MODULAR DRIVE SYSTEM
PROGRAMMABLE SHAPE MACHINE PACKAGE

Portable Two Axis Shape Machine Cuts In All Positions!

The **Modular Drive Programmable Shape Machine** is an easy to use 2-axis machine which you can program to run any contour or pattern for both welding or cutting applications. A handheld terminal supplied with the machine is used to program the required shape and operation sequence. Other functions besides moves can be programmed, such as repeats, starts, stops, delays, and rapid traverse. Twenty programs can be stored in machine memory at any one time.

An optional computer software program is available. With this program you can select pre-programmed shapes or create your own custom shapes, and store and edit any number of them on disk. Selected shapes can then be downloaded to the machine as needed.

The Modular Drive Programmable Shape Machine is compact and portable and can be easily carried throughout your facility or job site. The system can be configured to run on all types of Bug-O rail. It is held in position with either powerful permanent magnets or vacuum cups, depending on the work material. This enables you to take the machine to the work, which will help reduce your material handling. *PATENTS WORLDWIDE*

MDS - PROGRAMMABLE SHAPE MACHINE

The MDS Programmable Shape Machine is a two-axis machine that runs on a track and carries a torch on a motorized cross-arm. It can be used for flame or plasma cutting, or welding, of a variety of shapes which are programmed and stored in memory.

The machine has storage capacity in memory for 20 different programmed shapes. All programming is done with the provided handheld terminal. The terminal can be plugged into the connector on the rear of the machine or unplugged at any time. The terminal is not needed to run the machine once programmed.

Shapes and patterns are built up using segments. To do this, select the type of segment you want and determine what quadrant it is in – type it into the terminal. Any given shape can have up to 50 segments. Other functions such as weld/oxygen, on/off, time delay, or repeat a shape a number of times, also count as one segment each, if used.

Handheld Terminal Functions:

The programming operation is selected by pressing keys A, B, C, D, or E.
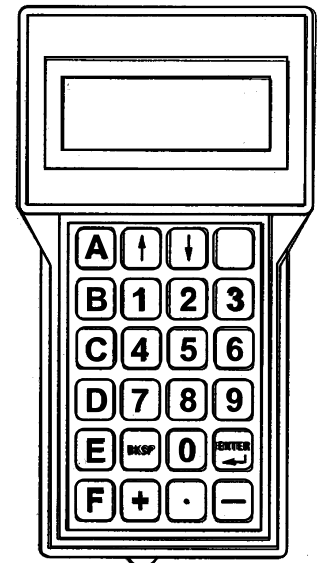
A: ALL SEGMENTS; data entry for new shape consists of total number of segments and data for each segment.

B: PROGRAM SEGMENT; press **B** on terminal to re-program a single segment. This is useful if there is an error in data for just one segment, so that the whole shape does not have to be re-entered.

C: CHANGE SHAPE NUMBER; press **C** on terminal to change the current shape number. The program switches to the new number in memory, and to whatever shape is stored there.

D: DISPLAY SHAPE DATA; press **D** to display the data for the current shape. The terminal display shows a total number of segments, and data for each segment one by one each time you press enter.

E: END OF SEGMENT SLOWDOWN; press **E** to set value of deceleration for the shape, when the machine approaches the end of each segment. This is useful when the shape has sharp corners to prevent overshoot. **99** is maximum slowdown, **0** is no slowdown.
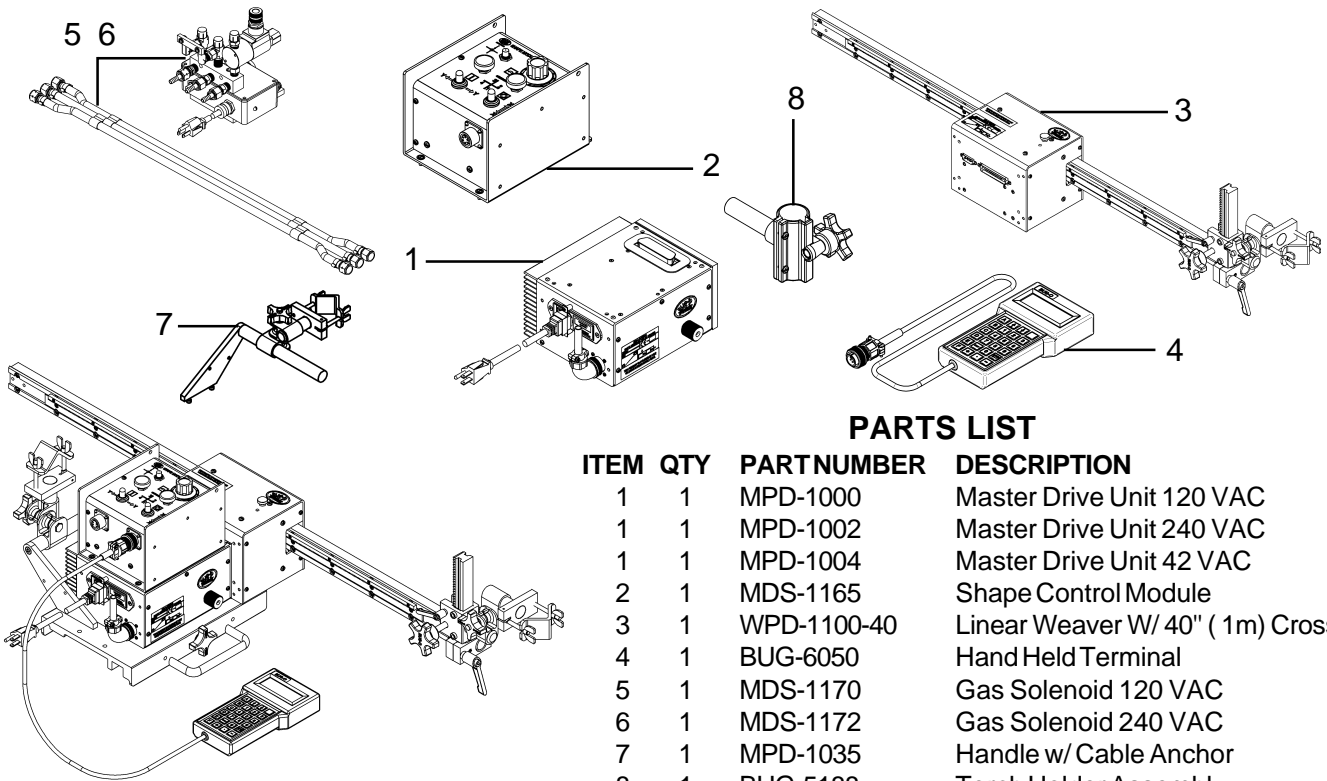
The different types of segments that can be loaded into the machine are as follows:

		Clockwise Partial Arcs	
Clockwise 90			
Counter Clockwise 90		**Counter Clockwise Partial Arcs**	
X or Y Axis		**Inclined Lines**	

Other functions besides the moves shown above are:
Weld Contact/Solenoid On/Off, Pause, Delay, Repeat another shape, Full ellipse, and Rapid Traverse.
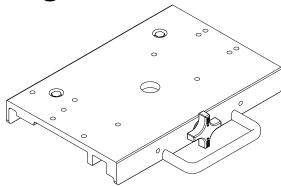
MDS - PROGRAMMABLE SHAPE MACHINE

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PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MPD-1000	Master Drive Unit 120 VAC
1	1	MPD-1002	Master Drive Unit 240 VAC
1	1	MPD-1004	Master Drive Unit 42 VAC
2	1	MDS-1165	Shape Control Module
3	1	WPD-1100-40	Linear Weaver W/ 40" (1m) Cross Arm
4	1	BUG-6050	Hand Held Terminal
5	1	MDS-1170	Gas Solenoid 120 VAC
6	1	MDS-1172	Gas Solenoid 240 VAC
7	1	MPD-1035	Handle w/ Cable Anchor
8	1	BUG-5188	Torch Holder Assembly

Carriages

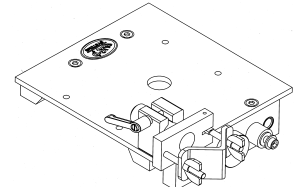### For Rigid and Semi-Flex rail

MPD-1065 4-wheel carriage.
Releasable, can be installed or released in any position anywhere on the rail.
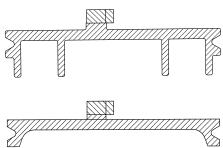
For Ring Rail

BUG-5910 Ring Rail Carriage.
4 wheels can be adjusted to the required ring diameter. Releasable.

For Hi-Flex Rails

FMD-1105 Hi-Flex Carriage.
Runs on high flex rail as shown below. Releasable.

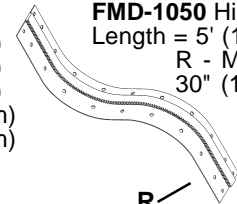**The above shown carriages can be used on the rails shown below:**

ARR-1080 L = 8' (2.4 m)
HD-Rigid Aluminum Rail

ARR-1085 L = 4' (1.2 m)
HD-Rigid Aluminum Rail
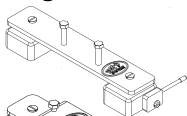
AFR-3000 L = 8' (2.4 m)
Semi-Flex Aluminum Rail

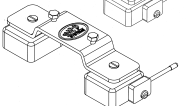| Ring Rails	Diameter
BRR-1210-20	(20" 500 mm)
BRR-1210-27	(27" 680 mm)
BRR-1210-34	(34" 860 mm)
BRR-1210-41	(41" 1040 mm)
BRR-1210-48	(48" 1220 mm)

Custom sizes are available.

FMD-1050 Hi-Flex Rail
Length = 5' (1.5 m)
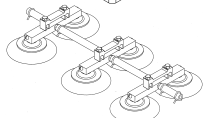R - Minimum Radius
30" (1,000 mm)
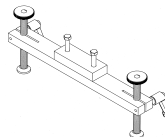
R

Magnet Bars and Vacuum Bars
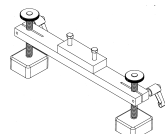
ARM-2325
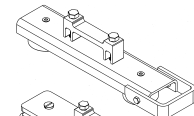Magnet w/Release

ARM-2425
Magnet w/Release

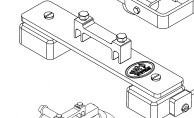**ARV-1080/1085**
Vacuum System

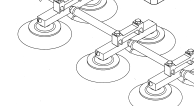**ARM-2380**
Support Bar with Screw Feet

ARM-2480
Support Bar with Screw Magnet Feet

ARM-2120
RE-Magnet w/Release

FMD-2325
Magnet w/Release
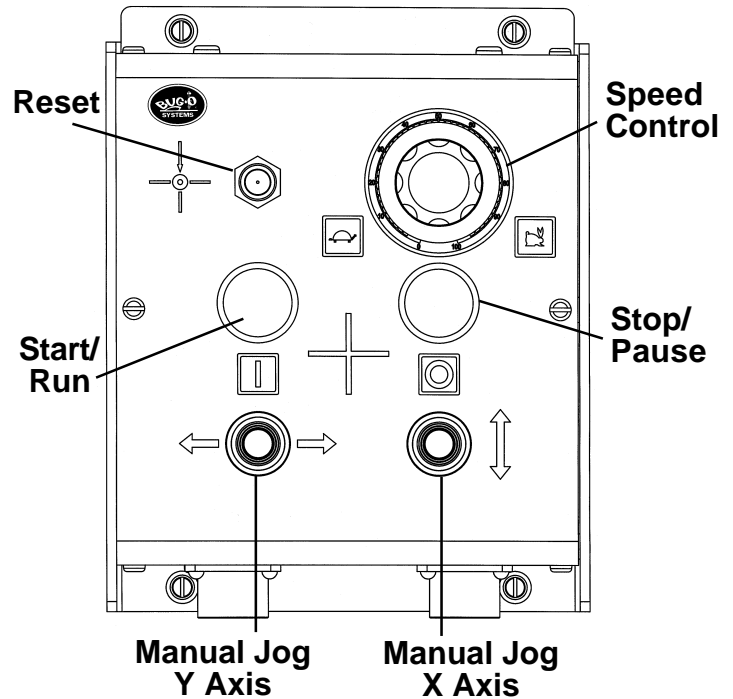
FMD-1220/1230
Vacuum System

MDS - PROGRAMMABLE SHAPE MACHINE

Operation:

The machine is in the reference start position, when first plugged in.

There are 3 options (the handheld terminal is not needed for the first two):

1. **MOVE:** To change the home position, push the STOP/PAUSE button, move the machine manually to the required position using the joy stick, and push the reset button.

2. **RUN:** Push the START/RUN button to cut/ weld a shape.

3. **PROGRAM:** The programming operation requires the use of the handheld terminal.

Technical Data:

Travel Speed: 5-100 ipm (127-2540 mm/min)

Cross Travel: 24" (610 mm)

Max. Segment Dimension: 72" (1800 mm) Within Limits of Travel

Min. Increment Dimension: .01" (0.1 mm)

Delay Increment: .01 seconds

Reset

Speed Control

Start/ Run

Stop/ Pause

Manual Jog Y Axis

Manual Jog X Axis

Bug-6140 PC Option

This Windows based software package provides Computer-Aided Programming for Shape Machines and other BUG-O programmable machines. The software will run on any PC with the Windows Operating System. A cable is provided to interface the BUG-O to the PC's serial port. (A USB to RS-232 serial adaptor can be used if a serial port is not available).

The program enables easy creation and editing of a shape while viewing it on screen. When a shape is loaded into the program the segment list is shown on the left, and the shape diagram on the right. Selecting (mouse-click) a segment in the list highlights the corresponding segment in the diagram. Buttons are provided to select Add, Edit, Insert or Delete a segment.

A print function lets you print out the Segment List and/or Shape Diagram.

Any number of shapes can be saved and stored on disk. Saved shapes can be loaded from disk into memory slots corresponding to the 20 shape numbers in the BUG-O machine.

The software is distributed as a single SETUP file, which when run will install the program on your PC.