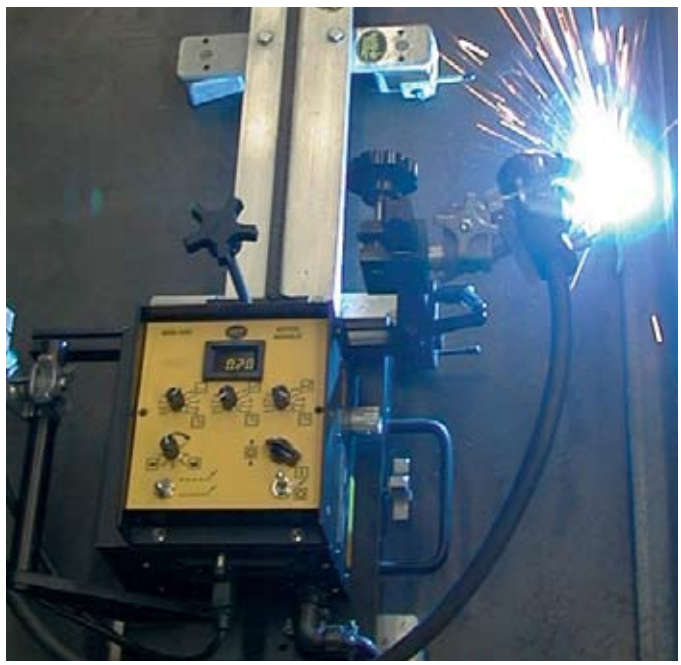
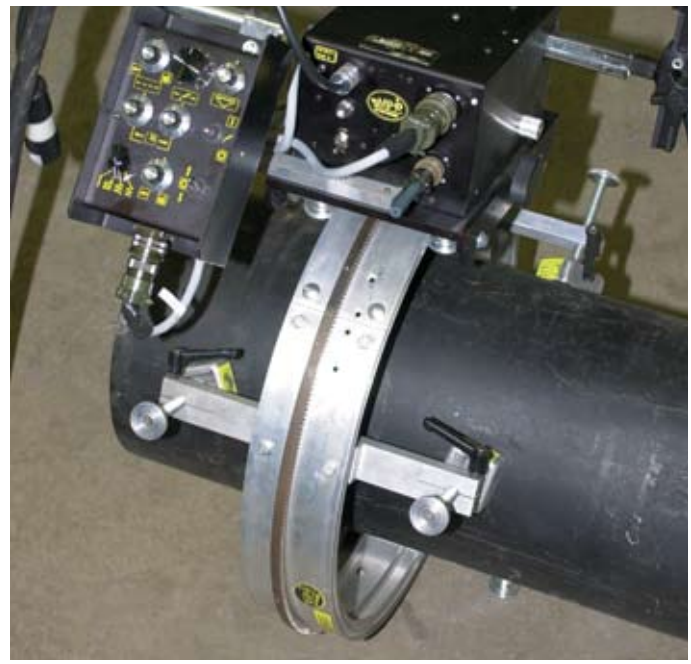
Flexible, Modular Motion Control.

Rails and Attachments

Custom Configurations From Standard Components.



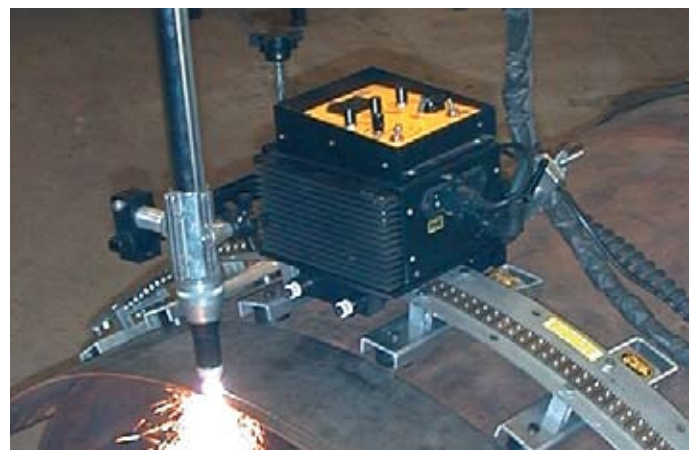
Aluminum Rigid Rail (ARR) for all position straight line applications. (Page 2)



Bent Rigid Rail (BRR) & Ring Rails for circumferential applications. (Page 3)



Aluminum Semi-Flex Rail (AFR) for large diameter applications down to a minimum radius of 15' (5 m). (Page 4)



Hi-Flex Rail (FMD) for various circumferential and irregular surface applications down to 30" (760 mm) radius. (Page 5)

Bug-O Systems offers rail for a variety of applications. Each type of rail requires a corresponding carriage and magnets or vacuum cups. Bug-O rail is lightweight and portable. When attached to the work with magnets or vacuum cups the rail can be used in any plane or position. The rail is pre-drilled for easy installation on a fixture. Choose the appropriate rail and attachments for your application.

BUG-O SYSTEMS

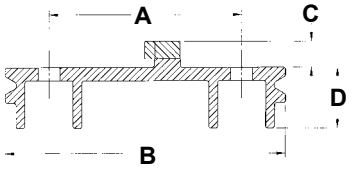
A DIVISION OF WELD TOOLING CORPORATION

280 TECHNOLOGY DRIVE CANONSBURG, PENNSYLVANIA 15317-9564 USA

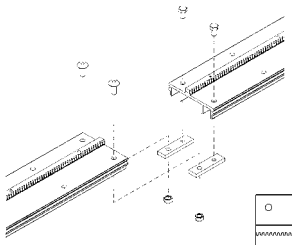
PHONE: 1-412-331-1776 http://www.bugo.com FAX: 1-412-331-0383

Aluminum Rigid Rails (ARR) & Corresponding Attachments

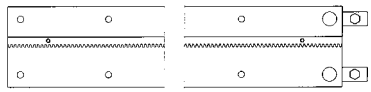
Heavy Duty Rigid Rail
ARR-1080 & ARR-1085



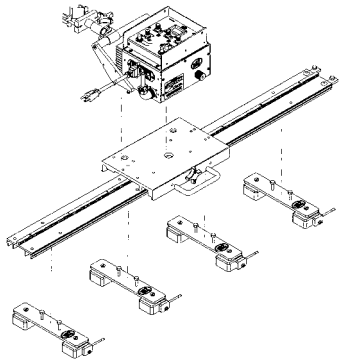
A. 2.75" (70 mm) **C.** .375" (9.5 mm)
B. 4.0" (102 mm) **D.** .875" (22 mm)



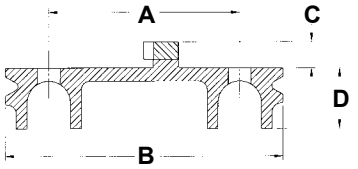
ARR rail is used for straight line applications and is made from extruded aluminum to machine tool tolerances. A steel machined gear rack is mounted on the rail. Carriage wheels run on recessed ways that are protected from dirt and spatter. The rail can be mounted with magnets, vacuum cups or bolted to a permanent fixture.



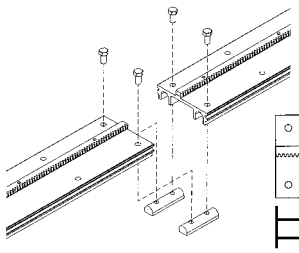
ARR-1080 8' (2.37 m) 93-7/16" Actual Length
ARR-1085 4' (1.18 m) 46-9/16" Actual Length

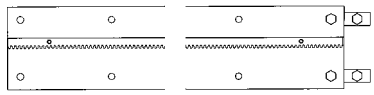


Extra Heavy Duty Rigid Rail
ARR-1250 & ARR-1200



A. 2.75" (70 mm) **C.** .375" (9.5 mm)
B. 4.0" (102 mm) **D.** .875" (22 mm)

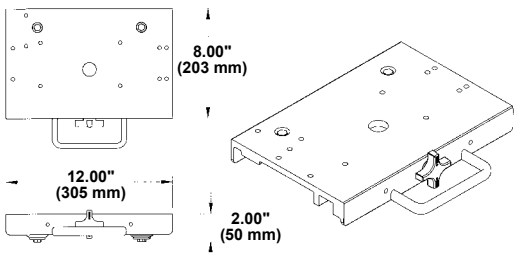




ARR-1250 8' (2.37 m) 93-7/16" Actual Length
ARR-1200 4' (1.18 m) 46-9/16" Actual Length

Drive Carriages For Aluminum Rigid Rail.

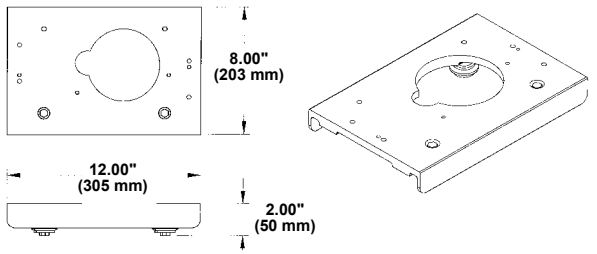
For Modular Drive And Universal Bug-O-Matic.



- Releasable (can be installed anywhere along the track).

MPD-1065 Releasable Carriage
Net Weight: 7.75 lbs. (3.52 kg)
Shipping Weight: 9 lbs. (4.09 kg)

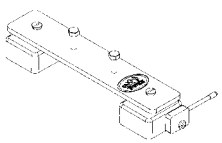
For DC IV Drives.



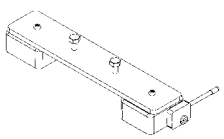
BUG-5250 Carriage 12" (305 mm)
Net Weight: 5 lbs. (2.26 kg)
Shipping Weight: 7 lbs. (3.17 kg)

Magnets, Spacer and Rail Alignment Tool For Aluminum Rigid Rail.

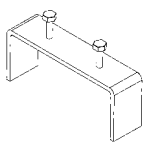
A Minimum of 4 Magnets Are Required Per Rail For All Out Of Position Applications.



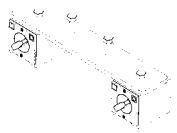
Swivel Magnet
ARM-2325
Holding Power
250 lbs. (113 kg)



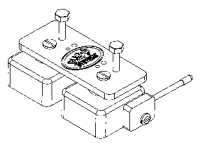
Fixed Magnet
ARM-2265
Holding Power
200 lbs. (91 kg)



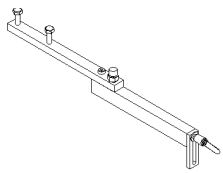
Spacer
ARM-2505
Use with
ARM-2500 only.



On/Off Magnet
ARM-2500
Holding Power 100 lb.
(45 kg)



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



Rail Alignment Tool
ARR-1090
Gauging device for rapid alignment of rails to joint.

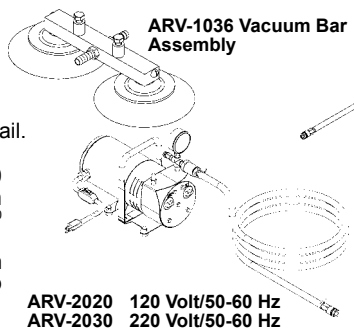
Vacuum Systems For Non-Ferrous Metals Where Magnets Will Not Hold.

Standard Vacuum Support Kits:
ARV-1080 Vacuum Kit
For ARR-1080 & AFR-3000 Rails.
ARV-1085 Vacuum Kit
For ARR-1085 Rails.
Custom systems are required for Bent Rail.

Keep flame or arc at least 4" (100 mm) away from vacuum cups. Vacuum systems can be used on material to 600° F (318° C).

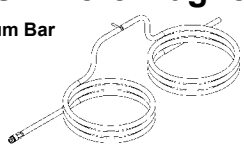
Vacuum kits require a source of vacuum which is provided by a Vacuum Pump Kit.

ARV-1036 Vacuum Bar Assemblies are available separately.



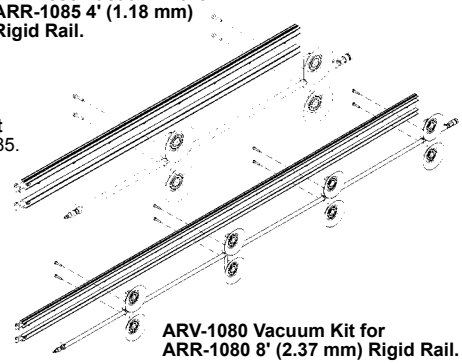
ARV-1036 Vacuum Bar Assembly

ARV-2020 120 Volt/50-60 Hz
ARV-2030 220 Volt/50-60 Hz
The ARV-2020 (ARV-2030) Vacuum Pump Kit is recommended for use with a maximum of four (4) pieces of rail, or sixteen (16) vacuum bars.



ARV-1085 Vacuum Kit for ARR-1085 4' (1.18 mm) Rigid Rail.

ARV-1060 Leap Frog Kit
For ARV-1080 & ARV-1085.
Used to reposition rail without losing vacuum.



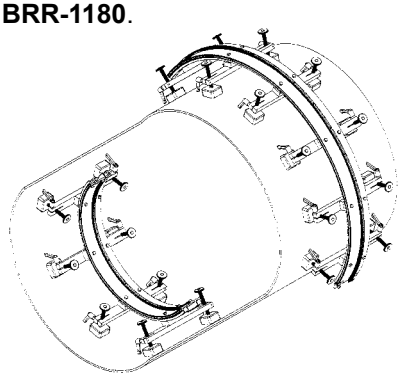
ARV-1080 Vacuum Kit for ARR-1080 8' (2.37 mm) Rigid Rail.

Bent Rigid Rail (BRR), Ring Rails & Corresponding Attachments

BRR rail is used for circumferential applications. The rail can be ordered either as a complete ring or as individual sections.

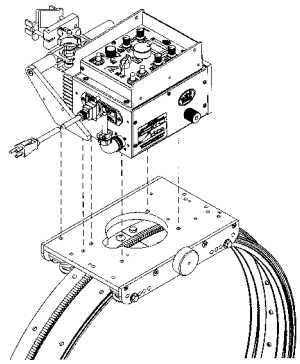
When ordering specify inside or outside work diameter, method of mounting (magnets, vacuum cups or bolts) and if a complete circle is required.

We will take into consideration the use of magnets or vacuum cups when bending the rail. If you don't want to order a complete ring, on larger ID's or OD's you can "Leapfrog" the rail around the vessel. Use at least four (4) magnets or vacuum cups on each piece of **BRR-1180**.

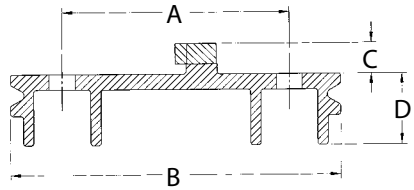


Individual sections of Bent Rigid Rail - BRR-1180.

Pieces of Rail Needed To Form Complete Ring	Maximum Outside Diameter of Workpiece	Maximum Inside Diameter of Workpiece
2	3'-11" (1.20 m)	4'-5" (1.35 m)
3	6'-1" (1.85 m)	6'-7" (2.00 m)
4	8'-2" (2.49 m)	8'-8" (2.64 m)
5	10'-2" (3.10 m)	10'-8" (3.25 m)
6	12'-5" (3.79 m)	12'-11" (3.94 m)
8	16'-8" (5.08 m)	17'-2" (5.23 m)
10	20'-11" (6.08 m)	21'-5" (6.23 m)

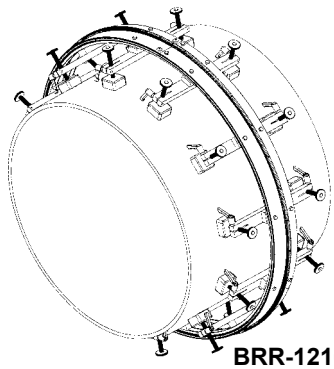


Bent Rigid Rail BRR-1180



A. 2.75" (70 mm) **C.** 375" (9.5 mm)
B. 4.0" (102 mm) **D.** 875" (22 mm)

Complete Ring Rail Assemblies

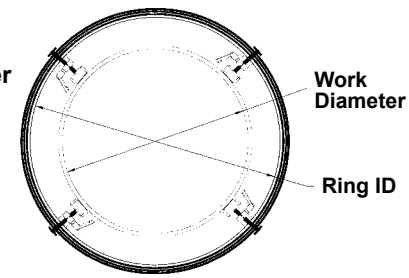


BRR-1210-_

Ring Rails and Tube Size Ranges

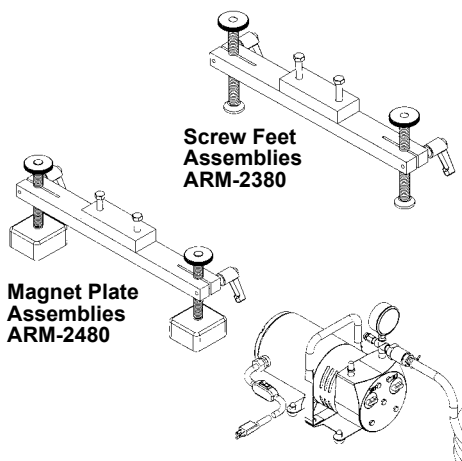
	Part Number	Work Diameters Inches	Work Diameters MM	Ring Inside Diameter Inches	Ring Inside Diameter MM
(1)	BRR-1210-20	9-16	230-400	20	500
(2)	BRR-1210-27	16-23	410-580	27	680
(3)	BRR-1210-34	23-30	590-760	34	860
(4)	BRR-1210-41	30-37	770-940	41	1040
(5)	BRR-1210-48	37-44	950-1120	48	1220

* Ring Rails do not include attachments.



Magnet Attachments

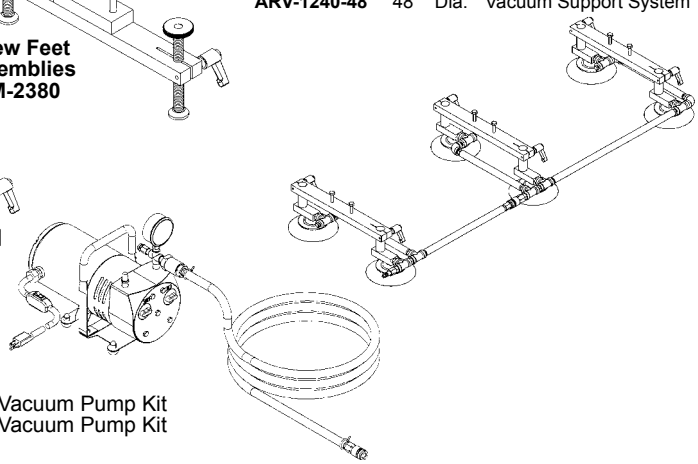
A minimum of three (3) magnet plate or screw feet assemblies are required for each ring rail. Either provides 8" (203 mm) of range adjustment.



Vacuum Supports

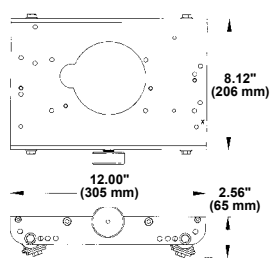
Vacuum Supports may be used instead of magnets to mount the Ring Rail on non-magnetic work pieces. Each Vacuum Support System requires a Vacuum Pump Kit for operation.

ARV-1240-20 20" Dia. Vacuum Support System
ARV-1240-27 27" Dia. Vacuum Support System
ARV-1240-34 34" Dia. Vacuum Support System
ARV-1240-41 41" Dia. Vacuum Support System
ARV-1240-48 48" Dia. Vacuum Support System

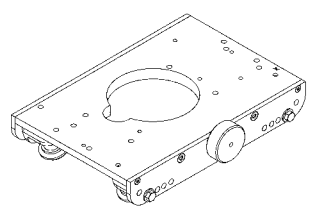


ARV-2020 120VAC Vacuum Pump Kit
ARV-2030 220VAC Vacuum Pump Kit

Carriage For Bent Rigid Rail.



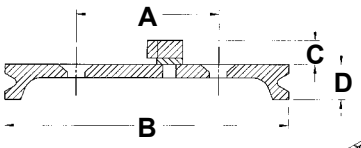
- Mounts a DC IV Drive Unit, Modular Drive Unit and Universal Bug-O-Matic.
- Releasable (can be installed anywhere along the track).
- Runs on straight or BRR Ring Rail.



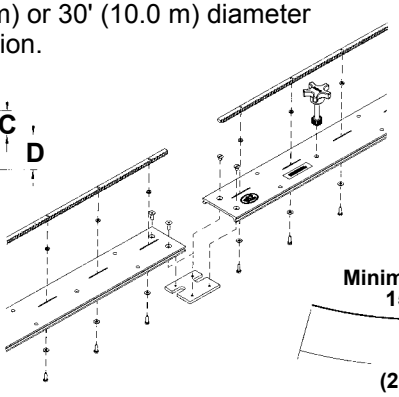
BUG-5910 Split Carriage
Net Weight: 7 lbs. (3.17 kg)
Shipping Weight: 8 lbs. (3.62 kg)

Semi-Flex Rail AFR-3000 & Corresponding Attachments

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

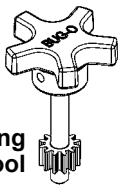


A	2.75"	(70 mm)
B	4.0"	(102 mm)
C	.33"	(8.5 mm)
D	.500"	(12.7 mm)

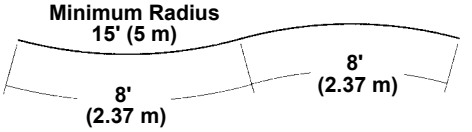


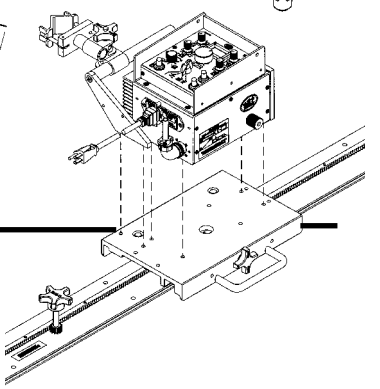
A splice plate is mounted at one end of each AFR-3000 Semi-Flex Rail, for joining to additional rail sections. A rack-adjusting tool is supplied with every two (2) rails, for moving the rack on the rail.

NOTE:
Use at least four (4) attachments (magnets or vacuum cups) on each **SEMI-FLEX RAIL.**



Rack Adjusting Tool

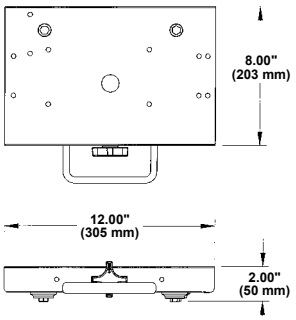


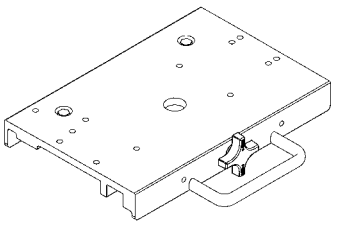


CAUTION: Bending beyond the recommended 15'-0" (5.0 m) radius may put a permanent bend in the rail and break off some of the rack screws.

Carriages For AFR-3000 Rail.

For Modular Drive And Universal Bug-O-Matic.

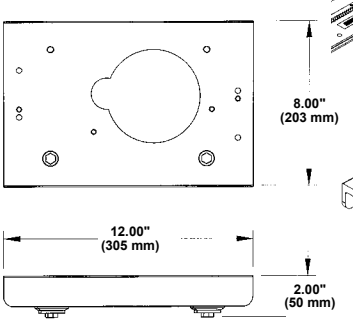


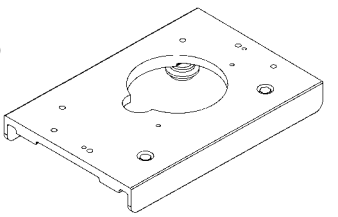


- Releasable (can be installed anywhere along the track).

MPD-1065 Releasable Carriage
Net Weight: 7.75 lbs. (3.52 kg)
Shipping Weight: 9 lbs. (4.09 kg)

For DC IV Drives



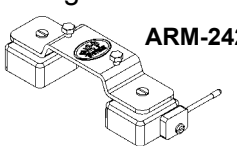


- Mounts a DC IV Drive Unit.

BUG-5250 Carriage 12" (305 mm)
Net Weight: 5 lbs. (2.26 kg)
Shipping Weight: 7 lbs. (3.17 kg)

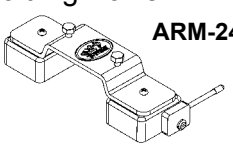
Magnets and Rail Alignment Tool For AFR-3000 Rail.

Swivel Magnet
250 lbs. Holding Power



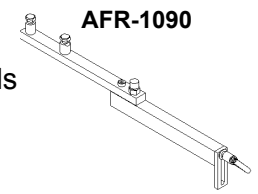
ARM-2425

Fixed Magnet
200 lbs. Holding Power



ARM-2465

Rail Alignment Tool
Gauging device for rapid alignment of rails to joint.



AFR-1090

Vacuum Attachments For AFR-3000 Rail.

Standard Vacuum Support Kit:
ARV-1080 Vacuum Kit
For AFR-3000 Semi-Flex Rail.

Keep flame or arc at least 4" (100 mm) away from vacuum cups. Vacuum system can be used on material to 600^0 F (318^0 C).

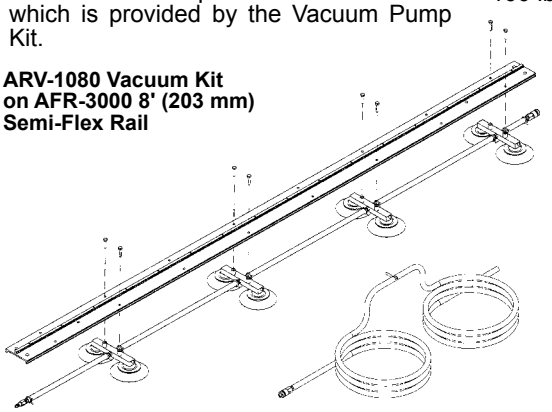
Vacuum Kits require a source of vacuum which is provided by the Vacuum Pump Kit.

ARV-2020 [120 VAC],
ARV-2030 [220VAC].

Vacuum Cups are used for mounting the rail to the workpiece when magnet bars will not hold.

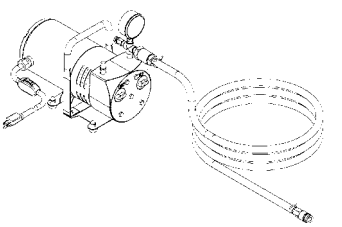
Each vacuum bar is fitted with two (2) cups and will exert a maximum pull of 100 lbs. (45 kg).

ARV-1080 Vacuum Kit on AFR-3000 8' (203 mm) Semi-Flex Rail



ARV-1060 Leap Frog Kit
For ARV-1080 & ARV-1085.
Used to reposition rail without losing vacuum.

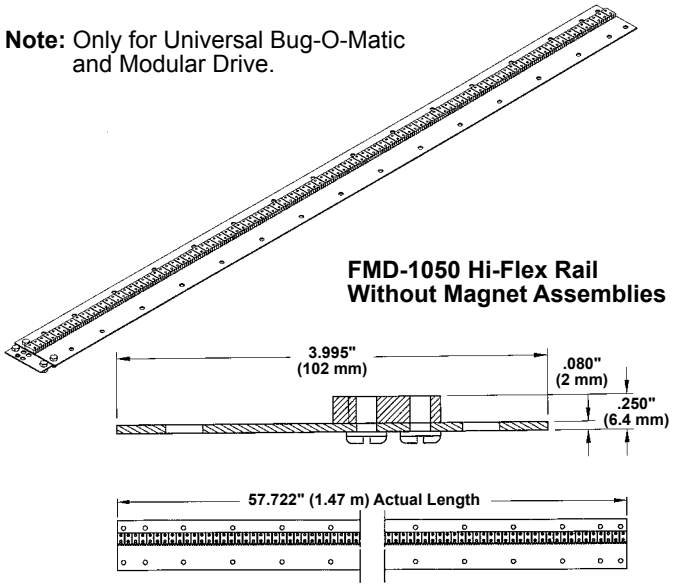
The ARV-2020 (ARV-2030) Vacuum Pump Kit is recommended for use with a maximum of four (4) pieces of rail, or sixteen (16) vacuum bars.



ARV-2020 120 Volt/50-60 Hz
ARV-2030 220 Volt/50-60 Hz

Hi-Flex Rail (FMD) & Corresponding Attachments

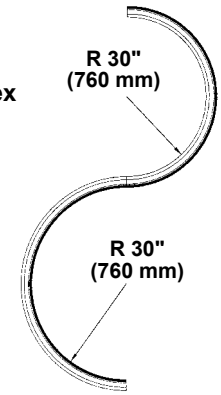
Note: Only for Universal Bug-O-Matic and Modular Drive.



FMD-1050 Hi-Flex Rail Without Magnet Assemblies

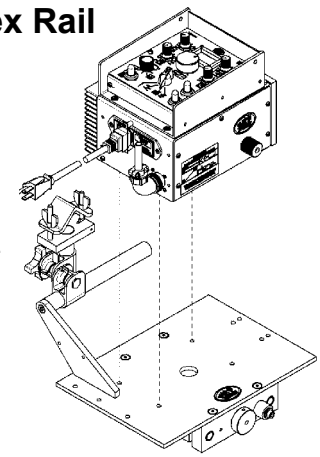
The FMD Flex Rail can flex from a straight to a 30" (760 mm) radius inside or outside. The rail is made from a tempered, wear resistant, stainless steel with a steel rack. It is designed for use with the FMD Hi-Flex Carriage and MDS Drive System. The rail comes in 57.7" (1.47 m) lengths and can be held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

FMD Hi-Flex Rail can flex inside or outside to a minimum radius of 30" (760 mm).

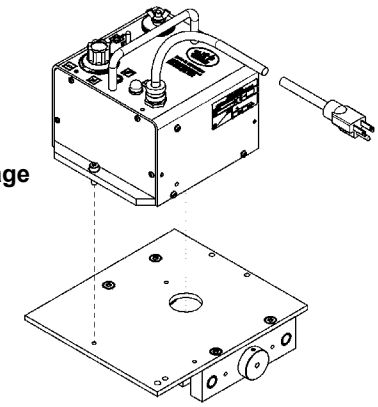


Carriages For Hi-Flex Rail

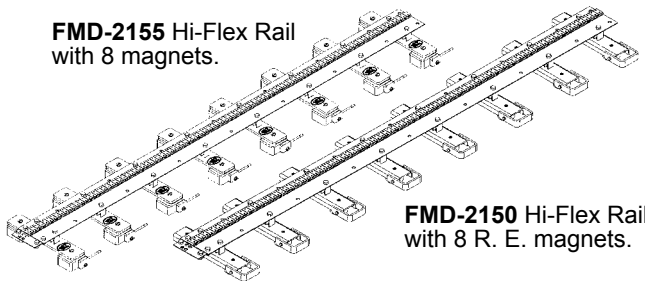
FMD-1105 Drive Carriage with cable anchor for MDS Master Drive or Universal Bug-O-Matic on High-Flex Rail.



FMD-1150 Hi-Flex Carriage for DC-III Drive.

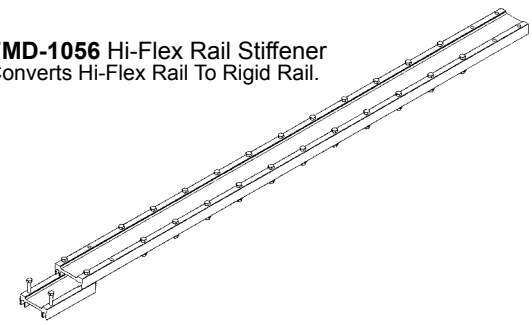


FMD-2155 Hi-Flex Rail with 8 magnets.



FMD-2150 Hi-Flex Rail with 8 R. E. magnets.

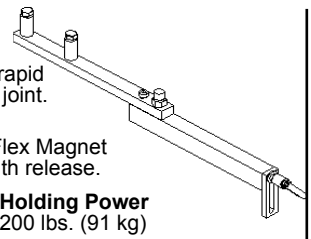
FMD-1056 Hi-Flex Rail Stiffener
Converts Hi-Flex Rail To Rigid Rail.



Magnets, Vacuum Accessories and Rail Alignment Tool For Hi-Flex Rail

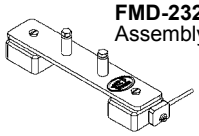
FMD-1020 Rail Alignment Tool

Gauging device for rapid alignment of rails to joint.



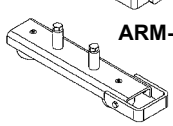
FMD-2325 Flex Magnet Assembly with release.

Holding Power 200 lbs. (91 kg)



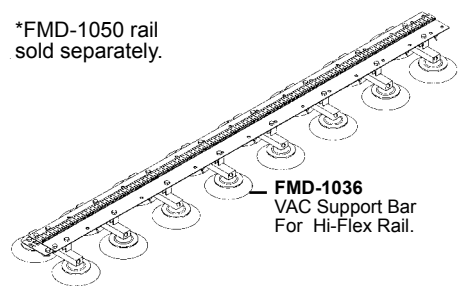
ARM-2120 Channel Magnet with release.

Holding Power 150 lbs. (68 kg)

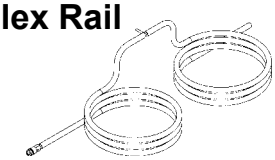


FMD-1220 Vacuum Support for (1) FMD-1050*
FMD-1230 Vacuum Support for additional FMD-1050*

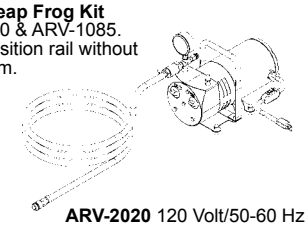
*FMD-1050 rail sold separately.



FMD-1036 VAC Support Bar For Hi-Flex Rail.



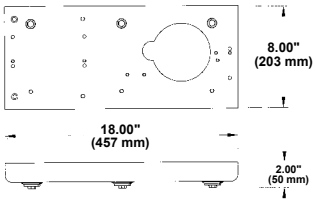
ARV-1060 Leap Frog Kit
For ARV-1080 & ARV-1085. Used to reposition rail without losing vacuum.



ARV-2020 120 Volt/50-60 Hz
ARV-2030 220 Volt/50-60 Hz

Carriages & Fixture Building

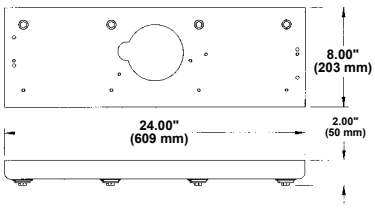
Specialty Carriages For ARR Rail.

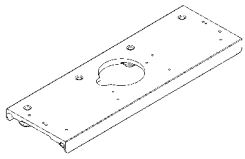




- Mounts a DC IV Drive Unit.
- Longer deck to mount accessories, wire feeder, etc.

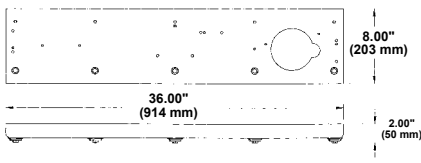
BUG-5260 Carriage 18" (457 mm)
Net Weight: 6 lbs. (2.72 kg)
Shipping Weight: 8 lbs. (3.62 kg)

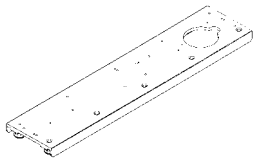




- Mounts a DC IV Drive Unit.
- Longer deck to mount accessories, wire feeder, etc.

BUG-2790 Carriage 24" (609 mm)
Net Weight: 11 lbs. (5 kg)
Shipping Weight: 15 lbs. (6.80 kg)

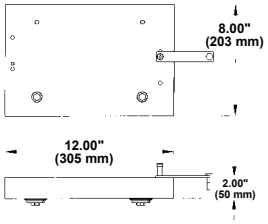


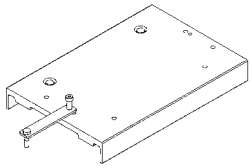


- Mounts a DC IV Drive Unit.
- Longer deck to mount accessories, wire feeder, etc.

BUG-2785 Carriage 36" (914 mm)
Net Weight: 16.5 lbs. (7.50 kg)
Shipping Weight: 23.0 lbs. (10.44 kg)

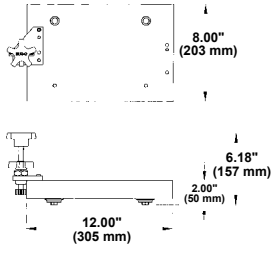
Optional Carriages for ARR.

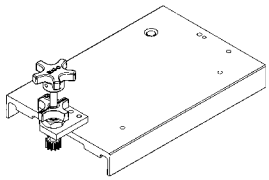




- Used to carry accessories, wire feeder, etc.

BUG-2205 Carriage Trailer w/Hitch
Net Weight: 6 lbs. (2.72 kg)
Shipping Weight: 8 lbs. (3.62 kg)





- Knob is used manually to move the carriage along the track.
- Bottom knob locks carriage to a fixed rail position.

MUG-1140 Spotting Car
Net Weight: 6 lbs. (2.72 kg)
Shipping Weight: 8 lbs. (3.62 kg)

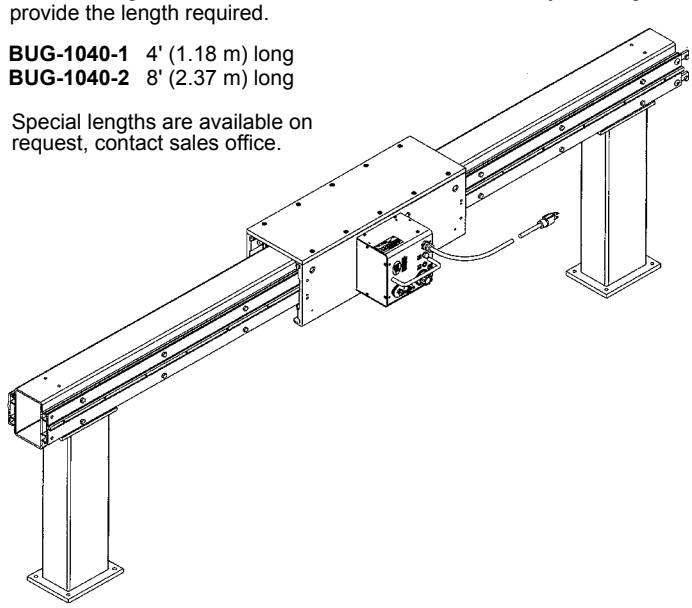
Fixture Building

Cross Beam Assemblies

Longitudinal rail sections are fabricated from rectangular steel tubing with ARR-1080 or ARR-1085 HD Rigid Rail mounted on each side. Two (2) standard lengths are available and these sections can be joined together to provide the length required.

BUG-1040-1 4' (1.18 m) long
BUG-1040-2 8' (2.37 m) long

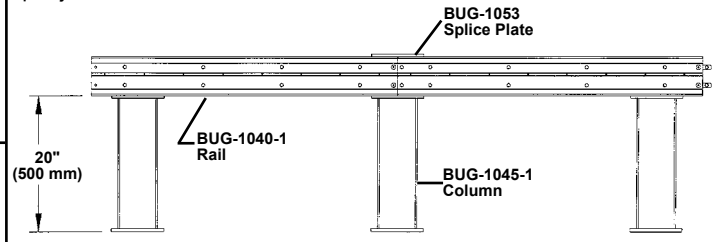
Special lengths are available on request, contact sales office.



Splicing Plates

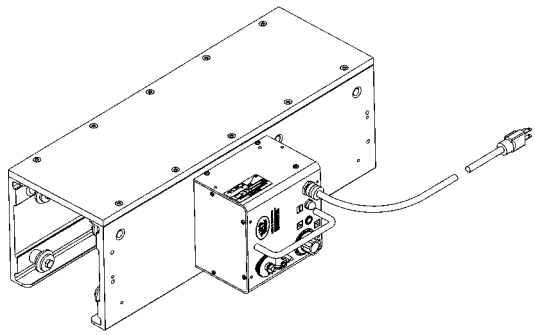
BUG-1053 Splicing Plates are used with the BUG-1040-1 and BUG-1040-2 longitudinal rail sections. Order one splice plate per joint.

Vertical columns for BUG-1040-1 or BUG-1040-2 longitudinal rail sections are available in three lengths.



BUG-1045-1 Vertical Column 20" (500 mm)
BUG-1045-2 Vertical Column 40" (1000 mm)
BUG-1045-3 Vertical Column 60" (1500 mm)

BUG-1096 Yoke Carriage



For use on BUG-1040_ Cross Beams.

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