

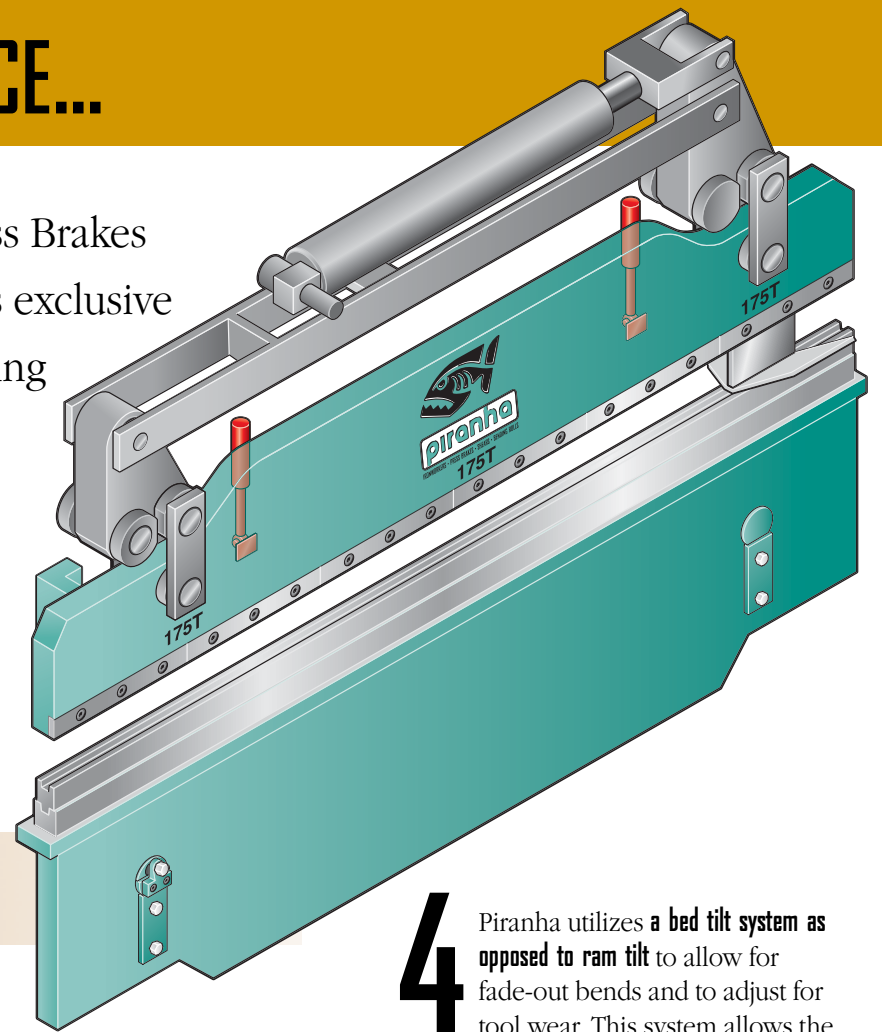
# PRESS BRAKES & SHEARS



piranha

# THE PIRANHA PRESS BRAKE DIFFERENCE...

The difference is in the design. Piranha's Fabrication Series Press Brakes combine a heavy-duty mechanical linkage system with Piranha's exclusive Preloaded Ram System to provide optimum bending and punching performance. Full rated tonnage for bending and punching is achievable at any point across the bed. These machines are designed and refined by professional engineers utilizing Finite Element Analysis and solid modeling. With their low deflection and high strength, Piranha press brakes are built to perform.



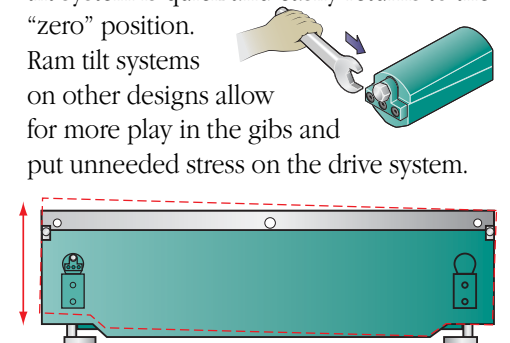
## Piranha's proven design provides four distinct advantages over other press brake designs.

**1** Piranha's mechanical linkage system provides **full tonnage at any point across the ram and bed**, allowing maximum flexibility for multi-operation set-ups. Operators may place full-tonnage tools anywhere on the bed. Other press brake designs require the operator to place any full-tonnage tool only in the center of the bed, resulting in added handling and lower productivity. Attempting multi-operation set-ups on other designs can result in machine damage. Other designs require more total machine tonnage for off-center applications.

**2** Piranha's Generation II Control System, combined with the single cylinder hydraulic system, provides **full control reliability in a simple, efficient design**. In the event of a violation of a safety device, the dual CPU module provides two paths for signals to stop ram movement. This, with the single hydraulic valve system, provides the utmost in simplicity, maintainability, and safety.

**3** Piranha's exclusive **Preloaded Ram System (PRS)** uses a dynamic system of opposing ram cylinders to preload the ram prior to movement. This system lifts the ram into the drive system, eliminating the influence of ram weight on the bending process. Furthermore, this system removes the effects of clearances and wear within the drive system throughout the life of the press brake.

**4** Piranha utilizes a **bed tilt system** as opposed to **ram tilt** to allow for fade-out bends and to adjust for tool wear. This system allows the ram to be fully gibbed and stabilized for parallel movement. Unlike ram tilt systems on other press brake designs, Piranha's bed tilt system is quick and easily returns to the "zero" position. Ram tilt systems on other designs allow for more play in the gibs and put unneeded stress on the drive system.

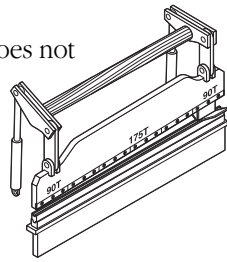




# Our Competitors' Designs

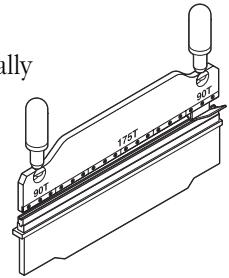
## Torque Tube Press Brakes

The torque tube or rocker arm design is a two-cylinder model that does not utilize a hydraulic compensation system. The torque tube ties the two end levers together in an attempt to transfer power between the cylinders and achieve parallelism. In reality, the tube *does* twist. Off-center loading causes the ram to deviate from parallel, leading to poor die alignment, uneven bottoming, and tapered work pieces. This design cannot achieve full tonnage anywhere but on center.



## Conventional Two Cylinder Press Brakes

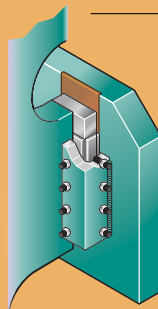
The conventional two cylinder design has a fixed bed and a hydraulically controlled ram. Compensation systems monitor fluid levels in both cylinders to attempt ram parallelism. These systems are expensive, complex, and fragile. They are vulnerable to contamination, temperature drift, and aging. Each hydraulic cylinder represents approximately one half of the rated machine tonnage, therefore full capacity is only available at the center of the ram.



# Piranha's Unique Features:

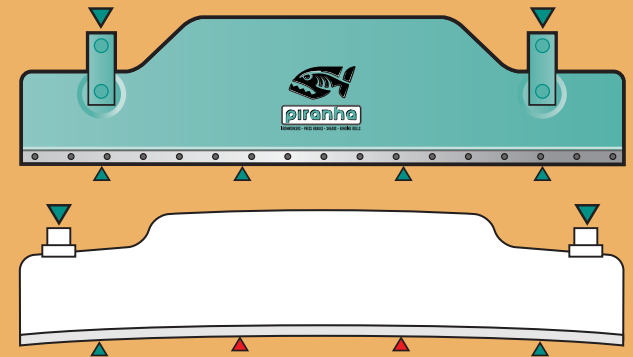
**Self-Lubricating Bearings:** Piranha's pivot points are lined with maintenance-free bearings. These state-of-the-art, aerospace bearings provide high load capacity and low friction in the form of a thin-walled sleeve. They are completely non-metallic, require no lubrication, and provide years of maintenance-free service.

**Full Length Gibs:** Extra-long, hardened and ground ways are mounted on the massive Piranha "C" frame to provide maximum support and guidance for parallel ram movement. Adjustable gibs ensure the ram is controlled front, back, and sides.



**Inboard Ram Drive:** Piranha's ram drive links are mounted between the "C" frames. This mounting increases the ram strength and minimizes ram deflection. Competitors' press brakes have a wider ram set which results in excessive ram deflection.

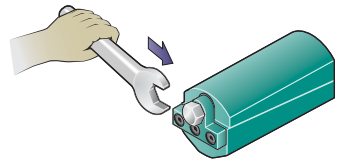
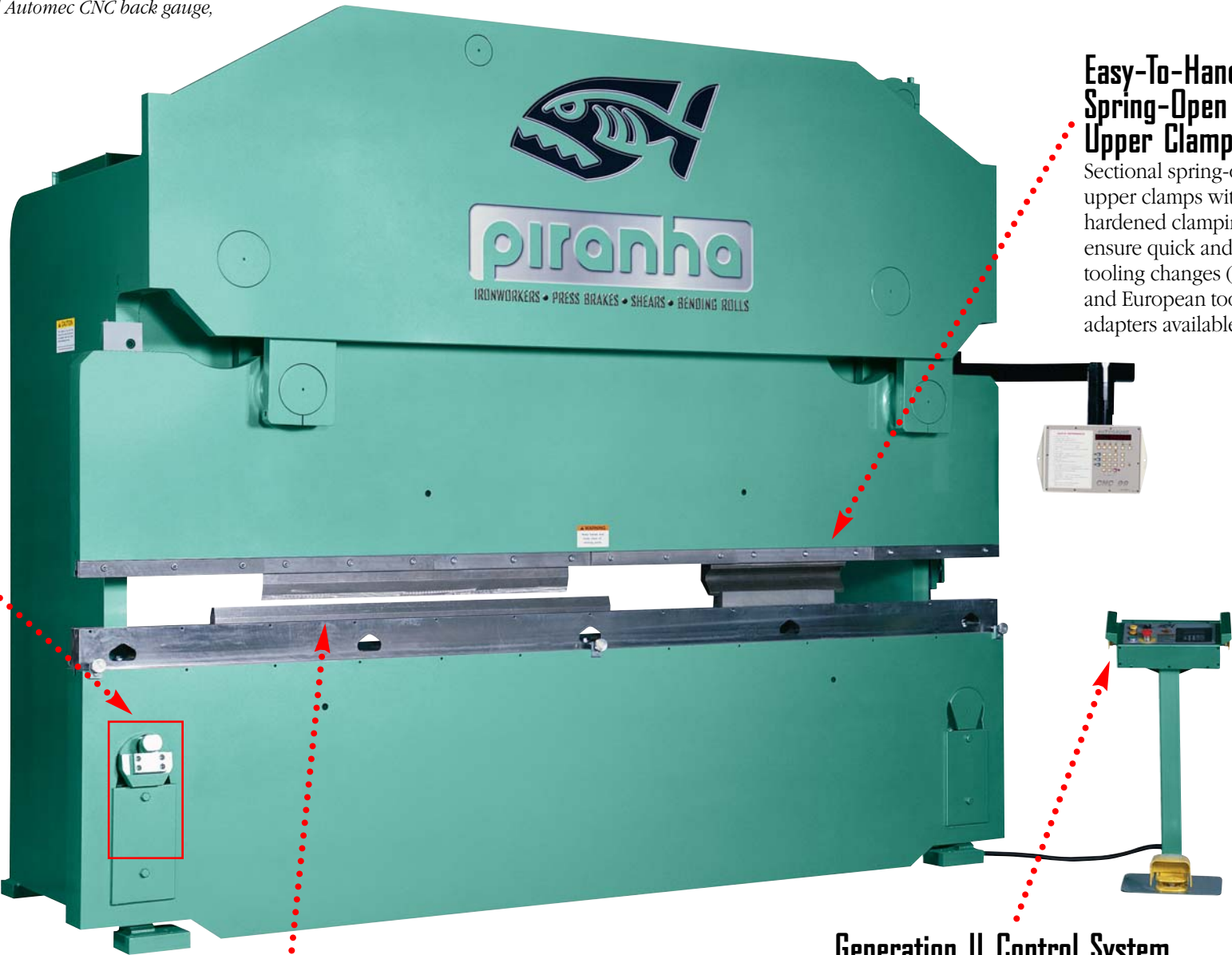
**Minimal Deflection:** Piranha's heavy design and rigid construction provide superior bed, ram, and machine deflection characteristics. This, along with the inboard drive system, allows less beam deflection for more accurate operations. Heavy construction allows ram and bed surfaces to be machined flat to better accommodate multiple tool set ups. Competing designs attempt to compensate for excessive deflection with machined crowning, a less than satisfactory solution.



Bending ■ Punching ■ Forming ■ Air Bending ■ Drawing ■ Bottom Bending ■ Riveting ■ Coining

# PRESS BRAKE FEATURES...

Model 250-12 shown with optional Automec CNC back gauge, optional die rail and tooling..



## Bed Tilt Adjustment Wedges

Bed tilt is accomplished from the front of the machine for fade-outs or cone forming.

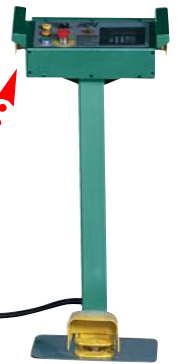
## Easy-To-Handle Spring-Open Upper Clamps

Sectional spring-open upper clamps with hardened clamping bolts ensure quick and easy tooling changes (Wila and European tooling adapters available).



## Die Rail

Optional Piranha die rail with bed mounting bolts, groove, and set screws will accommodate North American tooling. (Optional Wila and European tooling adapters and compensating die rails available.)



## Generation II Control System

Embedded module that allows control of basic and enhanced features at the operator's fingertips. Provides full control reliability, ensuring state-of-the-art safety operations via a dual CPU integrated circuit.



# Generation II Control System



## Full Function Pedestal

Dual palm control station with full functions at operator's fingertips. Fully programmable ram control unit with:

- 100 job (20 bends each) memory
- Full Y-axis (ram) CNC functions
- Top of stroke, speed change, and bottom of stroke positions set in program or learned in teach mode
- Variable pressing speed
- Full function tonnage control (varies by options selected)
- Multiple run modes and hand/foot combinations
- Variable ram return modes
- Display options—machine counters, hour meter, ram position (in inch or mm measurements)

## High Performance Overhead Hydraulic System

Piranha's simple, reliable hydraulic system with overload protection provides years of trouble-free service. With the hydraulic system components (motor, pump, valves, and tank) located overhead, the rear of the machine remains open and uncluttered for bending large parts. The hydraulic system is off the shop floor, stays cleaner, is easier to service, and runs cooler.



*Shown with optional die rail, tooling and CNC back gauge*

## Control Electronics

- Full control reliability with dual embedded CPU module
- Enhanced magnetostrictive scale plus redundant mute switch
- Digital keypad in full function pedestal



# PRESS BRAKE OPTIONS...

## CNC Gauging

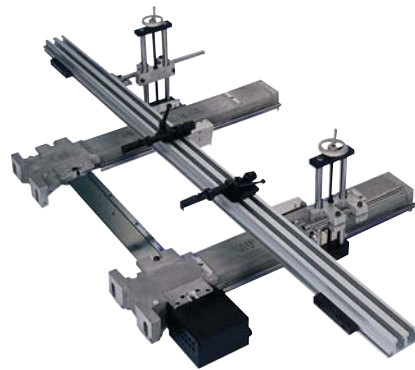
All Piranha press brakes are machined, predrilled, and prewired for installation of Piranha optional CNC controls. Piranha offers several versions of optional CNC controls, including Automec and Hurco.

## Automec



### B or HD Series Back Gauge

- 400 pounds holding force
- Disc brakes
- Dual ball screws



### CNC 300

- RS232 interface with software for off-line programming
- 300 job storage
- Automatic ram referencing to tool height (top of stroke)
- Tool library
- Angle or depth programming
- Back gauge retract on pinch points
- Programmable open height and slow approach point
- Inch or mm measurements
- R-axis programmable gauge bar available

*Other CNC models available from Automec: CNC 99 Control and CNC 2000 Control.*

## Hurco



### Hurco Back Gauges

- Easy horizontal and vertical adjustment
- Gauge speed up to 800 ipm
- Closed-loop servo system
- R-Axis available

### LPII Model

- Low profile design
- Heavy-duty U-shaped gauge bar
- Gauge travel 24"
- Gauge holding force 200 lbs.

### S6 & S7 Models

- Cross braced, one-piece cast aluminum
- Patented Y-shaped gauge bar
- Gauge travel up to 24"
- Gauge holding force 200 lbs.



### Hurco AB7 Control

- Store 600 jobs or 2400 bends
- Fast set-up—data carry forward minimizes keystrokes, allows quick edit and correction
- Tool libraries standard with two-axis systems
- Flange angle or ram depth programming
- Automatically calculates bend allowance—adjustable for each station
- “Simple job” mode for quick bends
- Industrial grade components
- Diagnostic capability in conversational English format
- Permanent data storage
- RS232-C interface, standard

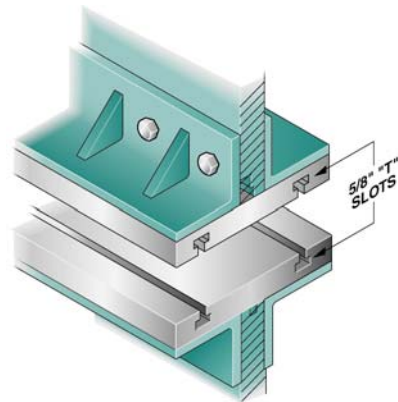
*Also available from Hurco: AB6 CNC Control, Off-Line Programming Package.*



# Options

## Rockford Light Curtains

- Individual channel indicator lights
- Programmable fixed or floating blank feature
- LED status indicators
- LED modulation to prevent ambient lighting interference
- Key-operated selector switch for operating mode programming
- Plug & Play with Generation II Control System

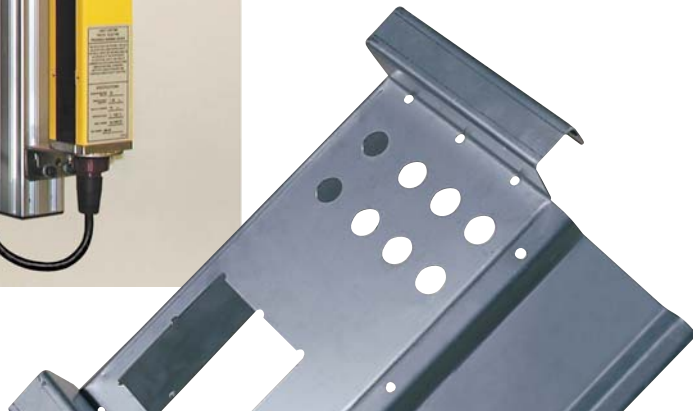


## Angles & Bolsters

Increase front-to-back dimensions of bed and ram working area to accommodate large tool sets or punches. Angle lengths fit between the "C" frames. Widths vary by model.

## High Speed Drive System

Faster approach and return for special applications.



## Bed Tilt Indicator

Dial indicator mounted on the bed permits quick and accurate bed tilt adjustments for taper forming and compensation adjustments for tooling wear. With the indicator, the operator can accurately return the bed to its required position.



## Micro-Adjustable Back Gauge

Sturdy micro-adjustable back gauge assures simple and fast setting.

## Tonnage Control Options

- **Tonnage Limiter**  
Vary maximum output as a percent of full machine tonnage.
- **Programmable Tonnage Control with Full Information Feedback**  
Set the maximum tonnage output in tons to protect tooling.
- **Return on Tonnage**  
Returns the ram when programmed tonnage setting is achieved.

## Customized Features

- Additional throat depth
- Additional open height
- Horn extensions
- Special beds and rams (extra wide, machined, dovetail slots, etc.)
- Front work support arms

## Precision Tooling

- Segmented, quick-change
- American, European and other tooling available



# THE PIRANHA SHEAR DIFFERENCE...

All Piranha shear models provide:

- Guillotine design.
- Single cylinder linkage system allows constant parallel alignment of beam throughout shearing movement.
- Extra-long, hardened ways, with adjustable non-metallic gibs, guide the ram laterally and front-to-back at all times during the shearing process to increase rigidity, shearing accuracy, and blade life.
- The straight line shearing action improves shearing accuracy in all metal thicknesses.
- All pivot points are lined with maintenance-free bearings. These state-of-the-art, aerospace bearings provide high load capacity and low friction in the form of a thin-walled sleeve. They are non-metallic and require no lubrication.
- The upper shear blade moves parallel to the lower blade, providing maximum blade life.
- High carbon, high chrome four-edge blades, top and bottom.
- 120v controls with overload-protected magnetic motor starter and circuit breaker disconnect.
- Hardened, micro-finished oversize link pins.

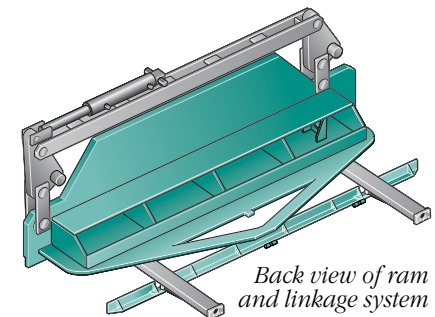
## 3/8" and 1/2" Models

*See specification insert for model widths.*



### Base Model Features

- Individual knife straighteners
- Ram tension adjustment
- Mode selector switch
- Push button, power driven ram up
- Mark II, modified high carbon, high chrome four-edge blades, top and bottom



*Back view of ram and linkage system*

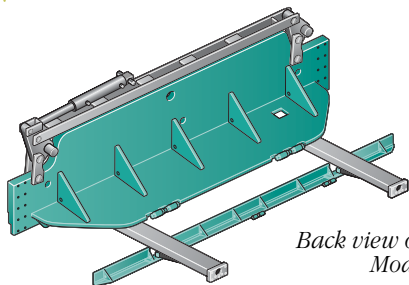


# 1/4" Models

See specification insert for model widths.

## Base Model Features

- Heavy duty, solid table
- Simple "go to" back gauge control with digital electronic readout
- Manual blade clearance adjustment
- Motorized disappearing back gauge with 36" travel
- Automatic back gauge retract during shearing stroke



Back view of ram and linkage system for Models 1/4-10 and 1/4-10 Premium

## Premium Model Features

- Premium, fully programmable CNC control
  - Job storage
  - Stroke counters
  - Maintenance advisories
  - Variable cut length
- High speed (600 inches per minute) back gauge
  - Heavy duty ball screw drive with precision, hardened guide bars
  - Accurate positioning (+/- .001 repeatability)
  - 36" travel
  - Disappearing for longer cuts
- High speed hydraulics
  - 20 HP motor and high capacity hydraulic pump
  - Smooth shifting hydraulic valves
- Hand slots with beveled edges in solid table
- Work support arms
- 6' embedded squaring arm
- T-slots in table
- Shadow line with on/off switch
- Additional hydraulic hold-down cylinders

# SHEAR OPTIONS...

## Option Packages

### Operator Enhancement Package

- Hand slots with beveled edges in table
- Work support arms
- 6' embedded squaring arm
- T-slots in bed
- Shadow light (includes on/off switch with premium control package)
- Additional hydraulic hold-down cylinders

### Operator Enhancement Package with Rapid Manual Blade Gap Adjustment

Available on 3/8" & 1/2" Models only

- Operator Enhancement Package (above)
- Single adjustment lever on side of table allows quick blade gap adjustments ranging from 20 gauge up to machine capacity

### High Speed Hydraulics Package

- 1/4" Models: 20 HP motor and high capacity hydraulic pump
- 1/2" & 3/8" Models: 30 HP motor and high capacity hydraulic pump
- Smooth shifting hydraulic valves

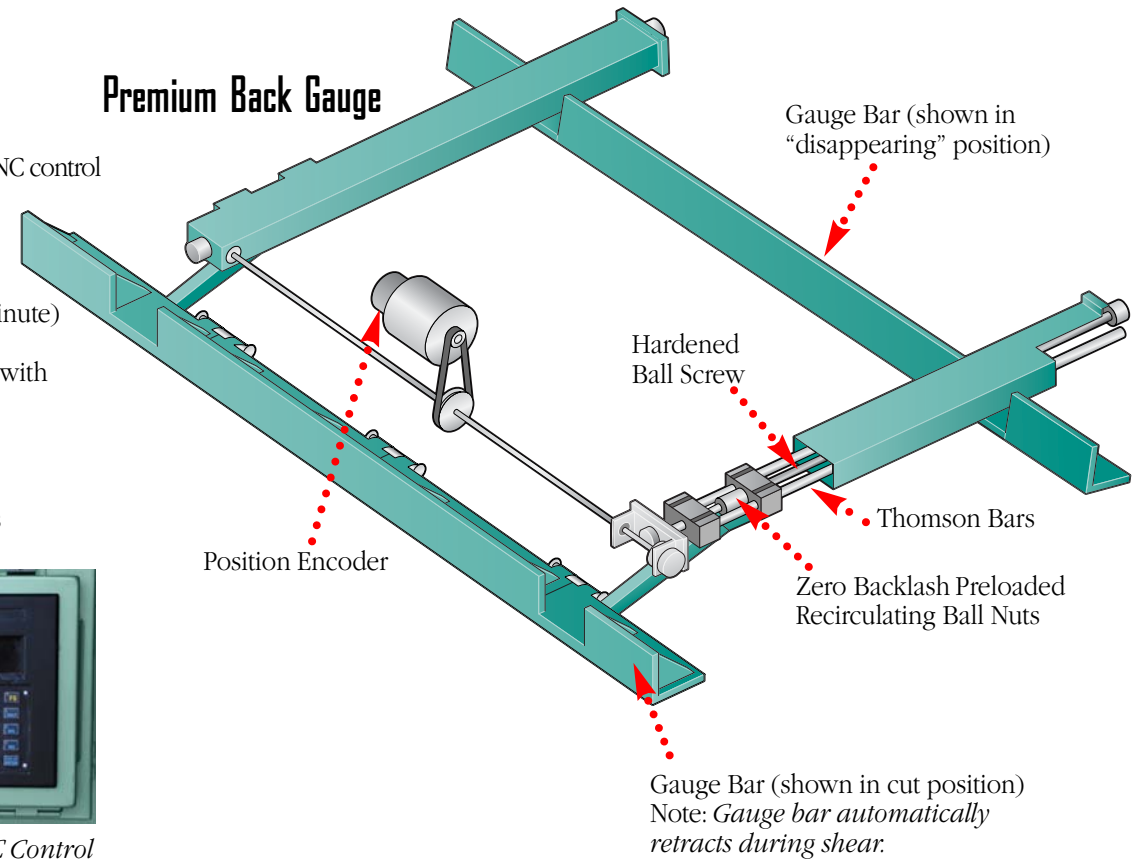
### Premium Back Gauge & Control Package

- Premium, fully programmable CNC control
  - Job storage
  - Stroke counters
  - Maintenance advisories
  - Variable cut length
- High speed (600 inches per minute) back gauge
  - Heavy duty ball screw drive with Thomson bars
  - Accurate positioning (+/- .001 repeatability)
  - 36" travel
  - Disappearing for longer cuts



Premium CNC Control

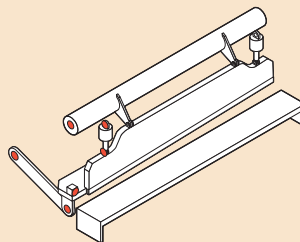
### Premium Back Gauge



## Our Competitors' Designs

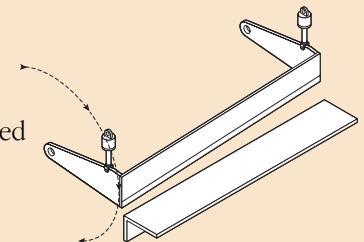
### Torque Tube Design

The complex drive mechanism on the torque tube design requires the use of additional pivot points. Adjusting blade clearance after blade sharpening is extremely difficult. The design lacks rigidity, which affects blade life, shearing accuracy, and shear service life.



### Swing Beam Design

The upper blade moves at an arc in relation to the lower blade which reduces blade life when compared to Piranha's guillotine design. Typically, two rollers are used to control the lateral position of the shear ram. However, the ram is not guided front-to-back, which can affect blade clearance.



# ADDITIONAL PRODUCTS & SERVICES...



## Sales

Piranha Fabricating Machinery is sold world-wide through our premier network of licensed machine tool dealers. These distributors are teamed with Piranha to provide you the best in application solutions, demonstrations, training, and customer service. When you call our toll-free number, your factory representative will send you product information and refer you to your authorized Piranha dealer.

## Financing

We understand that many of today's businesses prefer the benefits of leasing and that profits are derived from the use of equipment--not from owning it. To that end, Piranha offers leasing programs with considerable operating advantages:

- Preserves Working Capital
- Preserves Credit Lines
- Simplifies Equipment Acquisition
- Fixed Monthly Payments
- Tax Benefits
- Obsolescence Protection
- Inflation Protection
- Accounting Ease
- Flexible Terms

## Warranty

With each press brake and shear, Piranha provides a five-year warranty on structural components, including major weldments, and a one-year parts warranty covering defects in material or workmanship.

## Customer Service / Parts Orders

At Piranha, we strive to exceed your service expectations. Trained customer service technicians are available 7:00 a.m. to 5:30 p.m. (Central Time) to address your service, warranty, and parts requirements.

**For Sales Information, Financing or Customer Service/Parts Orders, please fax 800-428-3104, call 800-338-5471, or e-mail us at [piranha@piranhafab.com](mailto:piranha@piranhafab.com)**

- 1 Precision Press Brakes
- 2 Single End Punch Presses
- 3 Bertsch Section Rolls
- 4 Single Operator Ironworkers
- 5 Dual Operator Ironworkers
- 6 Bertsch Plate Rolls



# TONNAGE CHART...

Approximate Pressure in Tons per Linear Foot Required to Make 90° Air Bend on Mild Steel  
(60,000 PSI Tensile Strength) with Various Width Die Openings

Thickness of Metal		Width of V Die Opening																							
Gauge	Inches	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	7	8	10	12	
20	.036	3.1	2.3	1.7	1.4	1.1																			
18	.048	5.3	4.0	3.0	2.5	2.2	1.7	1.3																	
16	.060	9.6	7.1	5.6	4.5	3.8	2.8	2.2	1.8	1.5															
14	.075		11.9	9.2	7.6	6.3	4.7	3.5	3.0	2.5	2.1	1.8													
12	.105				16.7	13.1	9.7	8.0	6.5	5.6	4.6	4.1	3.2												
11	.120					19.2	14.2	11.1	9.0	7.5	6.3	5.5	4.4	2.9											
10	.135						18.6	14.5	11.9	9.9	8.5	7.3	5.8	4.0											
3/16	.188							27.4	23.1	19.3	16.4	14.3	11.2	7.5	5.7	4.4									
1/4	.250									39.4	33.3	29.5	22.7	15.4	11.4	9.0	7.4	6.1							
5/16	.313											50.4	39.8	27.0	19.7	15.3	12.7	10.5	7.7						
3/8	.375												61.1	42.3	30.9	24.0	19.6	16.3	12.3	9.5					
7/16	.438													61.7	45.8	35.4	28.6	24.4	17.3	14.8	11.2				
1/2	.500														85.2	63.6	48.8	39.7	33.3	24.6	19.4	15.9	13.1		
5/8	.625															110.0	86.2	70.0	58.3	43.1	33.3	27.4	23.3	16.9	
3/4	.750																	110.0	93.0	68.7	53.5	43.6	36.5	27.1	21.0
7/8	.875																		137.0	104.0	80.7	64.6	52.9	39.7	31.6
1	1.000																			143.0	113.0	91.2	76.2	56.3	44.2

Light orange = die openings 8 times thickness of metal up to 1/4".

Dark orange = die openings 10 times thickness of metal recommended above 1/4". Final selection of die opening depends on material hardness and desired radius. See your tooling expert.

Bending pressures for other metals, as compared to mild steel on chart, are as follows:

• Soft Brass - 50% of pressure shown • Stainless Steel - 50% more than shown • Soft Aluminum - 50% of pressure shown • Chrome Molybdenum - 100% more than shown • Aluminum Alloys heat-treated - same as steel. For harder steels (greater than 60,000 PSI) additional tonnage and/or wider die openings required.

All of the above bending pressures are nominal and represent average conditions. These values are dependent upon the radii of the dies, the yield strength of the material, the temper of the material, the direction of the grain, etc. **Therefore, a safety factor of at least 20% should be added when selecting a press for a given job.**

## About Piranha...

Piranha has been manufacturing and distributing machines for the metal fabrication industry since 1972. Based in Hutchinson, Kansas and long recognized as the Number One brand of ironworkers, Piranha has rapidly become a major producer and distributor of press brakes and shears. The same philosophy of efficient design, superb engineering, quality production, and outstanding customer service is carried across all Piranha brand products. Like our ironworkers, all machines in our complete line of metal fabrication equipment are simple in design, heavy in construction, and outfitted with efficient and safe operator features. We believe in continuous improvement and are dedicated to providing our customers with products that increase their productivity and profitability.



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