

AD-R SERIES PRESS BRAKES

BETTER PARTS  BETTER PROFITS

USA
DURMA

Durma press brakes guarantee precision, low maintenance and operating costs, as well as long-term reliability. These features along with large investments in modern manufacturing equipment have made Durma the largest volume press brake producer in the world. All Durma press brakes are produced with modern design technology and incorporate rigid stress-relieved frames to increase your productivity with accurate part production. Demanding applications are easily achieved. A broad offering of sizes and features satisfy nearly all economical requirements.

AD-R SERIES

Value-oriented press brakes with large strokes, daylight, and gaps to allow cost-effective production of simple to complex large shapes that require large dimensions for handling and removal. A simple-to-use control reduces the required operator level.

Standard Equipment

- Large Stroke-Daylight-Throat
- Y1,Y2 Ram Positioning
- Delem DA 52 Control
- Euro/American Style Punch Clamp
- Rear Work Light
- Side & Rear Safety Doors

Capacities

- 4' to 20' Lengths
- Tandem & Trio
- 70-440 Tons



Options

- Delem DA 56 Graphic Control
- X/R Axis Back Gauge
- Manual or Automatic Crowning
- Hydraulic Punch and Die Clamping
- Quickset Sliding Front Sheet Supports
- 2D Programming Software
- Operational Laser Guarding

AD-S SERIES

Unlimited possibilities and features provide faster and quicker setups. A wide assortment of material handling accessories and back gauge configurations allow the ADS to cost-effectively produce the most demanding parts.

Standard Equipment

- Large Stroke-Daylight-Throat
- Y1,Y2 Ram Positioning
- Delem DA 66 Graphic Control
- Euro/American Style Punch Clamp
- X/R Back Gauge
- Quickset Sliding Front Sheet Support
- Automatic Table Crowning
- Rear Work Light
- Side and Rear Safety Doors

Capacities

- 6' to 30' Lengths
- Tandem & Trio
- 44-3,000 Tons



Options

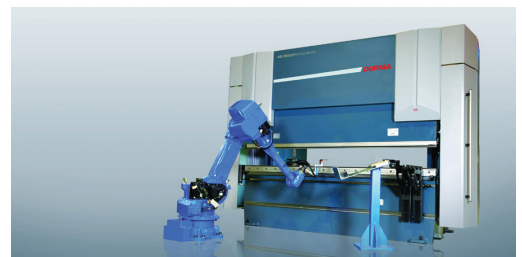
- Up to Six Axis Back Gauge
- Laser Style Angle Measuring System
- CNC Controlled Sheet Followers
- CNC Controlled Die Shuttle Systems
- 3D Controller
- 2d & 3d Programming Software
- Operational Laser Guarding

AD-H SERIES

Eco-friendly press brakes for clean, quiet, and energy-saving production. (Standard and optional features same as ADS)

Capacities

- 8' & 10' Lengths
- 110-150-195 Tons



For information on large format bending systems, refer to FBS.



STANDARD EQUIPMENT

- Y1, Y2 Servo Ram Positioning
- X Axis Back Gauge with Fingertip Lateral Adjustment
- Delem DA 52 Angle Programming Control
- Quickset Front Sheet Supports via Linear Guide
- Universal Wedge Style Punch Clamp for American or Euro Style Punches

OPTIONAL EQUIPMENT

- R Axis Back Gauge
- Manual Table Crowning
- Automatic Table Crowning
- Delem DA 56 Graphical Control
- Quick Release Punch Clamping
- Akas Ram Mounted Laser Operational Guarding
- Additional Finger Blocks
- 39" Back Gauge
- Hydraulic Tool Clamping
- Tooling

CAPACITIES

- 4' - 20' plus Tandem Systems
- 44 - 660 tons



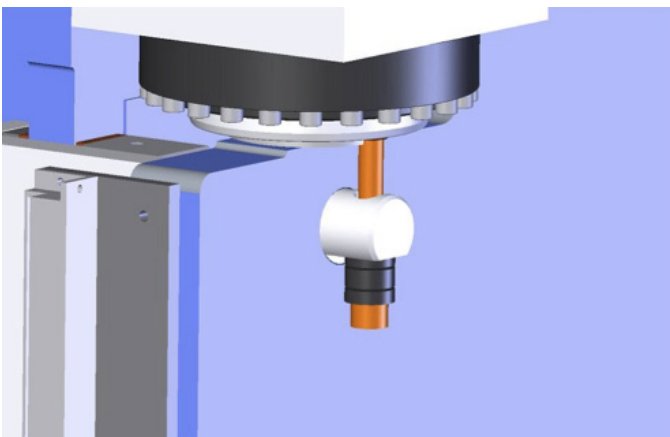
rear view



MACHINE FRAME

The design of the machine frame is a critical part of any machine with relation to its ability to produce accurate parts for a long period of time.

Durma uses several different types of construction depending on the certain dimension such as length, tonnage, stroke, daylight and throat/depth. For details on Durma's unique box frame construction please see FBS datasheet.



CYLINDER CONNECTION

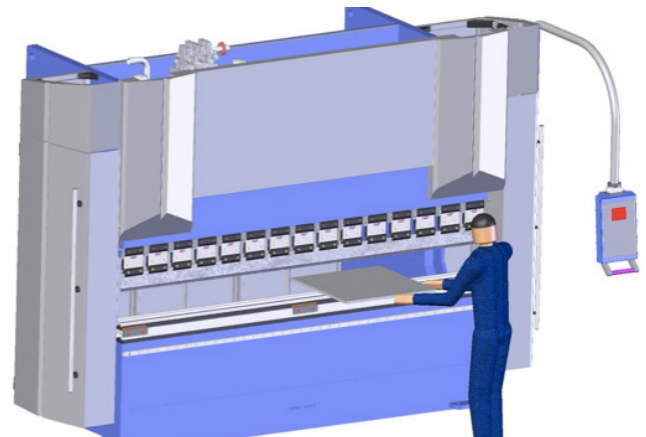
In order to allow tilting of the ram without damage, special spherical seating and connections are used. This type of connection also allows sudden forces to be absorbed gently.



PRECISION MACHINING

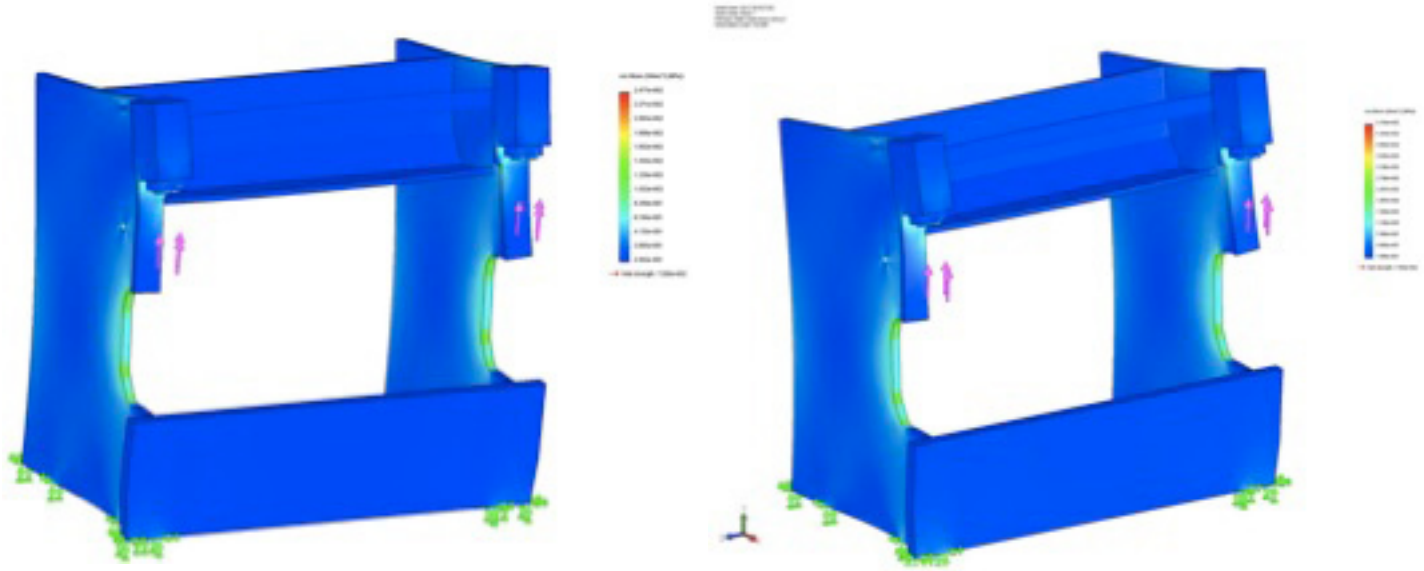
Modern machining centers are utilized for accuracy, rigidity, and smooth operation. Frames, assembly surfaces and connection holes are machined after the welding process, up to 60' in a single pass. Surface machining nearly to grinding tolerance: 1,6-3,2 micron Ra (roughness average) (0,8 micron on grinding). Parallel and square surfaces with 0,05-0,1mm tolerances. There is no axial eccentricity. In comparison, non-precision machining results in:

- Difference between Y1 Y2 (ram level) axes
- Difficult to hold tools parallel
- Difficult to hold tool dimensional tolerances
- High vibration during the bending process



ERGONOMIC WORKING HEIGHT

Lower beam (bed) height for most machines is optimized at approximately 35 to 36" (excluding die holders and dies) for ergonomic operation.



LOWER DEFLECTION & LONGER LIFETIME

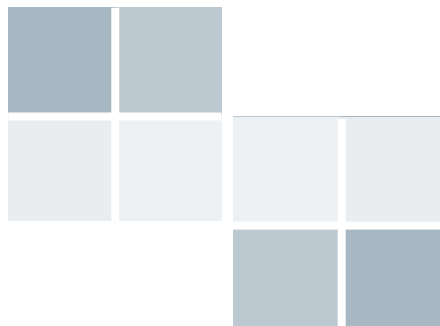
Durma's high engineering standards minimize stress and deflection. All mainframe components (side frames, ram, bed) are designed with built in safety factors.

All Durma machines are constructed from st44-2 steel. Acceptable industry stress standards for material is 8,5 kg/mm² stress. All Durma machines must meet a value of 5-6 kg/mm² . These strict standards reduce deflection and increase frame durability and the ability to hold tolerances over long periods of heavy use. All incoming plate must be certified the Durma's standards and requirements. Durma's high frame rigidity and robustness provides long-term accurate bending.

WHAT HAPPENS IF LOWER ENGINEERING CRITERIA ARE ACCEPTED?

For example in the case of 8,5 kg/mm²

- Weight of machine can be reduced as much as 30%
- Machine operates at limit for deflection and stress
- Steel fatigues from high deformation and stress at limit, as well as the risk of cracking is present
- High deflections on the ram and bed that that are too large to offset with crowning devices



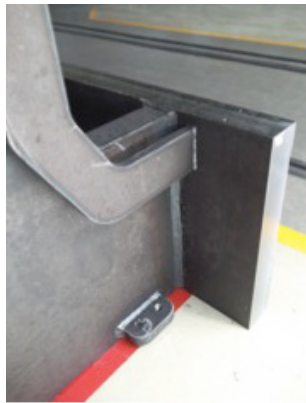
FRAME WELDING

Welding methods are selected after “welding equivalent” calculation.

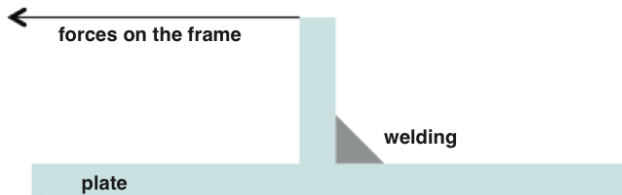
- MIG MAG welding on the frame.
- SAW (Submerged Arc Welding) at cylinder connection point. Welding at critical areas is subjected to high forces and vibration, and has to be clear of atmospheric contamination during the welding process.
- Applied forces at the welding position yields rigidity and strength.



SAW

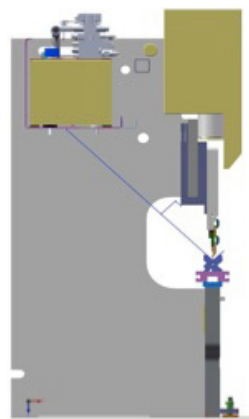


MIG

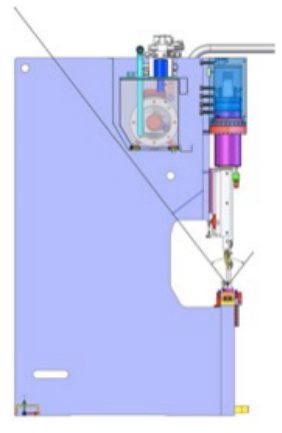


LARGE PART CLEARANCE

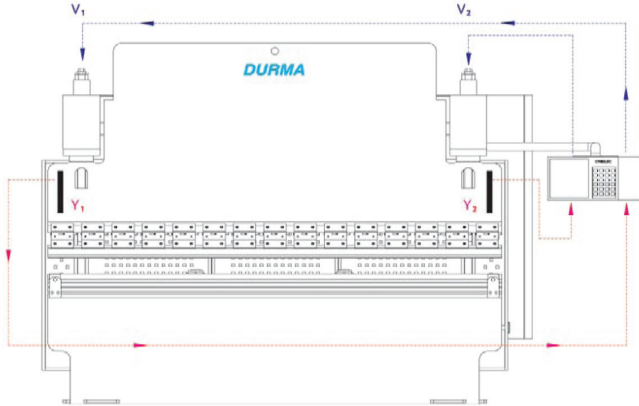
A combination of the specially designed reservoir, outboard mounted ram guides, large side frame gaps, strokes, and daylight provides for increased openings, reduced collisions during the bending process.



Others: Collision



AD-R/S: Collision-Free



Y1, Y2 PRECISION & FLEXIBILITY

In the ADS Series Y1, Y2 ram positioning system each cylinder operates independently in a closed loop system. Linear encoders combined with precision hydraulic valves and the CNC command center, provide $\pm .0004$ " accuracy and the ability to program all ram position, speeds and ram tilt. Application advantages include:

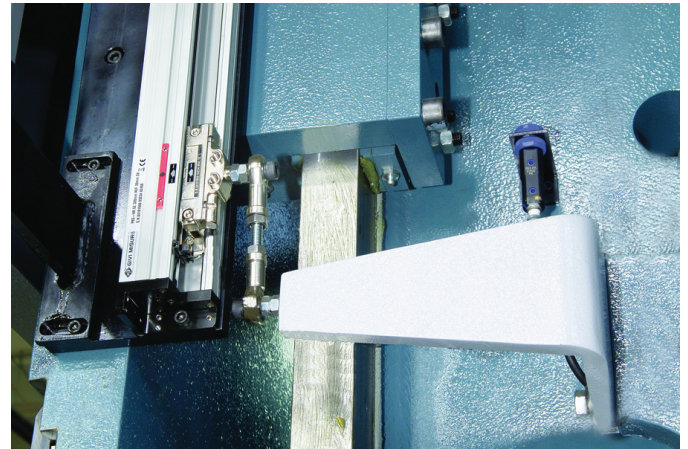
- Stage or Progressive Bending
- Fade Out or Conical Work
- Enhanced Material Handling with Total Ram Control



LARGE STROKE, DAYLIGHT & THROAT

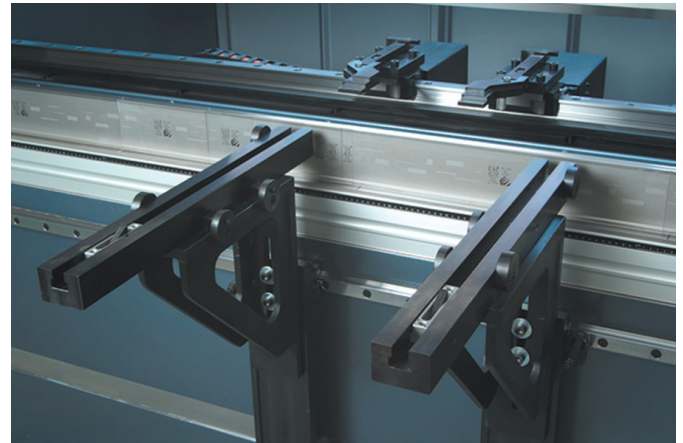
The large frame dimensions allow versatile production of parts requiring increased clearance profitably and easily.

- Forming of deep sectioned four sided boxes. .
- Forming and Removal of Complex Large Parts



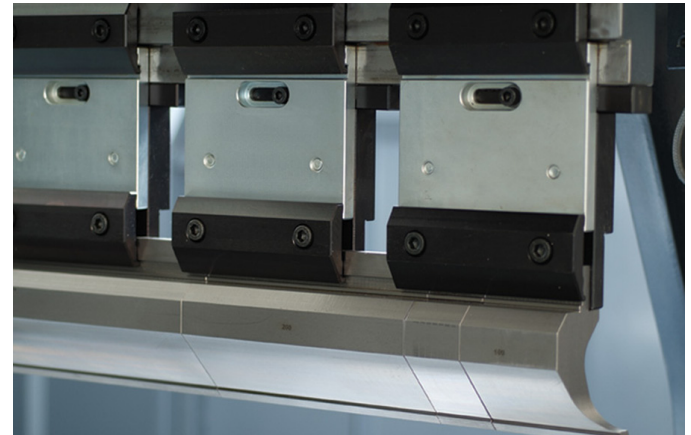
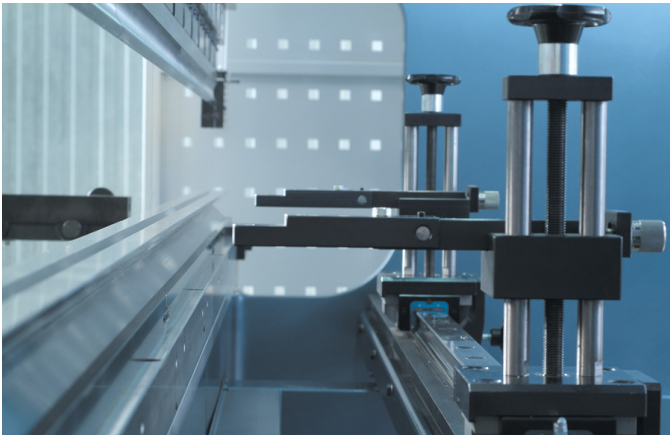
OVERSIZED RAM GUIDES

Long rectangular shaped guides assure stable, smooth, and secure ram positioning. Conventional machines can have these guides mounted on the inside of the frames resulting in obstructions to full length acute angle bends.



QUICK-SET FRONT SHEET SUPPORTS

Rugged support arms with disappearing stops are mounted on a linear guide rail system. This allows "finger-tip" lateral adjustment as required by the bend length of the part. They are also equipped with side gauges for the fast, easy, and accurate feeding of parts; small or large.



BACK GAUGE

X axis (finger depth) is set automatically via the program. The fingers are mounted on a linear guide for quick, easy, and accurate lateral positioning. A hand crank is located at the top of each finger for height adjustment. Programmable R axis (finger height) is optional.

UNIVERSAL BOX FORMING STYLE PUNCH CLAMPS

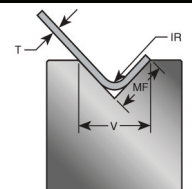
Up to 245 tons. A universal wedge style punch clamp accepts either American or European style punches. Because of their deep sectioned characteristics, they are very useful in deep box forming. The ability to form deep boxes with standard height punches is allowed. They are designed with an integrated wedge that allows vertical adjustment due to tool or ram.

AIR BENDING FORCE CHART

		V(")	0.25	0.313	0.375	0.5	0.625	0.75	0.875	1	1.125	1.25	1.5	2	2.5	3	3.5	4	5		
		MF*	0.18	0.225	0.36	0.36	0.45	0.54	0.63	0.72	0.81	0.9	1.08	1.44	1.8	2.159	2.519	2.879	3.599		
		IR	0.042	0.052	0.084	0.084	0.104	0.125	0.146	0.167	0.188	0.209	0.251	0.334	0.481	0.501	0.585	0.668	0.835		
GAUGE	DEC.	TONS PER FOOT	20	0.036	2.9	2.2	1.7	1.2	1												
	18		0.048		4	2.9	2.2	1.6	1.3												
	16		0.06			5.6	3.6	2.7	2.2	1.7											
	14		0.075				6	4.5	3.4	3	2.5	2.1									
	13		0.09					6.8	5.4	4.3	3.7	3.3	2.9								
	12		0.105					10.1	7.4	6.3	5.4	4.4	4	3.2							
	11		0.12						10.5	8.8	7.2	6.2	5.4	4.3	3.2						
	10		0.135							11.3	9.6	8.4	7	5.6	4.1						
	9		0.15								13.1	11.9	9	7.6	5.2	3.5					
	7		0.188									16.4	14	15.3	7.6	5.8	4.5				
	1/4"		0.25										28.8	26	15.3	11.5	9.1	7.5	6.2		
	5/16"		0.312											38	26	19.2	16	12.5	10.6	7.6	
	3/8"		0.375												41	29.9	24	19.4	16	12.3	
	7/16"		0.438													45.2	35	28	24	17	
	1/2"		0.5															47.9	39	33.1	24
	5/8"		0.625																69.5	58	42.2
	3/4"		0.75																	92	69
	7/8"		0.875																		104
	1"		1																		

T = Material Thickness
 V = V-Opening
 MF = Minimum Flange Length
 IR = Inside Radius

The bending force (tonnage) figures listed above are based on mild steel with tensile strength of 60,000 PSI. To calculate the approximate bending force requirements for other materials, please use the following multipliers:



*Based on bending to an included angle of 88 degrees. This dimension will increase when bending to an included angle of less than 88. A36 steel requires a safety multiplier of 1.33 (80,000 PSI) to the chart.

- Soft Brass
- Soft Aluminum
- Heat Treated Aluminum
- Stainless Steel

- Tons Per Foot x 50%
- Tons Per Foot x 50%
- Tons Per Foot x 100%
- Tons Per Foot x 150%



X/R STYLE BACK GAUGE

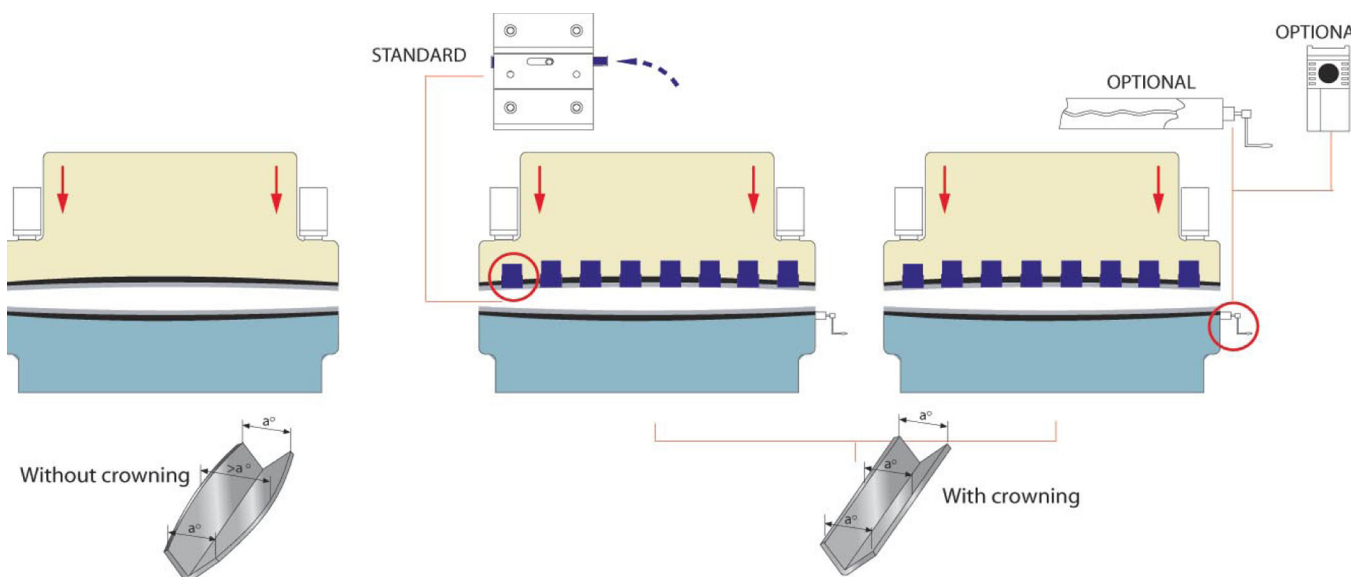
With the X/R style back gauge, the height of the back gauge is programmable in addition to the depth. This is very useful for changes in die height, extreme crowning settings, and for gauging to a flange that may be a different height than the die.

SAFETY

Due to the multiple purpose use of press brakes, point of operation guarding is the responsibility of the machine buyer/user. For this reason we offer the Akas ram mounted "laser" style point of operation guard. The system is based off of the location of the punch tip. Simply by pressing a button the system travels down and finds the safe setting relevant to the punch being used at the time.

SHIMLESS BENDING

Both manual and automatic controlled crowning systems are available. The manual style is equipped with single point adjustment and position readout. In the case of the CNC type the setting is automatically calculated and set from normal program information. Different than manual crowning, the position is automatically set via CNC.



DELEM DA 52 CONTROL

The Delem DA 52 control features quick, one-page programming and hotkey navigation. With a 6.4" VGA color LCD, the DA 52 controls up to 4 axes (Y1, Y2 and 2 auxiliary axes) and advanced Y-axis algorithms for closed loop as well as open loop valves. The DA 52 includes:

- Crowning control
- Tool/material/product library with 30 punches and 30 dies
- USB, peripheral interfacing with data back-up/restoration
- Panel-based controller with optional housing
- Synchronized / conventional press brake control
- 266 MHz processor, 64 MB memory
- Product memory min. 2 MB
- Power-down memorization
- 7-digit program number
- 20-character drawing number
- Stock counter (up to 9999)
- Step repetition (up to 99)
- Millimeter / Inch
- One-page programming table
- 'Teach-in' on all axes
- Programmable axis speed per step
- Programmable material properties

Graphic viewing is not possible on the standard DA 52 control.



DELEM DA 56 CONTROL (OPTIONAL)

The DA 56 provides graphical bend sequence calculation from very basic program info; tooling, bend angle, and flange length. This allows the operator to see how the part is sequenced prior to bending.

- 2D Graphical Programming
- 10.4" Color LCD TFT Display Alpha Numeric Programming
- Bend Sequence Determination
- Stretch Length Calculation (blank size)
- USB Port for Storage & Backup
- 2 MB Product and Tool Memory
- Graphic Tool Programming
- Auto Bumping
- Angle Correction Database

3D viewing is not possible on the DA 56 control.

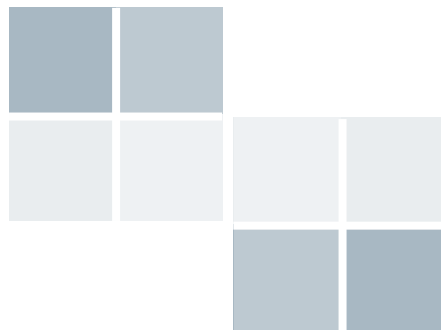


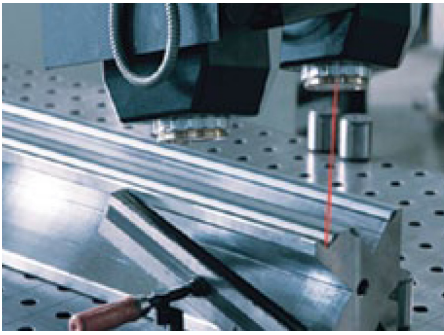
PROFILE-ON-WINDOWS

- GUI 1-to-1 compatible with DA-65W, DA-66W and DA-69W
- Basic package W2D graphical like DA-65W/66W
- Extra option to W3D graphical like DA-69W
- Software upgrades parallel to DA-65W/66W/69W versions
- Easy import of Delem control settings
- Printing functionality of products and tools*

Versions:

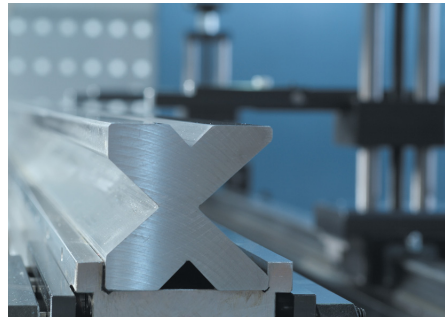
- Profile-W2D
 - Graphical product drawing
 - Tool drawing 2D
 - 2D bendsequence calculation
 - 3D machine set-up / tool stations
- Profile-W3D
 - Additional 3D product drawing
 - 3D full automatic bend sequence calculation





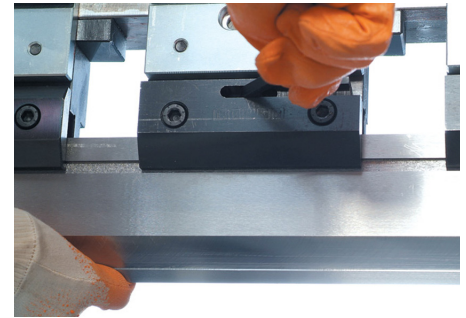
**DURMA LASER
HARDENED TOOLING**

Typically machines 350 tons and over are equipped as standard with an American style punch clamp and a large multi-vee table with five or more v-openings. The opening sizes are dependent on the machine tonnage.



**PRECISION GROUND
EURO-STYLE TOOL PACKAGE**

A very flexible and affordable precision ground tooling package is available. It consists of a four way bottom die with .625"/88° - .866"/88° - 1.37"/85° - 1.96"/85° openings, a four way die holder, and a 75 degree punch with .030 radius. The longest punch or die is 32".



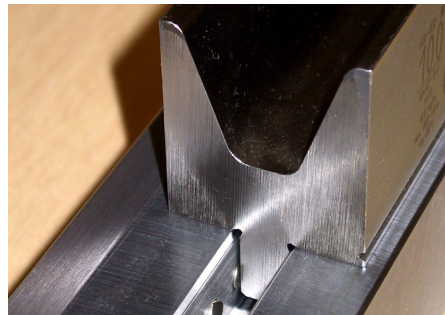
**LEVER-STYLE QUICK
RELEASE PUNCH CLAMPING**

A push pull lever eliminates the need for loosening and tightening bolts for punch removal. This style does not allow vertical loading/unloading of tools with safety tang. Available for European style punches and is not self seating.



NEW STANDARD STYLE

The New Standard concept is also available. This concept is generally a little harder and utilizes the patented "hour glass" tang for self seating.



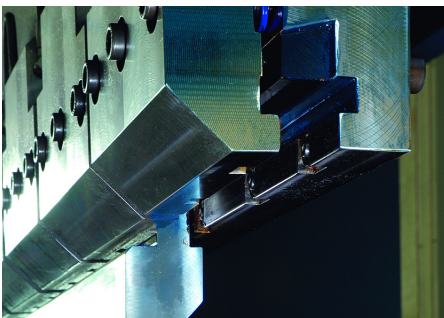
HYDRAULIC DIE CLAMPING

Hydraulic die clamping provides an equally fast method of securing the lower dies. It is available for both American and New Standard style dies.



AMERICAN STYLE TOOLING

Both precision ground and sectionalized tooling, as well as conventional full length style tooling is available.



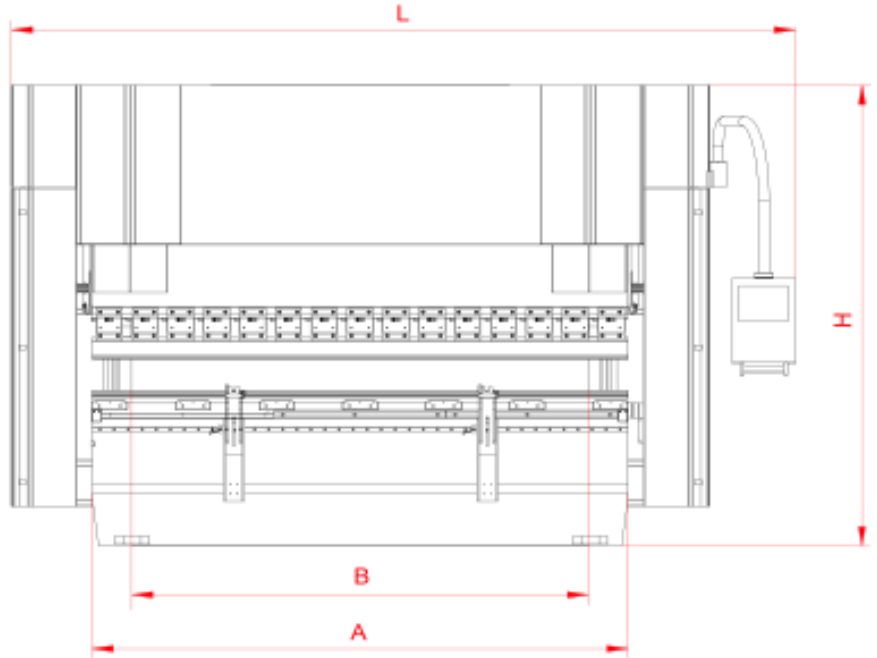
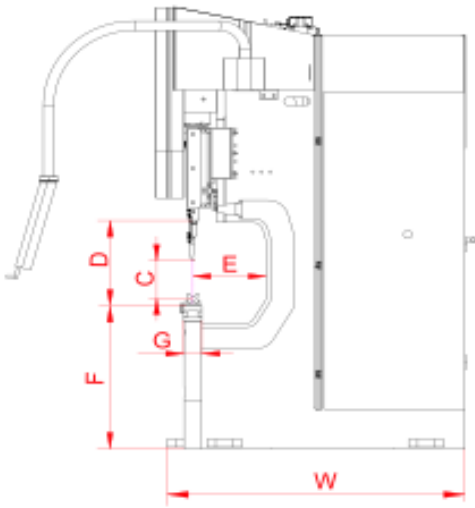
**DURMA HYDRAULIC
PUNCH CLAMPING**

Patented "easy slide" removal of the punch. Built to withstand loads up to 330 tons per foot for demanding jobs with heavy load over short area.

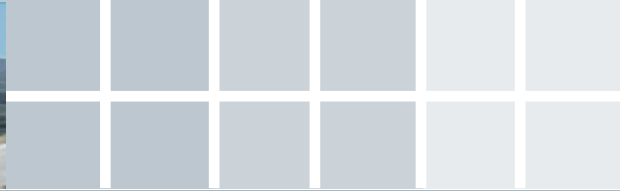


**HYDRAULIC
PUNCH CLAMPING**

We offer several styles of hydraulic punch clamping. Each automatically centers and seats the punch and allows vertical removal. Setup times can be dramatically reduced. It is available for American and New Standard style concepts.



R Series	Model	12 40	20 40	20 66	25 100	30 100	30 135	30 175	37 175	14 175	30 220	37 220	43 220	30 320	40 320	43 320	40 400	43 400	60 220	60 320	60 400
Bending force	U.S. ton	44	44	66	110	110	150	195	195	195	245	245	245	350	350	350	440	440	245	350	440
Bending length	(A) inch	49	80	80	100	120	120	120	145	168	120	145	168	120	159	168	159	168	240	240	240
Between columns	(B) inch	41	67	67	86	102	102	102	122	146 ^{***}	102	122	146	102	141	146	134	146	200	200	200
Y Rapid speed	ipm	354	354	472	425	425	378	283	283	283	282	282	282	236	236	236	236	236	236	236	236
Y Working speed	ipm	35	35	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	19
Y Return speed	ipm	236	236	283	283	283	283	236	236	236	236	236	236	236	236	236	189	189	236	236	189
Daylight	(D) inch	17	17	21	21	21	21	21	21	21	21	21	21	25	25	25	25	25	21	25	25
Table width	(G) inch	4	4	4	4	4	4	4	4	4	4	4	4.1	6	6	6	6	6	6	6	6
Table height	(F) inch	31	31	35	35	35	35	35	35	35	35	35	35	35	35	35	41	41	43	43	48
Stroke	(C) inch	6	6	10	10	10	10	10	10	10	10	10	10	10	14	14	14	14	10	14	14
Throat depth	(E) inch	14	14	16	16	16	16	16	16	16	16	16	16	16	16	16	20	20	16	16	20
Support arms	Qty	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4
B.G. Gauge Fingers		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	4	4
X Axis Speed	ipm	590	590	590	590	590	590	590	590	590	5900	590	590	590	590	590	590	590	590	590	590
X Axis Travel	inch	19.7	19.7	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6	29.5	29.5	29.5	29.5	29.5
Motor power	hp	5	5	10	15	15	20	25	25	25	30	30	30	50	50	50	50	50	30	30	50
Oil tank capacity	Gallon	15.9	15.9	26.4	26.4	26.4	39.6	66	66	66	66	66	66	66	66	66	118.9	118.9	66	66	132.1
Length	(L) inch	83	98	130	150	165	165	171	195	207	167	195	207	169	209	209	226	226	295	295	295
Width	(W) inch	49	51	65	66	66	66	67	67	67	70	70	70	72	75	75	83	83	70	75	83
Height	(H) inch	95	94	109	109	109	109	109	109	108	114	109	114	128	127	127	139	139	128	136	146
Weight (approx)	pounds	7,040	7716	12897	19070	20393	22597	24802	28600	29842	27007	31592	32518	38030	45746	47643	58974	59873	45393	62281	78815



DURMA AIMS FOR CONTINUOUS DEVELOPMENT

DURMA's large investment in machining centers and production equipment, as well as its ISO-certified factories totaling 1,350,000 square feet and 1,000 employees, make one of the world's largest, efficient and most contemporary facilities in the world.

In order to offer customer solutions and further develop patents, the Durma Research and Development center opened in 2010. Fifty engineers were added over the last two years.

Designed and engineered with modern technology, Durma products are equipped with high quality and proven readily available components.

Established in 1956, Durma has vast experience in building and supplying quality products. With over 60,000 machines delivered worldwide, Durma has earned a reputation as a supplier of innovative "value oriented" solutions.

Your partner today, tomorrow, and forever.

