechanical Handwheels; 400 IPM on X and Y, 250 IPM on Z on EHW machines
- Drilling max capacity - 1"
- Milling max capacity - 5 inch<sup>3</sup>/min
- Tapping max capacity – 1"-8
- Auto Lube Pump
- Precision ground ballscrews in the table, saddle and ram
- Chrome hardened and ground quill
- Meehanite castings
- Slide ways are Turcite coated
- Wide way surfaces are hardened and ground
- Programmable spindle control



*Machine shown with additional options*

## Machine Options

- Glass Scales on table and saddle
- Auxiliary Functions

- Electronic Handwheels
- Remote Stop/Go switch
- Power Drawbar
- Memory Option – USB
- Worklamp
- Chip Pan / Splash Shield
- Coolant Pump
- Spray Coolant
- Table Guard Enclosure
- Limit Switches
- Vise

## **ProtoTRAK RMX System Specifications**

**(O) indicates optional feature**

### **Pendant control hardware**

- 2 or 3-axis CNC, 3-axis DRO
- Real handwheels for manual operation
- 15.6" Touchscreen LCD
- Intel® 2.0 GHz processor
- 4 GB Ram
- At least 32 GB of mSATA SSD
- 5 USB connectors
- 2 Ethernet Ports (1 for user and 1 for motion control)
- Override of program Feedrate
- Override of spindle speed
- LED status lights built into run panel
- E-stop
- Spindle Control (FWD, REV, OFF)
- Feed STOP and GO
- Fine vs Course EHW resolution control
- Accessory button to control coolant or air and AUTO mode in RUN mode
- Power Reset Button to energize the servos
- Headphone jack for video sound (headphone supplied)

### **Computer Module Control Hardware**

- 3 axis motor control – X, Y and Z axis
- 10 inputs
- 10 outputs
- Mill Indexer interface

### **Software Features – general operation**

- Clear, uncluttered screen display
- Fly out windows for instant access to features and information
- EPA (Enhanced ProtoTRAK Assistance) for system help
- Programming Defaults to simplify part programming
- Event Options to modify control behavior
- QWERTY touchscreen keyboard
- Calculator places data in program for you

- Prompted data inputs
- English language – no codes
- Soft keys - change within context
- Windows® operating system
- Selectable two or three-axis CNC
- Color graphics with adjustable views
- Gestures for pan, zoom, rotate
- Inch/mm selectable
- Convenient modes of operation
- Networking

### **Info Soft Keys**

- Status shows current state of the ProtoTRAK RMX
- Tool Table for instant access to tool set ups
- EPA (Enhanced ProtoTRAK Assistance) help information for ProtoTRAK RMX operation
- Math Help to easily calculate missing print data
- Options appear when available while programming
- Defaults to customize the programming style
- Key board to enter alphanumeric and special symbols
- Calculator for simple calculations
- Warnings appear when you must resolve a condition

### **Status Features**

- IN/MM selection
- 2 to 3-axis CNC
- Check current program name
- Check software and firmware versions
- Purchased Options status
- Turn on/off Control Options: Advanced Features, Networking, Electronic Handwheels and Auxiliary Functions

### **Tool Table Features**

- Tool Library for using tools in multiple programs and DRO (O)
- Program Specific Library to manage tools in the current program
- Convenient tool length reference to Base tool
- Tool type reference
- Tool material reference
- # Flutes reference
- Tool Diameter set
- Diameter modifier set
- Z modifier set
- Ram Jog and manual quill enabled for quick tool height reference

### **EPA (Enhanced ProtoTRAK Assistance) Features**

- Context sensitive topics for ProtoTRAK RMX control operations
- Keyword search
- Brief explanations of specific operations

- Screen shots for clarity
- Videos for more advanced explanations
- Updated with software release versions

### **Math Help Features**

- 22 separate intuitive routines
- Calculate missing print data using data provided
- Screen Graphics to guide data inputs
- Feed – IPM / MMPM conversions
- Speed – RPM / SFPM conversions
- Cartesian / Polar conversions
- Right triangle calculations
- Load Beg – loads solution as X and Y Begin
- Load End – Loads solution as X and Y End
- Load Center – Loads solution as X and Y Center

### **Programming Defaults**

- Instant access to all defaults via fly out window
- Feedrate per Minute or per Tooth
- Spindle speed RPM or Surface Speed
- Peck type for drill events
- Number of Passes for Profile, Pocket and Island events
- Finish Cut for Profile, Pocket and Island Events
- Step over percentages
- Face mill tool path
- Z entry: plunge, helical or zig zag (ramp)
- Adaptive Tool Path selections (O)
- Numerous default parameters for pocket and island events
- Speed and feed overrides for subroutine and copy events
- Forward or Backward Mirror Direction
- Software X, Y and Z limits
- X and Y Home Positions
- Inch or MM
- 2 or 3 axis CNC at start up
- Maximum rapid feedrates
- Accessory On hardkey to control Coolant or Mist
- Cut Tolerances
- Tool Compensation

### **Keyboard Features**

- QWERTY style
- Touchscreen operation
- Numbers
- Special characters: \$ @ # ? % ( ) < = \* + -

### **DRO Mode Features** for Manual Machining

- Incremental and Absolute dimensions
- Virtual handwheels to control Override of Axis Feed and Spindle RPM

- Jog at rapid with override
- Powerfeed X, Y or Z
- Teach-in of manual moves
- Programmable Go To dimensions (O)
- Servo return to 0 absolute
- Tool offsets from Tool Library
- Line Center calculation
- Circle Center calculation

### **Program Mode Features**

- Circular interpolation
- Linear interpolation
- Advanced Adaptive Tool Path (O)
- Geometry programming
- Toolpath programming
- Auto Geometry Engine – Built-in CAD to fill in missing print data for you while you program
- Alphanumeric program names
- Automatic Scaling of print data
- Nesting
- Multiple Fixtures (O)
- Incremental and absolute dimensions may even be mixed on a single point
- Automatic diameter cutter comp
- Look –graphics at all times
- List step – graphics with programmed events displayed
- Program data editing
- Part graphics update while programming
- Selectable display between size of drawing and number of events
- List Step graphics relate Events to Drawing
- Editing of programmed data
- Swipe to move through programmed Events
- Auxiliary functions: Coolant, Air/Mist, Pulse Indexer, Programmable Output signal (O)

### **Selectable within applicable Events:**

- Z Safety plane
- Spindle Speed RPM or SFPM
- Feed rate per minute or tooth
- Event Comments on/off (O)
- Bottom Finish Cut
- Cutting method One Way or Zig-Zag
- Step-over %
- Machining Angle in XY (0 – 90 deg.)
- Drill Peck: Variable, Fixed, Chip Break
- Dwell Request
- Multiple Holes
- Z Entry Plunge, Zig-Zag or Helical
- Tool path Pattern: Offset, Parallel

- Tool path Pattern: Adaptive (O)
- Order of Passes: Depth or Region
- Insert Clipboard data
- Cut Tolerances

### **Canned Cycles (Event types):**

- Position
- Drill / Bore / Tap
- Bolt Hole Drill / Bore / Tap
- Mill
- Arc
- Circular profile
- Rectangular profile
- Irregular Profile (with Auto Geometry Engine)
- Face Mill
- Circle pocket
- Rectangular pocket
- Irregular Pocket (with Auto Geometry Engine)
- Islands including Pocket and Island shapes
- Subroutine Repeat
- Subroutine Mirror
- Subroutine Rotation
- Copy (O)
- Copy Mirror (O)
- Copy Rotate (O)
- Copy Convert Drill to Tap (O)
- Helix
- Engrave (O)
- Engrave subroutines and copy (O)
- Thread Mill (O)
- Program pause
- Aux Event

### **Edit Mode Features**

- Group Delete of Events
- Search Edit to make changes to multiple events
- Erase current program
- G-Code Editor (O)
- Clipboard to copy events for insertion elsewhere

### **Set-up Mode Features**

- Toolpath graphics with selectable views
- Estimated Run Time clock
- Step forward and backward through of Toolpath graphics
- XYZ tool position locations displayed in Step through mode
- Verify Make Part – solid model graphics of programmed toolpath (O)
- Verify View Part – solid model of finished part
- Fixture offsets – convenient table for managing fixtures with DRO and Jog

- Ref Position – convenient table for setting Retract, Homes and software limits
- Service Codes for infrequent machine and control settings

### **Run Mode Features**

- 3D CAM file run
- 3D G code file run
- Override of Programmed Axis Feed and Spindle Speed from 0 – 150%
- Virtual handwheels to control Override
- Tap override of Axis Feed and Spindle RPM
- Real time conversion of programmed RPM / SFM
- Real time conversion of programmed IPM / IPT
- Status display:
  - Event #
  - Fixture#
  - Control system Ready
  - Current Tool #
  - Repeat #
  - Countdown clock to next pause or tool change
  - Event Comments
  - Start at beginning
  - Start at any Event
  - Start at tool # for GCD programs
  - Start at rough or finish pass
  - Start at any finish cut for pockets and islands – XY, Z, XY & Z
  - Show Absolute Dimensions during run
  - Show Incremental Dimensions
  - Show Tool Path – real time graphics with Tool icon
  - Show Program
  - TRAKing® - you control programmed X,Y and Z feeds with Electronic Handwheels(O)
  - Chip Clear (O)

### **Program In/Out Mode features**

- Program storage to USB device plugged into Control Pendant
- Program storage to Network via RJ45 Port
- Browse file locations
- Create New Folders
- CAM program converter
- Convert prior-generation ProtoTRAK programs to current (.PT10)
- Save Temp – saves all current programs, tools and other settings
- Open Temp – opens the data saved at last "Save Temp"
- Rename programs
- Cut, Copy, Delete, Paste of program(s)
- Look - Graphics preview without opening files

### **Advanced Features Option**

- Adaptive Pocket Roughing
- Verify Make Part – solid model graphics of programmed toolpath

- Multiple Fixtures
- Event Comments
- G-code editor
- Thread Mill event
- Engrave Event
- Copy Repeat
- Copy Mirror
- Copy Rotate
- Copy Convert Drill to Tap
- Tool Library for using tools in multiple programs and DRO
- Chip Clear
- Rest Material

#### **Auxiliary Functions Option**

- Enables programming and control of:
  - Coolant
  - Air/Mist (for Fog Buster® or other air-driven coolant systems)
  - Pulse Indexer
  - Programmable Output signal

#### **DXF File Converter Option**

- Import and convert CAD data into ProtoTRAK programs
- DXF or DWG files
- Chaining
- Automatic Gap Closing
- Layer control
- Part alignment
- Feature analysis (circle/arc radius and position)
- Simple CAD construction/editing tools
- DXF-output capability
- Easy, prompted process you can do right at the machine

#### **Parasolid File Converter Option**

- Import and convert 3D CAD data into ProtoTRAK programs
- X\_T files
- X, Y & Z dimensions are transferred into program events
- 2D and 3D views of part
- Add or remove geometry
- Chaining
- Part alignment
- Feature analysis (circle/arc radius and position)
- Simple CAD construction/editing tools
- Easy, prompted process you can do right at the machine

#### **TRAKing® / Electronic Handwheels Option**

- Standard on the DPM RX5 and DPM RX7
- TRAKing® of programs during program run
- Go To Dimensions in DRO Mode



- Scalable Fine/Course handwheel resolution

**Offline Programming Option**

- ProtoTRAK RMX user interface for Windows PC
- Program parts and simulate CNC Run
- Modify files from current and former ProtoTRAK models