

# ServoWorks™ S-100T™



## An Advanced PC-Based CNC Solution for Lathes

### Overview

ServoWorks™ S-100T™ is a unique PC-based CNC controller for lathes, providing 2-axis motion control with a spindle, or 3-axis motion control including a C axis.

This industrial CNC solution supports all standard lathe operational functions and features, including indexing, plus live tools and all-axes simultaneous interpolation with a spindle (C axis). High performance CNC functionality and productivity allow customers to produce complex and precise parts quickly and easily.

### Standard CNC Lathe Functions

- Drilling
- Chamfering
- Profiling
- Indexing
- Grooving
- Boring
- Cutting
- Multi-pass threading

### Spindle Control Features

- Manual spindle control
- Spindle speed override (50 - 120%)
- Constant surface speed control (CSS)
- Actual spindle speed measurement and display
- Spindle gear change – supports up to 4 gear stages
- Spindle speed check

### C-Axis Control and Live Tool Features

- Full interpolation of X, Z and C axes
- Cylindrical interpolation
- Polar coordinate interpolation
- Face drilling
- Face tapping
- Face boring
- Side drilling
- Side tapping
- Side boring
- End face cutting cycle

### Tool Compensation Features

- Tool offset compensation: geometry and wear offsets
- 99 pairs of tool offsets
- Easy tool offset measurement: no calculations needed
- Tool nose radius compensations

### Macro Functions

- Supports local, global, permanent, and system variables (including symbolic global variables)
- Unlimited nesting of branching and repetition conditional statements
- Extensive math operations

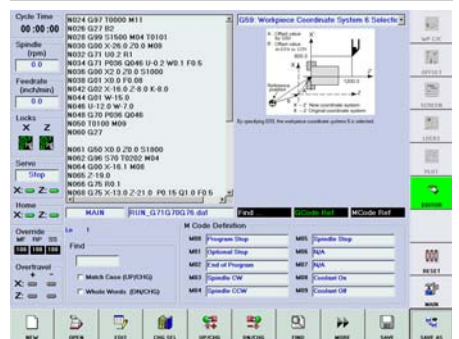
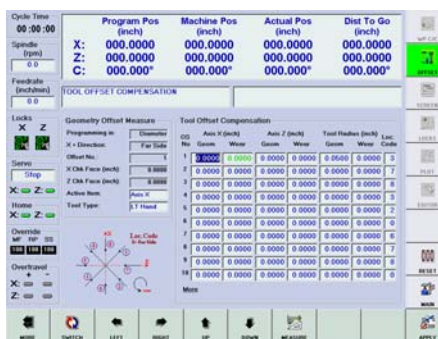
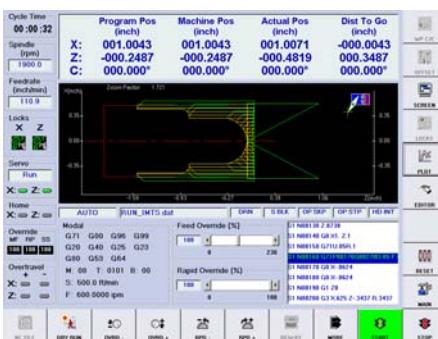
### Product Features

- Provides powerful, automatic execution of part programs, processing up to 1000 blocks per second
- Least input increment and accuracy: 1E-9 mm/ 1E-10 in. (0.000000001 mm/0.000000001 in.)
- Workpiece coordinates (one external zero offset and 6 workpiece coordinate systems)
- Maximum positioning speed: 300 M/min
- Maximum cutting feedrate: 60 M/min
- Operates with or without a touch panel
- Can be used with a manual pulse generator (handwheel)
- Quick and easy system setup
- Can operate on the VersioBus™ II, Panasonic Realtime Express™ (RTEX), Mitsubishi SSCNET™ and MECHATROLINK™ platforms

### PLC Features

- Integrated soft motion and soft PLC
- Includes LadderWorks PLC, an independent PLC package including a real-time soft PLC Engine. [NOTE: LadderWorks Console, a Win32 application for ladder sequence program editing, is not included with ServoWorks S-100T at this time.]

Consult the [ServoWorks CNC Product Parts List](#) or your Soft Servo Systems sales representative regarding standard and optional features for this product.



## Display Features

- Simple, user-friendly colorful GUI – will seem familiar because it is Windows-based
- Full-screen single window with static display areas, permanently anchored toolbars and easy-to-use soft buttons for giving commands, accessing information
- Displays position data, plot, I/O status, servo status, NC status and motion monitoring
- Real-time program execution, position display and plotting
- Real-time I/O, servo, NC status and motion monitoring
- Data display is configurable on-the-fly, in terms of what position types are displayed

## Interface Features

- Simple and intuitive HMI – easy to learn and easy to use
- Icon- and soft keys-based operation for manual data input
- 800 user configurable alarm messages programmable through PLC
- Manual NC modes:
  - 1) Jog Continuous Mode
  - 2) Jog Incremental Mode
  - 3) Home Mode
  - 4) Rapid Mode
  - 5) MDI Mode
  - 6) HandWheel Mode (manual jog with a pulse generator)
  - 7) Spindle Mode
- Auto Mode: real-time monitoring of G-code execution, with a part counter and a cycle timer
- On-line, interactive part program editing
- Graphical G-code input and editing facilitates part program creation
- Easy connection of equipment to business-oriented applications running on the network
- Password protection for parameter settings
- The ServoWorks S-100T Windows HMI application can be fully customized by using the ServoWorks Development Kit (SDK)

## Supported M Codes

- Program stop (M00)
- Optional stop (M01)
- Program end/program end and rewind (M02/M30)

- Spindle CW (M03) and spindle CCW (M04)
- Spindle stop (M05)
- Coolant on/off (M08, M09)
- Chuck unclamp/clamp, collet open/close (M10, M11)
- Indexing – spindle orientation, spindle rotation mode (M19, M20)
- Live tools control (M50–M55)
- Subprogram calls (M98/M99)
- Up to 82 customizable M codes through PLC

## Supported G Codes

- G00 Positioning (rapid traverse)
- G01 Linear interpolation
- G02, G03 CW/CCW circular interpolation
- G04 Dwell
- G09 Exact stop check
- G10 Programmable data input
- G20, G21 Inch/metric data input
- G22, G23 Barrier check on/off
- G25, G26 Spindle speed fluctuation detection off/on
- G28, G29 Automatic zero return to/from the reference point
- G30 Automatic zero return to 2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> reference points
- G32 Thread cutting with a constant lead
- G40-G42 Tool nose radius compensation cancel/left/right
- G50 Coordinate system preset and maximum spindle RPM
- G52 Local coordinate preset
- G53 Machine coordinate selection
- G54-G59 Workpiece coordinate selection
- G61 Exact stop check mode
- G64 Cutting mode
- G65 Simple macro call
- G70 Finishing cycle
- G71, G72 Stock removal in turning/facing
- G73 Pattern repeat cycle
- G74 End face peck drilling/grooving
- G75 Outer diameter/inner diameter grooving
- G76 Multiple-pass threading cycle
- G80 Hole machining canned cycle cancel
- G83 Face drilling cycle
- G84 Face tapping cycle
- G85 Face boring cycle
- G87 Side drilling cycle
- G88 Side tapping cycle
- G89 Side boring cycle
- G90 Outer diameter/inner diameter cutting cycle
- G92 Thread cutting cycle
- G94 End face cutting cycle
- G96, G97 Constant surface speed control set/cancel
- G98, G99 Per minute/per revolution feed
- G107 Cylindrical interpolation
- G112, G113 Polar coordinate interpolation mode set/cancel
- G164 Continuous cutting mode