Electropneumatics has been designing and manufacturing the highest quality, technologically advanced metal forming machines since 1972. We have more than 5000 installations worldwide of a wide variety of machines for sheet forming, moulding, spotting and tryout, compacting, honing, assembly and testing, transmission line tower manufacturing, tube/section bending and other applications. Our indigenous capabilities in all areas (mechanical, hydraulic, electrical, electronics and pneumatics) give our products an edge over the rest.

Electropneumatics specialises in tailored solutions for diverse metal forming applications and has been a pioneer of many forming technologies in India, tube bending being one among the many.

Electropneumatics & Hydraulics (India) Pvt. Ltd.  
Machine Manufacturing Division

Tube Benders

Electropneumatics has been designing and building tube benders for more than three decades. The wide variety of models along with tooling for different tube sizes, materials and bend requirements covers almost all tube bending applications in the automotive, furniture, boiler, railway and ship building sectors. We are continuously innovating to provide the best bending solutions to our customers - higher productivity, lower energy consumption, reduced maintenance and superior, repeatable bending quality.
Unique Advantages of Electropneumatics Benders

Energy saving up to 40%
Our servo electric hybrid benders employ a servo motor-driven pump system for auxiliary functions like clamping, pressure die assist, and mandrel. They cut down your power costs, reduce hydraulics and its associated maintenance costs, reduce working noise level, and reduce cooling requirement due to less heat generation.

Convert your conventional energy-guzzling hydraulic bender into a smart, servo electric hybrid bender and save on power costs.

Smarter, quieter, cleaner bending technology
All our CNC Benders use Electropneumatics optimised servo drives and motion on a CANBUS network with minimal wiring. High end models' auxiliary actuators can also be made electric. This enables soft actuator start and stop (lower noise levels), reduced energy, high-maintenance hydraulics, less energy consumption and programmable control and diagnostics of the bending sequence.

Superlative accuracies
Superior manufacturing and assembly capability along with precise, controllable servo motions make bending predictable, repeatable and exact.

Minimum cycle time, maximum productivity
Efficient control of high speed servo axes and actuators along with synchronized servo motion help save time in every part cycle, ensuring maximum productivity.

Multi-sequence part facility offers users the feature of bending multiple parts in sequence to form a part assembly effortlessly having to change programs for each new part.

Thin-walled tube bending
Friction Boost or Independent Pressure Die Assist (IPDA) is a standard feature of our benders that controls thinning when bending. An independent hydraulic source for the pressure die assist helps to set the exact pressure and synchronize the speed for different tube cross-sections and centre line radius.

Bending tight radius, especially in thin-walled tubes
Optional features like Trolley Boost and Anticipated Mandrel Withdrawal (AMW) set our benders enable control of thinning and enhance bend quality when bending thin tubes with tight radii up to 1D, like those of exhaust parts.

Bending large CLR and bend angles
Parts with bends of big centre line radius (CLR) and large bend angles beyond PDA travel can be bent in one setting with the split mode thereby saving the tube end wastage.

Precision tooling for any application
We have expertise in developing the most complicated parts for the most varied applications in almost all materials. We design and build tools for 1D bends in thick and thin tubes, large CLR bends, compound bends, split tools, heated tools, sealed tools and wide range of tools from tube OD 4.8 mm to 419 mm.

Long or continuous tube bending
Tube recapture feature allows bending of tubes of length more than trolley travel and also continuous coil tube bending for higher output.

Non-ferrous bending
Specially designed tool for hard materials like stainless steel, titanium, etc. and soft materials like brass, copper, cupronickel, aluminium, etc. allow complicated bends to be made with ease on our machines.

Friction boost or Independent Pressure Die Assist (IPDA) is a standard feature of our benders that controls thinning when bending. An independent hydraulic source for the pressure die assist helps to set the exact pressure and synchronize the speed for different tube cross-sections and centre line radius. Optional features like Trolley Boost and Anticipated Mandrel Withdrawal (AMW) set our benders enable control of thinning and enhance bend quality when bending thin tubes with tight radii up to 1D, like those of exhaust parts.

Bending large CLR and bend angles
Parts with bends of big centre line radius (CLR) and large bend angles beyond PDA travel can be bent in one setting with the split mode thereby saving the tube end wastage.
NC Single Axis Tube Benders
NCX, NCXR

These hydraulic semi-automatic NC Tube Benders can handle tubes in round, rectangular, square and other sections. The NCX models can produce parts with multiple bends in a single plane. The additional pre-settable linear and rotary indexing arrangement in NCXR models allow multi-plane bending. With the exception of plane of bend (POB) and distance between bend (DBB) being manual against pre-set stops, the bending cycle is automatic.

### Features
- No. of multi-plane bends settable = 8 (POB & DBB) (in NCXR)
- Programmable bending angle (DOB) in automatic open loop control
- Pre-settable POB (in NCXR)
- Memory capacity of 50 programs with 15 bends/program
- Electropneumatics make Micro PLC with 3” touch screen MMI
- Independent friction boost
- Direct-acting pressure die
- Adaptive spring back compensation
- 3.8” touch screen MMI

### Optional Features, on request
- Anticipated mandrel withdrawal (optional)
- Split-bend facility for large bend radius
- Adaptive spring back compensation
- Counter-clockwise bending
- Hydraulic chilling unit
- Bending simulation for feasibility
- 3-D drawing reading facility
- Individual axes speed setting for each bend
- Programmed bending angle (DOB) in automatic open loop control
- Split bends (manual / single bend / auto mode and split bend mode)
- Spring back calculation and offline compensation facility

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Max. tube capacity (Dxt)* mm</th>
<th>Min. tube capacity (D)* mm</th>
<th>Max. bend radius (CLR) mm</th>
<th>Min. bend radius mm</th>
<th>Min. bend radius in terms of D</th>
<th>Length over mandrel m</th>
<th>Bend angle range deg</th>
<th>Max. bend speed (accuracy) deg/s (deg)</th>
<th>DBB &amp; POB accuracy (in NCXR models) mm &amp; deg</th>
</tr>
</thead>
<tbody>
<tr>
<td>30NCX</td>
<td>32 x 2</td>
<td>6</td>
<td>120</td>
<td>9</td>
<td>1.5D</td>
<td>2</td>
<td>5 - 180</td>
<td>30 (±0.2)</td>
<td>±0.2</td>
</tr>
<tr>
<td>65NCX</td>
<td>65 x 4</td>
<td>10</td>
<td>300</td>
<td>15</td>
<td>1.5D</td>
<td>2</td>
<td>5 - 180</td>
<td>24 (±0.2)</td>
<td>±0.2</td>
</tr>
<tr>
<td>80NCX</td>
<td>80 x 2</td>
<td>10</td>
<td>300</td>
<td>38</td>
<td>1.5D</td>
<td>2</td>
<td>5 - 180</td>
<td>18 (±0.2)</td>
<td>±0.2</td>
</tr>
<tr>
<td>100NCX</td>
<td>114 x 6</td>
<td>25</td>
<td>500</td>
<td>100</td>
<td>2D</td>
<td>6</td>
<td>5 - 180</td>
<td>12 (±0.2)</td>
<td>±0.25</td>
</tr>
<tr>
<td>150NCX</td>
<td>168 x 11</td>
<td>50</td>
<td>600</td>
<td>150</td>
<td>2D</td>
<td>6</td>
<td>5 - 180</td>
<td>3 (±0.25)</td>
<td>±0.25</td>
</tr>
<tr>
<td>200NCX</td>
<td>219 x 13</td>
<td>76</td>
<td>660</td>
<td>219</td>
<td>2D</td>
<td>6</td>
<td>5 - 180</td>
<td>2 (±0.25)</td>
<td>±0.25</td>
</tr>
</tbody>
</table>

### Options
- Increased bend radius (at select models)
- Extra mandrel length and extended arm for specific applications
- Modified versions with split tools, heated tools, etc. to suit component requirements
- Safety mat and safety flap on bend arm
- Automatic mandrel Lubrication
- Hydraulic oil cooler
- Counter-clockwise bending
- Anticipated mandrel withdrawal

### Notes
- S = Standard
- B = Barnet
- NC = NComputex
- DX = Dynamic X-Press
- E = Electric
- P = Pneumatic
- D = Digital
- B = Bending
- M = Manipulator
- R = Robot
- C = CNC
- NCX = Hydraulic NC Single Axis Tube Bender
- NCXR = Electric NC Single Axis Tube Bender
- POB = Plane Of Bend
- DBB = Distance Between Bends
- UTS = Uniform Tensile Strength
### Features
- Push, turn axes powered by AC servo motors
- All axes fully programmable - no manual settings
- Programmable position control for bend and position-speed control for push and turn
- CANBUS network interface with reduced wiring
- Data entry as Push-Turn-Bend (Y-B-C) values
- Independent pressure die assist (friction boost)
- Adaptive spring back compensation
- Split bend facility for large bend radii

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Unit</th>
<th>30CNC2X</th>
<th>65CNC2X</th>
<th>80CNC2X</th>
<th>100CNC2X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. tube capacity (D x t)*</td>
<td>mm</td>
<td>32 x 2</td>
<td>65 x 4</td>
<td>80 x 2</td>
<td>114 x 6</td>
</tr>
<tr>
<td>Max. bend radius (CLR)</td>
<td>mm</td>
<td>120</td>
<td>300</td>
<td>300</td>
<td>500</td>
</tr>
<tr>
<td>Min. bend radius</td>
<td>in terms of D</td>
<td>1.5D</td>
<td>1.5D</td>
<td>1.5D</td>
<td>1.5D</td>
</tr>
<tr>
<td>Length over mandrel</td>
<td>m</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bend angle range</td>
<td>deg</td>
<td>5 - 180</td>
<td>5 - 180</td>
<td>5 - 180</td>
<td>5 - 180</td>
</tr>
<tr>
<td>Bend speed (accuracy)</td>
<td>deg/s (deg)</td>
<td>50 (±0.2)</td>
<td>24 (±0.2)</td>
<td>18 (±0.2)</td>
<td>12 (±0.2)</td>
</tr>
<tr>
<td>DBB speed (accuracy)</td>
<td>mm/s (mm)</td>
<td>400 (±0.1)</td>
<td>200 (±0.1)</td>
<td>200 (±0.1)</td>
<td>200 (±0.1)</td>
</tr>
<tr>
<td>POB speed (accuracy)</td>
<td>deg/s (deg)</td>
<td>150 (±0.1)</td>
<td>100 (±0.1)</td>
<td>100 (±0.1)</td>
<td>80 (±0.1)</td>
</tr>
</tbody>
</table>

*D= Tube Outside Diameter | t= Wall Thickness | CLR= Centre Line Radius | DOB= Degree Of Bend |

POB= Plane of Bend | DBB= Distance Between Bends

*For ferrous tubes with UTS of 45 kg/mm². Standard bending direction is clockwise. Power supply: 415 V, 50 Hz, 3-phase AC.

### Options
- Anticipated mandrel withdrawal
- Automatic mandrel lubrication
- Water cooled heat exchanger
- Conversion of existing single axis bender also possible as a retrofit
Electropneumatics’ 3-Axes CNC Tube Benders are ideally suited for bending of automotive parts because of their high productivity. These machines have a direct-acting / toggle clamps, pressure die and pressure die assist along with a mandrel extractor, power chuck, tube support and automatic machine lubrication. They are available in all-electric or combination of electric-hydraulic versions.

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Unit</th>
<th>16CNC3X</th>
<th>30CNC3X</th>
<th>30CNC3X (3M)</th>
<th>30CNC3X</th>
<th>100CNC3X</th>
<th>100CNC3X (3M)</th>
<th>150CNC3X</th>
<th>150CNC3X (3M)</th>
<th>200CNC3X</th>
<th>200CNC3X (3M)</th>
<th>325CNC3X</th>
<th>325CNC3X (3M)</th>
<th>400CNC3X</th>
<th>400CNC3X (3M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. tube capacity (Dxt)*</td>
<td>mm</td>
<td>16 x 2</td>
<td>32 x 2</td>
<td>65 x 3</td>
<td>114 x 6</td>
<td>168 x 11</td>
<td>219 x 13</td>
<td>324 x 17</td>
<td>419 x 21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. tube capacity (D)</td>
<td>mm</td>
<td>6</td>
<td>6</td>
<td>10</td>
<td>25</td>
<td>50</td>
<td>76</td>
<td>80</td>
<td>114</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. bend radius (CLR)</td>
<td>mm</td>
<td>70</td>
<td>120</td>
<td>250</td>
<td>500</td>
<td>600</td>
<td>660</td>
<td>1000</td>
<td>1260</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. bend radius</td>
<td>mm</td>
<td>10</td>
<td>9</td>
<td>15</td>
<td>38</td>
<td>100</td>
<td>150</td>
<td>178</td>
<td>228</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. bend radius in terms of D</td>
<td>1.5D</td>
<td>1.5D</td>
<td>1.5D</td>
<td>1.5D</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length over mandrel</td>
<td>m</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bend angle range</td>
<td>deg</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. speed (accuracy)</td>
<td>Push (Y) mms (mm)</td>
<td>1200 (±0.1)</td>
<td>1200 (±0.1)</td>
<td>1000 (±0.1)</td>
<td>400 (±0.1)</td>
<td>200 (±0.2)</td>
<td>150 (±0.2)</td>
<td>100 (±0.2)</td>
<td>75 (±0.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turn (B) degs (deg)</td>
<td>300 (±0.1)</td>
<td>300 (±0.1)</td>
<td>300 (±0.1)</td>
<td>120 (±0.1)</td>
<td>50 (±0.2)</td>
<td>30 (±0.2)</td>
<td>24 (±0.2)</td>
<td>15 (±0.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bend (C) degs (deg)</td>
<td>150 (±0.1)</td>
<td>150 (±0.1)</td>
<td>60 (±0.1)</td>
<td>30 (±0.1)</td>
<td>15 (±0.2)</td>
<td>2 (±0.2)</td>
<td>2 (±0.2)</td>
<td>1 (±0.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connected load (approx.)</td>
<td>kW</td>
<td>6</td>
<td>16</td>
<td>19</td>
<td>29</td>
<td>37</td>
<td>37</td>
<td>40</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*For ferrous tubes with UTS of 45 kg/mm². Standard bending direction is clockwise. Power supply: 415V, 50Hz, 3-phase AC.

### Features

- Electropneumatics’ make CNC system with touch screen monitor and keyboard
- CANBUS network interface with reduced wiring
- Programmable axes motions in closed loop position-speed feedback mode
- Data entry as Push-Turn-Bend (Y-B-C) values or X-Y-Z co-ordinates
- Capability of programming in inches or millimeters
- Multi-sequence bend capability for up to five parts with common bend radius and diameter
- Program retrieval by alphanumeric code and password protection for data entry
- Spring back calculation and off-line compensation facility
- Comprehensive diagnostics during online and offline operation
- Independent pressure die assist (friction boost)

### Options

- Extra mandrel length and extended arm for specific applications
- Modified versions with split tools, heated tools, etc. to suit component requirements
- Safety mat and safety flap on bend arm
- Automatic mandrel lubrication
- Hydraulic chilling unit
- Counter-clockwise bending
- Anticipated mandrel withdrawal
- Servo pump driven energy-efficient, low maintenance tube benders also available
CNC Three-Axes Tube Benders

CNC3X
Electropneumatics’ Multi-Axes CNC Tube Benders have a wide variety of features and a combination of electric and hydraulic drives for the programmable axes. They are designed to bend complex parts of different materials in high-volumes for all industries, specifically automotive.

Servo hydraulic pump driven, energy-efficient, low maintenance tube benders also available.

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Unit</th>
<th>10CNC5X3</th>
<th>19CNC5X3</th>
<th>38CNC5X3</th>
<th>65CNC5X3</th>
<th>90CNC5X3</th>
<th>114CNC5X3</th>
<th>32CNC10X3-LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. tube capacity (D)x(D)*</td>
<td>mm</td>
<td>10 x 2</td>
<td>19 x 2</td>
<td>38 x 2</td>
<td>65 x 3</td>
<td>90 x 3</td>
<td>114 x 3</td>
<td>32 x 2</td>
</tr>
<tr>
<td>Min. tube capacity (D)*</td>
<td>mm</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>25</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td>Max. bend radius (CLR)</td>
<td>mm</td>
<td>30</td>
<td>80</td>
<td>180</td>
<td>250</td>
<td>300</td>
<td>500</td>
<td>120</td>
</tr>
<tr>
<td>Min. bend radius</td>
<td>mm</td>
<td>12</td>
<td>24</td>
<td>20</td>
<td>15</td>
<td>38</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>Max. radius difference (max.-min.)</td>
<td>mm</td>
<td>15</td>
<td>35</td>
<td>50</td>
<td>90</td>
<td>90</td>
<td>60</td>
<td>35</td>
</tr>
<tr>
<td>Tooling stack nos.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Length over mandrel m</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Bend angle range deg</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>0 - 180</td>
<td>5 - 180</td>
<td>0 - 180</td>
<td></td>
</tr>
<tr>
<td>Axes drives</td>
<td></td>
<td>Electric</td>
<td>Electric</td>
<td>Electric</td>
<td>Electric</td>
<td>Electric#</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. speed (accuracy)</td>
<td>Push (Y)</td>
<td>1200 (±0.1)</td>
<td>1200 (±0.1)</td>
<td>1200 (±0.1)</td>
<td>1000 (±0.1)</td>
<td>800 (±0.1)</td>
<td>800 (±0.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turn (B)</td>
<td>360 (±0.1)</td>
<td>360 (±0.1)</td>
<td>360 (±0.1)</td>
<td>300 (±0.1)</td>
<td>200 (±0.1)</td>
<td>360 (±0.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bend (C)</td>
<td>300 (±0.1)</td>
<td>180 (±0.1)</td>
<td>150 (±0.1)</td>
<td>90 (±0.1)</td>
<td>50 (±0.1)</td>
<td>180 (±0.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lateral (X)</td>
<td>180 (±0.1)</td>
<td>180 (±0.1)</td>
<td>150 (±0.1)</td>
<td>100 (±0.1)</td>
<td>150 (±0.1)</td>
<td>150 (±0.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vertical (Z)</td>
<td>100 (±0.1)</td>
<td>100 (±0.1)</td>
<td>100 (±0.1)</td>
<td>100 (±0.1)</td>
<td>50 (±0.1)</td>
<td>100 (±0.1)</td>
<td></td>
</tr>
<tr>
<td>Connected load (approx.) kW</td>
<td>12</td>
<td>12</td>
<td>22</td>
<td>45</td>
<td>48</td>
<td>60</td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

*For ferrous tubes with UTS of 45 kg/mm². Standard bending direction is clockwise. Power supply: 415V 50Hz, 3-phase AC.

Features

- 3-radii bending capability by 3-stack tooling in single set up
- Push, turn, bend, lateral and vertical axes powered by AC servo motors
- Programmable closed loop position-speed control with optimised parallel axes motions
- Independent pressure die assist (friction boost)

Options

- Anticipated mandrel withdrawal
- Automatic mandrel lubrication
- Hydraulic oil chiller
- Servo pump driven auxiliary functions for energy efficiency
CNC Multi-Axes Tube Benders

CNC5X

90CNC5X3 (5M)

65CNC5X3 (3.8M)
Electropneumatics’ CNC Boost Benders meet the stringent ovality/thinning requirements of bending thick-walled, tight-radius tubes required in the boiler, chemical and process industries. Synchronisation and programmability of speed and position through servo controls results in excellent control on the bend quality.

### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Unit 65CNC2X-B</th>
<th>Unit 65CNC2XR-B</th>
<th>Unit 100CNC2X-B</th>
<th>Unit 100CNC2XR-B</th>
<th>Unit 100CNC4X-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. tube capacity (Dxt)*</td>
<td>mm 63.5 x 7.1</td>
<td>mm 114 x 6</td>
<td>mm 114 x 6</td>
<td>mm 114 x 6</td>
<td></td>
</tr>
<tr>
<td>Capacity in boost mode (mandrel-less)</td>
<td>mm 50.8 x 5.6</td>
<td>mm 63.5 x 7.1</td>
<td>mm 63.5 x 8.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. bend radius (CLR) Normal mode</td>
<td>mm 300</td>
<td>mm 500</td>
<td>mm 500</td>
<td>mm 125</td>
<td></td>
</tr>
<tr>
<td>Min. bend radius (mandrel-less)</td>
<td>mm 24</td>
<td>mm 38</td>
<td>mm 38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. bend radius in terms of D</td>
<td>1D (on D/t &lt; 9)</td>
<td>1D (on D/t &lt; 9)</td>
<td>1D (on D/t &lt; 9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serpentine bends</td>
<td>max. 1D CLR</td>
<td>max. 150 CLR</td>
<td>max. 150 CLR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length over mandrel</td>
<td>m 2</td>
<td>m 6</td>
<td>m 6</td>
<td>m 7</td>
<td></td>
</tr>
<tr>
<td>Bend angle range</td>
<td>deg 5 - 180</td>
<td>deg 5 - 180</td>
<td>deg 5 - 180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. bend speed (accuracy) Normal mode Boost mode</td>
<td>deg/s (deg) 18 (±0.2) 12 (±0.2) 12 (±0.2)</td>
<td>deg/s (deg) 10 (±0.2) 8 (±0.2) 4 (±0.2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ODBB and POB accuracy (in CNC2XR-B models)</td>
<td>mm &amp; deg ±0.2 ±0.2 ±0.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Booster unit</td>
<td>Hydraulic clamp &amp; boost unit for axial compression with programmable controls for synchronised bend-boost speed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connected load (approx.)</td>
<td>kW 11</td>
<td>kW 18.5</td>
<td>kW 23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*For ferrous tubes with UTS of 45 kg/mm². Standard bending direction is clockwise. Power supply: 415V, 50Hz, 3-phase AC.

### Features

- Minimum R = 1D bending on tubes with D/t ratio < 9
- Achievable parameters on R = 1D in ‘boost’ mode
  - Ovality: 8 - 10%
  - Thinning: 12 - 13%
- Capability of serpentine bends (with suitable tooling)
- Fully programmable closed loop (servo) ‘bend-boost’ speed and position control
- Unlimited tube length and capability of serpentine bends
- Mandrel-less and tie rod-less operation in ‘boost’ mode
- Suitable for both boost and normal (higher capacity) bending

### Options

- Provision of carriage with manually presettable linear and rotary indexing facility for multi-plane bends (in CNC2XR-B models)
- Extra mandrel length
- Split tool arrangement for R > 57 mm

---

*CNC Boost Benders  
CNC2X-B, CNC4X-B*
### Section Benders
These machines bend non-round sections like square or rectangular tubes for chassis long members of jeeps, trucks and commercial vehicles, and sections used in luggage frames, furniture frames, automobile accessories, etc.

### Section Coilers
These machines can form coils of condensers and evaporators used in refrigeration products. They can bend square, rectangular, round or any other section. They are usually provided with a decoiler, straightener, profile former and cut-off unit.

### Wire Benders
The 6CNC3W compression wire bender is ideal for bending wires from OD 2 to 6 mm in clockwise and anti-clockwise direction. Automotive remote rods for door lock, hood support, actuator levers, consumer and decorative items can be easily bent into complex parts on these machines.

### Stretch Benders
The CNC Hydraulic Stretch Benders have eight hydraulic servo controlled axes. The speeds of all these axes are synchronised with respect to each other in a programmed manner. The machine produces complex multi-plane bend shapes of rolled sections used in automobile windows, door frames, etc.

### Portabends
A universal mobile multi-purpose tube working station, it has a sawing, ID/OD deburring, bending and ferrule pre-setting unit. They are most suitable for hydraulic piping work in hydraulic shops, hydraulic machine tool factories and also for on-board and off-shore tasks.

Electropneumatics’ has indigenous expertise in developing customised solutions for the most demanding bending requirements. We work with our customers to offer the right equipment and automation, either as a single product or a production line, that can give the best productivity and quality using the latest techniques. These custom-designed machines can bend sectional profiles, tight-radii, different tube materials, thin-walled and thick-walled tubes, solid rods in cold or hot condition.
Robotic Bending Cells

The bending cell consists of a specially designed bending head mounted on a 6-axes robot integrated with a tube magazine for interference-free mandrel-less bending of intricate small diameter tubes. The cell is used for unmanned, consistent and high speed bending of tubes in high volumes.

CNC U-Benders for Long Copper Tubes

These special purpose 2-Axes CNC Benders for U-bending of smaller diameter, long copper tubes are used in HVAC industries. The machine is featured with automatic feeding from the coil, straightening, cutting as per the programmed length and is suitable for making tight bends (up to 1D) used in shell and tube type heat exchangers.
Electropneumatics offers total solutions in tube processing including tube bending, end forming and cutting. The end forming and cutting machines cover a wide range of diameters and applications in the automotive, air conditioning and ventilation, HVAC, furniture, boiler, shipbuilding, piping, construction and such industries.

The end forming machines are meticulously designed, proven and reliable. The formed parts produced by this chipless process have increased strength, good surface finish and tight tolerances. Special multi-section punching machines for programmable punching of holes in round, square, rectangular, oval and other sections are also available.

End Forming Machines
- Cold forming of intricate shapes and profiles- heading, flaring, swaging (expanding/reducing), beading, etc.
- Available in one, two or multiple stages with linear or rotary indexing facility
- Can form one or both ends of the tube simultaneously

End Cutting Machines
- Square end trim cuts, angle, radius and scallop cuts
- Incorporates dual blade shear and supported shear technologies
- End cutting systems can be incorporated on tube benders

Punching Machines
- Hole punching in tubular (round, square, rectangular, oval) and other sections
- CNC programmable hole pattern
Tube Processing Machines

2-Stage, Linear Indexing Medium Duty Tube End Former

2-Way, 2-Stage Special Tube End Former for head pipe swaging

Multi-Section Punching Machine

5-Stage, Rotary Indexing Tube End Former