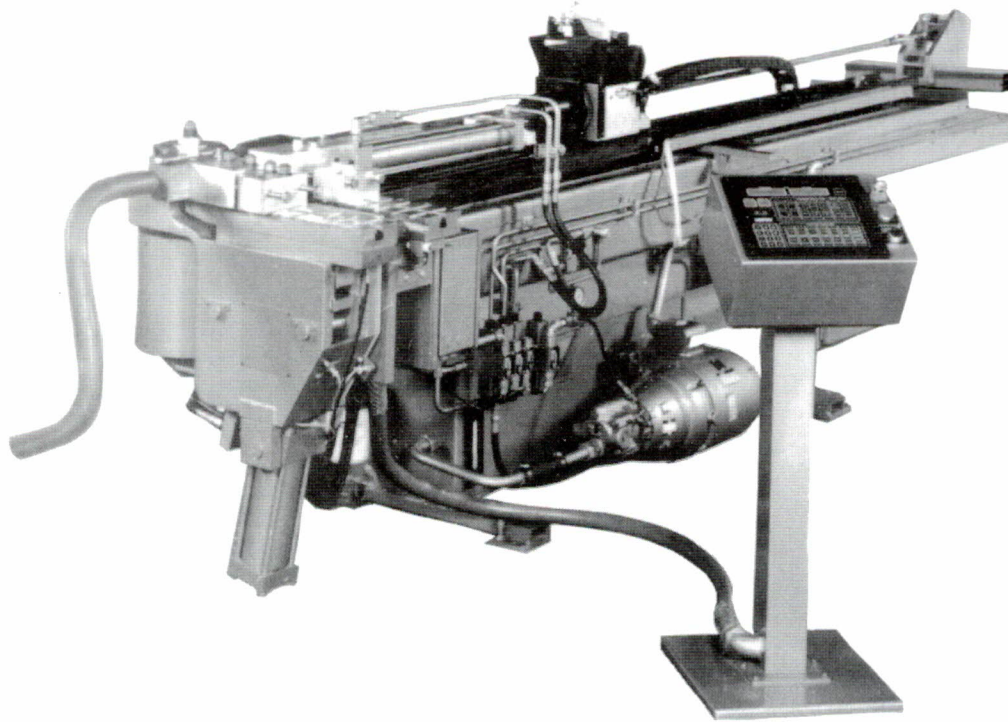


PHI 233 SYNCHRO BENDING MACHINE



Synchronized bending machine with programmable digital controller for semi-automatic bends up to 3" OD

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.

Our modular design—a basic machine with many options—allows each machine to be custom fitted to best meet your needs.

Any configuration of the 233 has a drop-away clamp which speeds production of complex parts by dropping the clamp away from the bend head prior to retracting the clamp and posi-

tioning 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, the DT5600, is specifically designed for bending and is logically laid out for proper bending sequencing. It has a capacity for 100 programs consisting of 1 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 DT 5600 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. Synchronized interlock positioning for accurate, scrap-free parts.

233 SYNCHRO BENDING MACHINE SPECIFICATIONS

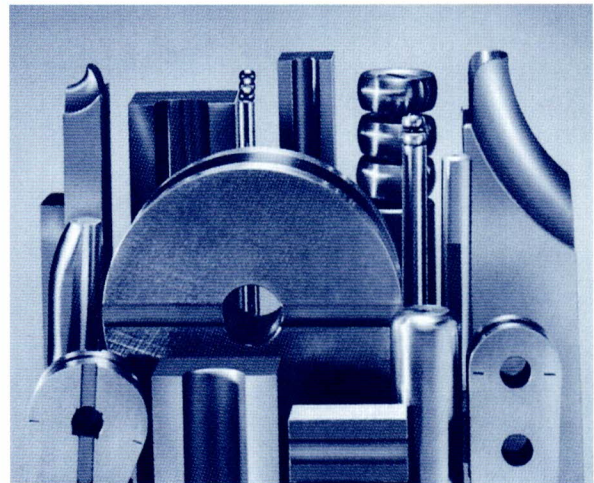
Capacity - Tube - Pipe	3" (75mm) OD × .188 (4.7mm) wall thickness × 2D minimum CLR
Material - Tube - Pipe	2" IPS (60mm) OD × schedule 80 × 3D minimum CLR 35,000 (930 MPa) psi yield, 35% elongation ASTM A-587 or equivalent
Direction of Bend	Clockwise (counter-clockwise rotation is available on special order)
Center Line Radius (CLR)	15" (381mm) standard
Maximum Bend Arm Movement	195°
Maximum Over-Mandrel Tube Length	10 feet (3.03m) standard, longer lengths optional
Machine Floor Space	18' (5.5m) long × 73" (183cm) wide × 52" (130cm) high
Shipping Weight	6600 lbs. (3000 kg) approximately

ACCESSORIES

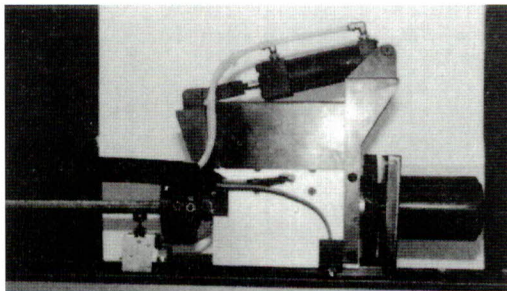
All necessary wrenches are included with the machine. Many accessories or options are available such as mandrel extractor, Synchro Carriage, wiper die bracket, mandrel lubrication, etc.



233 Control. Three bend modes are available. They are manual, semi-automatic (with or without the carriage) and synchro semi-automatic (with the carriage). The 233 controller has the capacity for 100 programs consisting of 1 to 10 bends (DOB) per program. Each control function has a light that informs the operator when the function is activated or complete.



Tooling. PHI is now a full-line supplier of bender tooling for not only PHI benders, but also for any other bender you might have. Let us give you a quotation.



Synchro Carriage. A 360° POB dial permits accurate POB settings. Disc stops on the carriage rotation ensure accurate POB positioning for each of the 10 presets. Settings for DOB 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 pneumatic collet closer holds the tube or pipe firmly in place. To bend longer sections, extended bed lengths can be specified.



14955 East Salt Lake Avenue, City of Industry, California 91746
Phone 626.968.9686 FAX 626.333.3610
Email phisales@phi-tulip.com Website www.phi-tulip.com