

# MODULAR DRIVE SYSTEM

Powerful Solutions for Welding and Cutting  
Automation with Precision and Versatility!

A powerful machine that allows the operator to custom  
configure one machine for various applications.



## Bug-O Systems

Automated Cutting and Welding Systems

Bug-O Systems is guided by honesty, integrity and  
ethics in service to our customers and in all we do.

412-331-1776 [www.bugo.com](http://www.bugo.com)





# MODULAR DRIVE SYSTEM

The Modular Drive System is the only product in the industry that allows the user to configure one machine for various automated applications, now and in the future!

Future development has been engineered into the system allowing its modular components to be easily upgraded. As tomorrow's technologies are introduced, the Modular Drive System can be enhanced to take advantage of new features and capabilities as they are perfected. Other systems will be obsolete as the Modular Drive System will remain "state of the art" in portable motion control!

The Master Drive Unit has a high torque, low inertia motor for precise stops and starts and a dedicated fail-safe brake with three times the stopping and holding power of the motor. The unit is equipped with motor overload protection which turns the motor off and engages the brake whenever an excessive load is placed on the machine. In addition, the Master Drive features closed loop speed control for adjustable, repeatable control of critical welding or cutting parameters, and closed loop position control to prevent creep.



## Master Drive Unit

At the heart of the Modular Drive System is the Master Drive Unit which houses the motor, speed control board, power supply, and clutch, that allows rapid manual positioning of the carriage anywhere along the track. The unit runs from 2-120 in/min (51-3048 mm/min) with a vertical load capacity of 60 lbs (27 kg) and a horizontal load capacity of 100 lbs (45 kg).

Order reference:

<b>MPD-1000</b>	120	VAC/50-60 Hz
<b>MPD-1002</b>	240	VAC/50-60 Hz
<b>MPD-1004</b>	42	VAC/50-60 Hz



**MPD-1000  
Master Drive Unit**

## Control Modules

A Control Module plugs onto the top of the Master Drive Unit and operates various machine functions. Several Control Modules are available; Programmable shape cutting or welding, straight-line cutting and/or welding, straightline gouging, programmable stitch welding as well as weave welding capability.



### MDS-1165 Programmable Shape Module

The MDS Programmable Shape Module provides 2-axis, encoder controlled, all-position, custom shape motion. Shapes and patterns are built by segments to control motion and function. The 2 axis motion is provided by the MDS Master drive and the Linear Weaver w/ 40" (101.6 cm) Crossarm.





# Control Modules



## MDS-1002 Straight Module

The **MDS-1002 Straight Control Module** provides direction and speed control for continuous cutting or welding applications.



## MDS-1003 Stitch Module

The **MDS-1003 Stitch Module** provides direction and speed control for continuous travel or Stitch Mode with adjustments for travel time, rapid time and puddle build/crater fill times.



## MDS-1004 Programmable Stitch Module

The **MDS-1004 Programmable Module** provides stitch controls for welding or cutting with the Modular Drive System. Program Stitch by distance, automatic stop and/or return to start at the end of the cycle, independent timers for puddle-buildup. All stitching parameters are set and displayed on a graphic screen. This allows each setting to be set exactly the same every time.



## AGS-1002 Arc Gouger Straight Module

The **AGS-1002 Arc Gouging Straight Control Module** provides direction and speed control for the AGS gouging systems. This Control Module interfaces with the Arc Gouging system to automatically provide travel when the arc is established.



# Weaver Control Modules

The Weaver Control Module operates the Pendulum or Linear Weaver, and the Master Drive Unit. The Control Module features include: a digital readout and control knob for longitudinal travel speed; a switch for Forward/Stop/Reverse tractor control; an amplitude knob to set weave width from 1/8"-2" (3-50 mm); weave speed control up to 100 in/min (254 cm/min); controls for left and right dwell; a knob to control steering up to 2" (50 mm), either side of center; weld contact; and a power On/Off switch. One of four weld patterns can be chosen using the mode selector switch, as shown in the figure below. The MDS-1005-DIAL Weaver Control Module w/ locking dials provides all of the function controls of the MDS-1005 and provides lockable numerical display dials for all oscillator functions.



**MDS-1005 Weaver Control Module**



**MDS-1005-DIAL Weaver Control Module**

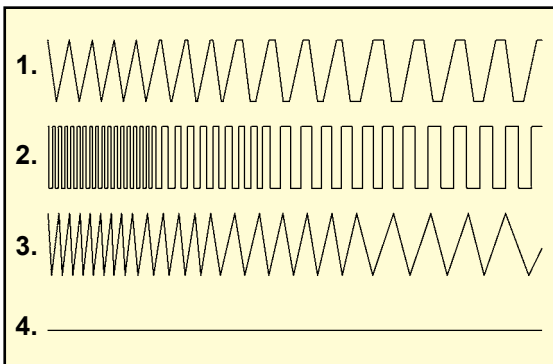
Digital display can be set to in/min or cm/min.

- A- WEAVE SPEED
- B- DWELL LEFT
- C- SPEED CONTROL
- D- POWER OFF-ON SWITCH

- E- DIGITAL READOUT
- F- STEERING CONTROL
- G- MODE SELECTOR SWITCH

- H- AMPLITUDE
- I- DWELL RIGHT
- J- DIRECTION SWITCH
- K- WELD CONTACT

## Weld Patterns:



1. **RUN:** In this mode, power to the drive unit is always on and the machine travels continuously both during weave and dwell. Weave speed and dwell time both affect the weld pattern.
2. **STEP:** The drive unit travels only during dwell, and stops during the oscillator cross stroke. Changing weave speed does not effect the weld pattern – dwell time does.
3. **TRACTOR STOP ON DWELL:** The drive unit travels during weave stroke; the drive unit and weaver stop during dwell.
4. **NO WEAVER:** In this mode oscillation is stopped. Only the tractor is powered. This mode is used for stringer passes.

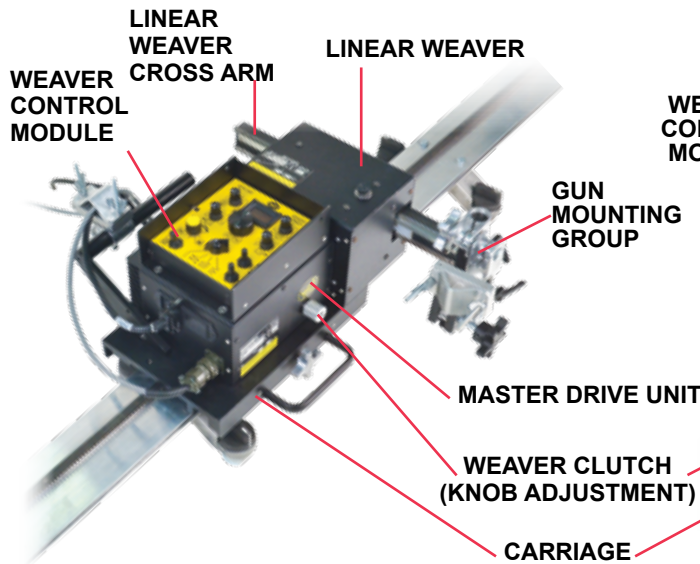


## WPD-1100 Linear Weaver

The Linear Weaver and the Weaver Control Module give the Modular Drive System linear weave motion, producing welds from 1/8" to 2" (3-50 mm) wide. The Linear Weaver bolts onto the front of the Carriage and the Weaver Control Module plugs onto the top of the Master Drive Unit, as shown below. The Linear Weaver also has motor overload protection which turns off the motor when too much load is placed on the Linear Weaver.

### Linear Weaver

Order reference: **WPD-1100**

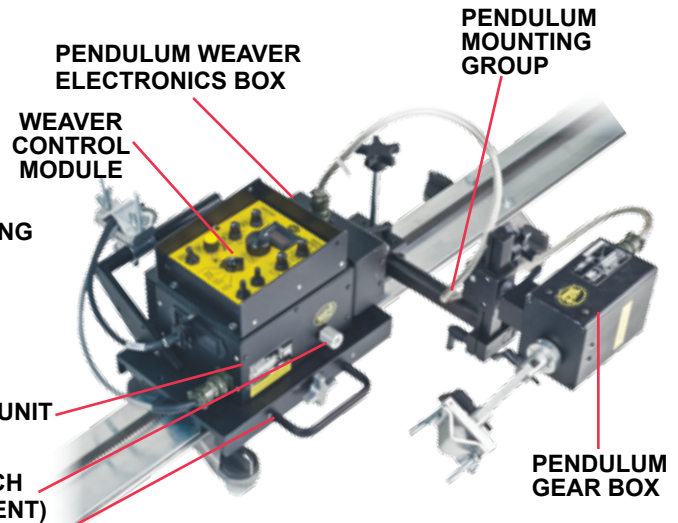


## WPD-2100 Pendulum Weaver

The Pendulum Weaver and the Weaver Control Module add a pendulum weaving motion to the Modular Drive System. The Pendulum Weaver is particularly useful for weaving fillet welds in a corner joint. The Pendulum Weaver support bolts onto the front of the carriage and the Weaver Control Module plugs onto the top of the Master Drive Unit, as shown below. The Pendulum Weaver has a heavy duty planetary gear box with powerful output for rotating welding gun and attachments.

### Pendulum Weaver

Order reference: **WPD-2100**



### Features:

The Linear/Pendulum Weaver and Weaver Control Module incorporate the following standard features:

- High torque, low inertia motor for precise starts and stops.
- High speed Linear/Pendulum Weaver for weaving, with independent control of right and left dwell times.
- High motor gearing which prevents the crossarm from moving when the unit is turned off.
- Closed loop speed control for adjustable and repeatable control of critical welding parameters.
- Closed loop position control to prevent drift from the weld center position.
- Clutch, to enable rapid installation or replacement of the weaver cross arm.
- Gun mounting group with adjustable racking for accurate positioning of the gun.
- Contactor ON/OFF switch.



# Rails & Carriages

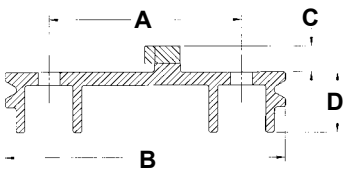
## Aluminum Rigid, Semi-Flex Rail & Carriage

The MPD-1065 is available for the Modular Drive System when using BUG-O Aluminum Rigid and Semi-Flex Rails. The 12" carriage is equipped with an engagement knob that allows the unit to be placed anywhere along the track.

Order reference:

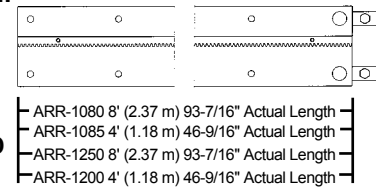
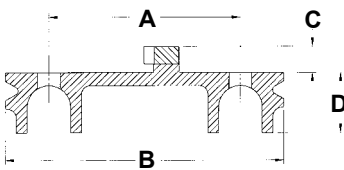
**MPD-1065** Releasable Carriage 12" (305 mm)

### Heavy Duty Rigid Rail ARR-1080 & ARR-1085

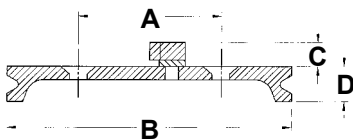


A. 2.75" (70 mm) C. 0.375" (9.5 mm)  
B. 4.0" (102 mm) D. 0.875" (22 mm)

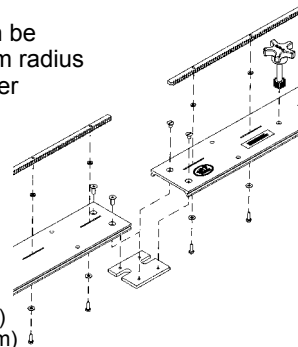
### Extra Heavy Duty Rigid Rail ARR-1250 & ARR-1200



**SEMI-FLEX RAIL AFR-3000** can be flexed inside or outside to a minimum radius of 15' (5.0 m) or 30' (10.0 m) diameter without permanent deformation.

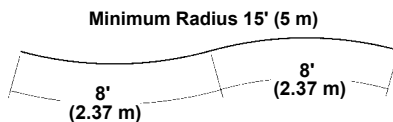


A. 2.75" (70 mm) C. 0.33" (8.5 mm)  
B. 4.0" (102 mm) D. 0.500" (12.7 mm)



**CAUTION:**

Flexing beyond the recommended 15'-0" (5.0 m) radius may put a permanent bend in the rail and break off some of the rack screws.



## Bent Aluminum Rigid Rail & Carriage

For applications using the Modular Drive System on Bug-O Bent Aluminum Rigid Rail, a split carriage is available. This releasable carriage can be placed anywhere along the track and easily adjusts to various work diameters.

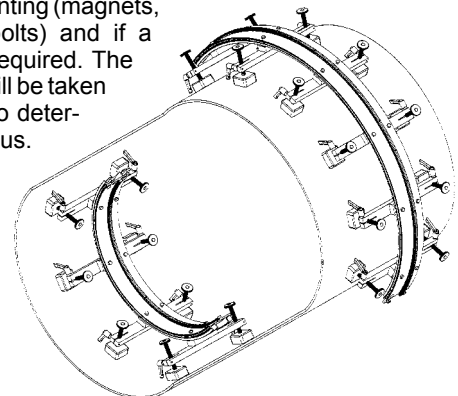
BUG-5910 Tube Carriage on Bent Aluminum Rigid Rail

Order reference: **BUG-5910** Tube Carriage



Individual sections of Bent Rigid Rail - BRR-1180

Maximum Bent Rigid Rail segment length is 80"



## Hi-Flex Rail & Carriage

The Hi-Flex carriages are designed for use with the Modular Drive System when running the equipment on Bug-O Hi-Flex Stainless Steel Rail. The carriage has a built-in quick release for mounting or removal at any point along the rail. A cable anchor is also included to keep welding cables and contact wires away from the work surface.

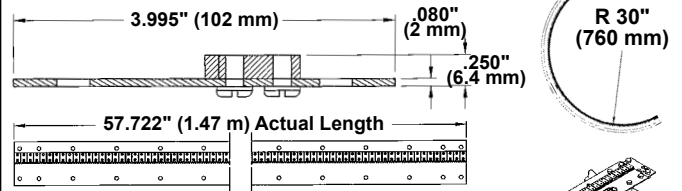


FMD-1105 Flex Rail Carriage w/Cable Anchor on Hi-Flex Rail  
Order reference:

**FMD-1105** Drive Carriage

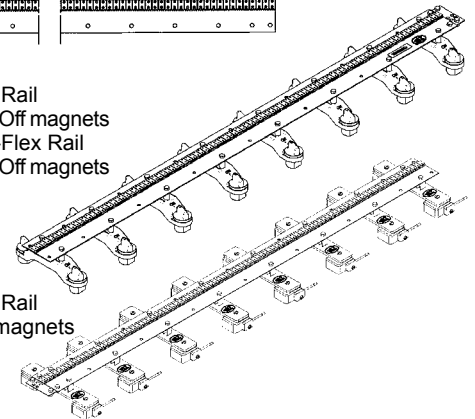
**Hi-Flex Rail (FMD)** can flex from a straight to a 30" (760 mm) radius inside or outside. The rail is made from a tempered, wear resistant, stainless steel with a steel rack. It is designed for use with the FMD Hi-Flex Carriage. The rail comes in 57.7" (1.47 m) lengths and can be held in place with magnets or vacuum cups. An optional stiffener can be installed behind the rail for heavy duty, straight line applications.

**FMD-1050** Hi-Flex Rail Without Magnet Assemblies



**FMD-2170** Hi-Flex Rail w/ 8 Rare Earth On/Off magnets

**FMD-2170-HH\*** Hi-Flex Rail w/ 8 Rare Earth On/Off magnets



**FMD-2155** Hi-Flex Rail with 8 Permanent magnets

**Bent Rigid Rail (BRR)** is used for circumferential applications.

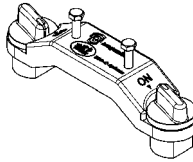
The rail can be ordered either as a complete ring or as individual sections. When ordering, specify inside or outside work diameter, method of mounting (magnets, vacuum cups or bolts) and if a complete circle is required. The mounting method will be taken into consideration to determine actual rail radius.

# Attachments

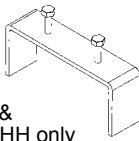
A Minimum of six (6) magnets or vacuums cups are required per rail for all out of position applications. Eight (8) are recommended.

## For Aluminum Rigid Rail

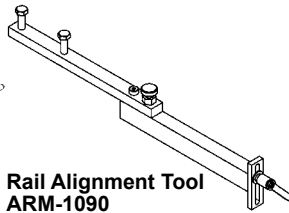
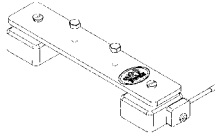
**R.E. On/Off Magnet**  
**ARM-2010**  
**ARM-2010-HH\***  
 Holding Power  
 250 lb. (113 kg)



**Spacer**  
**ARM-2015**  
 Use with  
 ARM-2010 &  
 ARM-2010-HH only

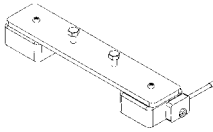


**Swivel Magnet w/ Release**  
**ARM-2325**  
 Holding Power  
 250 lbs. (113 kg)

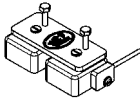


**Rail Alignment Tool**  
**ARM-1090**  
 Gauging device for rapid  
 alignment of rails to joint

**Fixed Magnet w/ Release**  
**ARM-2265**  
 Holding Power  
 200 lbs. (91 kg)

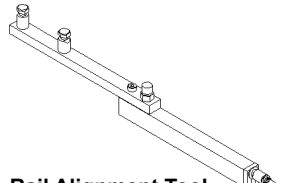
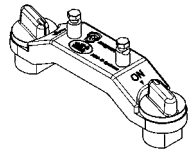


**Magnet Plate, Short**  
**ARM-2248**  
 Holding Power  
 200 lbs. (91 kg)



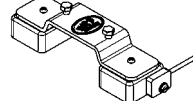
## For Semi-Flex Rail

**R.E. On/Off Magnet**  
**AFR-2010**  
**AFR-2010-HH\***  
 Holding Power  
 250 lb. (113 kg)

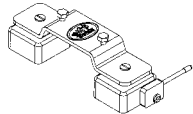


**Rail Alignment Tool**  
**AFR-1090**  
 Gauging device for rapid  
 alignment of rails to joint

**Fixed Magnet w/ Release**  
**ARM-2465**  
 Holding Power  
 200 lbs. (91 kg)

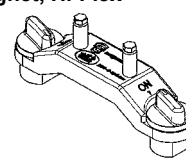


**Swivel Magnet w/ Release**  
**ARM-2425**  
 Holding Power  
 250 lbs. (113 kg)

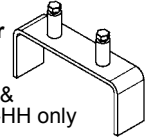


## For Hi-Flex Rail

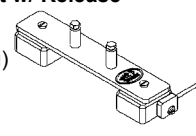
**R.E. On/Off Magnet, Hi-Flex**  
**FMD-2010**  
**FMD-2010-HH\***  
 Holding Power  
 250 lb. (113 kg)



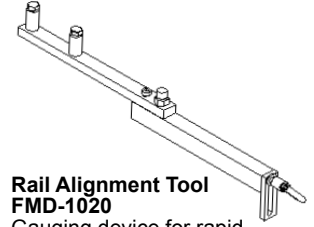
**Spacer Bar**  
**FMD-2015**  
 Use with  
 ARM-2010 &  
 ARM-2010-HH only



**Hi-Flex Magnet w/ Release**  
**FMD-2325**  
 Holding Power  
 250 lbs. (113 kg)



**Rail Alignment Tool**  
**FMD-1020**  
 Gauging device for rapid  
 alignment of rails to joint



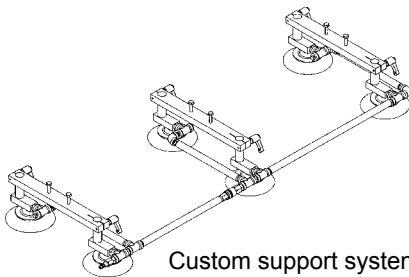
\*All **XXX-2010-HH** are "High Heat" models and are rated at 180°C (356°F) for high temperature applications.



Shown Above - Vertical linear weave welding with ARM-2480 Support Bar w/ Magnets

## Vacuum Supports for BRR

For BRR-1210-XX Ring Rail Assembly Vacuum Supports may be used instead of magnets to mount the Ring Rail on non-magnetic workpieces. Each Vacuum Support System requires a Vacuum Pump Kit for operation.

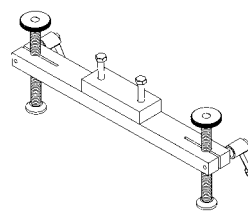


Custom support systems are available.

- ARV-1240-20** 20" (500 mm) Dia. Vacuum Support System
- ARV-1240-27** 27" (680 mm) Dia. Vacuum Support System
- ARV-1240-34** 34" (860 mm) Dia. Vacuum Support System
- ARV-1240-41** 41" (1040 mm) Dia. Vacuum Support System
- ARV-1240-48** 48" (1220 mm) Dia. Vacuum Support System

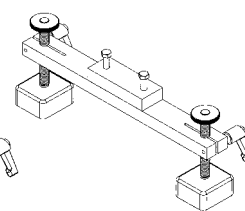
## Support Bars for BRR

A minimum of three (3) magnet plate or screw feet assemblies are required for each ring rail section.



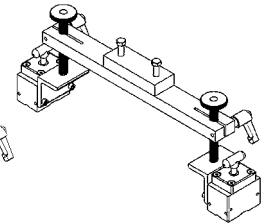
**Support Bar w/ Screw Feet**  
**ARM-2380**  
 4.5" (114.3 mm) of adjustment

Also available as a kit of three (3)  
**ARM-2390**



**Support Bar w/ Magnets**  
**ARM-2480**  
 3.5" (88.9 mm) of adjustment

Also available as a kit of three (3)  
**ARM-2490**



**Support Bar w/ R.E. On/Off Magnets**  
**ARM-2580**  
 3.5" (88.9 mm) of adjustment

Also available as a kit of three (3)  
**ARM-2590**





# How to Create a Modular Drive System

Choose from the options below to fit your application.

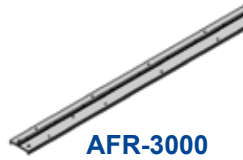
## 1 RAILS



**FMD-1050**  
Hi-Flex Rail



**ARR-1080**  
Aluminum Rigid Rail 8'  
**ARR-1085**  
Aluminum Rigid Rail 4'



**AFR-3000**  
Semi-Flex Rail



**BRR-1180**  
Bent Rigid Rail

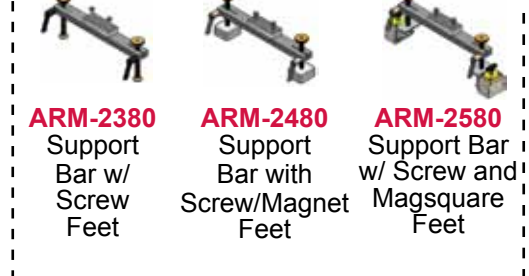


**BRR-3250-XX**  
Rigid Ring Rail

## 2 ATTACHMENTS



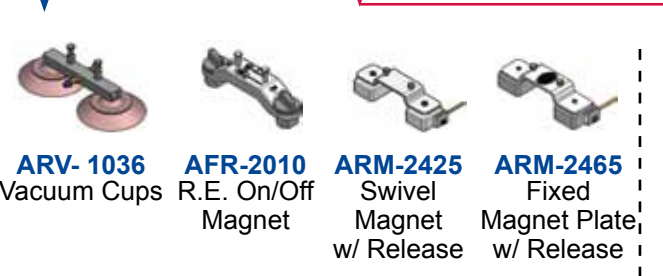
**FMD-1036** Vacuum Cup  
**FMD-2010** R.E. On/Off Magnet  
**FMD-2325** Swivel Magnet w/ Release



**ARM-2380** Support Bar w/ Screw Feet  
**ARM-2480** Support Bar with Screw/Magnet Feet  
**ARM-2580** Support Bar w/ Screw and Magsquare Feet

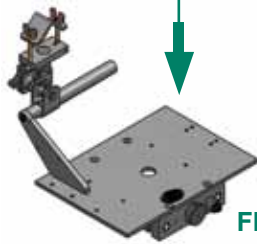


**ARV-1036** Vacuum Cup  
**ARM-2010** R.E. On/Off Magnet  
**ARM-2325** Swivel Magnet w/ Release  
**ARM-2265** Fixed Magnet Plate w/ Release

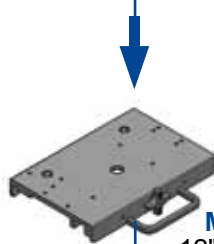


**ARV-1036** Vacuum Cups  
**AFR-2010** R.E. On/Off Magnet  
**ARM-2425** Swivel Magnet w/ Release  
**ARM-2465** Fixed Magnet Plate w/ Release

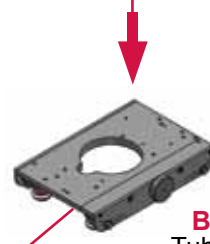
## 3 CARRIAGES



**FMD-1105**  
Hi-Flex Carriage



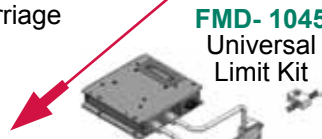
**MPD-1065**  
12" Releasable Carriage



**BUG-5910**  
Tube Carriage

## 4 MASTER DRIVE UNIT

**MPD-1000** 120 VAC  
**MPD-1002** 240 VAC  
**MPD-1004** 42 VAC



**FMD-1045**  
Universal Limit Kit

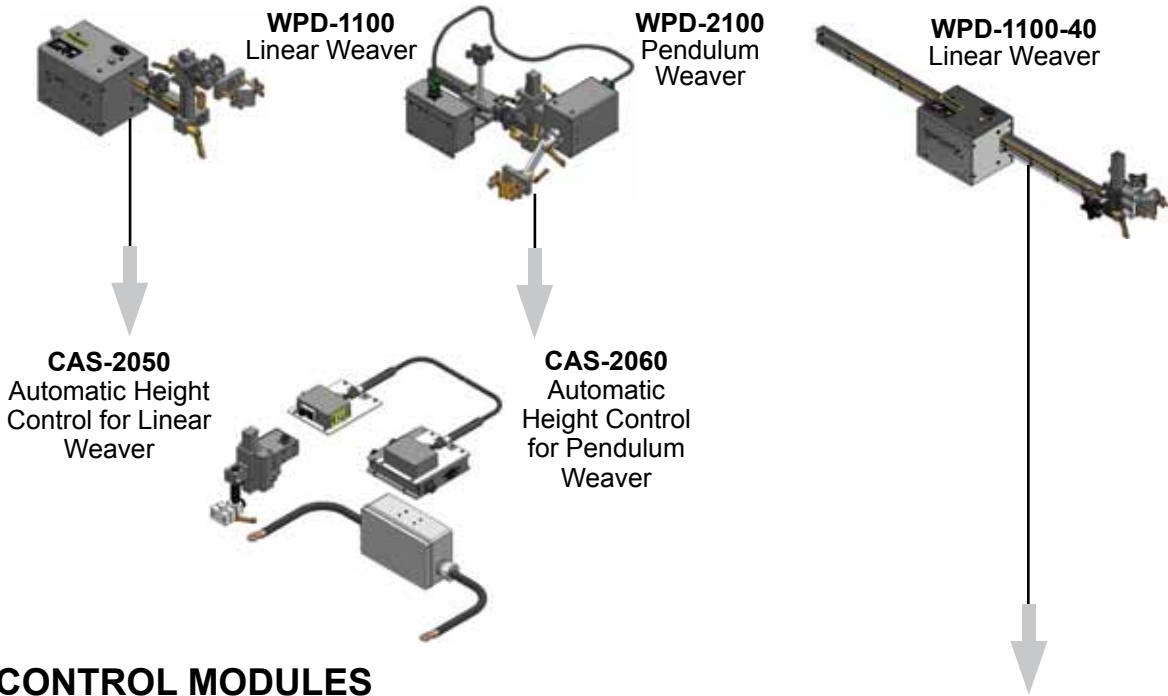
**MDS-1055**  
Universal Limit Kit



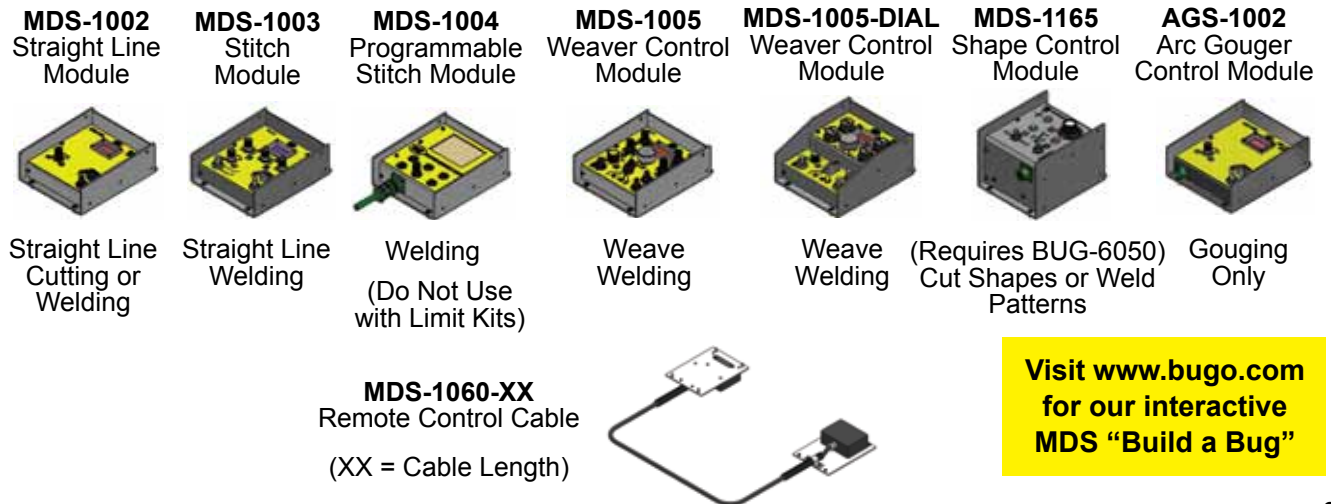
## 5 STRAIGHT LINE CUTTING & WELDING OR ARC GOUGING



## 6 WEAVE WELDING

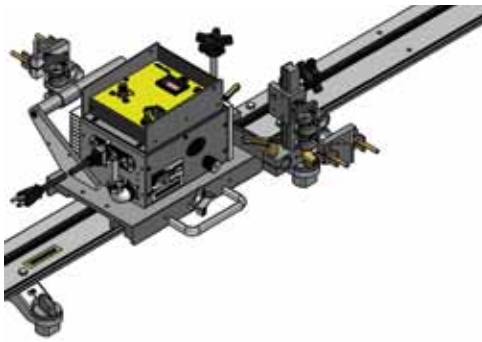


## 7 CONTROL MODULES



## MDS / STRAIGHT LINE / WELDING KIT

### MDS-4000 (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	MDS-1002	Straight Control Module
1	MDS-1040	Machined Rack Welding Group
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)

### MDS-4002 (240 VAC)

**Same as MDS-4000 except with:**

1	MPD-1002	Master Drive Unit, 240 VAC
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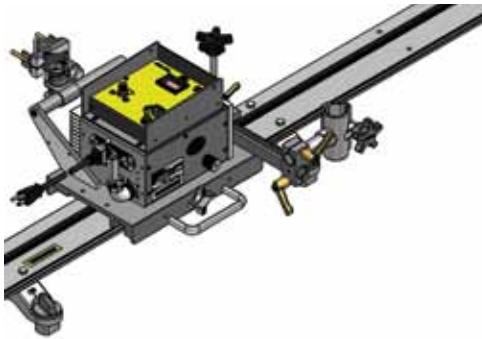
### MDS-4004 (42 VAC)

**Same as MDS-4000 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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## MDS / STRAIGHT LINE / PLASMA CUTTING KIT

### MDS-4100 (120 VAC)



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	MDS-1002	Straight Control Module
1	MDS-1050	Machined Rack Cutting Group
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)

### MDS-4102 (240 VAC)

**Same as MDS-4100 except with:**

1	MPD-1002	Master Drive Unit, 240 VAC
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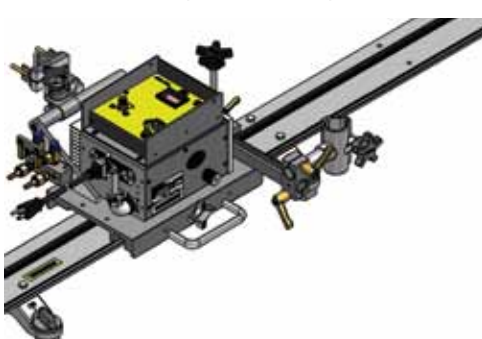
### MDS-4104 (42 VAC)

**Same as MDS-4100 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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## MDS / STRAIGHT LINE / OXY-FUEL CUTTING KIT

### MDS-4150 (120 VAC)



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	CIR-1010-3	2-Hose Assembly, 32" (812 mm)
1	MDS-1002	Straight Control Module
1	MDS-1050	Machined Rack Cutting Group
1	MPD-1000	Master Drive Unit, 120 VAC
1	MPD-1035	Handle w/ Cable Anchor
1	MPD-1065	Releasable Carriage 12" (305 mm)
1	MPD-3025	Quick Action Manifold, 2-Hose

### MDS-4152 (240 VAC)

**Same as MDS-4150 except with:**

1	MPD-1002	Master Drive Unit, 240 VAC
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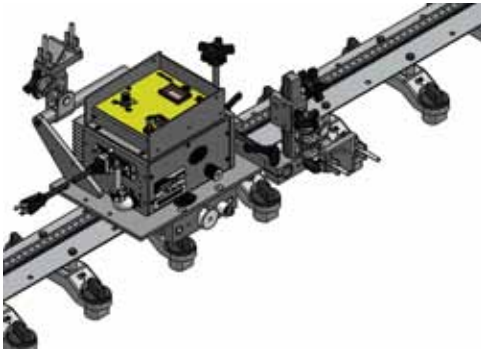
### MDS-4154 (42 VAC)

**Same as MDS-4150 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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**MDS / HI-FLEX / WELDING KIT**  
**FMD-4000 (120 VAC)**



<u>QTY</u>	<u>PART #</u>	<u>DESCRIPTION</u>
2	FMD-2170	Hi-Flex Rail w/ (8) FMD-2010 R.E. On/Off Magnets
1	MDS-1002	Straight Control Module
1	MDS-1040	Machined Rack Welding Group
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

FMD-4002 (240 VAC)

**Same as FMD-4000 except with:**

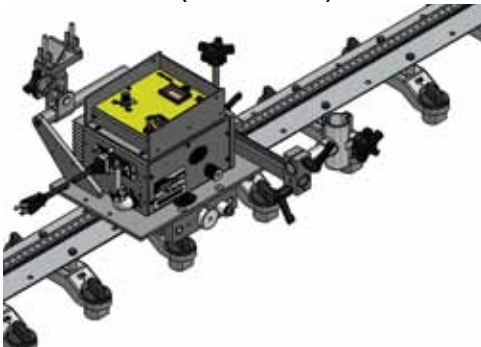
1	MPD-1002	Master Drive Unit, 240 VAC
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FMD-4004 (42 VAC)

**Same as FMD-4000 except with:**

1	MPD-1004	Master Drive Unit 42, VAC
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**MDS / HI-FLEX / PLASMA CUTTING KIT**  
**FMD-4100 (120 VAC)**



2	FMD-2170	Hi-Flex Rail w/ (8) FMD-2010 R.E. On/Off Magnets
1	MDS-1002	Straight Control Module
1	MDS-1050	Machined Rack Cutting Group
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

FMD-4102 (240 VAC)

**Same as FMD-4100 except with:**

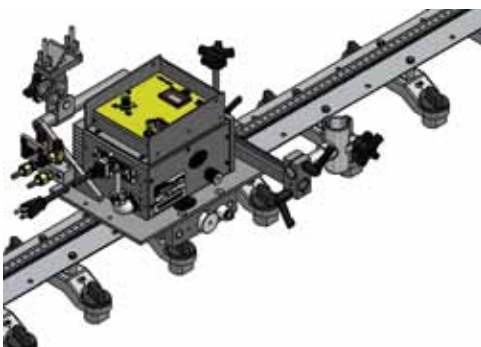
1	MPD-1002	Master Drive Unit, 240 VAC
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FMD-4104 (42 VAC)

**Same as FMD-4100 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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**MDS / HI-FLEX / OXY-FUEL CUTTING KIT**  
**FMD-4150 (120 VAC)**



2	FMD-2170	Hi-Flex Rail w/ (8) FMD-2010 R.E. On/Off Magnets
1	CIR-1010-3	2-Hose Assembly, 32" (812 mm)
1	MDS-1002	Straight Control Module
1	MDS-1050	Machined Rack Cutting Group
1	MPD-1000	Master Drive Unit, 120 VAC
1	MPD-1035	Handle w/ Cable Anchor
1	FMD-1105	Hi-Flex Carriage
1	MDS-3025	Quick Action Manifold, 2-Hose

FMD-4152 (240 VAC)

**Same as FMD-4150 except with:**

1	MPD-1002	Master Drive Unit, 240 VAC
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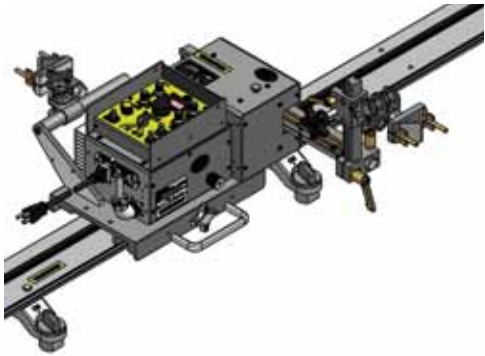
FMD-4154 (42 VAC)

**Same as FMD-4150 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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## MDS / STRAIGHT LINE / LINEAR WEAVER KIT

MDS-4200 (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	MDS-1005	Weaver 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	Linear Weaver

MDS-4202 (240 VAC)

**Same as MDS-4200 except with:**

1	MPD-1002	Master Drive Unit, 240 VAC
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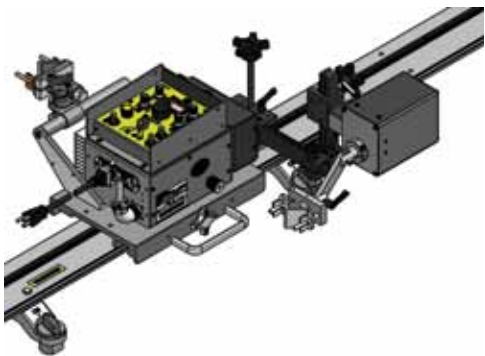
MDS-4204 (42 VAC)

**Same as MDS-4200 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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## MDS / STRAIGHT LINE / PENDULUM WEAVER KIT

MDS-4300 (120 VAC)



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	MDS-1005	Weaver 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-2100	Pendulum Weaver

MDS-4302 (240 VAC)

**Same as MDS-4300 except with:**

1	MPD-1002	Master Drive Unit, 240 VAC
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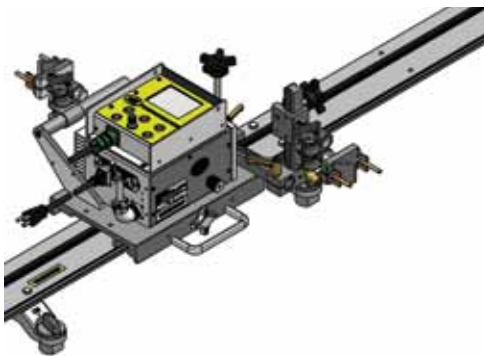
MDS-4304 (42 VAC)

**Same as MDS-4300 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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## MDS / STRAIGHT LINE / PROGRAMMABLE STITCH KIT

MDS-4400 (120 VAC)



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	MDS-1004	Programmable Module
1	MDS-1040	Machined Rack Welding Group
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)

MDS-4402 (240 VAC)

**Same as MDS-4400 except with:**

1	MPD-1002	Master Drive Unit, 240 VAC
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MDS-4404 (42 VAC)

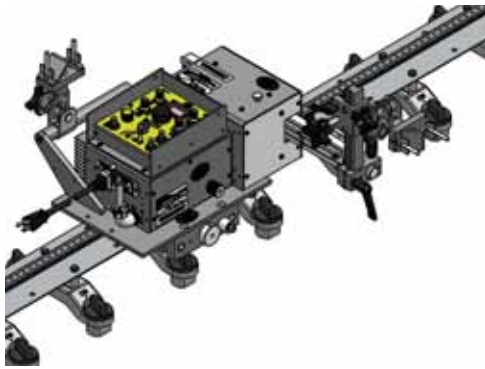
**Same as MDS-4400 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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### MDS / HI-FLEX / LINEAR WEAVER KIT

FMD-4200 (120 VAC)



<u>QTY</u>	<u>PART #</u>	<u>DESCRIPTION</u>
2	FMD-2170	Hi-Flex Rail w/ (8) FMD-2010 R.E. On/Off Magnets
1	MDS-1005	Weaver 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	Linear Weaver

FMD-4202 (240 VAC)

**Same as FMD-4200 except with:**

1	MPD-1002	Master Drive Unit 240, VAC
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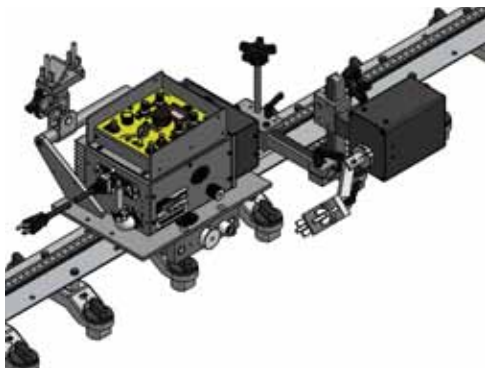
FMD-4204 (42 VAC)

**Same as FMD-4200 except with:**

1	MPD-1004	Master Drive Unit 42, VAC
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### MDS / HI-FLEX / PENDULUM WEAVER KIT

FMD-4300 (120 VAC)



2	FMD-2170	Hi-Flex Rail w/ (8) FMD-2010 R.E. On/Off Magnets
1	MDS-1005	Weaver 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-2100	Pendulum Weaver

FMD-4302 (240 VAC)

**Same as FMD-4300 except with:**

1	MPD-1002	Master Drive Unit, 240 VAC
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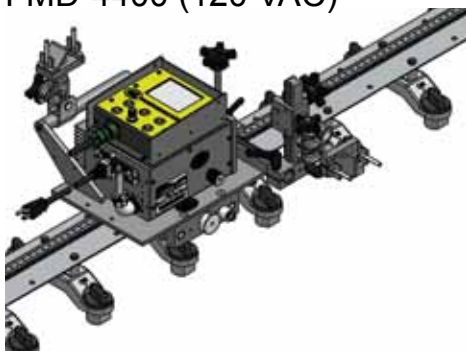
FMD-4304 (42 VAC)

**Same as FMD-4300 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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### MDS / HI-FLEX / PROGRAMMABLE STITCH KIT

FMD-4400 (120 VAC)



2	FMD-2170	Hi-Flex Rail w/ (8) FMD-2010 R.E. On/Off Magnets
1	MDS-1004	Programmable Module
1	MDS-1040	Machined Rack Welding Group
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

FMD-4402 (240 VAC)

**Same as FMD-4400 except with:**

1	MPD-1002	Master Drive Unit, 240 VAC
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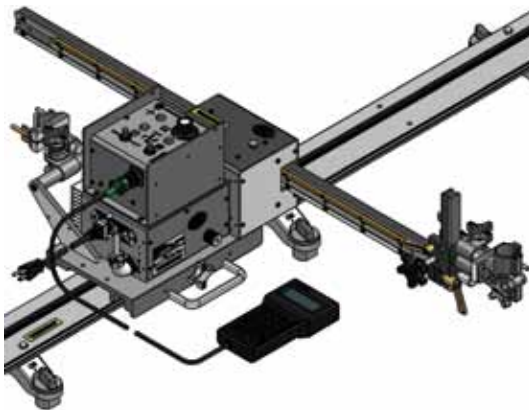
FMD-4404 (42 VAC)

**Same as FMD-4400 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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## MDS / STRAIGHT LINE / PROGRAMMABLE SHAPE PLASMA CUTTING / WELDING KIT

### MDS-4500 (120 VAC)

	<u>QTY</u>	<u>PART #</u>	<u>DESCRIPTION</u>
	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
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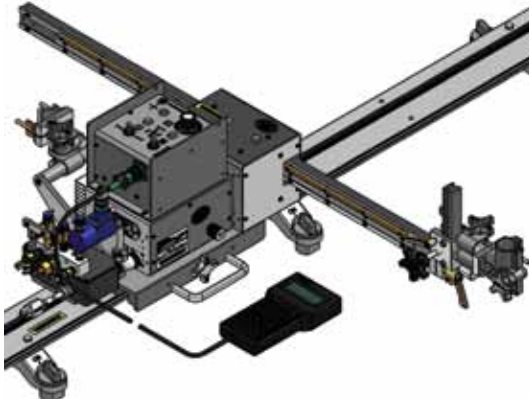
### MDS-4504 (42 VAC)

**Same as MDS-4500 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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## MDS / STRAIGHT LINE / PROGRAMMABLE OXY-FUEL CUTTING KIT

### MDS-4550 (120 VAC)

	<u>QTY</u>	<u>PART #</u>	<u>DESCRIPTION</u>
	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

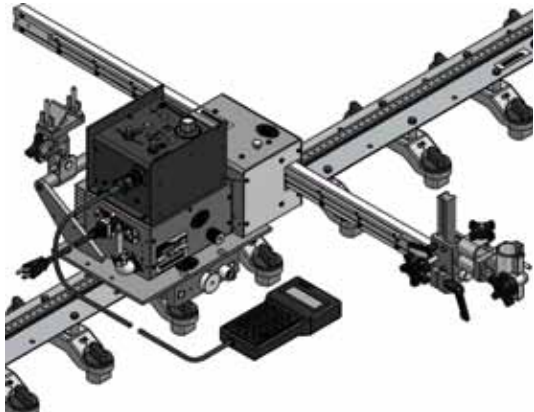
### MDS-4554 (42 VAC)

**Same as MDS-4550 except with:**

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



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

	<u>QTY</u>	<u>PART #</u>	<u>DESCRIPTION</u>
	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:**

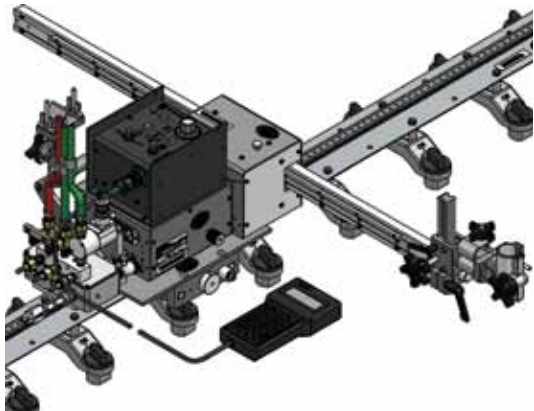
1	MPD-1002	Master Drive Unit, 240 VAC
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FMD-4504 (42 VAC)

**Same as FM-4500 except with:**

1	MPD-1004	Master Drive Unit, 42 VAC
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**MDS / HI-FLEX / PROGRAMMABLE SHAPE OXY-FUEL CUTTING KIT**  
**FMD-4550 (120 VAC)**

	<u>QTY</u>	<u>PART #</u>	<u>DESCRIPTION</u>
	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:**

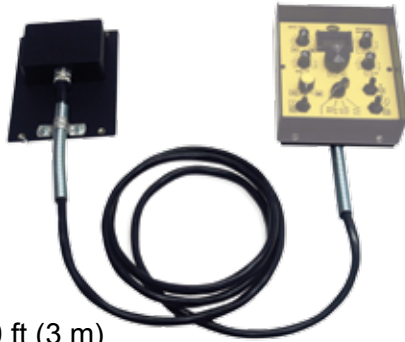
1	MDS-1174	42 VAC MDS Solenoid Kit
1	MPD-1004	Master Drive Unit, 42 VAC

## Accessories

### Remote Control Cable

Installs between the Master Drive Unit and the Control Module, allowing the operator to perform work in confined areas where it would be difficult to reach the controls.

Two lengths are available as shown below.



Order reference:

**MDS-1060-10** 10 ft (3 m)

**MDS-1060-25** 25 ft (7.6 m)

### Weld Contact Cable

Provides the required connection to control a wire feeder contractor circuit from the MDS Control Module.

Order reference:

**MDS-1085** 10' (3.05 m)

**MDS-1085-25** 25' (7.62 m)

**MDS-1085-50** 50' (15.24 m)



### Automatic Height Control System

Mounts on Master Drive Unit and includes Remote Control Cable. Provides automatic control of torch height when using an CV welding process. Includes controls for: current set point, auto/manual and torch raise/lower.



Order reference:

**CAS-2050** (For WPD-1100 Linear Weaver)

**CAS-2060** (For WPD-2100 Pendulum Weaver)

### Extended Mounting Plate

Mounts to front of the carriage for use with dual cutting or welding groups, heavy duty racking, etc.

Order reference: **MDS-1045**



## Racking Groups

There are two machined rack torch mounting groups in the Modular Drive System, one for plasma or oxy-fuel cutting and the other for welding.

### Machined Rack Cutting Group

Order reference: **MDS-1050**



### Machined Rack Welding Group

Order reference: **MDS-1040**



### Quick Action Manifold

Allows quick ON/OFF of preset torch and eliminates hose strain.

Order reference:

**MDS-3025** 2-Hose

**MDS-9898** 3-Hose

Hose Assemblies:

**CIR-1010-3** 2-Hose

**MUG-1119-32** 3-Hose



### Universal Limit Kit

Installs between the Master Drive Unit and any of the control modules. This limit kit adds the ability to cycle between limits, stop at limit, or rapid return. All existing functions of the control modules are maintained.



Order reference:

**MDS-1055** For Rigid Rail Applications

**FMD-1045** For Hi-Flex Rail Applications (not shown)



### Handle with Cable Anchor

Keeps welding cables and contact wires away from the work surface, eliminating drag.

Order reference:

**MPD-1035**