MDS PROGRAMMABLE SHAPE MACHINE

PORTABLE, TWO AXIS SHAPE MACHINE
CUTS IN ALL POSITIONS

Since 1948
made in U.S.A.

3 Year Warranty

Bug-O Systems
Operator Controlled Mechanization

412-331-1776   www.bugo.com

Bug-O Systems is committed to empowering our customers by providing operator controlled mechanized solutions for their welding, cutting and custom applications.

BUG·O SYSTEMS ®

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 cutting, plasma cutting or welding a variety of shapes which are programmed and stored in memory. 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.

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 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/plasma, 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.
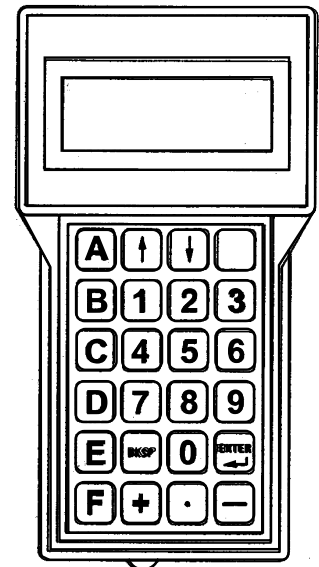
The different types of segments that can be loaded into the machine are as follows:

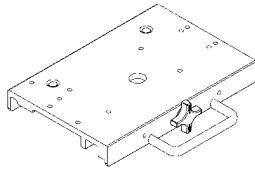|									
Clockwise 90					**Clockwise Partial Arcs**				
Counter Clockwise 90					**Counter Clockwise Partial Arcs**				
X or Y Axis					**Inclined Lines**				

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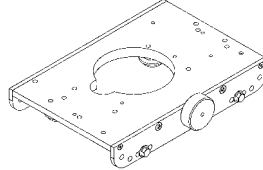
MDS - PROGRAMMABLE SHAPE MACHINE

Carriages

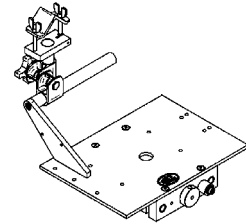### For Rigid and Semi-Flex rail

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
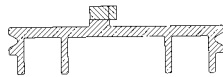4 wheels can be adjusted to the required ring diameter. Releasable.

For Hi-Flex Rails

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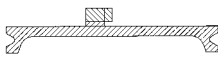Runs on high flex rail as shown below. Releasable.

Rails

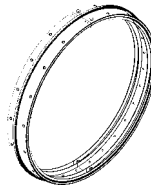The above shown carriages can be used on the rails shown below:

ARR-1080 8' (2.4 m)
HD-Rigid Aluminum Rail
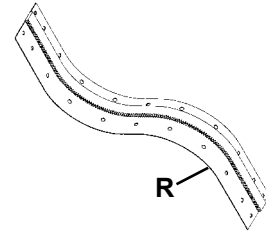
ARR-1085 4' (1.2 m)
HD-Rigid Aluminum Rail

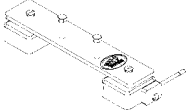**AFR-3000** 8' (2.4 m)
Semi-Flex Aluminum Rail

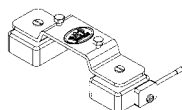| Ring Rails	Diameter
BRR-1210-20	(20" 508 mm)
BRR-1210-27	(27" 685 mm)
BRR-1210-34	(34" 865 mm)
BRR-1210-41	(41" 1041 mm)
BRR-1210-48	(48" 1219 mm)

Custom sizes are available.

R

FMD-1050 Hi-Flex Rail
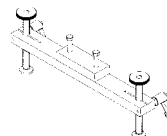Length = 5' (1.5 m)
R - Minimum Radius
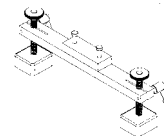30" (762 mm)

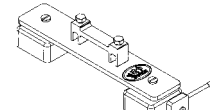## Magnet Bars and Vacuum Bars

ARM-2325
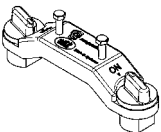Magnet w/Release

ARM-2425
Magnet w/Release

ARM-2380
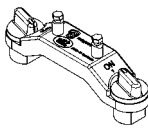Support Bar with Screw Feet

ARM-2480
Support Bar with Screw Magnet Feet
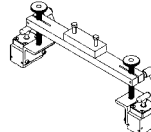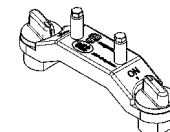
FMD-2325
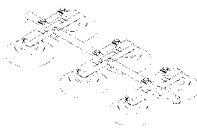Magnet w/Release

ARM-2010
Rare Earth
On/Off Magnet

AFR-2010
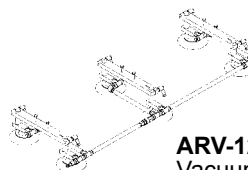Rare Earth
On/Off Magnet

ARM-2580
Support Bar with R.E.
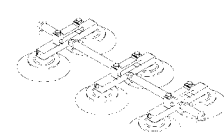On/Off Magnets

FMD-2010
Rare Earth
On/Off Magnet

ARV-1080/1085
Vacuum System
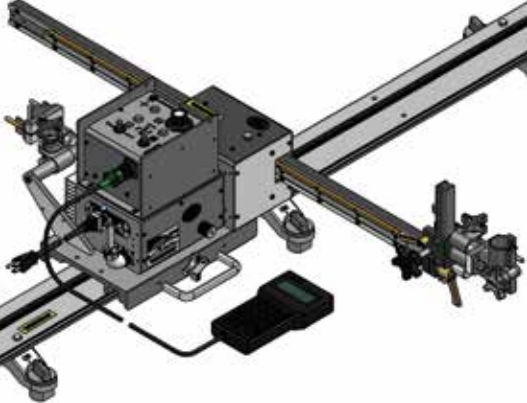
ARV-1240-__
Vacuum Support System

FMD-1220/1230
Vacuum System

Note: Refer to our MDS brochure (LIT-MDS-BRO), pages 8-9 for additional information.

MDS - PROGRAMMABLE SHAPE MACHINE

MDS / STRAIGHT LINE / PROGRAMMABLE SHAPE PLASMA CUTTING / WELDING KIT
MDS-4500 (120 VAC)

QTY	PART #	DESCRIPTION
6	ARM-2010	R. E. On/Off Magnet
1	ARR-1080	H. D. Aluminum Rigid Rail 8' (2.37 m)
1	ARR-1085	H. D. Aluminum Rigid Rail 4' (1.18 m)
1	BUG-5188	Torch Holder Assembly
1	BUG-6050	Hand Held Terminal
1	MDS-1165	Shape Control Module
1	MDS-1085-25	Weld Contact Cable 25' (7.6 m)
1	MPD-1000	Master Drive Unit, 120 VAC
1	MPD-1035	Handle w/ Cable Anchor
1	MPD-1065	Releasable Carriage 12" (305 mm)
1	WPD-1100-40	Linear Weaver w/ 40" (1 m) Long Arm

MDS-4502 (240 VAC)
Same as MDS-4500 except with:

1	MPD-1002	Master Drive Unit, 240 VAC

MDS-4504 (42 VAC)
Same as MDS-4500 except with:

1	MPD-1004	Master Drive Unit, 42 VAC

MDS / STRAIGHT LINE / PROGRAMMABLE OXY-FUEL CUTTING KIT
MDS-4550 (120 VAC)

QTY	PART #	DESCRIPTION
6	ARM-2010	R. E. On/Off Magnet
1	ARR-1080	H. D. Aluminum Rigid Rail 8' (2.37 m)
1	ARR-1085	H. D. Aluminum Rigid Rail 4' (1.18 m)
1	BUG-5188	Torch Holder Assembly
1	BUG-6050	Hand Held Terminal
1	MDS-1165	Shape Control Module
1	MDS-1170	120 VAC MDS Solenoid Kit
1	MPD-1000	Master Drive Unit, 120 VAC
1	MPD-1035	Handle w/ Cable Anchor
1	MPD-1065	Releasable Carriage 12" (305 mm)
1	WPD-1100-40	Linear Weaver w/ 40" (1 m) Long Arm

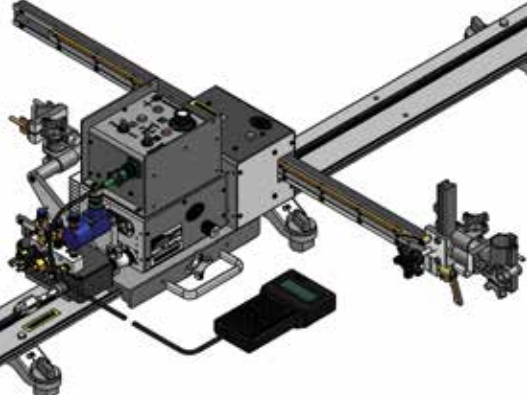### MDS-4552 (240 VAC)
Same as MDS-4550 except with:

1	MDS-1172	240 VAC MDS Solenoid Kit
1	MPD-1002	Master Drive Unit, 240 VAC

MDS-4554 (42 VAC)
Same as MDS-4550 except with:
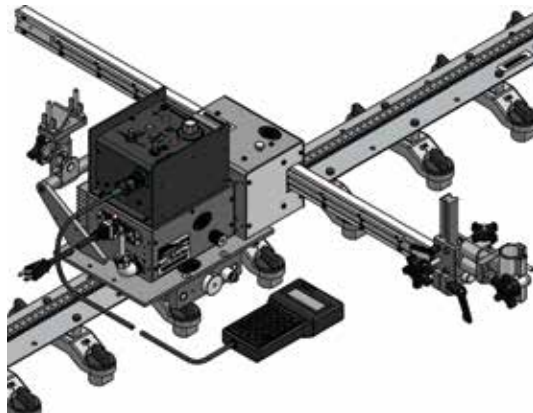
1	MDS-1174	42 VAC MDS Solenoid Kit
1	MPD-1004	Master Drive Unit, 42 VAC

MDS - PROGRAMMABLE SHAPE MACHINE

MDS / HI-FLEX / PROGRAMMABLE SHAPE PLASMA CUTTING / WELDING KIT
FMD-4500 (120 VAC)

QTY	PART #	DESCRIPTION
2	FMD-2170	Hi-Flex Rail w/ (8) FMD-2010 R.E. On/Off Magnets
1	BUG-5188	Torch Holder Assembly
1	BUG-6050	Hand Held Terminal
1	MDS-1165	Shape Control Module
1	MDS-1085-25	Weld Contact Cable 25' (7.6 m)
1	MPD-1000	Master Drive Unit, 120 VAC
1	MPD-1035	Handle w/ Cable Anchor
1	FMD-1105	Hi-Flex Carriage
1	WPD-1100-40	Linear Weaver w/ 40" (1 m) Long Arm

FMD-4502 (240 VAC)
Same as FMD-4500 except with:
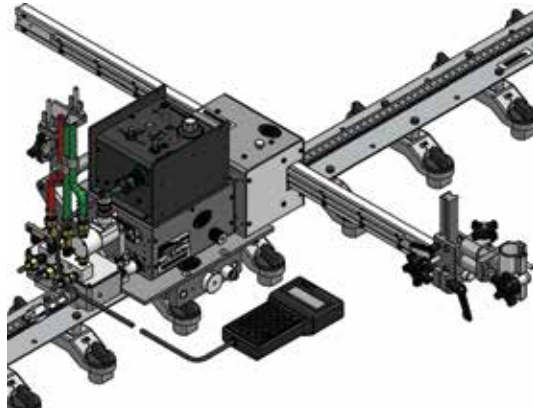
1	MPD-1002	Master Drive Unit, 240 VAC

FMD-4504 (42 VAC)
Same as FM-4500 except with:

1	MPD-1004	Master Drive Unit, 42 VAC

MDS / HI-FLEX / PROGRAMMABLE SHAPE OXY-FUEL CUTTING KIT
FMD-4550 (120 VAC)

2	FMD-2170	Hi-Flex Rail w/ (8) FMD-2010 R.E. On/Off Magnets
1	BUG-5188	Torch Holder Assembly
1	BUG-6050	Hand Held Terminal
1	MDS-1165	Shape Control Module
1	MDS-1170	120 VAC MDS Solenoid Kit
1	MPD-1000	Master Drive Unit, 120 VAC
1	MPD-1035	Handle w/ Cable Anchor
1	FMD-1105	Hi-Flex Carriage
1	WPD-1100-40	Linear Weaver w/ 40" (1 m) Long Arm

FMD-4552 (240 VAC)
Same as FMD-4550 except with:

1	MDS-1172	240 VAC MDS Solenoid Kit
1	MPD-1002	Master Drive Unit, 240 VAC

FMD-4554 (42 VAC)
Same as FMD-4550 except with:

1	MDS-1174	42 VAC MDS Solenoid Kit
1	MPD-1004	Master Drive Unit, 42 VAC

MDS - PROGRAMMABLE SHAPE MACHINE

BUG-6220
Wireless serial connection set
for use with PC Option software

Reset

Speed Control

Start/Run

Stop/Pause

Manual Jog Y Axis

Manual Jog X Axis

Technical Data:

Power Requirements: 120 VAC / 50-60 Hz / 1 Ph
240 VAC / 50-60 Hz / 1 Ph
42 VAC / 50-60 Hz / 1 Ph

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

Net Weight of Kit: 45 lbs. (20.41 kg)

Cross Travel: 24" (610 mm)

Max. Line Segment Dimension: 72" (1828 mm)
Within Limits of Travel

Min. Increment Dimension: .01" (0.3 mm)

Delay Increment: .01 seconds

Computer Software

The MDS-Programmable Shape Machine can be programmed from a PC, using either of two software packages described below. Shapes can be created off-line, and downloaded to the machine when required. A cable is supplied to connect to the serial port of the PC.
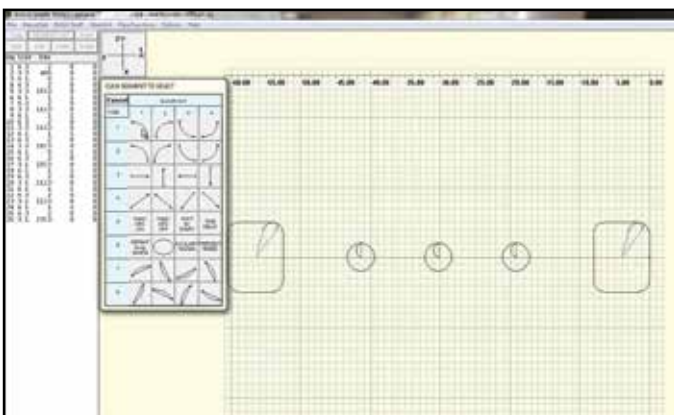
1. PC Option / BUG-6140
This runs under Windows, and allows you to:
- Create shapes on the PC.
- Save any number of shapes to disk, and retrieve them as necessary.
- View a programmed shape on screen - which helps program verification.
- Download programmed shapes from the PC to the machine.

2. BUG-6240 CAD Interface
This is a complete package that includes both the PC option and DeskCNC. This will allow you to take 2 dimensional CAD drawings and convert them to Shape files that you can directly load into your shape machine.
- DeskCNC is used to modify 2 dimensional CAD drawings (.DXF files) and create a toolpath
- The toolpath is saved as a shape file using DeskCNC
- The shape file can be loaded in the PC option for easy integration with the shape machine