STANDARD CONTROL FEATURES

- Standard KV-2004 CNC control with 11” TFT screen display
- 0.0004” high resolution linear scales provide precision dual ram position feedback.
- Bosch-Rexroth closed-loop proportional hydraulic position control: repeatability at ± 0.0004” and parallelism at ± 0.0004”
- Y1, Y2 programmable independently in angle or position. Ram tilt capacity at ±0.5”
- Hydraulic synchronized ram parallelism control compensates uneven force on the bend by means of hydra-electrical technique.
- Programmable ram delay control at bending position under adjustable pressure
- Servo CNC back gauge with precision ball screw and double linear guide way ensures high rigidity capability and high productivity speed.
- Back gauge position speed at 1000” per minute, repeatability at ± 0.002”
- Automatic or programmable back gauge retract feature.
- Auto and programmable pressure control
- Programmable ram top stop and slow bending position
- Programmable bending speed
- Automatic conversion: Inch / mm
- Promcam punch clamping system with quick release for less than 320Ton
MASTEEL KV-2004 CONTROL FEATURES

Simulation and optimum bending sequence with back gauge position
The optimized bending sequence can be simulated in the graphic window prior to the actual production of a part and avoid costly damage or collisions.

Interactive 2D graphic editor for work piece, parts and tool data entries
2D graphic display of machine frame, work-piece and tooling
2D graphic identification of optimum bending sequences
Automatic calculation of crowning tonnage
Automatically calculate back gauge position
Automatically calculate material thickness and offset back gauge position according to the bend
Optimum bend sequence and Collision detection
Machine set-up preparation for pre-drawing and testing new fixture
Machine set-up preparation for pre-drawing and testing new fixture
Programmable Y1, Y2 by position and angle
Unlimited tool memory
Unlimited job memory
Off-line programming system with similar user interface as CNC Control
Off-line programming system 2D profile view and simulation
Up/down load program and tooling data and machine parameters from USB port
Print-out capabilities
Keyboard interface adaptor
Built in Ethernet communication port for up/down load from office (require optional communication software)
Web enabled monitoring function for service, trouble shooting and data transfer (require optional communication software)

Easily draw a work piece
The cursor may be placed within the screen field to allow operator easy entry of desired angles and/or dimensions

CREATE TOOLING:
New tooling may be tested in your bend sequence prior to ordering from your tool supplier, saving time and money.
Create your own custom tooling when needed

4 tooling stations in each program (across the bed)
Excellent feature for various bending applications requiring different tooling setup within a single job under one program, no need to change program or re-set tooling
STANDARD CONTROL FEATURES

Standard SIEMENS TP-700 control with 6” Touch Screen display

SIEMENS Two Axis CNC controls on back gauge and ram bending position

Bosch-Rexroth Closed-loop proportional Hydraulic position control:

- Repeatability standard at ± 0.0006”, optional at ± 0.0004”
- Back gauge position control:

Standard CNC back gauge: speed at 200 IPM as per Demo Video; repeatability at ± 0.003”

Programmable back gauge retract feature

CNC bending angle control — Only inputs of bending angle, material thickness & die opening

Two-way bending calibration controls - allow inexperienced operator to achieve desired angles with no time consuming multiple test bends. Save on costly skilled labour and test bend material.

By correction of test-bending angle, control system automatically sets itself to achieve desired angle.

By correction of bending position calculated automatically by control system.

Dual ram position feedbacks with hydraulic Synchronized control compensates for uneven force on the bend

Tool memory for quick recall of tool setup

200 Job memory with average of 30 bends in each program

Programmable pressure control

Programmable ram delay control at bending position under adjustable pressure for bump bending or special heavy bending application

Maintenance plan auto-prompts service schedule

Operating prompts and Troubleshooting messages

Inch / MM conversion

OPERATING FUNCTION

Ram speed control:
- Rapid approach and return speeds insure more efficient production.
- Slow bending speed for better control of bending accuracy

Ram stroke control:
- Programmable ram top stop limit for more efficient production
- Programmable slow working speed position and second stop position

Four Operating Modes:
- Jog mode: inching control of ram for tool setup
- Single mode: one full bend cycle per control input.
- Double stop mode: excellent for sight bend operations.
- Follow bend mode: easy to follow bending and ram return on large sheet or with crane handling
MASTEEL CNC BACKGAUGE

The Z1 and Z2 axes on the standard Masteel back gauge are controlled from the operator stand.

Optional X1, X2, R1, R2, Z1, Z2 multi-axis back gauge

Standard Masteel CNC Back Gauge
MASTEEL PRESS BRAKE TOOLING

**PUNCHES**
- Standard Punces
- Narrow Punces
- Gooseneck Punces
- Large Radius Punces
- Flattening Punces 1
- Flattening Punces 2
- Heavy Punces

**DIES**
- Standard 2V Dies
- Quick Change 2V Dies 1
- Quick Change 2V Dies 2
- Standard 1V Dies
- Quick Change 1V Dies 1
- Quick Change 1V Dies 2
- Standard Multi-V Dies
- Optional Die Holders

**American and European Style Segmented Punces and Dies**

**Optional Punch Holders**

**Special tooling for customized work pieces**

**Special tooling for closed work pieces**
MASTEEL PRESS BRAKES

- Robotic Interface
- 0.0004" High Resolution Linear Scales
- Bosch-Rexroth Hydraulic Control
- Optional Hydraulic CNC Crowning System
- Safety Light Curtain
- Optional Interlock Back Guard
- Standard Front Sheet Support Arms
- Laser Check bending angle measuring device
- Optional Quick-set Front Sheet Support Arms
### MASTEEL PRESS BRAKES

#### SPECIFICATIONS

<table>
<thead>
<tr>
<th>MBHS</th>
<th>MBHSA</th>
<th>MAX. CAPACITY</th>
<th>MAX. BENDING LENGTH</th>
<th>DISTANCE BETWEEN CENTERS</th>
<th>DEPTH OF THROAT</th>
<th>LENGTH OF RAMSTROKE</th>
<th>MAX. OPEN HEIGHT</th>
<th>MAIN MOTOR</th>
<th>BACKGAUGE TRAVEL</th>
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<tbody>
<tr>
<td>MBHS6-06070</td>
<td>MBHSA6-06070</td>
<td>70</td>
<td>6</td>
<td>63</td>
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<td>14-1/8</td>
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<td>MBHS6-08070</td>
<td>MBHSA6-08070</td>
<td>90</td>
<td>6</td>
<td>70</td>
<td>12-3/4</td>
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<td>MBHS6-12070</td>
<td>MBHSA6-12070</td>
<td>120</td>
<td>7</td>
<td>110</td>
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<td>28</td>
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<tr>
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<td>MBHSA6-16070</td>
<td>160</td>
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<td>140</td>
<td>12-3/4</td>
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<tr>
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<td>MBHSA6-20070</td>
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<td>170</td>
<td>12-3/4</td>
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<td>28</td>
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<td>MBHSA6-30070</td>
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<td>12-3/4</td>
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<td>360</td>
<td>7</td>
<td>430</td>
<td>12-3/4</td>
<td>8</td>
<td>14-1/8</td>
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<td>28</td>
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</table>

#### TONNAGE CHART

**FORCE TO AIR-BEND MILD STEEL (60,000 PSI)**

F = U.S. tons/linear ft. of workpiece

<table>
<thead>
<tr>
<th>t</th>
<th>1/24</th>
<th>1/12</th>
<th>1/8</th>
<th>1/4</th>
<th>3/4</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>1/40</td>
<td>1/20</td>
<td>1/10</td>
<td>1/5</td>
<td>1/3</td>
<td>1/2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
</tbody>
</table>

#### BENDING PRESSURES FOR OTHER METALS ARE:

- Soft brass = 50% of pressure shown
- Soft aluminum = 50% of pressure shown
- Aluminum alloys heat treated = same as steel.
- Stainless = 50% more than steel

#### COINING:

When coining, it must be remembered that the tonnage requirements are three to five times greater than for air bending. Coining is normally only done in very high precision environments and on light gauge materials only.

#### TONNAGES:

The tonnages indicated in the boxes are produced when using a female die opening 8 times the metal thickness up to 3/8" plate, and ten times the metal thickness when bending 1/2" plate or more.

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**NOTE:**

The chart above illustrates the appropriate tonnages to air bend mild steel with 60,000 p.s.i. tensile properties. It must be noted that most North American steel mills are producing harder metals with typical mechanical properties of 44,000 p.s.i. yield and up to 80,000 p.s.i. tensile strengths. The tonnages required to form these metals are substantially higher and must be taken into consideration in the selection of a press brake.
MASTEEL CNC HYDRAULIC SWING BEAM SHEARS

Reliability and functionality
Masteel Swing bean shear doesn’t require relieve angle. The cutting is always perpendicular to the material and bottom blade. And also the hydraulic force from the cutting cylinder is applied directly against cutting load. There is no cutting load to change the blade clearance from blade deflection or blade beam mechanism. That allows Masteel shears cut strips

STANDARD CONTROL FEATURES
36” SIEMENS Multi-step CNC back gauge: accuracy at ±0.002”
60 position pre-set backgauge memory for shearing heavy material or production process with no need of layout or holding material, then adjusting back gauge.
One-step go-to position control on backgauge
Auto-swing up back gauge at full travel
Programmable cutting width control
Programmable cutting stroke control
Easy operating control console:
  Promting instruction for easy operation and service
  Running status display on control console
  Manual/Auto mode  Back gauge position
  Cutting width       Number of cutting strokes
  Blade setup message at power on to prompt operator

OPERATING FUNCTION
Rapid precision blade clearance adjustment
Steady cutting speed and rapid back stroke for high efficient performance
Multi - control mode
  Pushbutton / Foot switch operation
  Single cut/ continue cuts mode
  Multi-backgauge position and multi-cuts automatic control mode
Auto clamping pressure control on hold down feet auto-adjustable to various material
Complete hydraulic, electric overload protection avoids operating fault
ACCURACY
Top blade and back gauge with swing movement always have the cutting perpendicular to the material and bottom blade, then swing away from bottom blade. There is no jamming the material between the blades and backgauge. Top and down blade last longer to ensure quality cutting and less maintenance.

QUALITY AND HEAVY-DUTY STRUCTURES
Mono-block type, welded frame and blade beam are optimized by computer-aided calculation to guarantee the maximum rigidity. Heavy-duty taper roller bearings are located on cutting lever and support blade beam rotational movement. It avoids cutting load transferred along blade beam rotational radius to the supporting bearings to ensure constant accurate blade clearance.

STANDARD EQUIPMENT
Two square arms with stainless steel rule and disappearing stops
7 Ft squaring arm on left to square long sheet material
4 Ft squaring arm on right to provide even knife service life on both ends

Front gauge with adjustable disappearing stops and stainless steel rule
4 Ft front support arms

Ball transfers in table for easily handling heavy metal
Ball transfers on front support arms, front gauge bar and right squaring arm

Shadow light and line for positioning scribed line
Cut-off material sliding tray for easy-collecting cutting material
Safety guard

SIEMENS COMPACT CONTROL SYSTEM
-Siemens compact control system integrates CNC backgauge, hydraulics and electric control in one.
-Simple and less control components ensure years of quality performance of Masteel Shears

36" CNC BACKGAUGE
- Slide tray for easy collect of cut-off strips
- Heavy-duty structure
- Precision leadscrew with integrated backlash compensation
- Backgauge bar swings up at full travel to allow longer material to go through
**MACHINE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Mild Steel</th>
<th>Cutting Length</th>
<th>Throat Depth</th>
<th>Back Gauge</th>
<th>Front Gauge</th>
<th>Rake Angle</th>
<th>Motor</th>
<th>Weight Lbs.</th>
<th>Dimensions L x W x H</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSH-08250</td>
<td>1/4&quot;</td>
<td>8'4&quot;</td>
<td>5-13/16&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>1°30'</td>
<td>15 HP</td>
<td>14,200</td>
<td>122&quot; x 64&quot; x 65&quot;</td>
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<tr>
<td>MSH-10250</td>
<td>1/4&quot;</td>
<td>10'6&quot;</td>
<td>5-13/16&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>1°30'</td>
<td>15 HP</td>
<td>16,100</td>
<td>154&quot; x 68&quot; x 70&quot;</td>
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<tr>
<td>MSH-12250</td>
<td>1/4&quot;</td>
<td>12&quot;</td>
<td>5-13/16&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>1°30'</td>
<td>15 HP</td>
<td>22,000</td>
<td>175&quot; x 70&quot; x 71&quot;</td>
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<tr>
<td>MSH-10375</td>
<td>3/8&quot;</td>
<td>10'6&quot;</td>
<td>4&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>1°30'</td>
<td>25 HP</td>
<td>25,600</td>
<td>160&quot; x 82&quot; x 81&quot;</td>
</tr>
<tr>
<td>MSH-12375</td>
<td>3/8&quot;</td>
<td>12&quot;</td>
<td>4&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>1°30'</td>
<td>25 HP</td>
<td>28,500</td>
<td>194&quot; x 82&quot; x 81&quot;</td>
</tr>
<tr>
<td>MSH-10500</td>
<td>1/2&quot;</td>
<td>10'6&quot;</td>
<td>8&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>1°30'</td>
<td>25 HP</td>
<td>29,500</td>
<td>160&quot; x 82&quot; x 84&quot;</td>
</tr>
<tr>
<td>MSH-12500</td>
<td>1/2&quot;</td>
<td>12&quot;</td>
<td>8&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>1°30'</td>
<td>30 HP</td>
<td>35,200</td>
<td>194&quot; x 96&quot; x 84&quot;</td>
</tr>
<tr>
<td>MSH-14500</td>
<td>1/2&quot;</td>
<td>14&quot;</td>
<td>8&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>2°</td>
<td>30 HP</td>
<td>39,500</td>
<td>160&quot; x 82&quot; x 84&quot;</td>
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<tr>
<td>MSH-16500</td>
<td>1/2&quot;</td>
<td>16&quot;</td>
<td>8&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>2°</td>
<td>40 HP</td>
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<td>10&quot;</td>
<td>8&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>2°</td>
<td>50 HP</td>
<td>53,000</td>
<td>164&quot; x 94&quot; x 108&quot;</td>
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<td>8&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>2°</td>
<td>40 HP</td>
<td>46,600</td>
<td>196&quot; x 86&quot; x 86&quot;</td>
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<tr>
<td>MSH-10750</td>
<td>3/4&quot;</td>
<td>10&quot;</td>
<td>8&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>2°30'</td>
<td>50 HP</td>
<td>53,000</td>
<td>164&quot; x 94&quot; x 108&quot;</td>
</tr>
<tr>
<td>MSH-12750</td>
<td>3/4&quot;</td>
<td>12&quot;</td>
<td>8&quot;</td>
<td>36&quot;</td>
<td>48&quot;</td>
<td>2°30'</td>
<td>50 HP</td>
<td>61,000</td>
<td>196&quot; x 96&quot; x 111&quot;</td>
</tr>
</tbody>
</table>

**QUALITY COMPONENTS AND STRUCTURE DESIGN**

North-American made hydraulic & electrical system
Standard SIEMENS single-axis CNC controller
Swing beam design for consistent precise cutting quality and low maintenances
Simple hydraulic and electric system for easy service
Low-rake cutting angle for minimum distortion of material: 1°30' on 1/4", 3/8", 1/2" Shears

Heavy-duty design, rigid stress relieved box construction

**INDEPENDENT HOLD-DOWNS**

Automatically adjust hold-down pressure to various material. More hold-down pressure for heavier cutting and less for delicate thin material.

Precision variable position quick blade adjustment ensures proper blade clearance for various material thickness and properties and achieve quality cutting.

Movable pedestal with foot control switch and emergency stop.
MACHINE SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MIWH-66</th>
<th>MIWH-90</th>
<th>MIWH-130</th>
<th>MIWH-180</th>
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<tr>
<td>Punch tonnage (Ton)</td>
<td>66</td>
<td>90</td>
<td>130</td>
<td>180</td>
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<tr>
<td>Max. Punch Capacity (Diameter x thickness)</td>
<td>1” x 9/16”</td>
<td>1-1/4” x 3/4”</td>
<td>1-3/8” x 1”</td>
<td>1-7/16” x 1-1/4”</td>
</tr>
<tr>
<td>Throat Depth</td>
<td>12”</td>
<td>14”</td>
<td>16” (20” opt)</td>
<td>24”</td>
</tr>
<tr>
<td>Flat Bar Shearing (Thickness x Width)</td>
<td>3/4” x 10” x 9/16”</td>
<td>3/4” x 13-1/4” x 1/2”</td>
<td>1” x 13-1/4” x 5/8”</td>
<td>30” x 3/4” x 16” x 1-1/8”</td>
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<tr>
<td>Angle Bar Shearing @ 90°</td>
<td>5” x 5” x 1/2”</td>
<td>5.5” x 5.5” x 1/2”</td>
<td>6” x 6” x 9/16”</td>
<td>8” x 8” x 3/4”</td>
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<tr>
<td>Round Bar Shearing</td>
<td>1-3/4”</td>
<td>2”</td>
<td>2-3/8”</td>
<td>2-1/4”</td>
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<tr>
<td>Square Bar Shearing</td>
<td>1-9/16”</td>
<td>2”</td>
<td>2” x 2”</td>
<td>2-1/4”</td>
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<tr>
<td>Notching</td>
<td>2” x 3-1/2” x 5/16”</td>
<td>2-1/4” x 3-7/8” x 1/2”</td>
<td>2-1/4” x 3-7/8” x 1/2”</td>
<td>2-1/2” x 3-1/2” x 5/8”</td>
</tr>
<tr>
<td>Main Motor</td>
<td>7-1/2 HP</td>
<td>10 HP</td>
<td>10 HP</td>
<td>20 HP</td>
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<tr>
<td>Weight in Lbs</td>
<td>3360</td>
<td>4200</td>
<td>10080</td>
<td>11000</td>
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<tr>
<td>Dimensions L x W x H</td>
<td>76” x 30” x 70”</td>
<td>78” x 32” x 76”</td>
<td>94” x 38” x 83”</td>
<td>106” x 41” x 91”</td>
</tr>
</tbody>
</table>

Note: Capacities based on material with tensile strength of 60,000 PSI.

SHEARING STATION
Shearing station back gauge w/touch & cut feature
Adjustable hold down for all shearing section stations
90 and 45 angle bar shearing station
Various size square and round bar shear
15” square arm with scale for flat bar shearing station

PUNCH STATION
Universal die block for punching of large flats, angle & channel / beam flanges
Quick change punch holder, ring and adapters
Swing away punch stripper with view window
Punch table with scale and two adjustable gauging stops
Bending attachment with punch and multi-die as Optional equipment

STANDARD FEATURES
North-American made pump and motors
North-American built hydraulics
North-American built electrics
Double cylinder operation
2 foot pedals for punching side and shearing section
Adjustable stroke

Price Includes
Standard 65 series die
Punch 26 series
Op die 59 series
Punch 23 series