TRAK® MACHINE TOOLS

SOUTHWESTERN INDUSTRIES, INC.

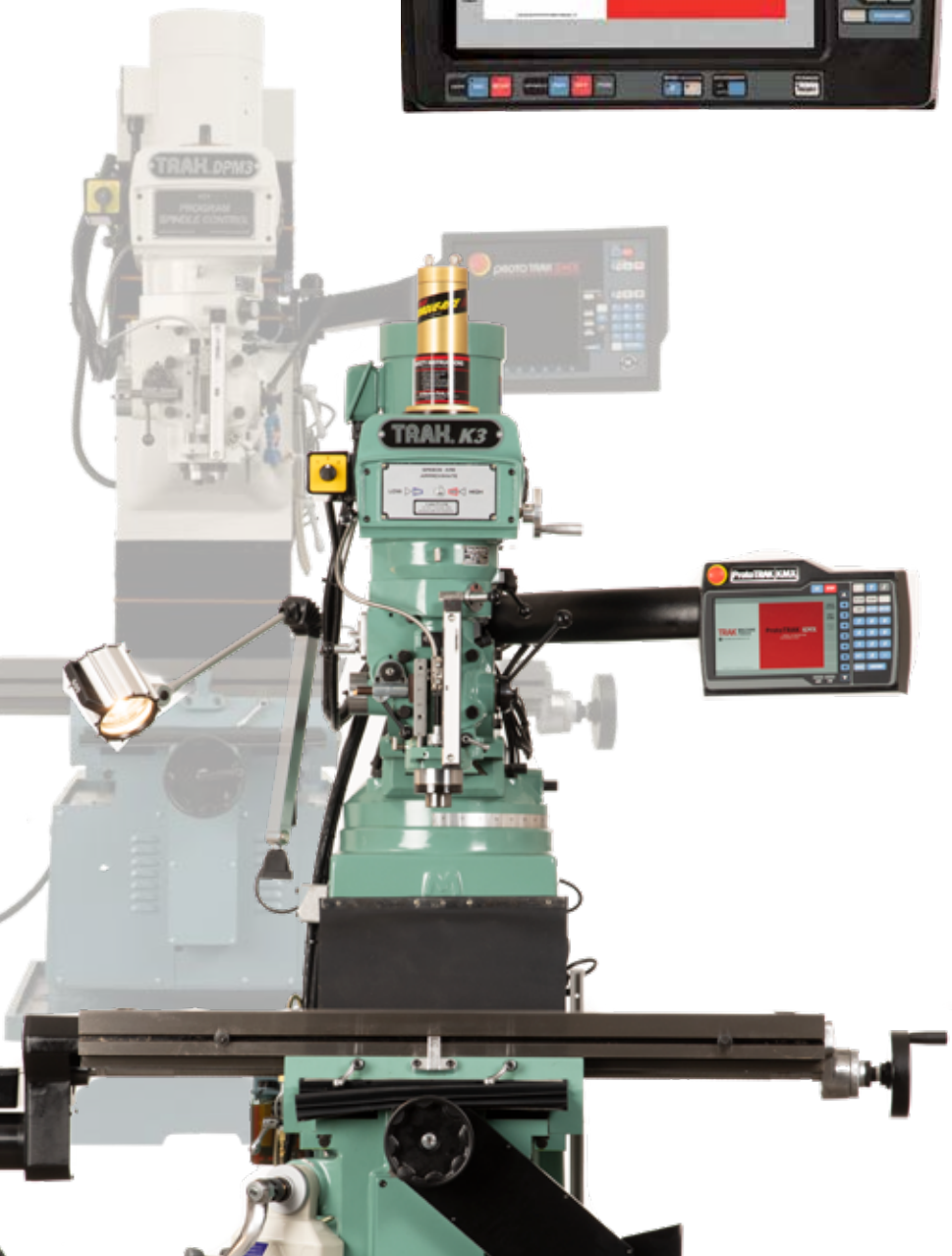
ProtoTRAK RMX CNC

ProtoTRAK KMX CNC

ProtoTRAK Upgrades

ProtoTRAK Retrofits

TRAK Knee Mills



THE TRAK KNEE MILL

For over 20 years, still your best choice in knee mills today

- Precision 7207 P4 Spindle bearings
- Standard glass scale for quill Z readout
- ProtoTRAK CNC integrated at the factory
- Chrome ground quill

KMX Also Available

- Precision ground ballscrews installed in the table and saddle
- Slide ways are Turcite® coated
- Meehanite castings
- Wide way surfaces are hardened and ground

Three-Axis CNC

TRAK Knee Mills with the KMX CNC are available as three-axis CNCs, with a quill drive for Z-axis machining. The mill can be run manually, as a two-axis or three-axis CNC. For 3 axis knee mills, manual quill control is with our unique Electronic Handwheel.

Note: For most three-axis CNC applications, we highly recommend our TRAK Bed Mills.

Machine Specifications:

- Table Size – 10” x 50”
- T-Slots – 3” x 5/8”
- Table Travel – 32”
- Saddle Travel – 16”
- Knee Travel – 16”
- Maximum Quill Travel – 5”
- Quill Diameter – 3 3/8”
- Spindle Taper – R8
- Spindle Speed Range – 60-4200 RPM
  With Spindle Control – 40-5000 RPM
- Head Tilt – +/- 90 LR and +/- 45 FB
- Quill Feeds per Rev .0015”/ .0030”/ .0060”
- Spindle Motor Power – 3 HP
- Power Requirement Control – 110V; 1P; 8A*
- Power requirements, machine - 208/480V;3P; 8.5/4.25A-11A**
- Maximum Weight on Table – 850 lbs.
- Machine Weight – 2816 lbs.
- Machine dims l,w,h, - 78” x 103” x 87”
- Maximum rapid feed – 100 IPM
- Precision 7207 CP4 spindle bearings
- Chrome hardened and ground quill
- Meehanite castings
- Slide ways are Turcite coated
- Wide way surfaces are hardened and ground

Options:

- Glass Scales on table and saddle
- Auxiliary Function hardware box
- TRAKing™/Electronic Handwheels
- Programmable Spindle Control
- Remote Stop/Go switch
- Power Drawbar
- Halogen Worklamp
- Chip Pan
- Knee Power Feed
- Riser Block
- Coolant Pump
- Spray Coolant
- Table Guard Enclosure
- Limit Switches
- Vise

* 10A required with spindle control
** 480V not avaioble with sprindle control machines

Retrofit ProtoTRAK CNCs

Make your manual machines more productive

We have transformed thousands of Bridgeport® and similar knee-type milling machines from outdated manual machines to highly productive ProtoTRAK CNCs. With experience earned over 40 years, we know how to give you the best possible outcome.

Retrofits are available with both ProtoTRAK RMX and KMX CNC Controls.

The Retrofit Kit includes everything: motors, CNC, hardware, ballscrews, fasteners, and even cable ties.

Custom and General Kits Are Available for the following brands of machines:

* note, not all models may be retrofitted – contact your Southwestern Industries representative.

Acer	Birmingham	Do-All	Kingston	MSC	Hegner/	Webb
Acra Mill	Bridgeport	Enco	Kondia	Pasma	Santec	Wells Index
Alliant	Chevalier	Euro-Mill	Lagun	Royal	Southbend	Willis
Astro	Classic	First	Marina	Santec	Supermax	Wilton
Atlas	Clausing	Hurco	Merlin	Seiki	(YCI)	
Atrump	Atlas	Kalamazoo	Microcut	Sharp	Vectrax	
Besmer	Comet	Kent	Millport	Siber-	Victor	

Upgrades

An affordable way to keep your shop up to date

Your machine is still in good condition, but chances are you can do a lot better than keeping that older ProtoTRAK. Sure, you can count on us to provide you with the best support in the industry, and that won't change. But we're been busy making the ProtoTRAK CNC better as the years go by. Today's models offer you more power within the same user interface.

Modern Hardware Platform

ProtoTRAK CNCs are computers, and out ability to maintain support for non-current models is limited. At some point it gets more expensive to maintain an old system than to buy a new one. A new platform puts you in a more economical position, and makes it more secure as well.

KMX or RMX

You can choose from the best of the basic CNC in the ProtoTRAK KMX and the best of the full featured CNC in the ProtoTRAK RMX.

Easy Transition

You already know the ProtoTRAK, and that means you will pick up the new things right away. Before you know it, you will be working with better productivity without the usual hassle of getting used to something that is unfamiliar.

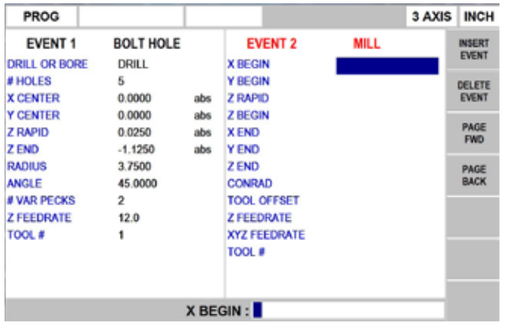
Upgrades are available for the following Models:

ProtoTRAK MX2	TRAK AGE2	ProtoTRAK SM2
ProtoTRAK MX3	TRAK AGE3	ProtoTRAK SM3
ProtoTRAK M2	ProtoTRAK EMX	ProtoTRAK KMX
ProtoTRAK M2	ProtoTRAK Edge	ProtoTRAK SMX

THE ProtoTRAK KMX CNC

ProtoTRAK KMX

- The perfect CNC for beginners and professionals who need basic CNC automation.
- Easy to learn and use with thoughtful features that make work easier
- Improved AGE® capability gives you the power of CAD for finding missing print data while you program!
- Outstanding graphics
- Powerful offline programming for using our Advanced Software Options
- We recommend this ProtoTRAK for most Knee Mill applications due to its amazing combination of price, features and ease of use
- Can handle anything from quick manual jobs to complex profiling



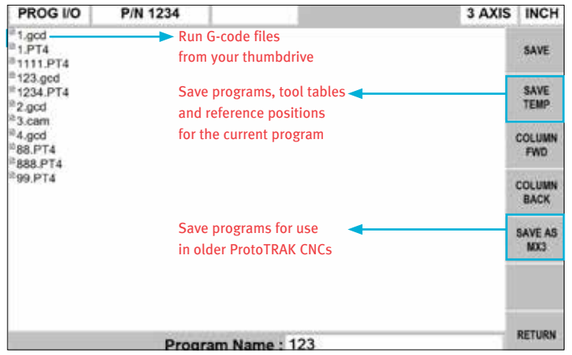
Powerful Canned Cycles

- Position
- Drill
- Bolt Hole
- Mill
- Arc
- Face Mill
- Circle Pocket
- Rectangular Pocket
- Irregular Pocket
- Circular Pocket
- Rectangular Profile
- Irregular Profile
- Subroutine Repeat
- Subroutine Rotate
- Subroutine Mirror
- Copy Repeat
- Copy Rotate
- Copy Mirror

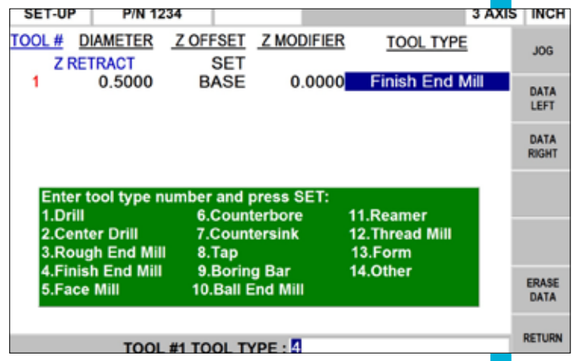
AGE™ the Auto Geometry Engine

Program complex profiles easily with the powerful AGE™
feature. Enter the information you have and the AGE™ will calculate missing points for you while you program.

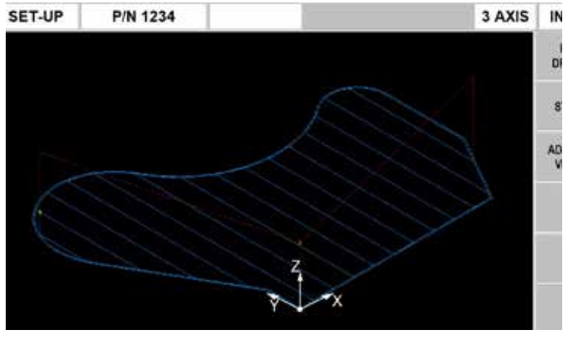
Advanced File Management



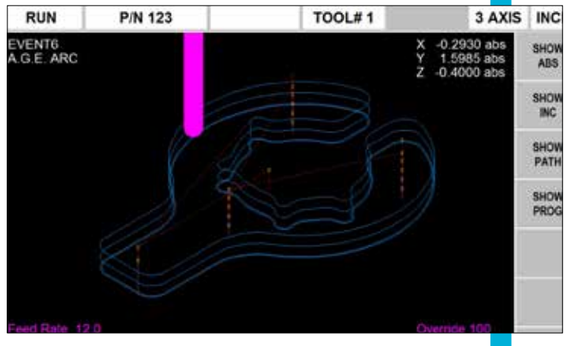
Convenient Tool Table



Check your program with convenient graphics

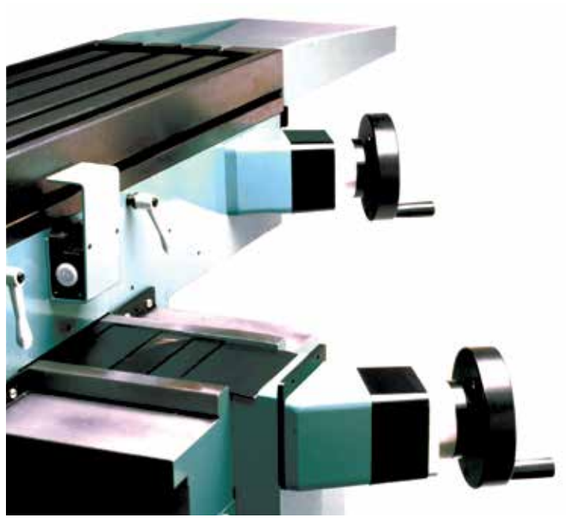


View your programmed toolpath during program run



See the video at www.trakmt.com/KMX Better yet, get a demo and play with it yourself!

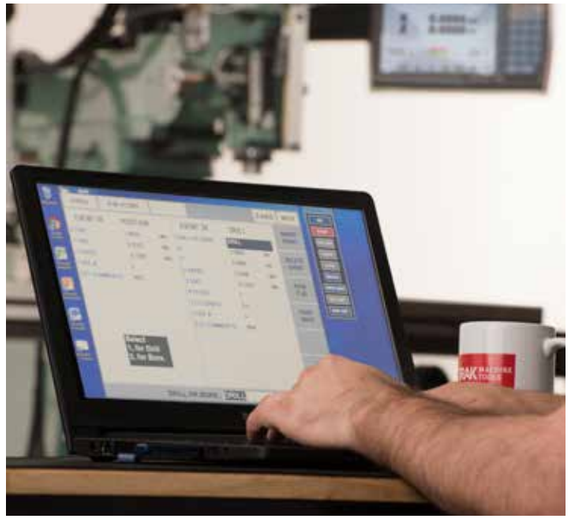
ProtoTRAK KMX Options



TRAKing®/ Electronic Handwheel Option

- Electronic handwheels on X and Y (replaces the mechanical handwheels)
- TRAKing® of programs during program run
- GoTo Dimensions
- Selectable Fine/Course handwheel resolution

Once you use TRAKing®, you will never want to crank manual handles again!



KMX Offline Programming

- All features of the ProtoTRAK KMX organized to run on your PC
- Program and setup your jobs and then load into the ProtoTRAK KMX
- Windows® operating system

Converter Package for Offline

(requires purchase of KMX Offline Programming)

Verify

- Solid model representation of parts and toolpaths

DXF File Converter

- Import and convert CAD data
- DXF or DWG files
- Automatic Gap Closing with Chaining
- Layer Control
- Easy, prompted process

Parasolid File Converter

- Generate ProtoTRAK KMX programs from the data in the solid file
- 3D CAD format
- No specialized knowledge required

Specifications may change – please see www.trakmt.com/KMX

ProtoTRAK KMX Specifications Summary

ProtoTRAK KMX Hardware

- Two- or three-axis CNC, 3-axis DRO
- 9.0” Color LCD
- Rugged industrial PC
- 2 USB ports for interface with a storage device, keyboard and mouse
- RJ45 Port and Ethernet card for Networking
- 110V, 1P, 10A

Software Features – General Operation

- Clear, uncluttered screen display
- Prompted data inputs
- English language – no codes
- Soft keys - change with context
- Windows® operating system
- Selectable two or three-axis CNC (3-axis models)
- Color graphics with adjustable views
- Inch/mm selectable
- Convenient modes of operation (see below)

DRO Mode Features

- Incremental and Absolute dimensions
- Jog at rapid with override
- Powerfeed X, Y or Z (3-axis)
- Teach-in of manual moves
- Servo motor return to 0 Absolute
- Tool offsets from library
- Go To Dimensions (Optional with TRAKing®)
- Fine/Course handwheel resolution (Optional with TRAKing®)

Program Mode Features

- Auto Geometry Engine
- Geometry-based programming
- Tool Path programming
- Scaling of print data
- 3-axis Geometry conversational programming (3-axis models)
- Incremental and Absolute dimensions
- Automatic diameter cutter comp
- Circular interpolation
- Linear interpolation
- Look – graphics with a single button push
- Event editing within the program
- Conrad – automatic corner radius
- Math Helps with graphical interface
- Tool step over adjustable for pocket routines
- Selectable ramp or plunge cutter entry
- Subroutine repeat of programmed events
- Nesting
- Subroutine Rotate about Z-axis for skewing data
- Subroutine Mirror of programmed events
- Copy repeat for editing of repeated events
- Copy rotate for editing of rotated events
- Copy mirror for editing of mirrored events
- Run Island, Helix, Thread Mill and Engrave events when present in an imported ProtoTRAK program

Canned Cycles

- Position
- Drill
- Bolt Hole
- Mill
- Arc
- Circle pocket
- Rectangular pocket
- Irregular pocket
- Face Mill
- Circular profile
- Rectangular profile
- Irregular profile

Set Up Mode Features

- Service Codes
  - Software
  - Machine Setup
  - Advanced Diagnostics and Service logs
  - Operator Defaults and options
- Set pocket and Face Mill step-over (in service codes)
- Tool names
- Tool library
- Tool length offset with modifiers
- Tool path graphics with adjustable views
- Verify – solid model representation of finished part (as programmed)

Run Mode Features

- TRAKing® (optional)
- 3D CAM file program run
- 3D G-code file run with tool comp
- Real time run graphics with tool icon

Program In/Out Mode Features

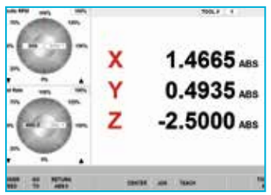
- Program Storage to USB Flash Drives
- CAM program converter
- Converter for prior-generation ProtoTRAK programs
- DXF / DWG file Converter (Offline version only)
- Preview Graphics for unopened files
- Networking
- Save Temp to save current program, tool offsets and home positions for running the next day with minimal setup

THE ProtoTRAK RMX CNC

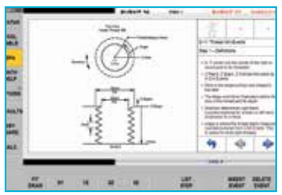
The Perfect Blend of CNC, Machine Tool and You

There is nothing like a ProtoTRAK for usability and the ProtoTRAK RMX goes beyond with productivity features that are not found anywhere else. Our 40 years of experience serving machinists in small lot milling applications have led us to a CNC that is simply amazing. Describing it fully in a few pages is impossible. See a demo and experince it yourself.

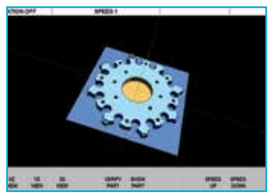
Touchscreen for an extraordinary user experience that keeps you working fast



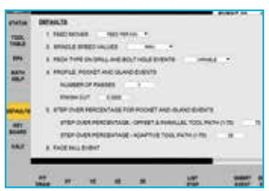
Powerful Features for **manual milling** in Toolroom Ops



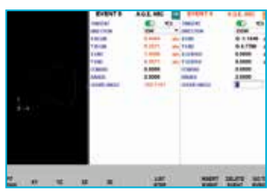
Enhanced ProtoTRAK Assistance – instructions at your fingertips



Powerful solid model **graphics** for Verify and Parasolid converters



Defaults teach the ProtoTRAK RMX your machining style

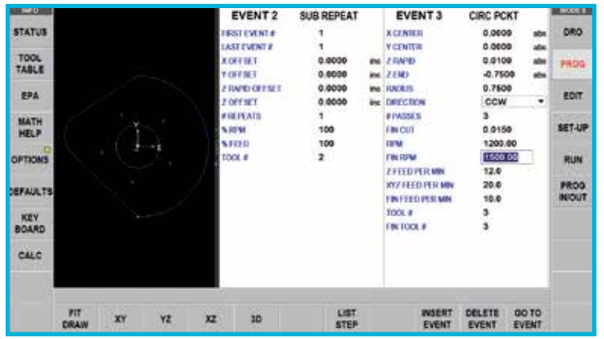


Auto Geometry Engine® software to fill missing data for you as you program

Easy, prompted programming **events** with graphics that update while you program

Flyout Windows

Tap an Info Key and a Flyout Window appears. Tap it again and you're back to where you started.



Swipe to Navigate, Tap to Enter

Simple changes to the program have never been easier. Move easily through your program by swiping, the line color in the drawing shows you which event you are viewing.

Interact with your part graphics

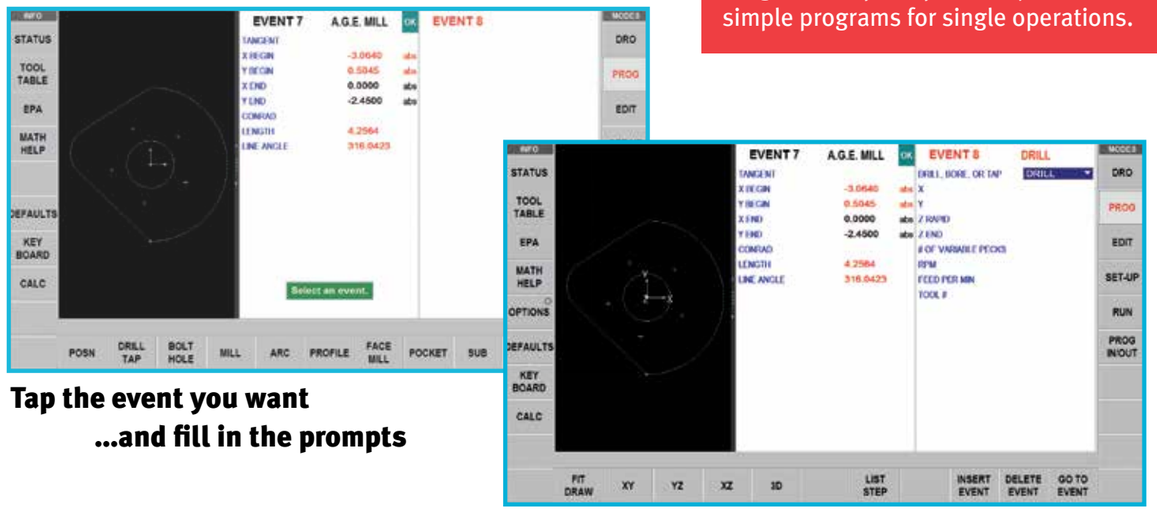
You can zoom, pan or rotate your drawings and 3D models by using the touchscreen.

See our touchscreen video at www.trakmt.com/RMX

Programming

Programming is a simple process of selecting the event and then describing the geometry from print data.

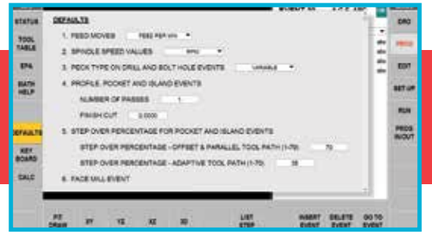
Program complete prints or just write simple programs for single operations.



Tap the event you want
...and fill in the prompts

Defaults

Defaults customize the programming to your style. The prompts will autofill with the choices you make in Defaults, making programming even faster and easier.

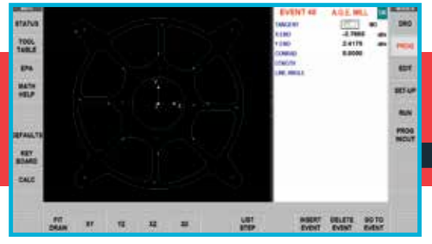


Options

Tap Options while programming the event and you'll have choices for how the geometry is machined.

Canned Cycles

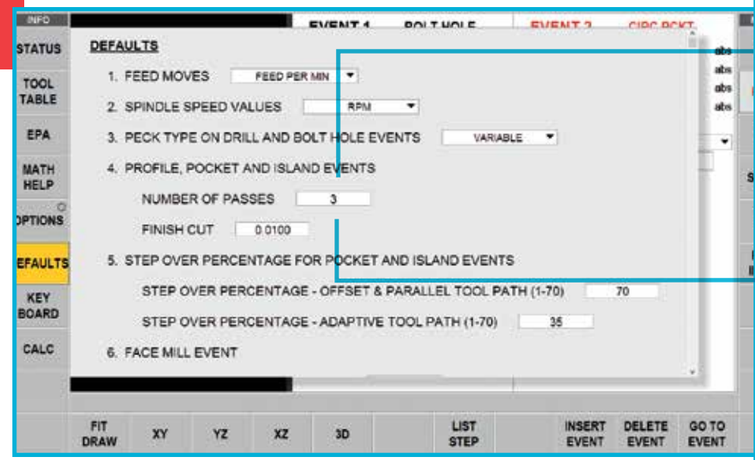
There are over 25 canned cycles that make it easy to program even complex shapes right on the shop floor.



Defaults

make it personal

You have a style. The work you do, the material you cut, the tooling you use, they all make up your style. The ProtoTRAK RMX is the world's only CNC that you customize to your style. You do this easily by setting Defaults.



Setting Defaults makes programming even easier by loading in your preferences as you program. Once you select the event, your preferences are already there for you. If you're mentoring someone who is new to the craft, you can set the Defaults to help your student work within the parameters you define.

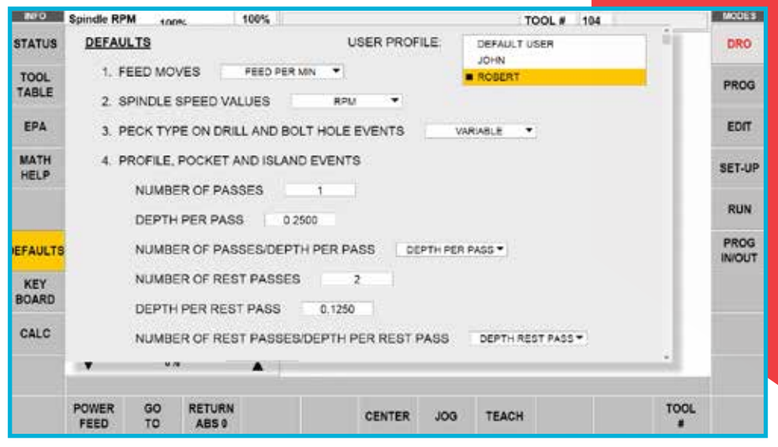
We set the Number of Passes as a default

EVENT 2	CIRC PCKT	
X CENTER	0.0000	abs
Y CENTER	0.0000	abs
Z RAPID	0.0100	abs
Z END	-0.5000	abs
RADIUS	0.7500	
DIRECTION	CCW	
# PASSES	3	
FIN CUT		
RPM		
FIN RPM		
Z FEED PER MIN		
XYZ FEED PER MIN		
FIN FEED PER MIN		
TOOL #		
FIN TOOL #		

Now when we program, those values are already there.

User Profiles

Your shop is a busy place, often with multiple users and different jobs being swapped in and out on the same machine. With profiles each user can set their own defaults or you can setup profiles for different types of cutting and for different materials.



Check with us at www.trakmt.com/RMX to stay on top of what is happening with this tremendous new feature that you won't find anywhere else!

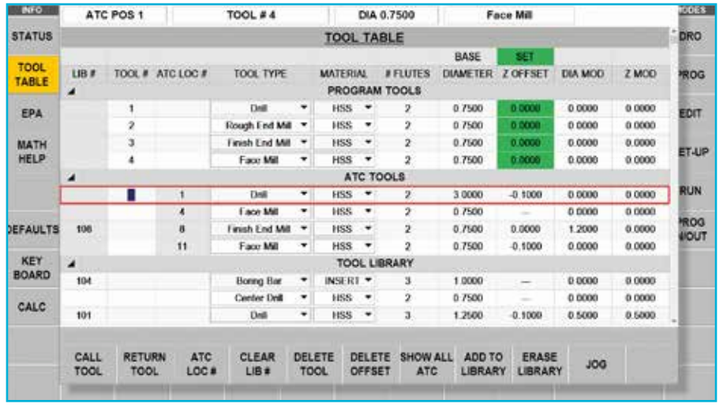
TRAKing®

We simply cannot say enough about this awesome feature.

You've written the program. Looked at the toolpath. Everything looks good, so you turn on the spindle and start to run. BUT...you have TRAKing. So before you press the GO button you press TRAKing and grab the handwheels. As you crank, the ProtoTRAK runs the program X, Y and Z. You control the speed, you control the direction the program runs, you can stop the spindle to move a clamp or brush off chips.

You're in control, not the CNC...that's **TRAKing**

RMX Tool Table



Convenient

- Set up tools at the same time you program by one tap of the Tool Table info key.
- Retain tool set ups in the Tool Library.
- Changes made to a tool automatically synced to all instances of that tool.
- Jog to position tools without leaving the tool table.

Certain

- Program Tools always clearly demarcated to eliminate confusion.
- Separate tables for Program, Library and ATC.
- Highlights confirm all instances of a tool in each table.

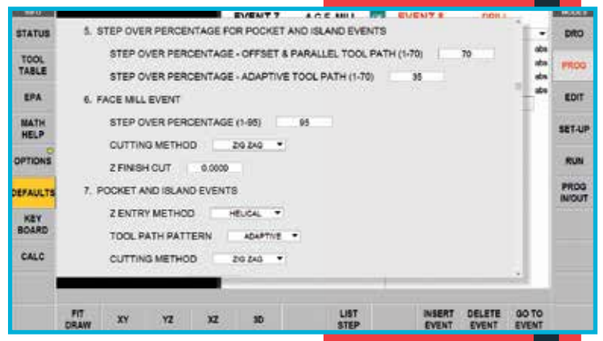
Easy

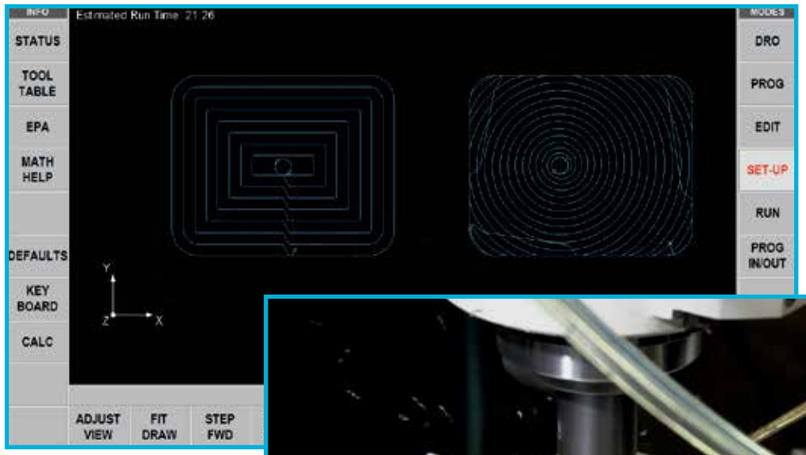
- Clear descriptions of tables and tool attributes.
- Simple touch off and entry of offsets.
- Videos and EPA instructions to guide you.

Adaptive Toolpath

The Adaptive Tool Path works with the Defaults to:

- Provide state of the art toolpath generation for faster machining
- Keep the load constant on the cutter to extend tool life
- Reduce wear and tear on the machine

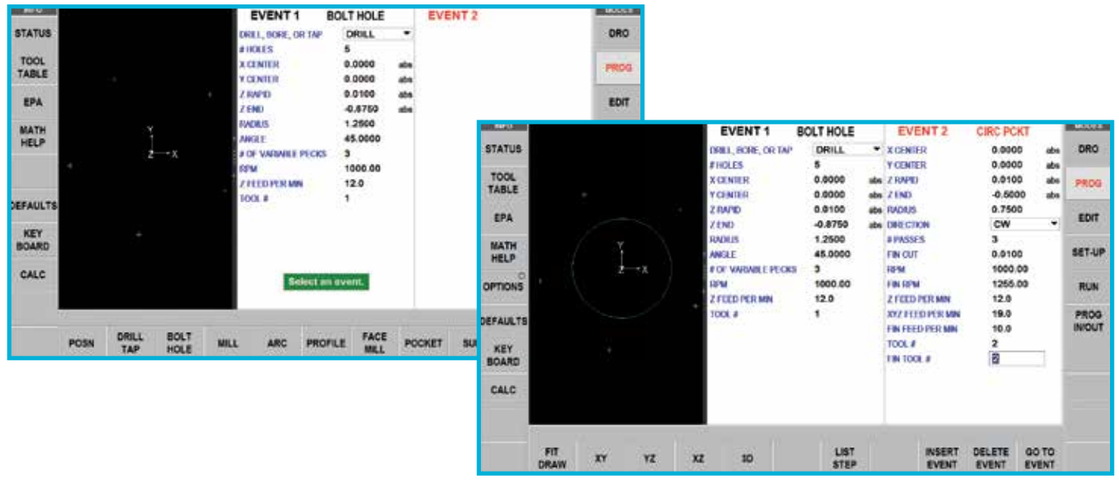


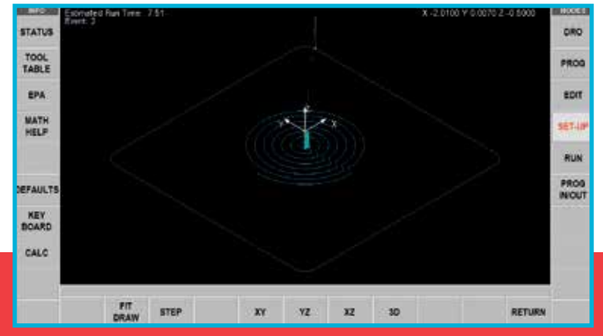


You have to see Adaptive to appreciate it. See our video at www.trakmt.com/RMX
Better yet, call for a demo.

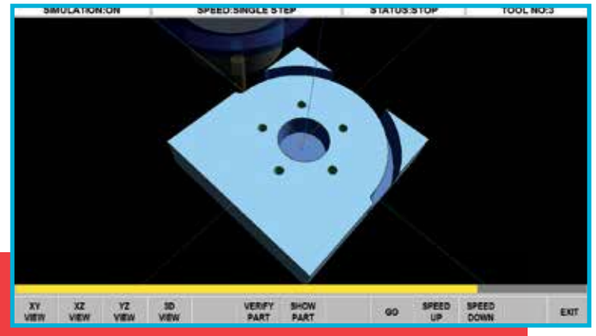
RMX GRAPHICS KEEP YOU WORKING FAST

Part drawings update in real time as you program.



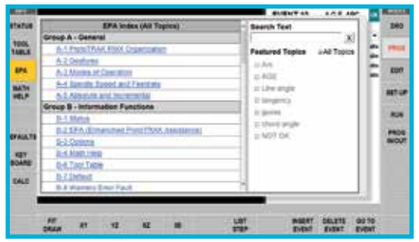


Tool Path gives you a clear idea of where the tool will go with X, Y & Z locations given as you step forward and backward through the program.

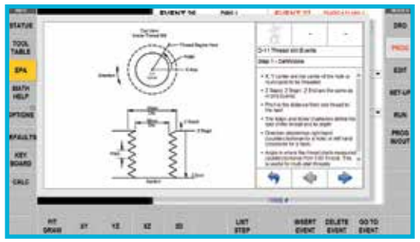


Verify Part shows you a solid model tool path simulation of what you've programmed

Enhanced ProtoTRAK Assistance - You're Never Stuck!

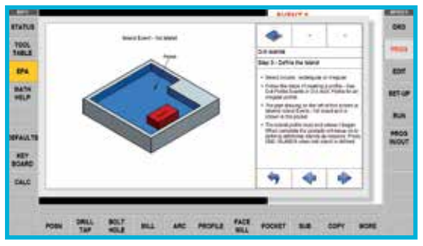


Context-sensitive information that you access by tapping EPA Info screen.



Diagrams will guide you through some of the more complex prompts.

Screen shots mimic your program to help you apply the instructions right away.



Bulleted instructions provide you with a summary of what to do.

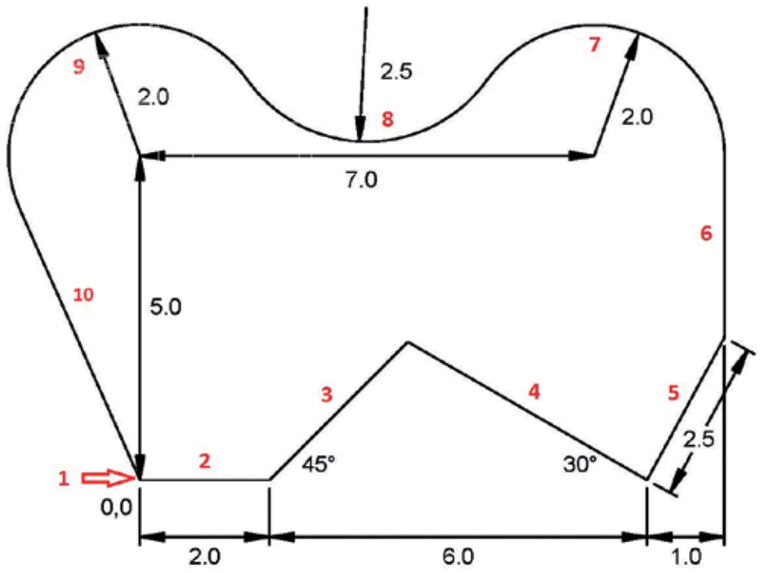
Videos supplement the help when nothing else will do.

EPA

The EPA is an extraordinary resource that we will continue to refine and expand over time. You will have access to additional EPA content through software updates. The updates to the EPA that help you run the ProtoTRAK will be at no charge. It is a commitment to your satisfaction that you can only find in a ProtoTRAK.

The ProtoTRAK RMX is the only CNC that can teach you how to use itself

AUTO GEOMETRY ENGINE (A.G.E.) SUPERCHARGED ON THE RMX



This print lacks the dimensions for several intersections and even one arc center.
. . .Yet you can easily program the complete profile using A.G.E.

The Auto Geometry Engine® (A.G.E.) is the answer to missing print data. It is powerful software that automatically fills in missing print dimensions as you program.
It is CAD capability embedded into ProtoTRAK RMX programming.

Here is a snapshot of how A.G.E. works

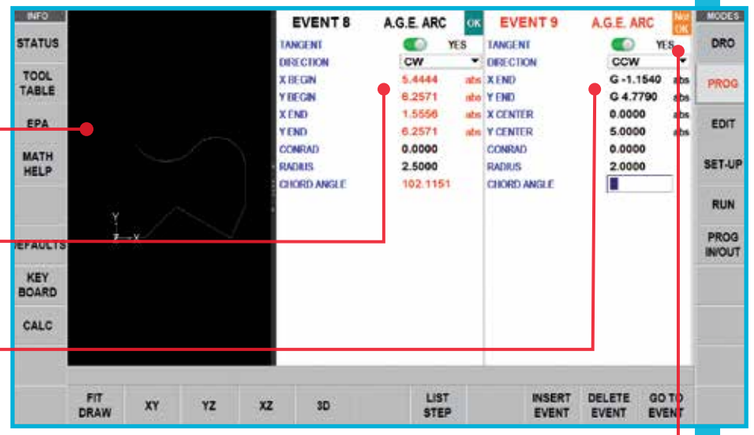
The line is dashed to let us know that is the A.G.E.'s guess for what we want. Solid means it isn't guessing, it knows from what we've given.

The data in red were calculated by the AGE. The data in black were entered by us.

G means we guessed. And the A.G.E. uses guesses to help solve for missing dimensions.

Not OK

NOT OK tells us that event 9 isn't yet fully defined. Stay tuned, the A.G.E. will define it with a little more info.

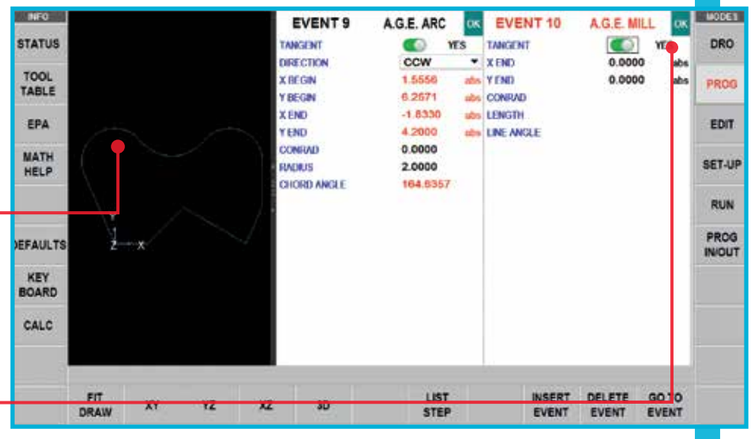


Now, by entering the information for event 10, AGE can complete event 9

Notice that the arc has become solid. Also, the red numbers show that most of the data was calculated for you by the A.G.E.

OK

OK means the geometry is complete so we can get ready to run the part. And we didn't have to go back to the CAD guy for missing data.



It really is that good!

And thanks to the new touchscreen, A.G.E. now has

Tap to Guess

We tapped the screen here and the A.G.E. entered the data from our fingertip as a guess.

Yes, really!

The foregoing is just a bit of the programming for the part above. You can see the rest at www.trakmt.com/RMX
Better yet, call us for a demo and play with it yourself.

ProtoTRAK RMX Specifications Summary

For full, updated specifications see trakmt.com/PTRMX

Software Features – general operation

- Clear, uncluttered screen display
- Fly out windows for instant access to features and information
- EPA (Enhanced ProtoTRAK Assistance)
- User based Programming Defaults to simplify part programming
- Event Options to modify Defaults or select additional functionality
- QWERTY touchscreen keyboard
- Calculator
- Prompted data inputs
- English language – no codes
- Soft keys - change within context
- Windows® operating system
- Selectable two or three-axis CNC
- Color graphics w/ adjustable view
- Gestures for pan, zoom, rotate
- Inch/mm conversion
- Convenient modes of operation
- Networking

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

Clear Off Option

- Easily and efficiently remove material to creats mesas and busses - 3 axis only

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

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, Pulse Indexer

DRO Mode Features

- Incremental and Absolute dimensions
- Graphical Override of Axis Feed
- Spindle RPM (O)
- Jog at rapid with override
- Power feed X, Y or Z
- Teach-in of manual moves
- Programmable Go To dimensions (O)
- Servo return to 0 absolute
- Tool offsets from Tool Library (O)
- Line Center calculation
- Circle Center calculation

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
- Subroutine Convert Drill to Tap
- Subroutine Engrave (O)
- Copy (O)
- Copy Mirror (O)
- Copy Rotate (O)
- Copy Convert Drill to Tap (O)
- Helix
- Thread Mill (O)
- Program pause
- Clear Off (O)
- Subroutine Sub Part - 3 axis only (O)

Advanced Features (Optional)

- Adaptive Pocket Roughing
- Verify Make Part – solid model graphic of programmed toolpath
- Finish Tool #
- Rest Machining
- Multiple Fixture Offsets
- Event Comments
- G-code editor
- Thread Mill event
- Engrave Event
- Search Edit
- Events
- Copy
- Copy Mirror
- Copy Rotate
- Copy Convert Drill to Tap
- Tool Library
- Chip Clear
- Clipboard

Offline Programming (Optional)

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

Auxiliary Functions (Optional)

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

TRAK MTConnect (Optional)

- Machine networking through ProtoTRAK® ethernet connection or USB Wi-Fi adapter
- Collect machine data throughout shop
- Monitor machine status, receive notifications and analyze data throughout your machines' history

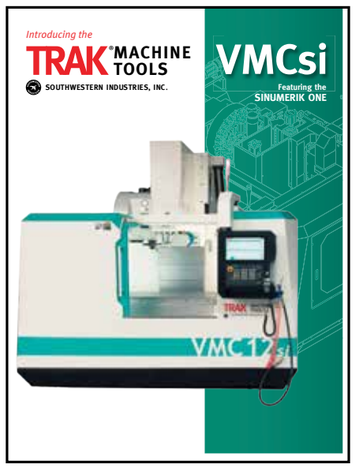
Specifications may change – please see www.trakmt.com/RMX

More TRAK Machines For Your Shop

RMX DPM Bed Mills

RLX CNC Lathes

Toolroom Machining Centers



VMCsi w/ Siemens SINUMERIK ONE

TC820si w/ Siemens SINUMERIK ONE

TRAK VMC2

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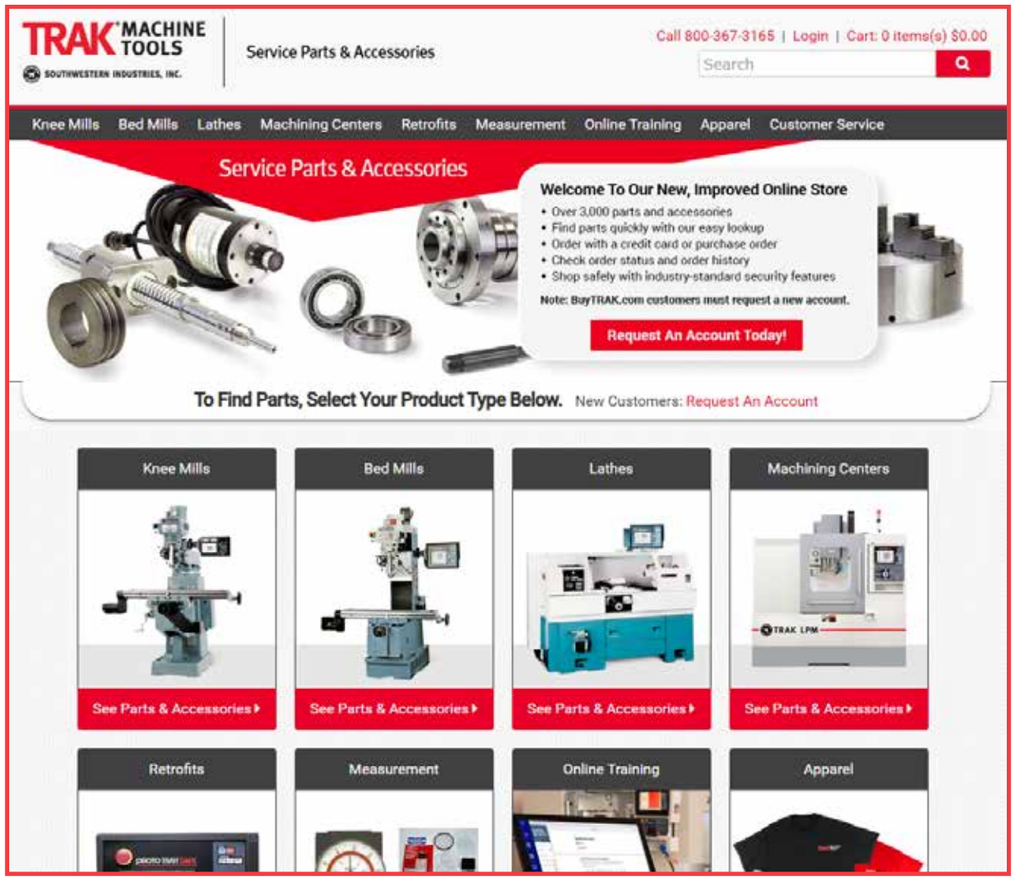

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