

Semi Automatic Benders

PHI 210 Synchro Bending Machine The PHI 210 Synchro Bending Machine is a synchronized bending machine with microprocessor controller for semi-automatic bends up to 1.5 OD. Model 210, offers three-axis bending with one powered axis for the degree of bend (DOB). When configured as shown, the 210 provides high-speed production of simple and complex bent tube shapes up to 1.5" outside diameter (OD) and pipes up to 1"OD.

Features of the PHI 210 Synchro Bending Machine Our modular design -- a basic machine with many options -- allows each machine to be custom fitted to meet your specific needs. PHI's user-friendly programmable digital controller is specifically designed for bending. Its logical layout ensures a proper bending sequencing. It has a capacity for 100 programs consisting of one to 10 bends (DOB's) per program.

The optional carriage allows mechanical presetting of up to 10 planes of bend (POB) and distance between bends (DBB). When incorporated with the controller, the machine will synchronize and interlock all three positions (POB, DOB and DBB) to ensure correct tube alignment before bending can occur. This ensures easily repeatable bend tube shapes and scrap-free production.

Additional Features of the PHI 210 Synchro Bending Machine

Quality Output

-Perfect part duplication, scrap-free production, quality tooling, positive POB stops and DBB stops

Labor Savings

-Single setup for multiple bend parts

Reliable Performance

-Heavy-duty construction and extra-large electric motors

Performance Enhancing Features

-Precision PHI tooling to help reduce wall thinning and ovality, and synchronized interlock positioning for accurate, scrap-free parts

Synchro Carriage

A 360-degree POB dial permits accurate POB settings. Disc stops on the carriage rotation ensure accurate POB positioning for each of the 10 presets. Settings for DBB are positioned on the rail for each of 10 bends. They are positive mechanical stops ensuring accurate location of bends. The standard tube-over-mandrel length is 10 feet. A collet chuck (with special lever-type collet closer) holds the tube or pipe firmly in place. In order to bend longer sections, you can specify extended bed lengths. PHI 220 Synchro Bending Machine PHI's synchronized bending machine, Model 220, offers three-axis bending with one powered axis for the degree of bend (DOB). When configured as shown, the 220 provides high-speed production of simple and complex bent tube shapes up to 2" outside diameter (OD) and pipes up to 1-1/2" OD.

Features of the PHI 220 Synchro Bending Machine Our modular design -- a basic machine with many options -- allows each machine to be custom fitted to meet your needs. PHI's user-friendly programmable digital controller is specifically designed for bending. Its logical layout ensures proper bending sequencing. It has a capacity for 100 programs consisting of one to 10 bends (DOB's) per program.

The optional carriage allows mechanical presetting of up to 10 planes of bend (POB) and distance between bends (DBB). When incorporated with the controller, the machine will synchronize and interlock all three positions (POB, DOB and DBB) to ensure correct tube alignment before bending can occur. This ensures easily repeatable bent tube shapes and scrap-free production.

Additional Features of the PHI 220 Synchro Bending Machine

Quality Output

-Perfect part duplication, scrap-free production, quality tooling, positive POB stops and DBB stops

Labor Saving

-Single setup for multiple bend parts

Reliable Performance

-Heavy-duty construction and extra-large electric motors

Performance Enhancing Features

-Precision PHI tooling to help reduce wall thinning and ovality, and synchronized interlock positioning for accurate, scrap-free parts

Specifications of the 220 Synchro Capacity - Tube
 - PipeMaterial - Tube
 - Pipe 2" (50mm) OD x .125" (3.175) wall thickness x 2D minimum CLR 1 1/2" (37.5mm) OD x schedule 40 x 3D minimum CLR 35,000 psi (930 MPa) yield , 35% elongation ASTM A-587 or equivalent
 Direction of Bend Clockwise (Counter-clockwise rotation is available on special order) Center Line Radius (CLR) 10" (254mm) standard Maximum Bend Arm Movement 180 ° Maximum Over-Mandrel Tube Length 10 feet (3.0m) standard, longer lengths optional Machine Floor Space 15 feet (4.5m) long x 51" (110 cm) wide x 49" (122cm) high Shipping Weight 3500 lbs. (1588 kg) approximately PHI 233 Synchro Bending Machine
 PHI's synchronized bending machine, Model 233, offers three-axis bending with one powered axis for the degree of bend (DOB). When configured as shown, the 233 provides high-speed production of simple and complex bent tube shapes up to 3" outside diameter (OD) and pipes up to 2" IPS schedule 80.
 Features of the PHI 233 Synchro Bending Machine

Our modular design -- a basic machine with many options -- allows each machine to be custom fitted to meet your unique needs. Any configuration of the 233 includes a drop-away clamp. This clamp speeds production of complex parts by dropping away from the bend head prior to retracting the clamp and positioning it for the next bend. This eliminates the problem of previously bent pipe getting in the way of the clamp and bend die in its retraction cycle.

PHI's user-friendly programmable digital controller is specifically designed for bending. Its logical layout ensures proper bending sequencing. It has a capacity for 100 programs consisting of one to 10 bends (DOB) per program.

The optional carriage allows mechanical presetting of up to 10 planes of bend (POB) and distance between bends (DBB). When incorporated with the controller, the machine will synchronize and interlock all three positions (POB, DOB and DBB) to ensure correct tube alignment before bending can occur. This ensures easily repeatable bent tube shapes and scrap-free production.

Quality Output

-Perfect part duplication, scrap-free production, quality tooling, positive POB stops and DBB stops

Labor Savings

-Single set-up for multiple bend parts

Reliable Performance

-Heavy-duty construction and extra large electric motors

Performance Enhancing Features

-Precision PHI tooling to help reduce wall thinning and ovality, and synchronized interlock positioning for accurate, scrap-free parts
 Specifications for the 230 Synchro

Capacity - Tube
 - PipeMaterial - Tube
 - Pipe 3" (75mm) OD x .188" (4.7mm) wall thickness x 2D minimum CLR 2" IPS (60mm) OD x schedule 80 x 3D minimum CLR 35,000 psi (930 MPa) yield, 35% elongation ASTM A-587 or equivalent
 Direction of Bend Clockwise (Counter-clockwise rotation is available on special order) Center Line Radius (CLR) 15" (381mm) standard Maximum Bend Arm Movement 195* Maximum Over-Mandrel Tube Length 10 feet (3.0m) standard, longer lengths optional Machine Floor Space 18 feet (5.5m) long x 73" (183 cm) wide x 52" (130cm) high Shipping Weight 6600 lbs. (3000 kg) approximately