

RAS SYSTEMS, LLC

Refurbished 2011 RAS 79.05 MiniBendCenter Metal Folding System

RAS MiniBendCenter Metal Folding System

RAS MiniBendCenter 79.05

Blank length minimum	50 mm	1.97"	
Blank length maximum	600 mm	23.62"	
Blank width minimum	40 mm	1.57"	
Blank width maximum	600 mm	23.62"	
Material thickness maximum	3.0 mm	11 ga.	(depending on tool)
Box height maximum	127 mm	5"	
Drives	servo motors		
Required blank quality	leveled	leveled	



Intelligent Load Robot System

Using a camera and a scanner this system detects the location of the blanks in the bulk box. The software calculates which blanks are the top layers and which blanks are in position for the robot to be picked up. Fed with this information, the robot reaches into the box, picks out the top blank and feeds it to the MiniBendCenter. No programming. No teaching.





Pallet System

Standard wooden pallets (1200 x 800 mm, 47" x 31.5") can be loaded and unloaded to the roller conveyor from the front by a forklift. On each pallet either stacks of material or unsorted blanks in a bulk box can be placed. The scanner of the load robot system needs to receive an image of the parts being located on each pallet.



The pallets will move into and out of the system on motor driven rollers and will be cross over from the entry to the exit rollers on motor driven heavy duty chain conveyors.

If the scanner finds a part that cannot be identified (wrong parts loaded or flipped image in bulk box), the load robot will sort out the "wrong part" pallet next to the pallet system.

Light protection banners protect failure scans caused by sunlight or factory light.

A safety system covers the entire area around the pallet system and load robot. It comes with a safety fence, two light beam system (muting function when pallets move in and out) and a safety door to get the "wrong part pallet" out.

Universal vacuum gripper

The universal vacuum gripper allows loading of different blank geometries without a gripper change. Loading requires the blanks to be stacked. The maximum stack height is 200 mm.

If there is more than one stack on a pallet, the distance between the stacks must allow sufficient space for the universal vacuum gripper. Breather fleece pad so that the universal vacuum gripper will not suck on the scanning table.







Blank Scanner

The main manipulator moves the blank along the optical blank scanner. The blank scanner measures 3 points of the part and calculates the exact blank loading position. On the way to the first folding station any offset to the programmed position will be corrected automatically.

Main Manipulator

When picking up the blank, the main manipulator checks for double material blank loading.

The main manipulator takes the blank from the delivery table. The upper and lower feet of the main manipulator clamp the blank with programmable clamping pressure. For clamping different size parts two clamping foot geometries will be delivered (70x20 mm and 40x20 mm). Three servo axes (X, Y, Z) and a servo axis for part rotation are able to position the clamping surface of the part to any position.

The main manipulator positions the part to the programmed measuring points at the blank scanner. Then, the main manipulator moves the workpiece to the folding stations, positions the blank to each bend line and performs all programmed freemove, lowering and lifting movements.

Without stops the part can be bent quickly and precisely.

The main manipulator foot can change its clamping position in the program sequence. For more speed and flexibility the upper and lower feet are able to rotate separate from each other.

After the part is finished the main manipulator moves it to the unload position.

Brushless AC servo motors position the part very dynamically and with maximum precision:

•	Positioning accuracy along the machine (X)	+/- 0.02 mm
•	Positioning accuracy to the bend line (Y)	+/- 0.02 mm
•	Positioning accuracy lift axis (Z)	+/- 0.05 mm
•	Rotation axis	+/- 0.01 degrees
•	Rotation axis	+/- 0.01 degree







Folding Cell

With an upper and lower folding beam, the MiniBendCenter is able to fold a blank up and down. Positive and negative bends can be made without turning the blank. The flange which is held by the main manipulator always stays in the plane, therefore the folding sequence is easy to automate, simple to program and quick to run. Via special folding movement the folding tool rolls along material surface. This allows scratch-free folding and prevents wear of the tools.

The folding cell is designed in a four-machine stand architecture. With eight connection points to the upper and lower beams, the machine is extremely rigid, which is reflected in excellent bend results. A lever mechanism moves in each machine stand. These levers either move the upper or lower folding beam into working position.

The folding cell automatically adjusts for the actual material thickness.

By a continuous-path-controlled movement of the folding beams the machine is able to model the requested bend radius, fold the material scratch-free and bend smallest flange dimensions.



Machine Covers

The entire folding cell, as well as the main manipulator and tool changer travel range are protected with safe guarded machine covers.

Automatic Tool Clamping System

The automatic tool clamping system of the upper, lower and the two folding beams lock the tools in position, as soon as the folding sequence starts.

Finished Part Delivery

The main manipulator can deliver the finished part either over a part chute into a customer container or over a belt conveyor. The belt is about 1500 mm long.

Tool Changer and Tool Magazine

The tool changer can move along the entire front of the machine. It has its park position at the left machine edge.

The tool magazine is located underneath the work area. The tool changer stores all tools in the two-level magazine, which is not used for the actual setup. An automatic tool clamping system locks the tools in position during the folding sequence.

A gripper system grasps a tool segment and positions it with 0.02 mm accuracy. The tool change gripper can automatically change tools of the upper beam and the lower beam, as well as the tools of the upper and lower folding beam.

The tool changer is self-intelligent. Meaning: There is no need to program it. The tool changer selects suitable the tool segments for the tool length and automatically calculates a tool change strategy.

With its three servo motor axes (X, Y, Z) and a rotation axis the tool changer takes the tools









out of the beams, sets them on another position or stores them in the tool magazine.

By the use of the rotation axis, the tool changer sets up the clamping tools in the upper beam or the lower beam. Same for the folding beam tools, which can be set up in the upper or lower folding beam.

CNC Control

The 18" Touch&More control is integrated in a moveable operating panel. The control takes over data from the RASCAM program and automatically generates the machine sequences.

RASCAM-Office Software

The software runs on a user PC based SolidWorks functionality. The screen can be divided into 4 windows. During programming you can see the part, the folding sequence and the machine periphery in 3D views from adjustable perspectives. The software is arranged into three function groups:

Preparation:

- Load 3D model from SolidWorks or another 3D CAD system
- Develop 3D model with bend lines
- Determine blank data (length, width, geometry, thickness, weight)









Blank definition:

- Set blank orientation
- Specify main manipulator take over position •
- Program three measuring points
- Select folding technology table (bend radius, folding movement related to material thickness, cut-out in blank)
- Select main manipulator foot size
- Adjust upper beam clamping pressure (for sensitive materials) •

Folding process:

- Load blank into virtual machine
- Move blank to determined bend lines
- Set up tool stations
- Determine folding sequence
- Unload finished part

The result of the RASCAM program will be transferred to the Touch&More control. In reverse a part program, which has been optimized at the Touch&More control, can be loaded into the RASCAM program and visualized there.

Clamping Tools

The tool changer can set up the clamping tools in the upper beam as well as in the lower beam. This reduces the number of required tool geometries and increases the MiniBendCenter flexibility.

A tool length can be set using basic segments and adapter tools. The tool clamping systems in the upper and lower beam lock the tools automatically in position. Large free spaces around the tools increase the clamping tools versatility.

Folding Beam Tools

The tools of the folding beam are segmented and come with basic segments and adapter tools. The folding beam tools can be set up in the upper and lower folding beam. Different tool geometries are available for even the most complex parts. The tool clamping systems in the upper and lower folding beam lock the tools automatically in position as soon as a program starts.

Additional main manipulator foot (10x40 mm) for U shape parts with inside dimension min 40 mm









12x40

10x12





VF18

Online Support Agreement*

- Secure Online Support worldwide via TeamViewer, Phone, Email (German/English) (Machine needs to be connected to the Internet)
- Online assistance with application and service questions

Software Update Agreement*

- Use of new software features
- Latest software versions and features are described on the RAS Website
- Update contract for Office software