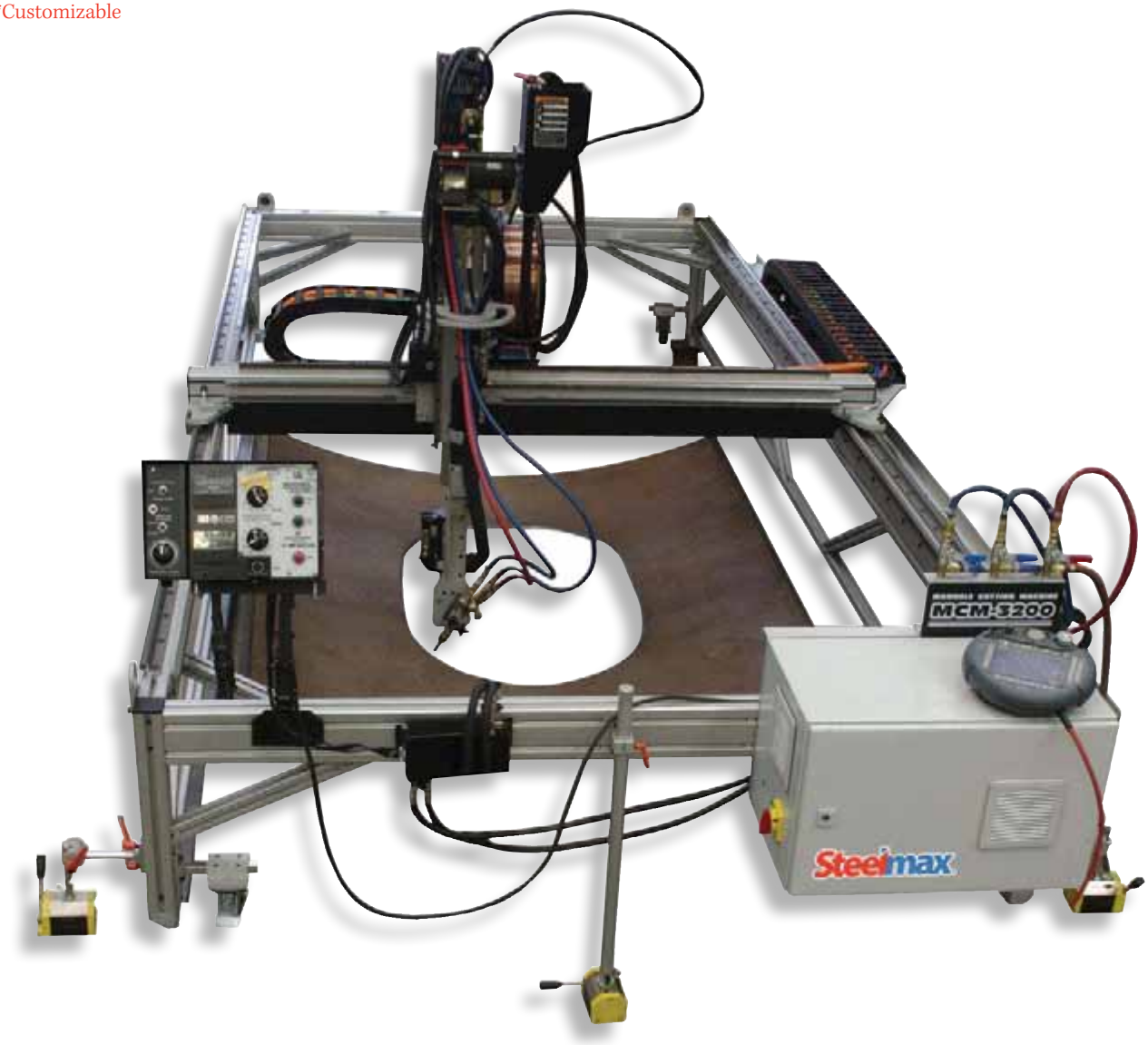
PORTABLE GANTRY MACHINE FROM STEELMAX®

THE MCM 2700, 3200, and 4000*

MANHOLE CUTTING AND BEVELING WITH OPTIONAL WELDING HEAD

The **MCM** portable 5-axis portable gantry machine from Steelmax is designed for cutting and beveling holes on flat, convex, concave surfaces, pipes, tanks and special conical shaped tubular structures such as wind towers. It allows for programmable oxyfuel or plasma hole cutting and beveling – all in one set up and in most cases in one operation. Optionally, the **MCM** can be equipped with a welding head attachment for either SAW or, MCAW/FCAW applications such as door frames in wind towers.

*Customizable



Steelmax®
The tools of innovation.

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Features

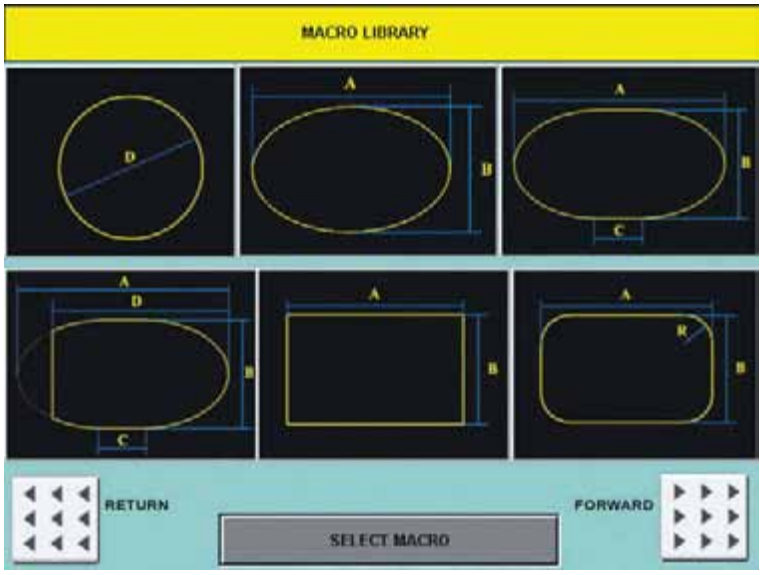
- Most processes can be performed in a fully programmable cycle.
- Simple and user-friendly interface enables an easy input and configuration of cutting/beveling parameters. The innovative control system and software allow for double-sided beveling in one operation and ensures precise movement of cutting torch and active compensation of torch position with regards to work piece curvature.
- During welding processes, the system maintains the programmed torch position.
- Cutting/beveling/welding on flat, concave, convex and conical surfaces is available.
- The MCM machine is fully portable.
- The MCM can be firmly and quickly positioned with a set of magnetic feet.
- High-quality and efficient double-sided beveling in one operation is possible.
- A multi language user friendly control system interface is available.
- Custom made versions are also available.
- Motorized torch angle control is available as an option.
- SAW, MCAW or FCAW welding methods can be implemented on the same unit.

MCM Technical specifications

Machine type	**SM-MCM2700**	**SM-MCM3200**	**SM-MCM4000**
Power supply	220V (+10%, -5%) 50-60Hz	220V (+10%, -5%) 50-60Hz	230V (+10%, -5%), 50-60Hz
Minimal pipe diameter	118" (3000 mm) also suitable for flat surfaces	118" (3000 mm) also suitable for flat surfaces	118" (3000 mm) also suitable for flat surfaces
Maximum hole length	106-5/16" (2700 mm)	126" (3200 mm)	157-1/2" (4000 mm)
Maximum beveling angle	50°	50°	50°
Maximum hole width	up 47-1/4" (1200 mm)	up 47-1/4" (1200 mm)	up 47-1/4" (1200 mm)
Maximum cutting speed	141"/min (3.6 m/min)	141"/min (3.6 m/min)	141"/min (3.6 m/min)
Weight	1300 lbs (590 kg)	1475 (670 kg)	1670 lbs (760 kg)
Overall machine dimensions			
Length:	164-3/4" (4185 mm)	184-7/16" (4685 mm)	217-7/8" (5535 mm)
Width:	89-3/4" (2280 mm)	89-3/4" (2280 mm)	91-3/8" (2320 mm)
Height:	64-3/4" (1640 mm)	64-3/4" (1640 mm)	64-3/4" (1640 mm)
Number of axis	5 axes	5 axes	5 axes
Oxyfuel cutting	standard	standard	standard
Plasma cutting	option	option	option
SAW equipment (LE)*	option	option	option
FCAW ** equipment	option	option	option
Transport beam	standard	standard	standard

*Welding option does not include: power source, control cables, welding consumables.
Set includes: controller, wire reel assembly, wire feeder, nozzle assembly.
** to be customized

NOTE: Integration with power source other than recommended is subject to a specific quote. Further information upon request.



Our latest generation control system permits fast shape programming. Integrated library of macros allows for parametric definition of typical elements. User-friendly interface helps operator to input only the necessary data.

Alternatively, the machine can also accept G-CODE format program transferred by operator from an external computer through a USB port.

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Programming process begins by choosing a required shape from built-in library. Next an operator inputs specific dimensions related to the job at hand. *Figure 1*

Then the operator chooses beveling type, defines the way of burning lead-in & lead out and determines basic parameters of cutting. *Figure 2*

Once the necessary data is entered, the numerical controller of the machine generates the torch path and angles. If the hole to be cut is a unique oval shape, the operator can "teach" the machine and customize the hole (see MSS on next page). *Figure 3*

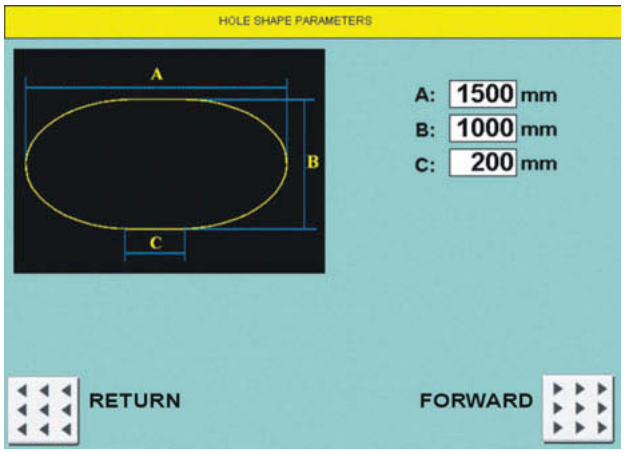


Figure 1

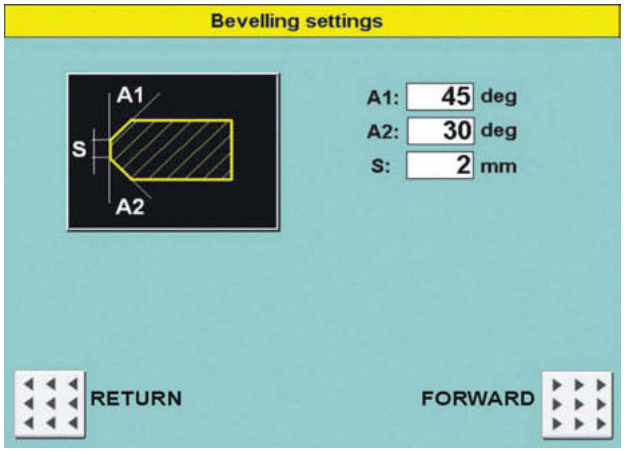


Figure 2

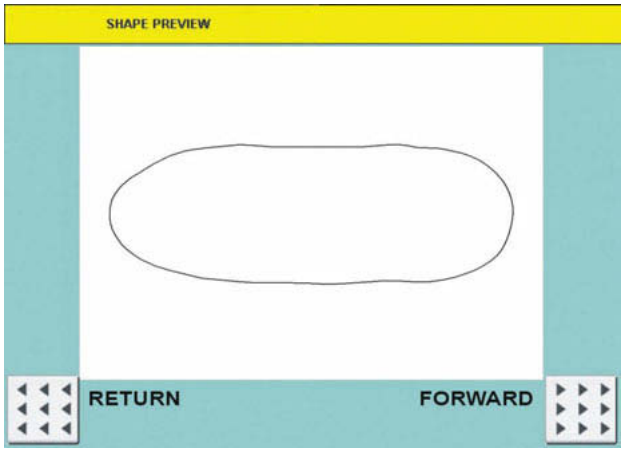
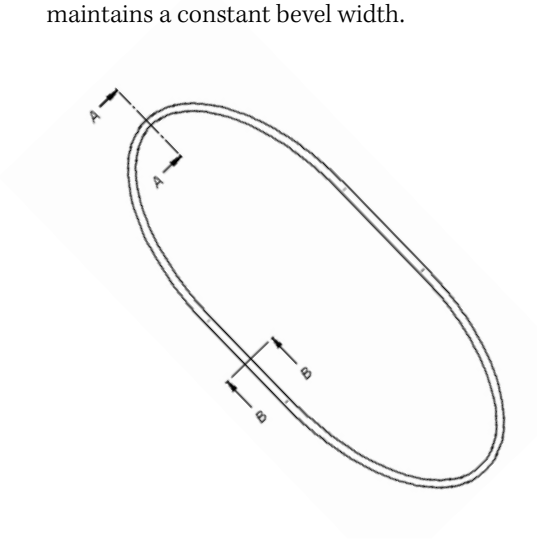


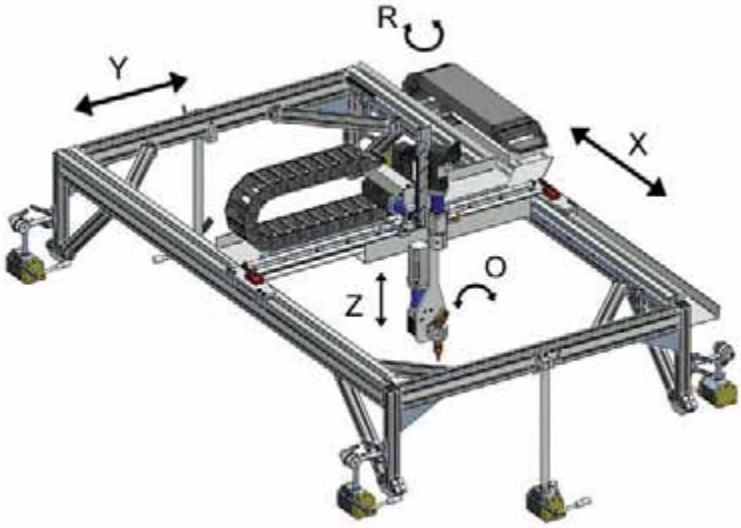
Figure 3

The operator can also transfer his own software in G-CODE format to MCM through USB port using a flash-type memory stick. (Available as an option)

Thanks to the 5th axis of the MCM machine it is able to bevel both with a constant bevel width or with a constant angle.

The MCM's 5th axis controls the torch position with accuracy up to 0.1°, which provides precise beveling of the angle and maintains a constant bevel width.





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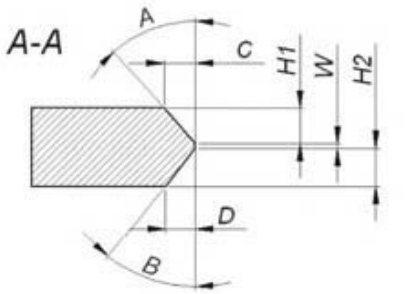
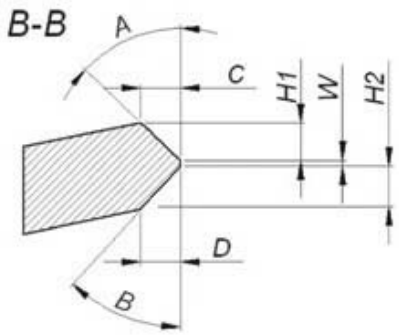
The ability to cut with a constant groove width is highly valuable when beveling curved shapes on cone shaped convex or concave structures. MCM's ability to maintain bevel width while changing the beveling angle around the oval hole (eg. manhole for wind towers) offers huge opportunities to save labor costs by optimization of weld material deposition.



Hole dimensions when cutting at constant beveling angle:

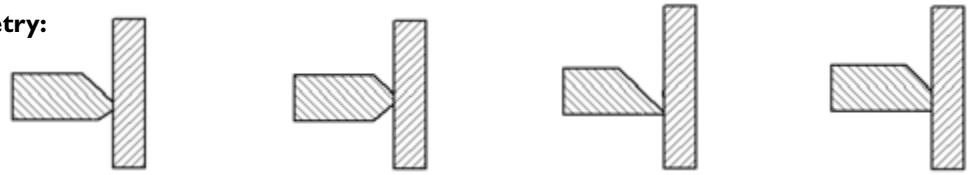
A – Constant
B – Constant
C – Variable
D – Variable
W – Constant
H1 – Variable
H2 – Variable



Hole dimensions when cutting at constant groove width:

A – Variable
B – Variable
C – Constant
D – Constant
W – Constant
H1 – Variable
H2 – Variable

Typical beveling geometry:



1/3 - 2/3 Double Bevel | Double Bevel | Single Bevel | Single Bevel

The MCM machine offers a new and unique feature that has been developed especially for the wind tower industry. A special tool and software named MSS allows the operator to "teach" the machine an imperfect shape of an oval hole which needs to be cut, beveled and welded. Door frames which are welded into wind towers usually have a unique oval shape which varies from one to another. Therefore the operator will need to create a custom program for each door frame to be installed.

Measuring Slide System (MSS) consists of: measuring arm, sliding clamp, main beam with linear scale, and software

The operator places the aluminum beam with perpendicular measuring slide on the doorframe and makes the width measurement at selected points (both left and right side of the frame).

Then the measured values are entered into to the machine's controller. Next the MSS software calculates the exact hole shape and automatically generates the torch path. It is a cost-effective, precise and quick way of doorframe shape programming.

The whole operation can take a couple of minutes and each time delivers an ideal fit between the beveled hole and the door frame.

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APPLICATIONS

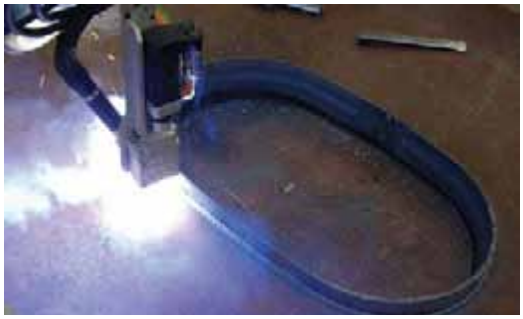
1. Cutting

2. Beveling

3. Double-Sided Beveling

4. Welding SAW (option)

5. Welding FCAW (option)



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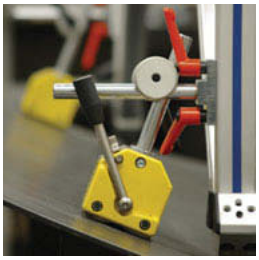
Remote control for operator's convenience

2 laser pointers facilitate precise & easy positioning



Permanent magnets ensure firm, fast & easy positioning

Typical "out of position" applications:

- horizontal positions

inside tubes or vessels with diameter above 118" (3000 mm)

externally on tubes or tanks with diameters above 118" (3000 mm)

- or vertical positions (option)

- on flat surfaces (plates etc.)
- customized versions available

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