



**Pines specializes in custom Tube and Pipe Bending machinery. Pines provides tooling, process technology, and tube bending solutions across a wide variety of industries.**

## Pines Range of Flexible Production CNC Tube Benders



CNC 100 2 stack configuration

Pines rugged production CNC benders are capable of fast, repeatable, bending of tube and pipe up to 4" (100mm) O.D. These powerful automatic precision benders offer fast set-up and change-over advantages along with an advanced level of programming to deliver high performance and flexibility in bending operations.

Pines CNC benders can be customized for any bending application. Pines CNC benders are now available with new electric servo motor control options including: quick change tools incorporating programmable pressure settings, carriage push for short grips, programmable PDA and programmable mandrel extract and tangent adjust.

The Pines line of production CNC bending machines provide tested, trusted and tough, proven on-the-job performance in manufacturing plants around the world.

### CNC CONTROL FEATURES

- PC Based Touch Screen Control with Full Keyboard Support
- On-Screen Self Diagnostics
- Parts Counter Capability
- Bending Program Storage & Recall
- Hitch Feed Program
- Automatic Spring-back Compensation
- Pressure Die Interference Zone Recapture
- Automatic & Semiautomatic Mode
- Remote Operator Control Stand
- Remote Diagnostics
- Power Loss Resume Without Scrapping a Bend
- Automatic Bend Angle Correction (Option)
- Off the Shelf Components
- Color Touch Screen Displays and Rotates Parts in 3D
- Edit/Display Part Programs in XYZ, YBC, or ABS Formats
- Edit/Display Part Programs in Millimeters, Inches, or Feet and Inches
- Bends in Open Collet and Closed Collet
- Part Programs can be Stored on a Local Hard Disk or Remotely Through a Network
- Automatic Backup of Part Programs
- No Limit On Part Length (no mandrel)
- CMM Integration
- Direct Programming from Design Data



CNC 040



Heavy Duty Carriage Option



Generous Under Nose Clearance

## AVAILABLE OPTIONS

- Special Heavy Duty Carriage
- Carriage Push For Short Grip Bending
- Swing-Away Wiper Die Holder
- Quick Change Tools – Electric Servo Programmable Clamp and Pressure Die
- Electric Programmable Mandrel Extract and Tangent Adjust
- Overhead Tie Bar
- Pressure Die Assist Booster (Open Loop Hydraulic) Programmable
- Electric Servo Controlled Programmable Pressure Die Assist
- Clockwise or Counterclockwise Rotation
- Base Extensions for Extra Carriage Travel or Longer Tube Over Mandrel
- Off-Line PC Programming Package
- Programmable Clamp and Pressure Die Pressures
- Pipe Loading Devices
- Mandrel Extractor
- Split Die Actuation
- Powered Pipe Support Rollers
- Split Die Actuation
- Powered Pipe Support Rollers

### CNC Features Highlights

The Pines TS CNC Control represents technology that virtually eliminates manual operator set-ups. The TS control was designed by engineers who know how to bend for operators who bend for a living. The easy to use

control features completely programmable machine axes, a variety of editing options and bending modes. The TS CNC Control offers complete flexibility in tube bending for a wide range of applications.

Programming can be done off line or downloaded directly from a CAD package. Pines CNC hybrid machines use the same electronic encoders as all electric machines for monitoring and controlling machine movement, thereby providing equally accurate bends.

### No Need To Modify Tools

Designed to Open automatically, the pressure die and optional (patented) swing-away wiper die on these CNC benders eliminate the carriage interference that other benders commonly experience.

### No Need To Trim Scrap

Parts can be cut to length before bending on these CNC machines. Closed loop electronics with in-process monitoring of part configuration guarantee the repeatability of each part shape during the bending operation.

### Any Length Part

Pines patented hitch feed feature makes it possible to bend parts of virtually any length. By eliminating tool/carriage interference on the final bend, the hitch feed program increases machine productivity and reduces material waste

## CNC - Heavy Duty Pipe Bending Machine Specifications

| Machine Model                          |             | CNC040         | CNC075     | CNC100     |
|--|-------------|----------------|------------|------------|
| <b>MACHINE CAPACITY</b>                |             |                |            |            |
| Steel tubing, Y.P. to 40,000 PSI       | Inches      | 1 1/2" x .109" | 3" x .109" | 4" x .109" |
|  | Millimeters | 28 x 2.75      | 75 x 2.75  | 100 x 2.75 |
| Stainless steel, Y.P. to 60,000 PSI    | Inches      | 1 3/8" x .065" | 3" x .065" | 4" x .065" |
|  | Millimeters | 35 x 1.65      | 75 x 1.65  | 100 x 1.65 |
| Non-ferrous tubing, Y.P. to 25,000 PSI | Inches      | 1 1/2" x .188" | 3" x .188" | 3" x .188" |
|  | Millimeters | 38 x 4.75      | 75 x 4.75  | 100 x 4.75 |
| Steel Pipe, Schedule 80                | Inches      | 1"             | 2"         | 2.5        |
|  | Millimeters | 25             | 50         | 63         |
| Standard bend radius to centerline     | Inches      | 4 1/2"         | 12"        | 12         |
|  | Millimeters | 113            | 300        | 300        |
| Standard Max. tube length over mandrel | Inches      | 120"           | 120"       | 136        |
|  | Meters      | 3              | 3          | 3.5        |
| Standard Carriage Travel               | Inches      | 72             | 72"        | 72         |
|  | Meters      | 1.85           | 1.85       | 1.85       |
| <b>BEND ANGLE REPEATABILITY</b>        |             |                |            |            |
| Carriage Travel (Y Motion)             | Inches      | ± .005"        | ± .005"    | ± .005"    |
|  | Millimeters | ± .125         | ± .125     | ± .125     |
| Collet Rotation (B Motion)             |             | ±.10 deg.      | ±.10 deg.  | ±.10 deg.  |
| Bend Arm Rotation (C Motion)           |             | ±.10 deg.      | ±.10 deg.  | ±.10 deg.  |
| <b>STANDARD MACHINE SPECIFICATION</b>  |             |                |            |            |
| Bend Arm Rotation                      | Degrees     | 195 deg.       | 195 deg.   | 195 deg.   |
| Collet Rotation                        | Degrees     | 360 deg.       | 360 deg.   | 360 deg.   |
| Overall Length                         | Inches      | 162            | 220        | 226        |
|  | Millimeters | 4,121          | 5,588      | 5,740      |
| B. Length of Arm                       | Inches      | 48             | 36         | 38         |
|  | Millimeters | 1,219          | 914        | 965        |
| C. Bed Length                          | Inches      | 192            | 185        | 188        |
|  | Millimeters | 4,864          | 4,686      | 4,775      |
| D. Centerline Height                   | Inches      | 1.63           | 2          | 3          |
|  | Millimeters | 41             | 51         | 51         |
| E. Undemose Clearance                  | Inches      | 11             | 22         | 30         |
|  | Millimeters | 275            | 559        | 749        |
| F. Working Height                      | Inches      | 31             | 41         | 42         |
|  | Millimeters | 781            | 1,029      | 1,054      |
| Maximum Bend Angle                     | Degrees     | 180            | 180        | 180        |
| ( +allowance for spring back ) :       |             |                |            |            |
| Over-Mandrel Tube Length :             | Inches      | 119            | 156        | 136        |
|  | Millimeters | 3,023          | 3,962      | 3,454      |
| Bending Arm Speed :                    | RPM         | 30             | 14         | 21         |
| Motor :                                | HP          | 15             | 20         | 40         |
|  | Kw          | 11             | 15         | 30         |
| Operating Pressure :                   | PSI         | 1,000          | 2,000      | 2,000      |
|  | bar         | 69             | 138        | 138        |
| Reservoir Capacity :                   | Gallons     | 41             | 55         | 100        |
|  | Litres      | 181            | 242        | 440        |
| Weight :                               | Pounds      | 2,750          | 4,400      | 4,500      |
|  | kilograms   | 606            | 970        | 992        |



TS 2000 Control Console

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