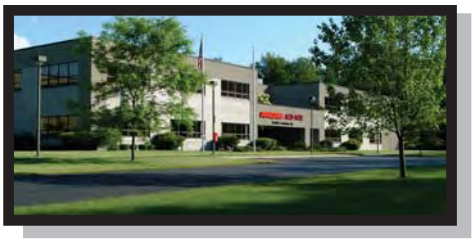
4200T

Conversational CNC Controls for Turning

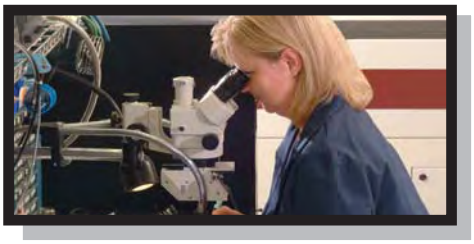
ANILAM®

ANILAM is CNC technology and people.

ANILAM'S headquarters and manufacturing facilities are located in Jamestown, New York. We have been providing reliable, easy-to-learn control solutions for more than 25 years.



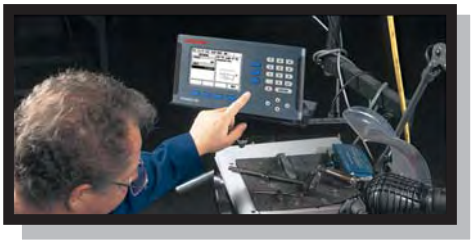
All our products, from software to hardware, are specified and designed by ANILAM. Our design team is continually working on innovative ways to improve our products based on market input from users and machine tool builders.



We provide a complete range of CNC products, from simple-to-learn 2-axis retrofits for automating manual machines to 5-axis-plus spindle digital solutions for production machines – and everything in between. Plus, all ANILAM products come with the programming format customers prefer.

ANILAM is an international company with offices located throughout the world, maximizing the support and commitment required for today's manufacturing needs. All ANILAM offices are staffed with qualified sales engineers and technicians.

ANILAM employees are prepared, experienced, and trained to recognize and understand your application needs. We are eager to assist and support customers from the initial product specification right through to the build. Our job begins even before the sale and continues right through with support for the user for as long as they own our product.



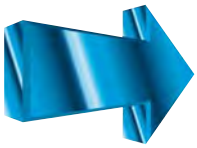
The ANILAM 4200T turning control is everything you asked for. And more. Use it as a DRO in manual mode. Use the semiautomatic, dual handwheel mode to cut in arcs and angles. Or, use it as a powerful CNC. Program it in teach-in mode. Program it with canned cycles. Use conversational programming, or even G-codes. The 4200T is the most versatile turning control available.

Ease of use
Intuitive interaction, no prior programming knowledge necessary.

Productivity
Minimum set-up times and automatic operation boost throughput.

Quality
Better finish, consistency and less scrap ensure less costs.

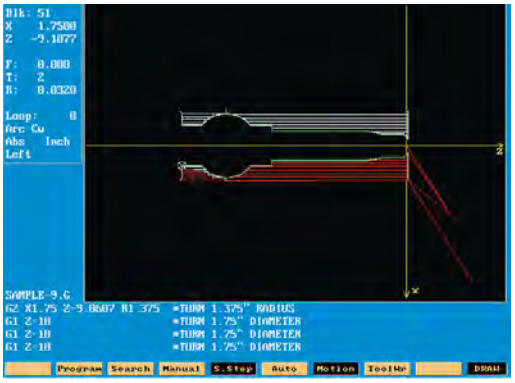
Versatility
More jobs to go for, more choice.



Profitability
Investment is paid off in almost no time, the rest becomes profit.

Manual mode
In manual mode, the lathe can be operated just as simply as if it had been a conventional lathe. Up to two electronic handwheels can be connected to run the axes. In addition, the 4200T provides a wealth of data and many useful features, for example constant surface speed (CSS).

Semiautomatic mode
The dual handwheel mode allows the machinist to cut in perfect arcs, tapers and chamfers. As only one hand-wheel is cranked, the 4200T will precisely control both axes to produce the desired shape.



Automatic mode
During automatic operation, the 4200T will control everything from start to finish. The machinist has several options on how to generate the program and some very powerful programming tools are available.

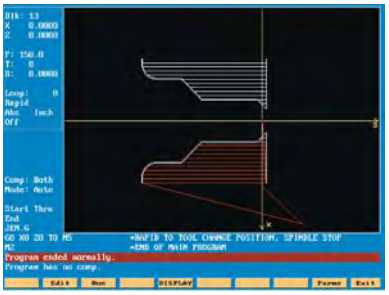
Single step mode
The single step mode allows the machinist to go through all or part of the machining process by executing the program step by step.

Programming Formats

The 4200T has a conversational programming utility. You don't have to have any prior programming experience. Screens are icon-based and you are prompted for data input. The intuitive interaction makes the control easy to learn.

As an alternative, the 4200T can be programmed direct in G-codes. This enables utilization of some sophisticated features such as parametric or variable programming. The 4200T has a help mode where G-codes are explained in clear text.

Programming Tools



Teach-in

In Teach-in mode, the machinist can manufacture the part manually while the 4200T records the corresponding program. Programming could not be easier. Additional parts can be manufactured in automatic mode.

Shape Editor

Any shape can be defined in the shape editor. Icons are used to select standard geometrical segments which, combined together, will form the desired shape. It is easy to build the shape as graphics simultaneously show the progress. The shapes generated can easily be used in combination with canned cycles.

Canned Cycles

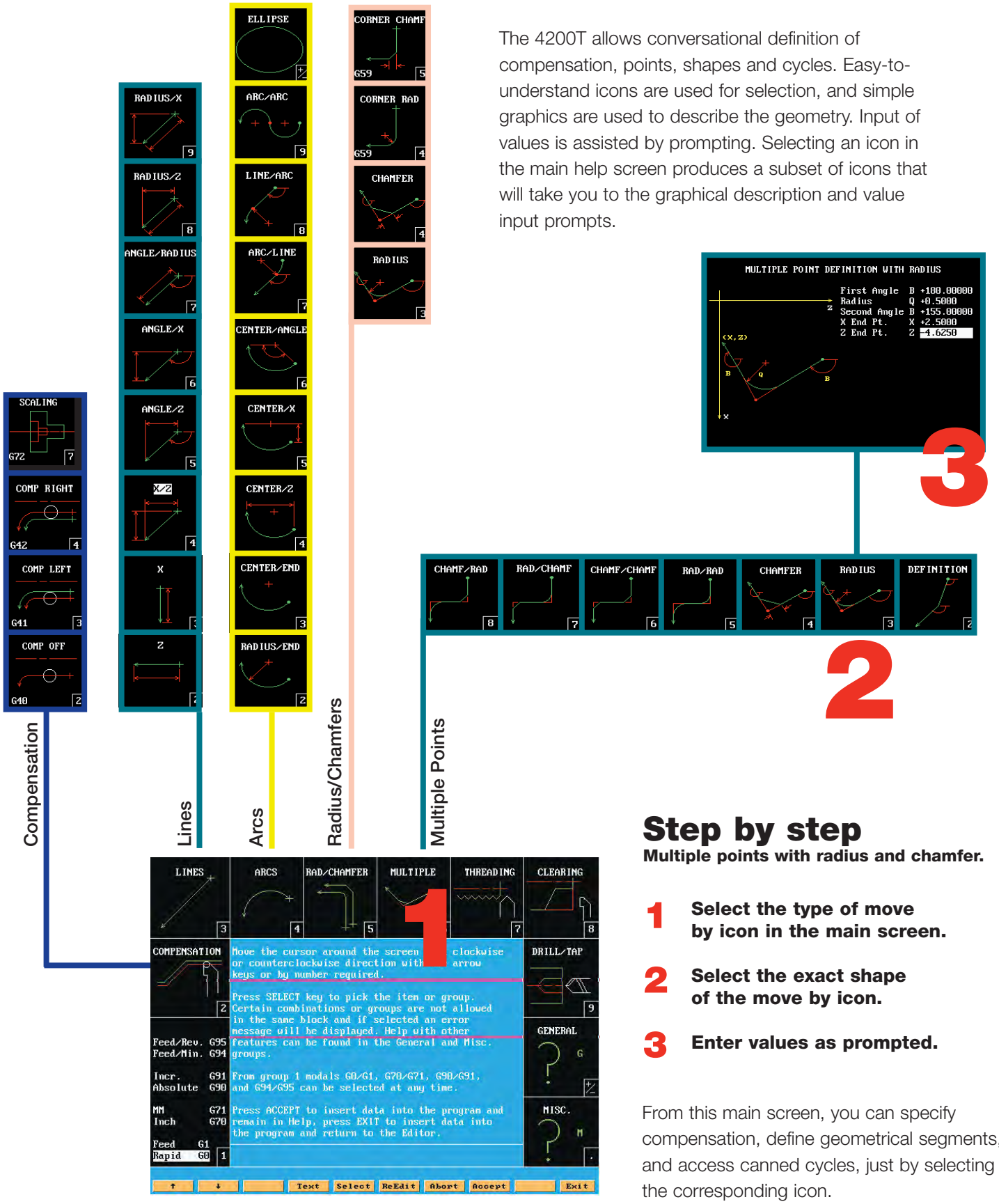
The 4200T has an extensive set of preconfigured cycles. Only a few parameters need to be specified to complete the program. The control will prompt for the required data with reference to simple graphical illustrations.

Draw Mode

When the program is completed, the draw graphics mode can be used to verify the part before machining it. Then simply edit the program if needed.

Icon-Based Programming

The 4200T allows conversational definition of compensation, points, shapes and cycles. Easy-to-understand icons are used for selection, and simple graphics are used to describe the geometry. Input of values is assisted by prompting. Selecting an icon in the main help screen produces a subset of icons that will take you to the graphical description and value input prompts.



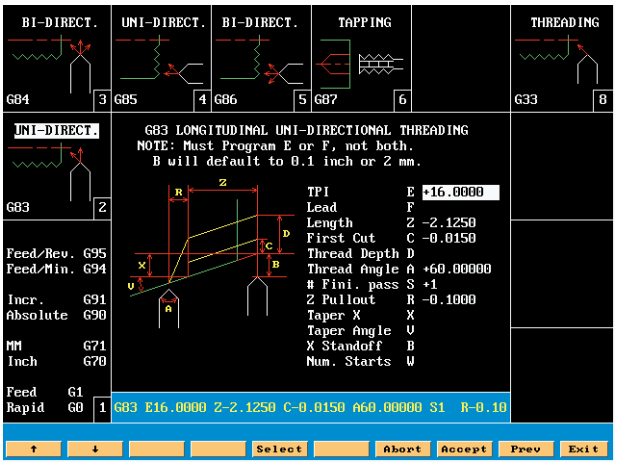
Step by step

Multiple points with radius and chamfer.

1. **Select the type of move by icon in the main screen.**
2. **Select the exact shape of the move by icon.**
3. **Enter values as prompted.**

From this main screen, you can specify compensation, define geometrical segments, and access canned cycles, just by selecting the corresponding icon.

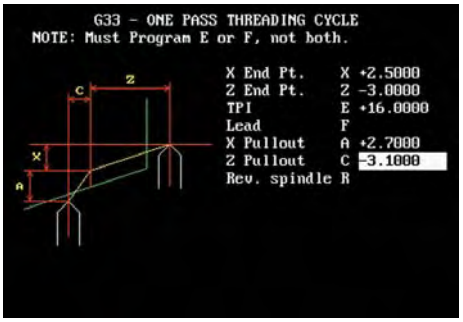
Canned Cycles: Threading



Longitudinal uni-directional threading

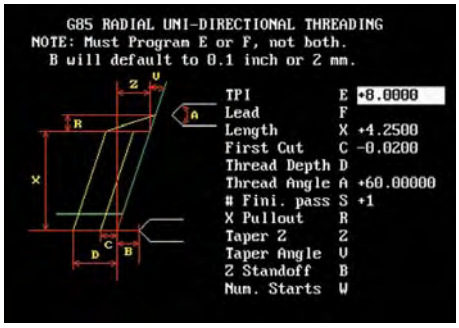
Thread using multiple passes with each pass moving down the leading flank angle.

ANILAM's threading cycles are designed to optimize thread cutting whether the thread is a standard straight thread, tapered pipe thread, Acme thread or even a multiple start thread. Using the threading cycles, only three entries are required to produce a thread: threads per inch (thread lead, for metric threads), length and first cut depth. The tapping cycle allows for tapping of any hole with standard taps. *(For the tapping cycle, refer to our drilling and tapping cycles page).*



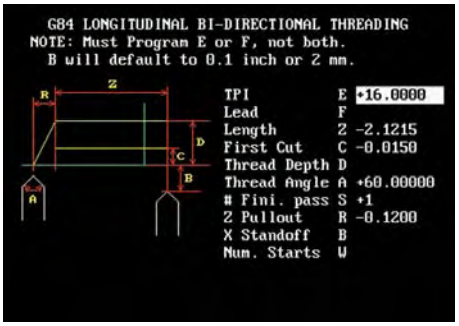
Single-pass threading

The single pass threading cycle is useful when generating very special or customized threads.



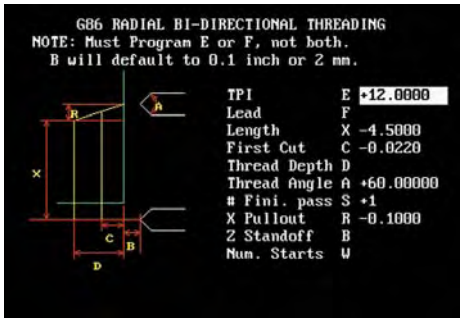
Radial uni-directional threading

Thread down a face using multiple passes with each pass moving down the leading flank angle.



Longitudinal bi-directional threading

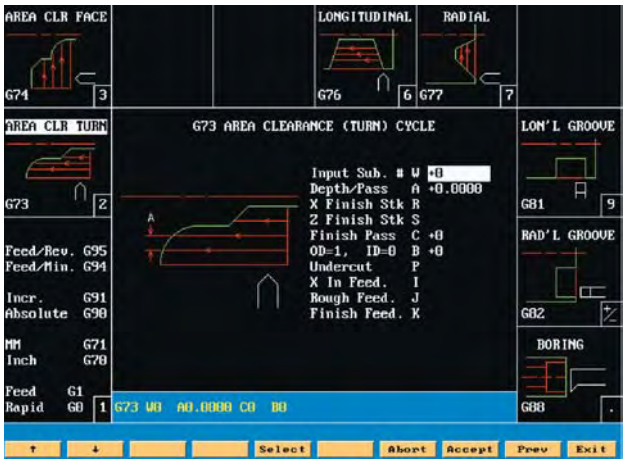
Thread using multiple passes with the passes alternating from the right to the left hand flank angles.



Radial bi-directional threading

Thread down a face using multiple passes with the passes alternating between each flank angle.

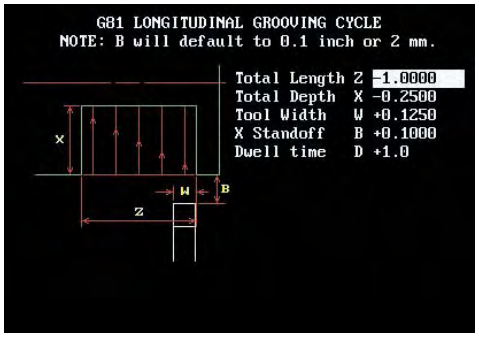
Canned Cycles: Clearing



Area clearance turn

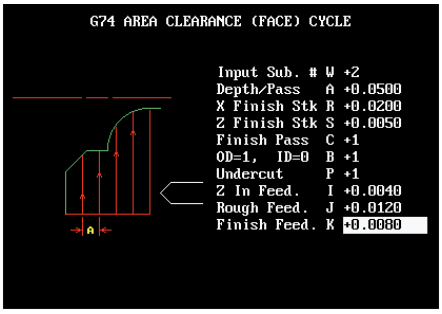
Used for rough and finish turning (OD) or boring (ID) to a profile. This cycle allows for a specified stock amount to remain after roughing for the finish profile pass.

ANILAM's clearing cycles provide for quick and efficient stock removal with a minimum of program input. The cycles are designed for metal removal to a profile, square shoulder, V-groove or square groove configuration by either turning, facing or boring. The simple, yet powerful clearing cycles are used for both rough and finish stock removal to a part profile. The part profile may be defined through direct programming, with icon-based programming using dimensions directly from the part print, or by creating the profile using ANILAM's easy-to-use, powerful shape editor. *(For the boring cycle, refer to our drilling and tapping cycles page).*



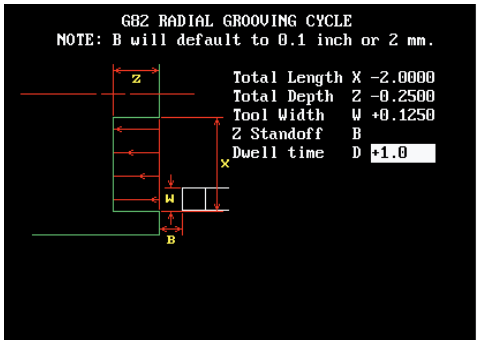
Longitudinal grooving

Used for plunge cutting a specified length groove on either the OD or ID of a component. This cycle allows any length of groove to be cut using any width of grooving tool, therefore reducing the number of tools required.



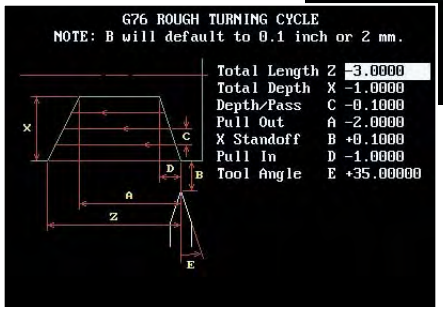
Area clearance face

Used for rough and finish facing to a profile. When machining large diameter parts, the rough facing passes allow the tool to remain "in the cut" longer, therefore reducing part cycle time.



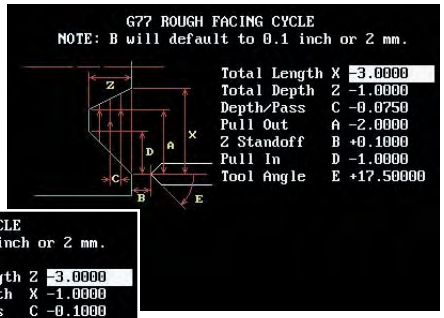
Radial grooving

Used for plunge cutting grooves into the face of a component to any specified length. This cycle allows any length of groove to be cut using any width of grooving tool, therefore reducing the number of tools required.



Rough turning

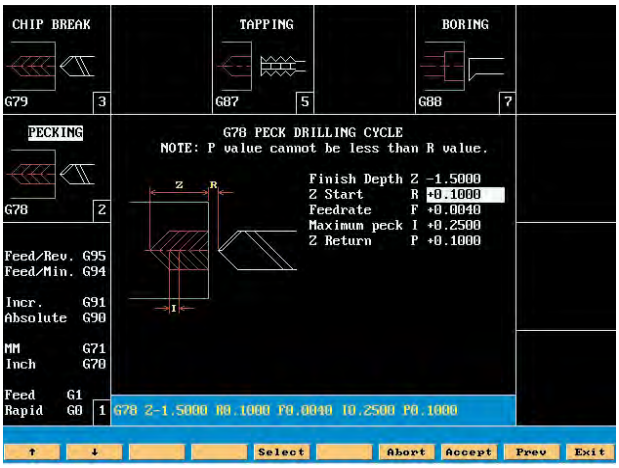
Used for rough turning a square shoulder, angle or a V-groove with minimal program entries.



Rough facing

Used for rough facing a square shoulder, angle or a V-groove with minimal program entries.

Canned Cycles: Drilling and Tapping

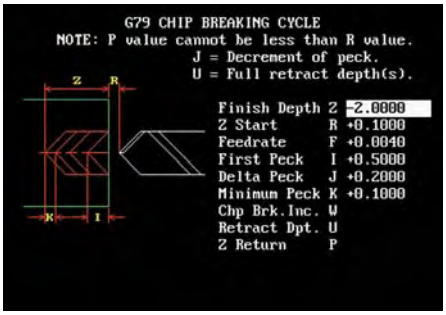


Peck Drilling

Used for drilling a specified length hole using a constant peck depth. Typically used for shallow holes where chip build-up is not a factor.

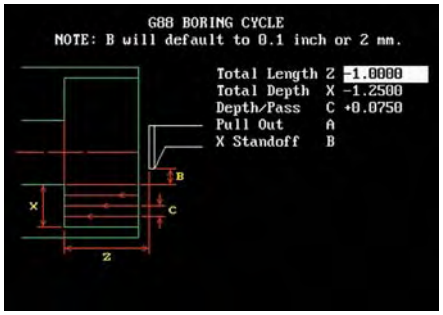
ANILAM's drilling and tapping cycles

include peck and chip-break drilling, boring and tapping. For drilling, the hole size is given by the drill, the cutting motion is determined by which cycle is selected. The peck drilling cycle is used for holes of moderate depth where a constant peck depth can be maintained. For deeper holes the chip-breaking cycle is used. Both cycles break the chip and clear the chips from the hole by retracting either partially or completely from the hole. This increases drill life and therefore reduces machine down time due to tool changes. The boring cycle is used for larger holes and the tapping cycle allows for tapping of any hole with standard taps.



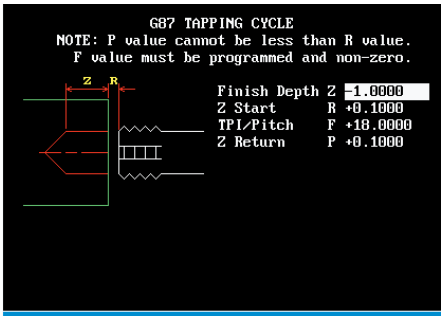
Chipbreak Drilling

Used for drilling a specified length hole using a reducing peck depth. Typically used for deep hole drilling. The cycle allows the drill to either fully retract from the hole after each peck, or simply retract sufficiently to break the chip.



Boring

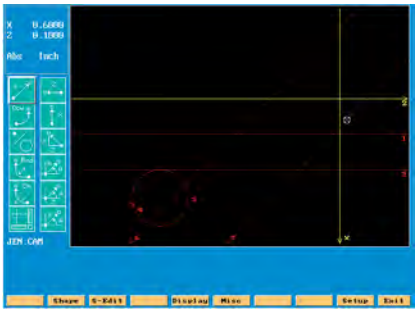
Used for boring an existing hole to a larger diameter and specified length. The cycle allows the operator to specify the depth of cut per pass and either a straight or angled back face.



Tapping

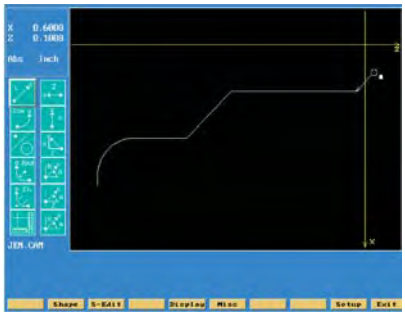
Used for tapping a hole using any standard tap. The tapping operation is performed through the simple input of only four entries: depth, starting position, thread and finish position.

Shape Editor



ANILAM's shape editor is both powerful and easy to use with icon selected commands and full graphical presentation. Define any shape and use it in your program. First, insert the construction geometry elements for the desired shape.

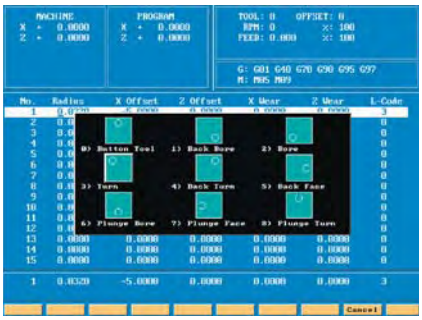
Then, combine the geometry elements and define the transitions between them to describe the desired shape.



The final result is the exact tool path for the complete shape.

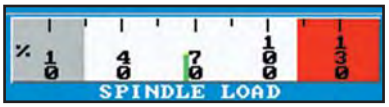
Tool Page

The 4200T comprehensive tool file allows you to store up to 255 tools. You can specify tool radius, length and wear offsets. The graphical tool descriptions are a good help when setting up the tool offsets.



On-screen Gauges

With ANILAM, the unique facility is available to display gauges direct on the screen, right where you want them to be.



Our CAN-bus driven I/O-modules allow for inputting analog signals, for example for monitoring spindle load. Such signals can then be displayed graphically on the screen by configurable gauges.

C-Axis

The C-Axis programming allows orientation of the spindle axis from 0 to 360 degrees with accuracy of up to 4 decimal places.

With the addition of live tooling the C-Axis gives the ability to machine key-ways, cross hole drilling, bolt hole patterns or even spiral cutting.

Offline Software

The 4200T CNC software is available for offline use as an option. The offline software enables the programmer to make the program away from the machine tool, at any workstation (PC) of choice. The program can then be transferred to the 4200T via RS-232 network or by using a floppy disk.

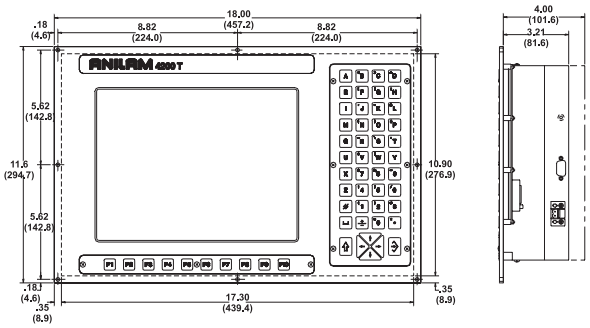
Easy to build into any lathe.

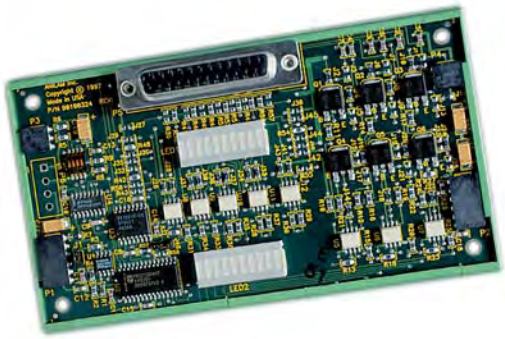
The 4200T configuration is complete with a console, computer chassis, manual panel, and remote floppy drive – all designed to build easily into your machine.

Pictured is the 12.1" Flat Panel Display

12.1" active matrix TFT flat-panel display

The console has a 12.1" active matrix TFT flat panel display standard. The console features a full alphanumeric keypad and softkeys for the on-screen menus.





I/O Module

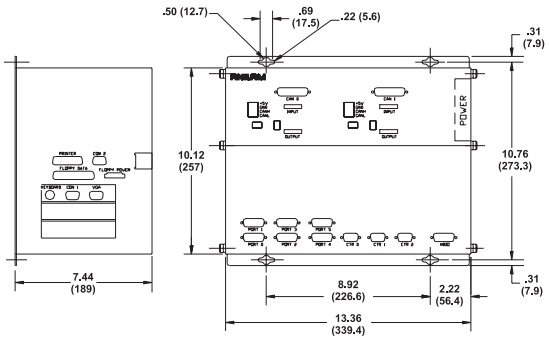
ANILAM's CAN-bus driven I/O-modules can be added as needed. Each module has 10 inputs and 6 outputs (one output can be traded for an analog input) and come as either sink or source. The I/O-module can be mounted remote, where it is needed, and fits in standard DIN-rail holders.

General Specifications

- Automatic mode
- Single step mode
- Semiautomatic (dual-handwheel) mode
- Manual mode
- Consistent surface speed (CSS)
- Feedrate/Spindle speed overrides
- Dwell, time or revolutions
- Multiple part zero shift
- Block search/Block start
- Background functions (Program edit, RS-232 etc.)

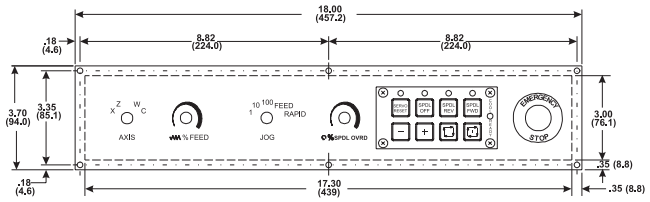
Specifications

CNC Chassis



The CNC chassis is installation-friendly with easy access connections.

Manual Panel



ANILAM's manual panel has keys for Jog+ and Jog- and rotary switches for Jog resolution and Axis selection. There are rotary switches for Feedrate and Spindle speed override and keys for Start, Stop, Servo reset, Spindle forward, Reverse and off, plus the E-stop switch. The manual panel is available with one integrated handwheel as an option.

Display

Machine pos./Program pos./Target pos./Distance-to-go	•
Program position/Distance-to-go (Large digit screen)	•
Resolution, up to 0.00002 inch (0.0005 mm)	•
Feedrate	•
Spindle speed	•
Tool	•
Messages/status	•
Part timer/counter	•
Loop counter/dwell time	•
Real time draw mode	•
On-screen gauges	•

Programming

Input: MDI, floppy disk, RS 232	•
Teach-in mode	•
Icon based programming with graphical support	•
Graphical shape editor	•
Canned cycles	•
Block skip	•
Mirroring	•
Scaling	•
Corner rounding	•
Exact/contouring mode	•
ISO programming	•
Parametric programming	•
Subprograms	256
PC style editing and program management	•
Verification draw mode	•

Compensation

Number of tools in library	255
Radius, length and wear offsets	•
Length offset calibration	•
Wear adjustment while in automatic/single step mode	•
Leadscrew Compensation (direct input from file)	•
Backlash Compensation	•
Linear Compensation	•

Hardware platform

Pentium PC processor	•
DSP, 32-bit 50MHz floating point processor	•
DRAM	4MB
DRAM 8-64MB	Option
Floppy disk drive	31/2", 1.44MB
Hard disk drive	8GB or more
Networking, Ethernet (RJ-45)	Option
RS-232 port (DB-9)	•
Printer port (DB-25)	•
External PC keyboard connector (DIN)	•
Axis feedback inputs (rotary/linear, DB-15)	3
Handwheel inputs (DB-9)	2
Universal power supply (90-260VAC)	•

Interfacing

I/O CAN-bus interface	•
Dedicated I/O for manual panel functions	5/1
Available I/O (2 analog inputs optional)	20/12
Optional I/O expansion (4 analog inputs optional)	40/24
ANILAM IPI programming	•

Motion control

Controlled axes	X, Z, C
Spindle axis	•
Servo loop cycle time	0.4 ms
Block cycle time	10 ms
Block throughput	100 bps
DAC resolution	12 bit
Rapid, interpolating axes	X, Z, C
Feed, interpolating axes	X, Z, C
Circular, interpolating axes	X, Z, C
Ellipse, interpolating axes	X, Z, C

Setup support

Motion/setup/testing utility	•
Auto-tuning	•
Diagnostics	•
I/O status	•

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