TRAK® MACHINE TOOLS

TRAK Toolroom Lathes

The Ideal Machines for Short Run and Toolroom Turning

TRL 1630SX

SOUTHWESTERN INDUSTRIES, INC.

TRAK Toolroom Lathes

Only TRAK Toolroom Lathes have what you need to make every turning job easier and more productive

The ProtoTRAK CNC is always easy to use

- Manual turning when you need it
- CNC with manual tool changes
- Light production CNC with programmed tool changes

TRL 1440EX

The CNC that can work like a DRO

Manual turning has never been more productive. The DRO features of the ProtoTRAK SLX CNC will make every turning job easier.

TRL 1630SX

Tool setting is precise and easy

Tool data is even useful in manual operation

Thread without Sweating

A few inputs into the ProtoTRAK SLX or ELX CNC and the control will make easy work out of manual threading. You will not miss the old way.

TRL 1630HSSX

Real Handwheels

So you can move the machine manually when that's the best way to get something done.

TRL 1845SX

Cycle Programming

Automatically remove stock with a few inputs.

Generous X axis travel

To accommodate a variety of tool setups

TRL 2470SX

TRAKing® *Our favorite option!*

You control CNC program run by cranking one of the handwheels. You have to see it to apreciate what it will do for your productiviy.

Precision Ground Ballscrews

For accurate, precise positioning.

Not all features are found on all models. Turn page and read on!

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TRAK TRL 1630SX

A great combination of low price and advanced capability

TRL 1630SX

Like all our SX Lathes, the TRAK TRL 1630SX features:

- ProtoTRAK SLX CNC
- Manual or CNC operation
- Electronic hand wheels and jogstick
- Inverter-duty spindle drive
- Programmable spindle speeds
- Optional Constant Surface Speed (CSS) Programming
- Optional Inch Per Revolution (IPR) Programming
- Optional TRAKing for manual control of CNC programs
- Optional Indexer for automatic tool changes

With these important differences:

- 16" swing, 30" between centers
- Spindle through hole of 2.12"
- Ideal for small parts, but a generous swing for versatility
- At home in a toolroom

TRAK TRL 1630HSSX

The high-speed version of the 1630SX

TRL 1630HSSX

Like all our SX Lathes, the TRAK TRL 1630HSSX features:

- ProtoTRAK SLX CNC
- Manual or CNC operation
- Electronic hand wheels and jogstick
- Inverter-duty spindle drive
- Programmable spindle speeds
- Optional Constant Surface Speed (CSS) Programming
- Optional Inch Per Revolution (IPR) Programming
- Optional TRAKing for manual control of CNC programs
- Optional Indexer for automatic tool changes

With these important differences:

- Higher rpm version of the 1630SX
- 150-4000 rpm
- Spindle through hole 1.57"

At home in a lab or wherever smaller parts are made

TRAK TRL 1845SX

Generous capacities and excellent performance over its entire range of motion

TRL 1845SX

Like all our SX Lathes, the TRAK TRL 1845SX features:

- ProtoTRAK SLX CNC
- Manual or CNC operation
- Electronic hand wheels and jogstick
- Inverter-duty spindle drive
- Programmable spindle speeds
- Optional Constant Surface Speed (CSS) Programming
- Optional Inch Per Revolution (IPR) Programming
- Optional TRAKing for manual control of CNC programs
- Optional Indexer for automatic tool changes

With these important differences:

- 18" swing, 45" between centers
- Spindle through hole of 2.36"
- Geared head for excellent performance at slower speeds
- 10 HP continuous spindle motor
- Machine efficiently through the full 18" of working diameter
- High (aluminum) and low (steel) speed range settings.
- Good performance for heavy cuts on parts with diameters over 4"

TRAK TRL 2470SX

Our largest lathe combines capacity, rigidity and the versatility of the ProtoTRAK SLX CNC

TRL 2470SX

Like all our SX Lathes, the TRAK TRL 2470SX features:

- ProtoTRAK SLX CNC
- Manual or CNC operation
- Electronic hand wheels and jogstick
- Inverter-duty spindle drive
- Programmable spindle speeds
- Optional Constant Surface Speed (CSS) Programming
- Optional Inch Per Revolution (IPR) Programming
- Optional TRAKing for manual control of CNC programs
- Optional Indexer for automatic tool changes

With these important differences:

- 24" swing, 70" between centers
- Generous 4.09" spindle through hole
- 15 HP continuous spindle motor
- Geared head for good performance at low speeds
- Tapered roller bearings
- High (aluminum) and low (steel) speed range settings.

ProtoTRAK SLX CNC

- Always easy to use
- Outstanding precision and repeatability
- Advanced technology adapted to small lot applications
- Easy transition between manual and CNC turning

Programming is always easy with the ProtoTRAK SLX

- **Few keys** to memorize and use
- **No Codes** – always plain shop language
- **Prompted inputs** – tell the SLX what you want and then fill in the prompted data
- **LOOK graphics** to see a picture of what you've programmed as you go
- **Powerful canned cycles** to easily program complex profiles
- **Connecting chamfers and radii** are programmed with a single data input

Thread programming in a few simple inputs

Combine **Turn** and **Arc** events to make complex profiles

Just a few simple inputs in the powerful Cycle event...

...and the hard work of defining the tool path is done for you automatically.

With most CNCs you must define your part in terms of toolpath. But with the powerful cycle capability of ProtoTRAK lathe CNCs, you simply define your part geometry and the dimensions of your stock. The toolpath is generated automatically.
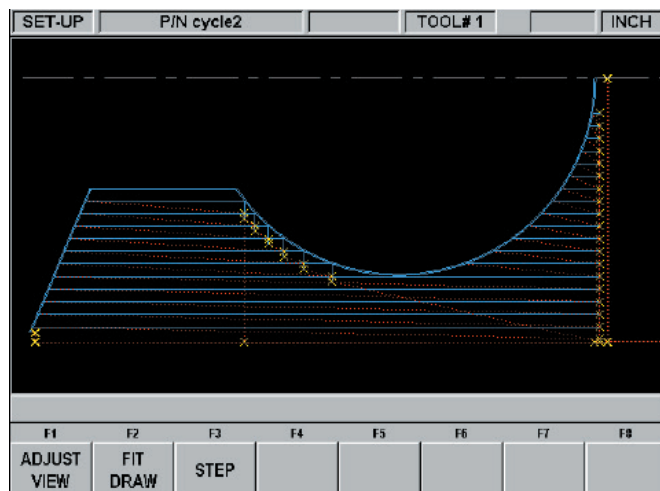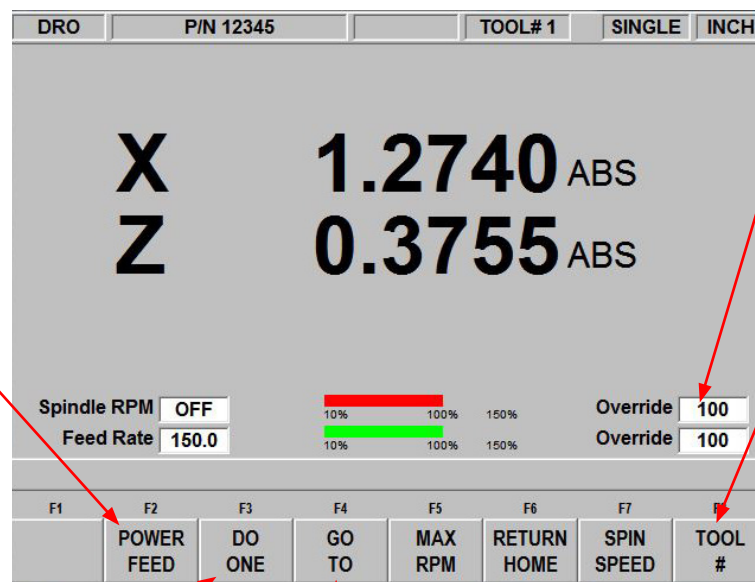
Manual Turning has never been so productive
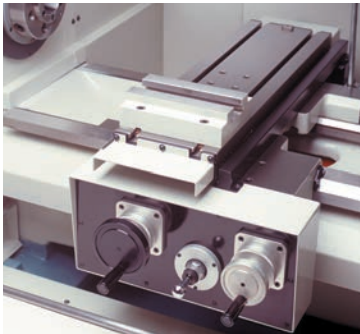
Electronic Handwheels Transform Manual Turning

- CNC integration with the Electronic Handwheel gives you useful CNC functionality without the programming and setup.
- Fine/Course Resolution is selectable so that you may choose between rapid positioning and precise motion.
- Jog Stick for convenient rapid traverse

DRO Mode for Manual Operation

Big, Bright position readouts

show selectable Absolute or Incremental dimensions

Power Feed

for controlled feed of each axis for the exact distance you specify

Do One

to move simultaneously in both axis to machine precise chamfer or radius

| DRO | P/N 12345 | | | TOOL# 1 | SINGLE | INCH |

X   **1.2740** ABS
Z   **0.3755** ABS

Spindle RPM   OFF
Feed Rate   150.0

10%   100%   150%
10%   100%   150%

Override   100
Override   100

| F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 |
| | POWER FEED | DO ONE | GO TO | MAX RPM | RETURN HOME | SPIN SPEED | TOOL # |

Fingertip control

of axis feed and spindle speed overrides

Tool#

loads in the tool offsets from your tool library so you don't have to touch off tools every time you make a change

Manual GoTo

where you set a dimension in X, Z or both. Once you reach that dimension, the motion stops

Thread Repair
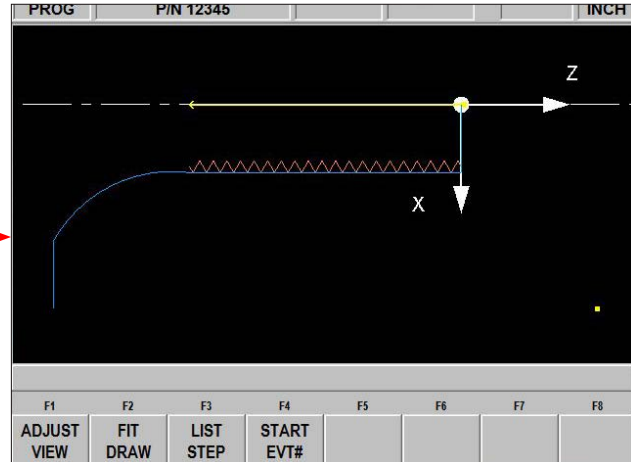
to pick up and remachine threads in a quick, easy process

Advanced Graphics to identify mistakes and keep you working fast
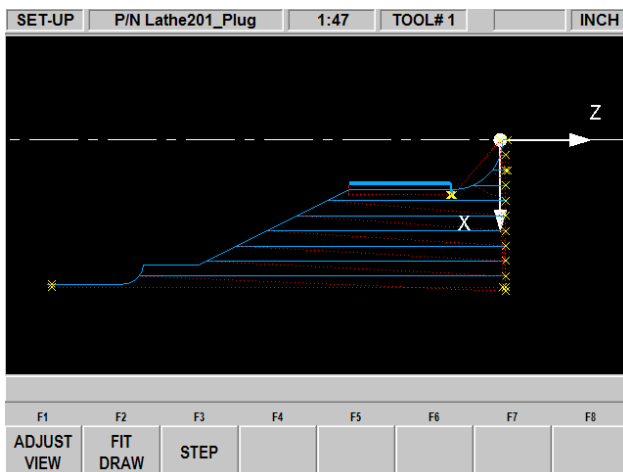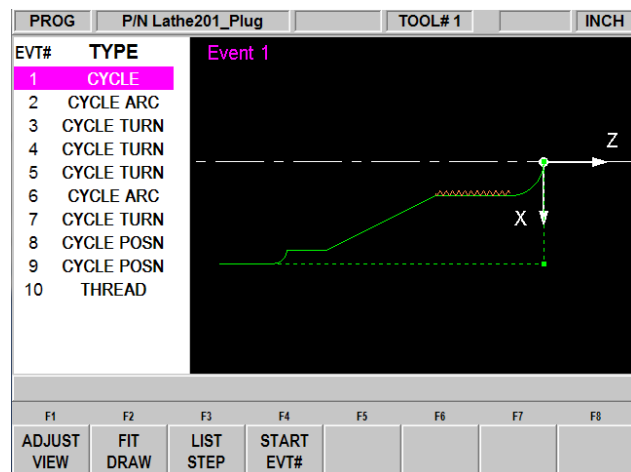

LOOK - Toggle between program view and part graphics with the single press of the LOOK Hard key

Tool Path Graphics

- See where the control plans to move the tool prior to machining
- Easily catch mistakes with error messages, colors, and selectable views

List-Step Graphics

- See a full screen view of your programming progress with the push of a button
- Use the list step graphics to easily isolate program problems
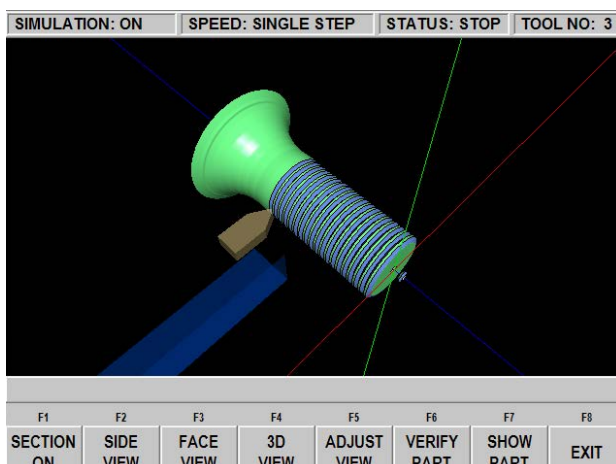
Verify Machining Simulation

- Verifies Prototrak or G-Code generated programs for errors
- Watch tools machine and display the finished part

Powerful Features that are always easy to use

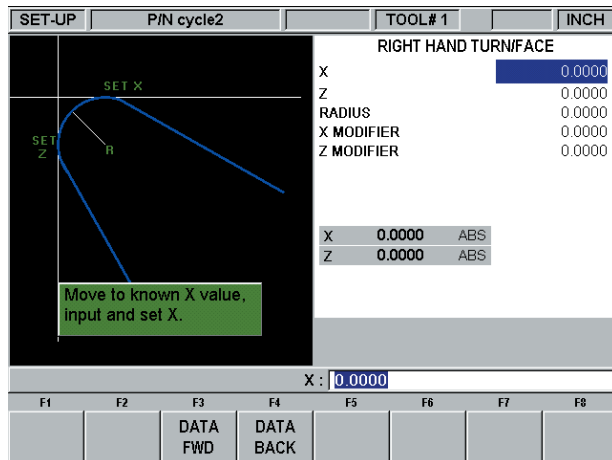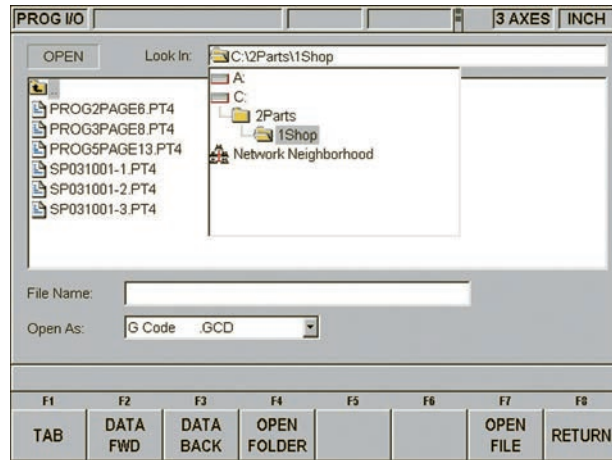## Easy, Convenient Lathe Tool Setting
- Save tool data for use on different programs or even apply to manual work in DRO mode

Advanced File Management
- Access different drives, copy and rename files and look at part graphics before opening a file
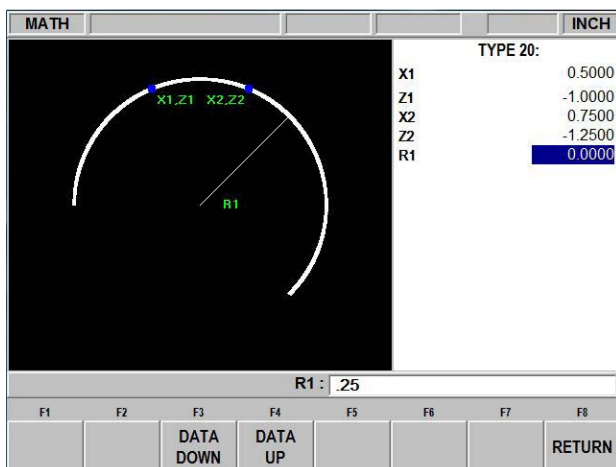- Back up programs easily with the automatic back up routine

Tooling Choices
Easily program your ProtoTRAK to use manual or automatic tool changes
- Single – manual tool changes
- Gang – set up and run jobs with gang tooling
- CNC Turret – choose between optional 4 or 8-station

Networking via RJ45 Port and Ethernet Card
- Network your ProtoTRAK with a server or another ProtoTRAK
- File, share, or back-up programs from your machine
- Collaborate easily - centralized file management helps assure revision control

Spreadsheet Editing
- View data for your whole program at once
- Sort and make changes to a group of events with the press of a button

Run-Time Clock
- Easily see on the ProtoTRAK display how much time remains before the control is programmed to stop for a tool change

Your choice of program feed: Inch Per Revolution or Surface Feet Per Minute for Constant Surface Speed Machining.

Math Helps
to easily calculate missing print data. Auto load puts the solution into the event you are programming.

DXF Converter | A simple process that you control

Easily convert dimensions from a DXF or DWG file into a ProtoTRAK program.

- Works with ProtoTRAK SLX CNCs on the shop floor or with the ProtoTRAK Offline system
- Easy process that ProtoTRAK machinists can learn in minutes
- Milling and turning versions available

Layer Selection

- View the entire file and select the layers you want to machine
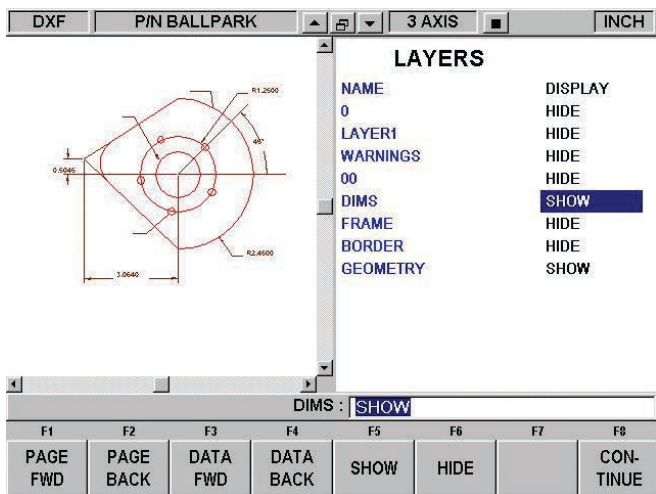
Interactive, Prompted Selection of Geometry

- Program events in the order you choose
- Once the event type and dimensions are loaded it's easy to fill in the prompts
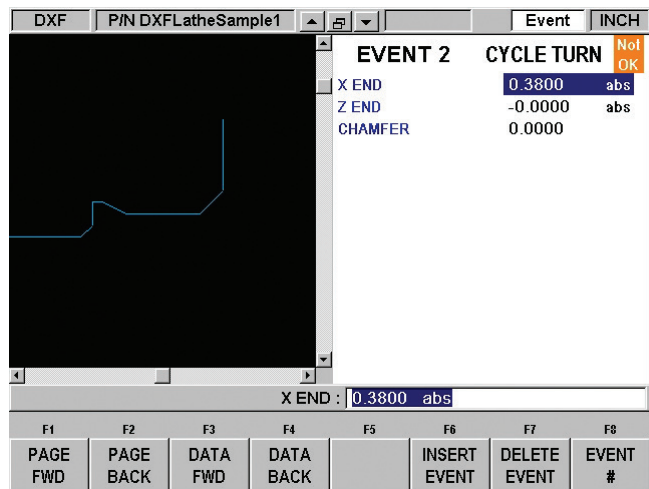
Chaining

- Program the entire geometry of Pocket or Profile peripheries with just two clicks – tell ProtoTRAK where to start then tell it which direction to go. The rest of the connected events are loaded automatically
- The seven events below were programmed as easily as clicking two lines
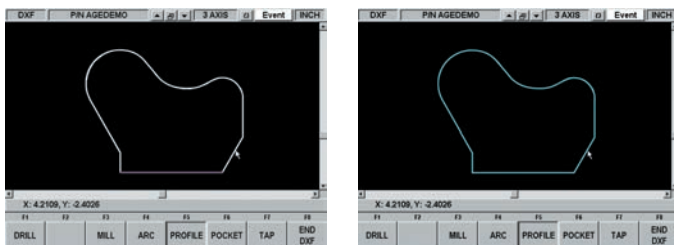
Line Editing

- If lines drawn in a DXF file can't be machined as drawn, the DXF converter enables you to insert or hide lines to get past these problems. No need to go back to the CAD department.
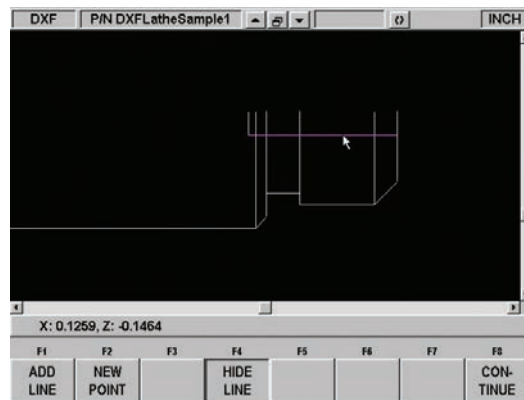
Specifications for the ProtoTRAK SLX for Lathes

(O) – optional feature

Control Hardware

- Two-axis CNC, Two-axis DRO
- Electronic handwheels for manual operation
- 10.4" color active-matrix screen
- Industrial-grade Pentium® processor
- 1 GB Ram
- 4 USB connectors
- RJ45 port and Ethernet card (O)
- Override of program feedrate
- Override of program spindle speed
- LED status lights built into display
- Gasket-sealed enclosures
- Jogstick for convenient jog
- USB thumb drive flash memory 512 MB or more
- Uncluttered front panel with few hard keys

Software Features – General Operation

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

DRO Mode Features for Manual Machining

- Incremental and absolute dimensions
- Powerfeed X or Z
- Tapers of any angle
- Radius
- Fillet
- Go To dimensions (O)
- Servo motor return to Home
- Spindle speed setting with override
- Tool offsets from library
- Fine/Course handwheel resolution
- Thread repair (O)

Program Mode Features

- Geometry-based programming
- Event comments (O)
- Incremental and absolute dimensions
- Automatic tool nose radius compensation
- Circular interpolation
- Linear interpolation
- Look –graphics with a single button push
- List step – graphics with programmed events displayed
- Alphanumeric program names
- Canned cycles:
  - Position
  - Drill
  - Bore
  - Turn
  - Arc
  - Cycle
  - Thread
  - Groove
  - Custom thread (O)
  - Tap (O)
- Conrad – one input for automatic corner radius programming
- Chamfer – one input for automatic chamfer programming
- Math Helps with graphical interface
- Auto load of math solutions
- Subroutine repeat of programmed events
- Nesting
- Programmable spindle speeds
- CSS (Constant Surface Speed) (O)
- IPR (Inch per Revolution) programming (O)
- Gang Tooling (O)

Edit Mode Features

- Clipboard to copy events to another program (O)
- Spreadsheet editing (O)
- Global data change (O)

Set Up Mode Features

- Program diagnostics
- Advanced tool library
- Tool library file save
- Icon-prompted tool setting
- Tool offsets with modifiers
- Single tool set-up
- Gang tool set-up (O)
- Indexer tool set-up (O)
- Advanced diagnostic routines
- Software travel limits
- Tool path graphics with adjustable views
- Program run time estimation clock (O)

Run Mode Features

- CAM file program run
- Automatic coolant on/off
- Real time run graphics with tool icon
- Countdown clock to next pause or tool change (O)
- TRAKing of programs during program run (O)
- Automatic indexing for tool change (O)
- Gang Tool Operation (O)

Specifications are subject to change or modification.

Options for the ProtoTRAK SLX

Program In/Out Mode Features

- Simple program storage to USB flash drive
- CAM IN program converter
- CAM OUT converter to run ProtoTRAK programs on different controls (O)
- Converter for prior-generation ProtoTRAK programs
- DXF / DWG Converter (O)
- Selection of file storage locations
- Automatic file back up routine
- Preview Graphics for unopened files
- Networking via RJ45 port (O)

Advanced Features Option

- Verify Machining Simulation
- CSS (Constant Surface Speed) programming
- IPR (Inch per Revolution) programming
- Spreadsheet editing
- Global data change
- Clipboard to copy events to another program
- Event comments
- Program run time estimation clock
- Gang tool operation
- Additional Canned Cycles:
  - Custom thread
  - Tap
  - Thread repair

Networking Option

- Networking via RJ45 port

TRAKing® Option

- TRAKing of programs during program run
- GoTo Dimensions

DXF File Converter

- Import and convert CAD data into ProtoTRAK programs
- DXF or DWG files
- Chaining
- Automatic Gap Closing
- Layer control
- Easy, prompted process you can do right at the machine
- Verify Software

TRAKing® - Our favorite option

You control the programmed toolpath as you crank one of the handwheels. Get a demo to see for yourself the dramatic impac this can have on your productivity.

TRAK TRL 1440EX

The look and feel of a manual lathe, but with CNC efficiency

- Geared head
- Easy to learn and use - Ideal where many users share the machine
- Basic CNC turning capabilty
  - threading
  - profiling with standard tools
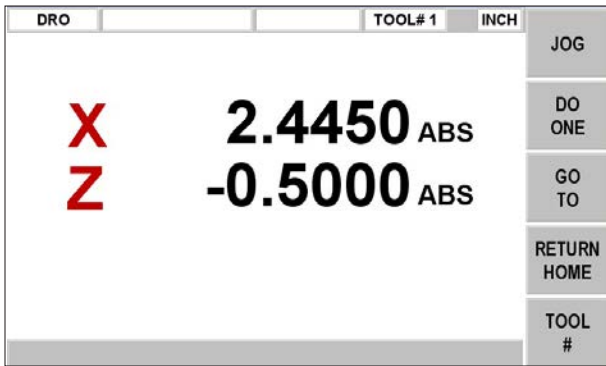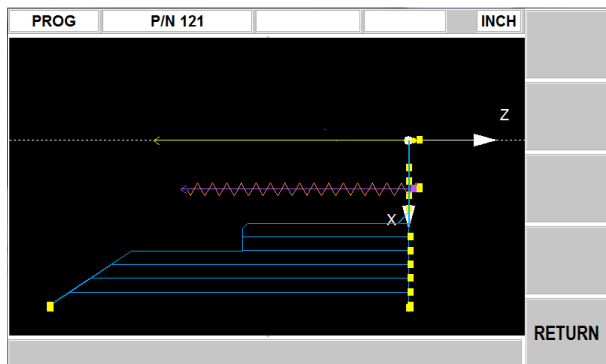 - accurate and repeatable from part to part

TRL 1440EX

ProtoTRAK ELX

Programming is always easy.
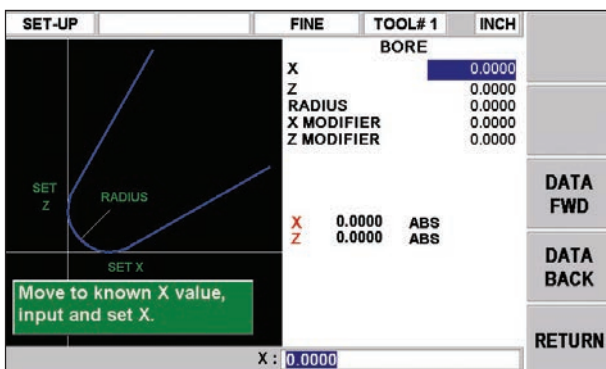Just select the geometry and answer the prompts.

DRO Mode gives you CNC functionality for manual turning work.

Part Graphics make it easy to check your programs.

Cycle: Just program the profile you want and the ELX will program the toolpath to clear the stock for you.

Tool Setting

- Set tools easily with the prompted, graphical interface
- Tool data is applied to CNC and manual machining

ProtoTRAK ELX 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
- Electronic Handwheels for manual operation
- Fine/coarse selectable manual movement
- Jog button in DRO

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 Turn to eliminate repetitive data inputs while programming
- Context help information
- CAM to ProtoTRAK conversational language file conversion
- Cycle event to automatically program roughing passes
- Tool table and tool offsets for CNC and manual operation
- Free offline programming available for download from our website

Options

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

Programming Canned Cycles

Position
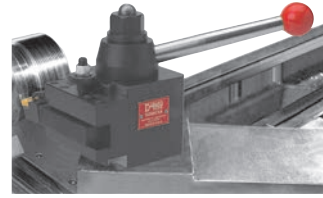Drill/Bore
Turn
Arc
Cycle
Thread
Repeat

Lathe Options

Chuck

- Direct mounting, featuring separate top jaws and master jaws
- Chucks offered for each model are rated from the maximum RPM of the lathe

TRL Model		Through Hole
1440EX	6" D1-4	1.57"
1630SX	8" D1-6	2.36"
1630HSSX	6" A2-4	1.77"
1845SX	8" D1-6	2.36"
2470SX	12" D1-8	4.160"

Tooling Kit

- Dorian brand tooling kit contains a tool post and a variety of tool holders
- The tool post has a release mechanism for quick, easy tool changes. Repeatable within .001"

Model	Tooling
1440EX	3/4"
1630SX	3/4"
1630HSSX	3/4"
1845SX	3/4 or 1"
2470SX	1"

The tooling kit includes:

- a quick-change tool post
- 4 each 3/4" or 1" square tool holders for turning, facing and boring
- 1 each boring tool holder
  for the 3/4" tooling kit – 1" holder
  for the 1" tooling kit – 1.25" holder

Star 4-Position Indexer

- Integrated into the ProtoTRAK SLX CNC
- Four stations that index with the control command

Model	Tooling
1630SX	3/4"
1630HSSX	3/4"
1845SX	3/4 or 1"
2470SX	1"

Follow Rest

- Solid brass nib type

Model	max workpiece dia. (inches)
1440EX	1.97"
1630SX	5"
1630HSSX	5"
1845SX	3.94"
2470SX	6.5"

TRAK CNC Turret

- Eight stations
- Coolant supplied at each tool

Model	Tooling
1630SX	3/4"
1630HSSX	3/4"
1845SX	3/4 or 1"
2470SX	1"

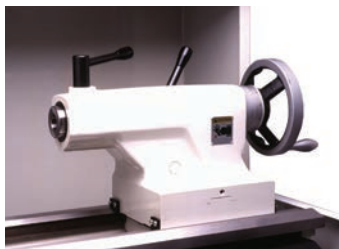Supplied with two each boring bar holders

Remote Stop/Go Switch
- A hand-held switch to stop and continue program run

Collet Closer
- 5C collet closer
- Extended taper mount nosepiece
- Available for models 1845SX, 1630SX, 1630HSSX and 1440EX.
- Not available for 2470SX

Tailstock
- Optional for models 1630SX and 1630 HSSX
- Standard on all other lathe models

Advanced Features
- Constant surface speed
- Additional canned cycles
- Verify Machining Simulation
- And more. See SLX CNC specifications on pages 14-15 for full list

Work Lamp
- Mounts on the underside of the chip enclosure

Coolant Pump
- May be configured to operate as commanded by the Accessory Key on the ProtoTRAK SLX front panel
- 1440EX coolant pump turned on and off by switch on apron

TRAKing™
- Use electronic handwheels to control CNC run – see page 10 for more information
- Not available on model 1440EX

Steady Rest

Model	Diameter	Type
1440EX	.20 to 2.36"	roller
1630SX	.500 to 5.75"	roller
1630HSSX	.500 to 5.75"	roller
1845SX	0.4 to 7.87"	roller
2470SX	1.5 to 8"	roller

Faceplate

Model	Diameter
1440EX	10 inches
1630SX	12 inches
1845SX	14 inches
2470SX	20 inches
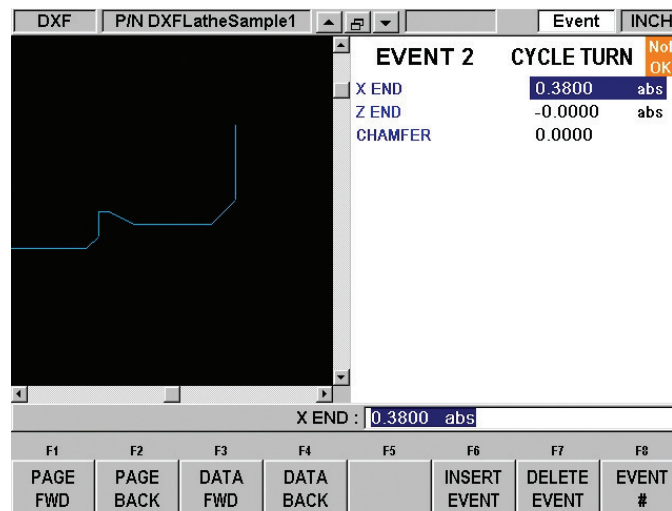
DXF Converter
- Translate CAD-generated data into ProtoTRAK programs right at your machine
- For use on the ProtoTRAK SLX and Offline Programming.

Networking Option
- Connect your ProtoTRAK to a network of other ProtoTRAKs or offline computers
- Not available with the ProtoTRAK ELX

Specifications for TRAK TRL Lathes

|	1440EX	1630SX	1630HSSX	1845SX	2470SX
ProtoTRAK CNC model	ELX	SLX	SLX	SLX	SLX
Height of Centers	7"	8"	8"	9"	12"
Distance between Centers	40"	30"	30"	45"	70"
Swing over bed	14"	16"	16"	18.1"	24"
Swing over Saddle Wings	14"	16"	16"	17"	24"
Swing over Cross Slide	7.0"	8.6"	8.6"	9.13"	14.5"
Cross Slide Travel	8.0"	8.5"	8.5"	10.6"	12.5"
Tool Section Max	3/4"	3/4"	3/4"	1"	1"
Coolant Tank Capacity	3 gal.	9.3 gal.	9.3 gal.	12 gal.	15 gal.
Width of Bed	8.1"	12.6"	12.6"	13.4"	14.57"
Height of Bed	10.6"	12.6"	12.6"	12.4"	15"
Spindle Nose	D1-4	D1-6	A2-4	D1-6	D1-8
Spindle through Hole	1.56"	2.12"	1.57"	2.36"	4.09"
Spindle Taper	MT#5	MT#6	MT#5	MT#6	MT#8
Taper in Reduction Sleeve	3	N/A	N/A	MT#4	MT#5
Spindle dia at front bearing	2.36"	3.15"	2.56"	3.35"	5.51"
Number of Bearings	2	2	5	2	2
Spindle Speed Range (RPM)	60–2400	150–2500	150–4000	80–850, 250–2500	40–670, 100–1800
Number of Speeds	12	1	1	2	2
Tailstock	Standard	Optional	Optional	Standard	Standard
– Quill Travel	5"	6.3"	6.3"	6"	8.5"
– Quill Diameter	1.575"	2.36"	2.36"	2.56"	3.5"
– Quill Taper Hole	MT#3	MT#4	MT#4	MT#4	MT#5
Spindle Motor HP	5	7.5	7.5	10	15
Power Requirements, Control	110V; 1P; 8A	110V; 1P; 12A	110V; 1P; 12A	110V; 1P; 12A	110V; 1P; 12A
Power Requirements, Machine	220V; 3P; 60Hz	220V; 3P; 60Hz	220V; 3P; 60Hz	220V; 3P; 60Hz	220V; 3P; 60Hz
Amps full load current	15	25	25	33	42
Dimensions net	73" x 44" x 57"	82" x 46" x 72"	82" x 46" x 72"	94" x 52" x 73"	129" x 60" x 77"
Dimensions shipping	78" x 49" x 67"	85" x 46" x 67"	85" x 46" x 67"	91" x 52" x 84"	134" x 64" x 77"
Weight net	1800 lbs.	2875 lbs.	2875 lbs.	3285 lbs	6500 lbs.
Weight shipping	2200 lbs.	3420 lbs.	3420 lbs.	3800 lbs	6900 lbs.
Maximum Rapid Feed X (IPM)	100	100	100	100	100
Maximum Rapid Feed Z (IPM)	100	150	250	250	250
Coolant Pump Motor	1/8 HP	1/8 HP	1/8 HP	1/8 HP	1/8 HP
Spindle Motor Brake	Magnetic	Dynamic Braking	Dynamic Braking	Dynamic Braking	Dynamic Braking
Way Surface Hardness	400 – 450 HB	400 – 450 HB	400 – 450 HB	480 - 560 HB	400 – 560 HB
Head Stock Lubrication	Splash Lube	Oil Bath	Grease	Oil Bath	Oil Bath

Options for TRAK TRL Lathes

- Remote Stop/Go Switch
- Chuck
- Collet Closer (not available for the 2470SX)
- Coolant Pump
- Face Plate
- Follow Rest
- Steady Rest
- Tailstock (optional for the 1630SX and 1630HSSX only)
- Tooling Kit
- Work Lamp
- CNC Turret – 4 or 8-Station
- TRAKing

TRAK CNC Turret

Configure your TRAK TRL Lathe for low volume production turning
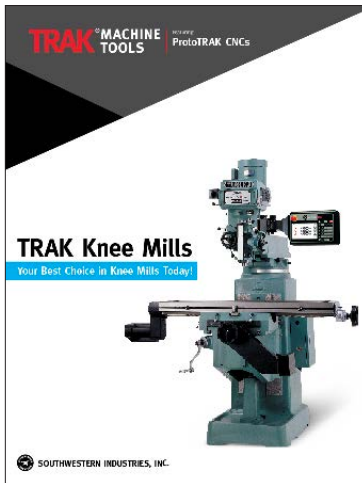
All New Design

Factory-direct Support
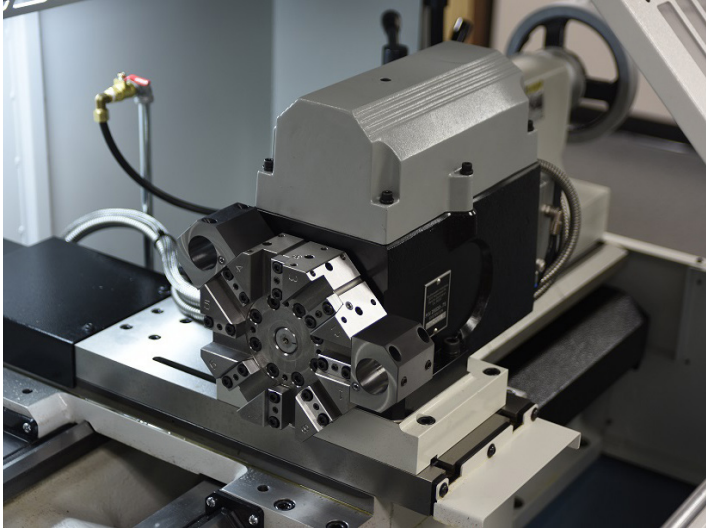
- Eight stations
- Easy programming for automatic tool changes
- Coolant supplied at each tool
- Comes with 2 ea. Boring Bar Holders Standard

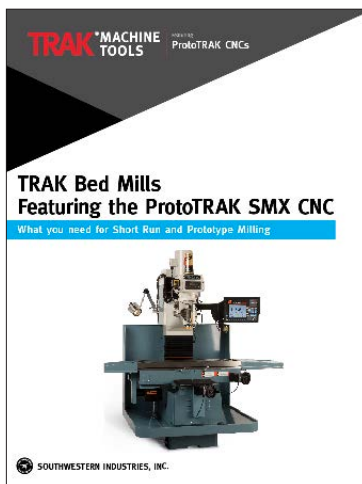Available as a factory-fit option or installed in your shop

Not available on model TRl 1440EX

TRAK Machines for Short Run/Protoype work

TRAK Knee Mills

- The best built, best supported knee-type milling machines you can buy
- Factory integrated ProtoTRAK CNC
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TRAK Bed Mills

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- 4 models starting at around $32,000
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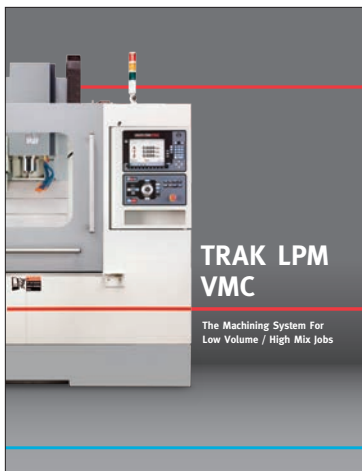- Exciting new features will give you a great boost in productivity!

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Design: Selbert Perkins Design Collaborative, F16901