

TRAK[®] MACHINE
TOOLS

Featuring
ProtoTRAK CNCs



TRAK Knee Mills

Your Best Choice in Knee Mills Today!

TRAK Knee Mills

The best built, best supported knee-type milling machines you can buy



- Precision 7207 P4 Spindle bearings
- Standard glass scale for quill Z readout
- Chrome ground quill
- ProtoTRAK CNC integrated at the factory
- Slide ways are Turcite[®] coated
- Precision ground ballscrews installed in the table and saddle
- Wide way surfaces are hardened and ground
- Meehanite castings

Outstanding Support at no Extra Cost

Only TRAK Knee Mills featuring ProtoTRAK CNCs are factory-integrated by us, the manufacturer of the control. That means an outstanding product and one source of parts and support. You will never be shuffled between machine and CNC supplier – the entire product is our responsibility.

Our track record proves you can rely on us to live up to our responsibility to you.

TRAK Knee Mill Models



ProtoTRAK EMX

Easy to use, yet full CNC functionality
See page 6 for a complete description

TRAK-K3 EMX

- 2-axis CNC
- 3-axis DRO



ProtoTRAK KMX

The best CNC we've ever made for knee mill applications (and that is saying a lot).
See page 8 for a complete description

TRAK-K3 KMX

- 2-axis CNC
- 3-axis DRO

TRAK-K3 KMX-3

- 3-axis CNC
- 3-axis DRO



Three-Axis CNC

TRAK Knee Mills with the SMX and 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. Manual quill control is with our unique Electronic Handwheel.

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

Milling Machine Options



TRAKing™/Electronic Handwheels

- Converts the mechanical handwheels into electronic handwheels for operating the table and saddle
- Enables the powerful TRAKing® feature
- Useful DRO features
- Not available with the ProtoTRAK EMX CNC



Power Draw Bar

- A Torque-Rite R8 power draw bar factory installed with push button tool in/out



Chip Pan



Remote Stop/Go Switch

- A hand-held switch to stop and continue program run



Tableguard

- Provides an enclosed workspace mounted on the table
- The sliding door is switched to prevent operation of CNC Run with door open



Knee Power Feed



Glass Scales

- A glass scale mounted on the table and saddle
- Not available on ProtoTRAK EMX products



Spray Coolant

- The non-fogging coolant sprayer directs a fine stream of coolant to the tool and workpiece

Additional Options

Coolant Pump

- Mounted inside the bed or machine column
- A manual switch is provided when not used with Auxiliary Functions

Riser Block

- 4", 6" or 8"

Limit Switches

- Switches and brackets to set maximum travel limits
- Tripping the switch will cause servo motors to shut down
- Not available with the ProtoTRAK EMX CNC

Automatic Lubrication Pump

- Provides lubrication to ways and ballscrews
- Programmable
- Alarms in case of problems



Vise

- Model DX6 6' Kurt vise and mounting hardware.



Halogen Work Lamp

- Convenient light with bright, long-lasting halogen bulb

Machine Specifications

- Table Size – 50" x 10"
- T-Slots – 5/8" x 3 x 2 1/2"
- Table Travel – 32"
- Saddle Travel – 16"
- Knee Travel – 16"
- Ram Travel – 15"
- Maximum Quill Travel – 5"
- Quill Diameter -- 3 3/8"
- Spindle Taper – R8
- Spindle Speed – 60-4200 RPM
- Head Tilt – 45 deg. forward, 45 deg. back, 90 deg. left, 90 deg. right
- Spindle Motor Power - 3HP continuous
- Power Requirements, machine - 220/ 440V;3P; 8.5/4.25A
- Maximum Weight on Table – 850lbs.
- Machine Weight – 2816 lbs.
- Machine dims l, w, h - 71" x 59" x 84"
- Maximum rapid feed – 100IPM
- Way surface type - Dovetail X, Z Square Y
- Precision 7207 CP4 spindle bearings
- Chrome hardened and ground quill
- Meehanite[®] castings
- Slide ways are Turcite[®] coated
- Wide way surfaces are hardened and ground

ProtoTRAK EMX



ProtoTRAK EMX

- Easy to use yet full CNC functionality
- Easy to learn and remember all the features
- We recommend this control when most of the work for the machine is simple
- Great for shops where different people use the machine occasionally
- Vo Techs love this CNC for teaching conventional milling and introduction to CNC on the same machine

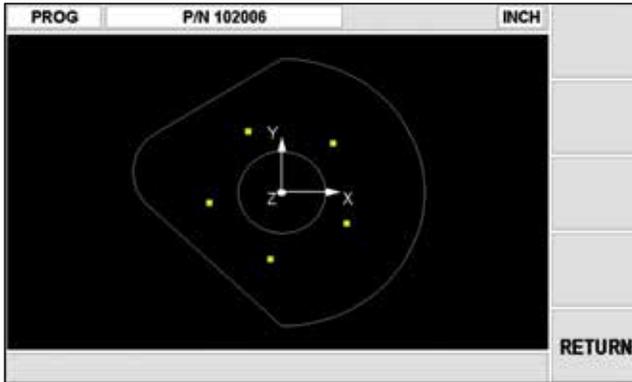
PROG	P/N 102006	INCH
EVENT 1	BOLT HOLE	EVENT 2
# HOLES	5	
X CENTER	0.0000 abs	
Y CENTER	0.0000 abs	
RADIUS	1.2500	
ANGLE	45.0000	
TOOL #	1	
TOOL DIA	0.2500	
Select an event.		

Programming

- Program easily with simple selections and prompts in plain English
- The ProtoTRAK EMX defines the tool path for you once you define the part geometry

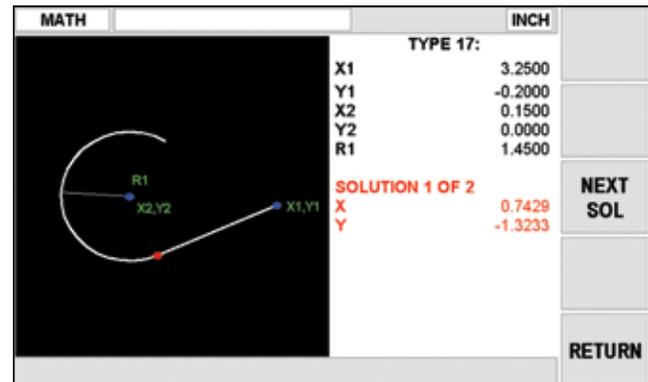
Canned Cycles

- Posn/ Drill
- Bolt Hole
- Mill
- Arc
- Pocket
- Frame
- Rotate
- Repeat



Part Graphics

- Press the LOOK key while programming to see programmed events with color graphics



Math Helps

- Quickly calculate intersections, points of tangency, arc centers and more.

DRO Routines

- View the most useful DRO features in a clear, color display
- Press the Power Feed and Jog Buttons to let the servo motors do most of the work
- Ball screws provide smooth, positive control while hand cranking

Easy Program Storage and Handling

- Save hundreds of typical programs on the internal flash drive
- Use the USB port to plug in a storage device or move programs between ProtoTRAKs and computers
- Use the optional USB flash drive that is configured to work with ProtoTRAK

ProtoTRAK EMX Specifications

Hardware

- Digital Servo Amplifiers – custom designed for ProtoTRAK operation
- D.C. Servo Motors – rated at 280 in-oz. continuous torque
- Precision Ball Screws
- Modular Design – simplifies service and maximizes uptime
- 115V/60Hz
- 10 amps
- Feedrate Override of programmed feedrate and rapid
- Polycarbonate Sealed Membrane Keypad to lock out contamination
- 7.0" Color LCD with adjustable contrast
- On board IDE flash memory storage for part programs
- 2 USB ports for interface with a storage device
- Rugged Industrial PC
- Glass Scale on quill for Z-axis position readout
- Jog button in DRO

Options

- Remote Stop/Go (RSG) switch
- USB thumb drive for program storage and transfer

Software

- Diameter Cutter Compensation
- Circular interpolation
- Linear Interpolation
- Conrad – provides automatic corner radius programming
- Incremental and Absolute dimensioning
- Error Messages – to identify programming mistakes
- Fault Messages – for system self-diagnostics
- Parts graphics display
- Look – a single button press to view part graphics
- Machine Tool Error Compensation
- Backlash Compensation
- Selectable Inch/mm measurement readout
- Jog from 1 to 100 inches per minute
- Continue Mill/eliminate repetitive data inputs while programming
- Context help information
- CAM to ProtoTRAK conversational language file conversion
- Teach
- Free offline programming available for download from our website

ProtoTRAK KMX CNC



ProtoTRAK KMX

- The best CNC we've ever made for knee mill applications (and that is saying a lot).
- 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

PROG				3 AXIS	INCH
EVENT 1	BOLT HOLE		EVENT 2	MILL	
DRILL OR BORE	DRILL		X BEGIN		INSERT EVENT
# HOLES	5		Y BEGIN		DELETE EVENT
X CENTER	0.0000 abs		Z RAPID		PAGE FWD
Y CENTER	0.0000 abs		Z BEGIN		PAGE BACK
Z RAPID	0.0250 abs		X END		
Z END	-1.1250 abs		Y END		
RADIUS	3.7500		Z END		
ANGLE	45.0000		CONRAD		
# VAR PECKS	2		TOOL OFFSET		
Z FEEDRATE	12.0		Z FEEDRATE		
TOOL #	1		XYZ FEEDRATE		
			TOOL #		
X BEGIN : █					

Powerful Canned Cycles

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

PROG				3 AXIS	INCH
EVENT 6	A.G.E. ARC	OK	EVENT 7	A.G.E. ARC	Not OK
TANGENT	YES		TANGENT	YES	
DIRECTION	CW		DIRECTION	CCW	
X BEGIN	3.3055	abs	X END		
Y BEGIN	3.3541	abs	Y END		
X END	1.0985	abs	X CENTER	0.0000	abs
Y END	3.8465	abs	Y CENTER	3.2500	abs
CONRAD			CONRAD	0.0000	
RADIUS	1.5000		RADIUS	1.2500	
CHORD ANGLE	97.8375		CHORD ANGLE		

Select
1 for YES
2 for NO.

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

PROG I/O	P/N 1234		3 AXIS	INCH
1.god				
1.PT4				
1111.PT4				
123.god				
1234.PT4				
2.god				
3.cam				
4.god				
88.PT4				
888.PT4				
99.PT4				

Run G-code files from your thumbdrive

Save programs, tool tables and reference positions for the current program

Save programs for use in older ProtoTRAK CNCs

Program Name : 123

Convenient Tool Table

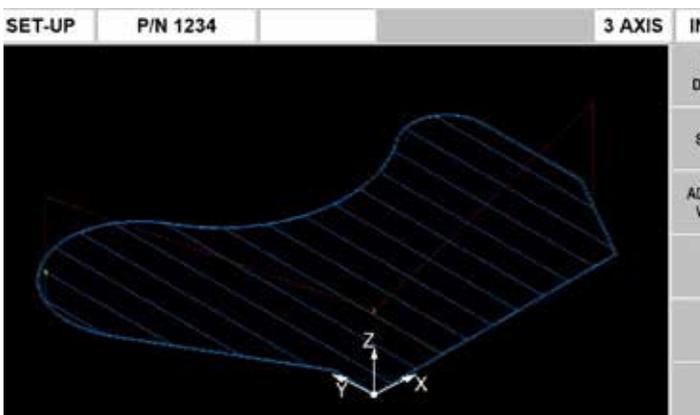
SET-UP	P/N 1234		3 AXIS	INCH
TOOL #	DIAMETER	Z OFFSET	Z MODIFIER	TOOL TYPE
Z RETRACT		SET		
1	0.5000	BASE	0.0000	Finish End Mill

Enter tool type number and press SET:

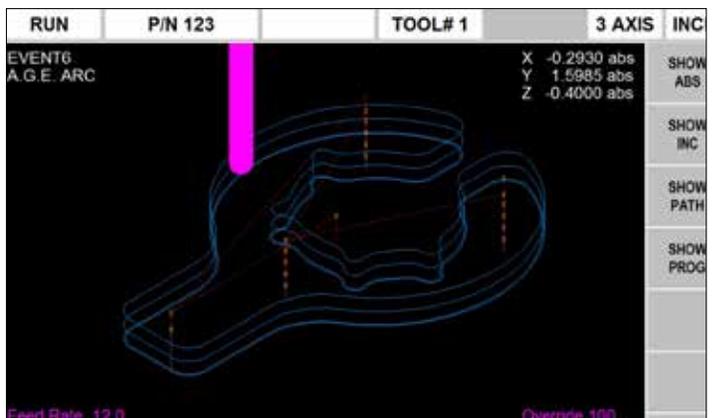
1.Drill	6.Counterbore	11.Reamer
2.Center Drill	7.Countersink	12.Thread Mill
3.Rough End Mill	8.Tap	13.Form
4.Finish End Mill	9.Boring Bar	14.Other
5.Face Mill	10.Ball End Mill	

TOOL #1 TOOL TYPE : 4

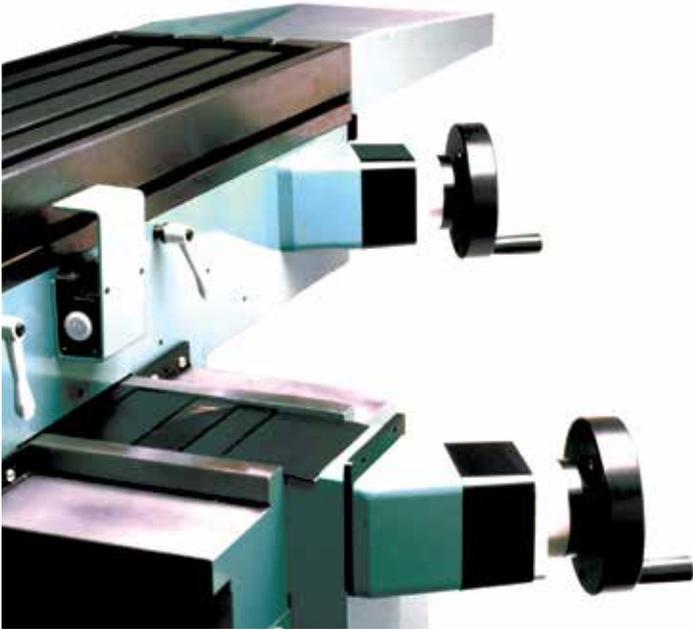
Check your program with convenient graphics



View your programmed toolpath during program run



Options for the ProtoTRAK KMX



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

ProtoTRAK KMX Specifications

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

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 30 years, we know how to give you the best possible outcome.



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

An Exciting New Upgrade

For Your ProtoTRAK CNC



Modern Hardware Platform

- USB Storage replaces the floppy disc drive
- Crisp color LCD replaces monochrome CRT
- Warranty and Express Exchange Protection far into the future

Improved Navigation

- Edit right in program mode
- Save Temp to retain tool table after shut down

Exciting New Features

- Enhanced Auto Geometry Engine
- Enhanced Screen Graphics
- Optional TRAKing®

Easy Transition

- Same look and feel of your current ProtoTRAK
- Quick start guide will have you running parts in minutes



ProtoTRAK MX2 and MX3
Manufactured from 1992 to 1996



ProtoTRAK M2 and M3
Manufactured from 1996 to 2001



TRAK AGE2 and AGE3
Manufactured from 1996 to 2001

On these Machines:

- Bridgeport® and Bridgeport® -style retrofits
- TRAK® Bed Mills
- TRAK® Knee Mills
- Sport Machines

More TRAK Machines for all your shop needs



RMX DPM Bed Mills



RLX CNC Lathes



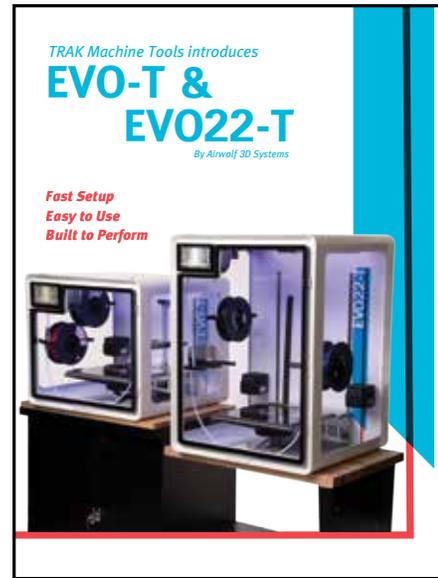
Toolroom Machining Centers



TRAK 1440EX Lathe



3D Printers by 3ntr



3D Printers by Airwolf



TRAK VMC2

Want to see more? Check out our website or call for demo



TRAK[®] MACHINE TOOLS

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