

INSTRUCTIONS AND PARTS MANUAL

DC-IV MAX TRACTOR

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Model Number: _____

Serial Number: _____

Date of Purchase: _____

Whenever you request replacement parts or information on this equipment, always supply the information you have recorded above.

LIT-DCIV-MAX-IPM-1122

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



B U G - O S Y S T E M S

A DIVISION OF WELD TOOLING CORPORATION

280 TECHNOLOGY DRIVE CANONSBURG, PENNSYLVANIA, 15317-9564 USA
PHONE: 412-331-1776 <http://www.bugo.com> FAX: 412-331-0383



SAFETY

PROTECT YOURSELF AND OTHERS FROM SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.



ELECTRIC SHOCK can kill.

1. The equipment is not waterproof. Using the unit in a wet environment may result in serious injury. Do not touch the equipment when wet or standing in a wet location.
2. Never open the equipment without first unplugging the power cord or serious injury may result.
3. Verify the customer-supplied power connections are made in accordance with all applicable local and national electrical safety codes. If none exist, use International Electric Code (IEC) 950.
4. Never remove or bypass the equipment power cord ground. Verify the equipment is grounded in accordance with all applicable local and national electrical safety codes. If none exist, use International Electrical Code (IEC) 950.



READ INSTRUCTIONS

Read the instruction manual before installing and using the equipment.



EQUIPMENT DAMAGE POSSIBLE.

1. Do not plug in the power cord without first verifying the equipment is OFF and the cord input voltage is the same as required by the machine or serious damage may result.
2. Do not leave the equipment unattended. Remove from the worksite and store in a safe location when not in use.



FALLING EQUIPMENT can cause serious personal injury and equipment damage.

Faulty or careless user installation is possible. As a result, never stand or walk underneath equipment.



MOVING PARTS can cause serious injury.

1. Never try to stop the pinion from moving except by removing power or by using the STOP control.
2. Do not remove any protective panels, covers or guards and operate equipment.

CAUTION

DO NOT LEAVE EQUIPMENT UNATTENDED WHEN NOT IN USE!

Remove from work site and store in a safe location.

HIGH FREQUENCY WARNINGS

SPECIAL PRECAUTIONS ARE REQUIRED WHEN USING PLASMA, TIG OR ANY WELDING PROCESS THAT USES HIGH FREQUENCY TO STRIKE AN ARC.

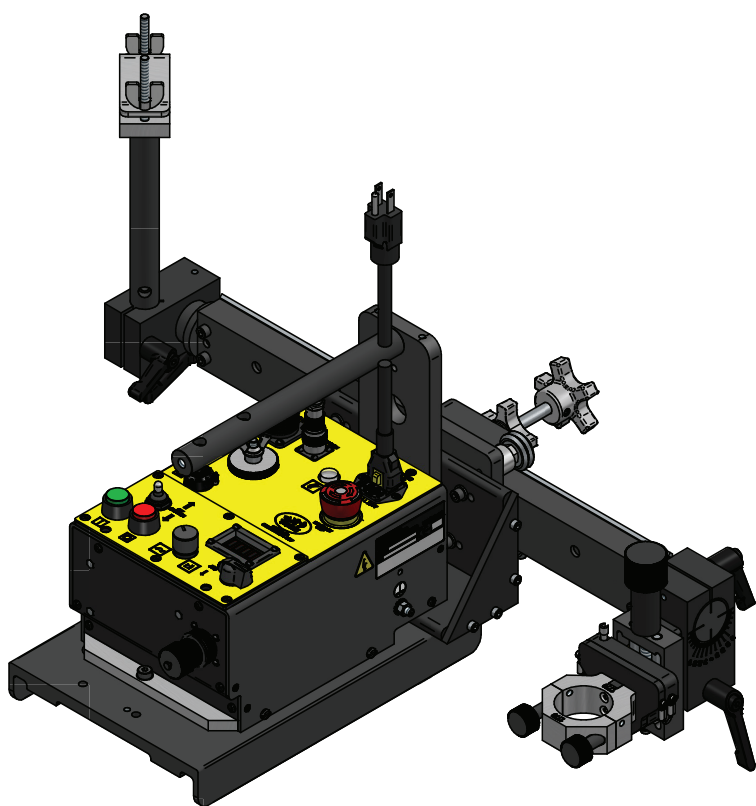


WARNING: HIGH FREQUENCY CAN EFFECT MACHINE OPERATION AND THEREFORE, WELD QUALITY.

Read the precautions below before installing and using the equipment.

PRECAUTIONS:

- 1) Some plasma or welding cables are strong sources of high frequency interference. NEVER lay a plasma or welding cable across the controls of the machine.
- 2) Always physically separate the plasma or welding cable leads from the machine cables. For example, the plasma or welding cable leads should NEVER be bundled with a pendant cable or the machine power cord. Maximize the separation between any machine cables and the plasma or welding cables.
- 3) Strictly follow the grounding procedures specified for the plasma or welding unit.
NOTE: Some plasma and welding units produce exceptionally large amounts of high frequency noise. They may require a grounding rod be driven into the earth within six feet (2 meters) of the plasma or welding unit to become compatible with an automatic cutting or welding process.
- 4) If the high frequency is produced using a spark gap, adjust the points so the gap is as small as possible. The larger the gap, the higher the voltage and the higher the interference.
- 5) Some plasma or welding units will inject high frequency interference into the AC power line. Use separate power line branches whenever possible to power the plasma or welding source and the machine. Do not plug them into the same outlet box.
- 6) High frequency noise may enter the machine through the plasma or welding supply remote contactor leads. Some plasma and welding sources can produce noise spikes of up to several thousand volts. These sources are not compatible with automated cutting and welding equipment. It is recommended that the remote contactor leads on these plasma or welding sources not be connected to the machine. An alternate solution is to purchase a separate remote contactor isolation box.



DC-IV MAX TRACTOR

INSTRUCTION AND PARTS MANUAL

TABLE OF CONTENTS

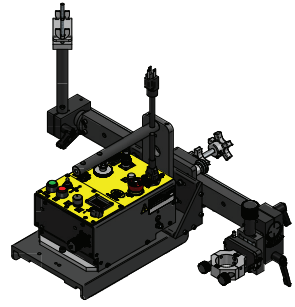
PAGE

6	.....	INTRODUCTION
7	.....	TECHNICAL DATA
8	.....	CONTROLS
10	.....	OPERATION INSTRUCTIONS AND DETAILS
12	.....	DC-IV MAX BASE KITS & ACCESSORY LIST
15	.....	ROUTINE SERVICE AND MAINTENANCE
16	.....	POWER SOURCE CONTROL CABLE CONNECTOR INTERFACING
17	.....	OVERALL WIRING DIAGRAM
18	.....	TROUBLESHOOTING GUIDE
21	.....	RAIL AND MAGNET INFORMATION
21	.....	A. ALUMINUM RIGID RAIL
22	.....	B. STANDARD MAGNET ASSEMBLIES
23	.....	C. VACUUM SUPPORT KIT
28	.....	DC-IV MAX EXPLODED VIEWS
28	.....	A. BASE KIT
29	.....	B. BUG (TRACTOR)
39	.....	C. RACKING
43	.....	D. CARRIAGE
45	.....	DC-IV MAX DETAILED HARNESS DIAGRAMS
52	.....	DOCUMENTATION FOR DC-IV MAX ACCESSORIES
52	.....	A. DC-IV MAX PENDANT CONVERSION KIT
57	.....	B. LIMIT SWITCH KIT
61	.....	C. OXY FUEL KIT
65	.....	EU DECLARATION OF CONFORMITY
66	.....	WARRANTY

**THIS PRODUCT IS COVERED BY ONE OR
MORE PATENTS WORLD WIDE.**

INTRODUCTION

For metal workers who need to easily and repeatably bevel or sever cut metal, the DC-IV MAX is a unique tractor and control combination purposely built to interface with plasma power sources. It can be used with other cutting types as well. Unlike competitive products, this solution has a single push-button start for both the tractor and plasma system and includes extra heavy duty, specialized racking with positioning and angle markers for accurate torch positioning. Utilizing bevel cutting process information and a specialized setup guide, this turnkey solution takes the guesswork out of the setup and operation for bevel-cutting resulting in quick setup and repeatable bevel cuts resulting in less rework and reduced weld time.



FEATURES:

- One button start for both the tractor and plasma power source
 - One button start for oxy-fuel operation
 - Integrated start delay to allow arc to pierce material
 - Sensing to prevent tractor motion during a non-transfer event
 - Display shows tractor speed in inches/min (selectable to cm/min)
 - Pierce timer settable directly in seconds
 - Powermax125 cut charts and bevel compensation tables included
 - Heavy duty racking provides smooth and stable racker operation
 - Independent manual bevel and lead/lag angle controls
 - Built in degree dial on bevel and lead/lag angle
 - Torch breakaway with auto process stop
 - Oxy fuel accessory available for thicker material
 - Auto shutdown at end of plate*
- *Powersource specific: Plasma source must support by De-asserting “arc established” signal at end of plate or limit kit must be installed. Limit kit required for auto shutdown when gouging.
- Emergency stop
 - Toolless setup
 - Finer speed tuning
 - Easy conversion to pendant control
 - Fully integrated with Hypertherm® MAXPRO200® and the Powermax® series power sources. Cut charts, bevel compensation tables and the rail alignment tool are included in Hypertherm® bundles.
 - Numerous accessories including: Pendant, limit kit, bevel and rail alignment setup tool, oxy-fuel kit.

TECHNICAL DATA

Power

Requirements: 120 watts at rated voltage:

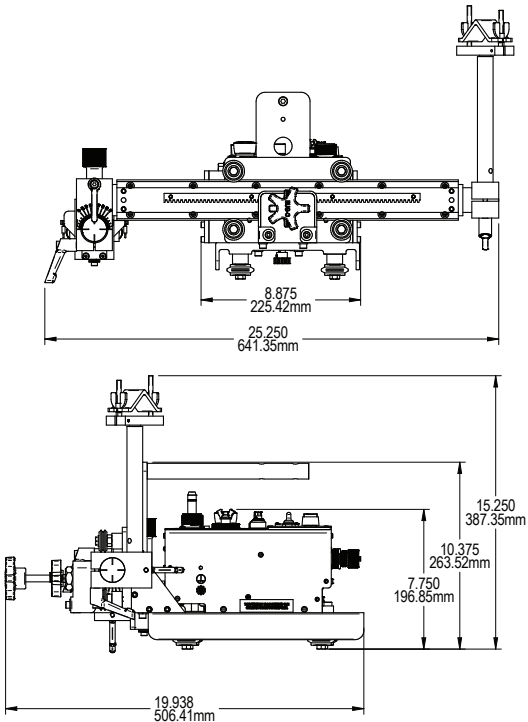
DC-IV MAX:	100-0701-120	DC-IV Max Drive 80:1	120 VAC/50-60Hz/1 Phase
	100-0701-240	DC-IV Max Drive 80:1	240 VAC/50-60Hz/1 Phase

Dimensions: 19.938"L x 25.250"W x 15.250"H
(506,41 mm x 641,35 mm x 387,35 mm)

Net Weight: 34.5 lbs. (15.65 kg)

Shipping Weight: 48 lbs. (21.8 kg)

DIMENSIONS:



Travel

Speed: Infinitely variable from
2.5-100 ipm (6.4-254 cm/min) +- 10%

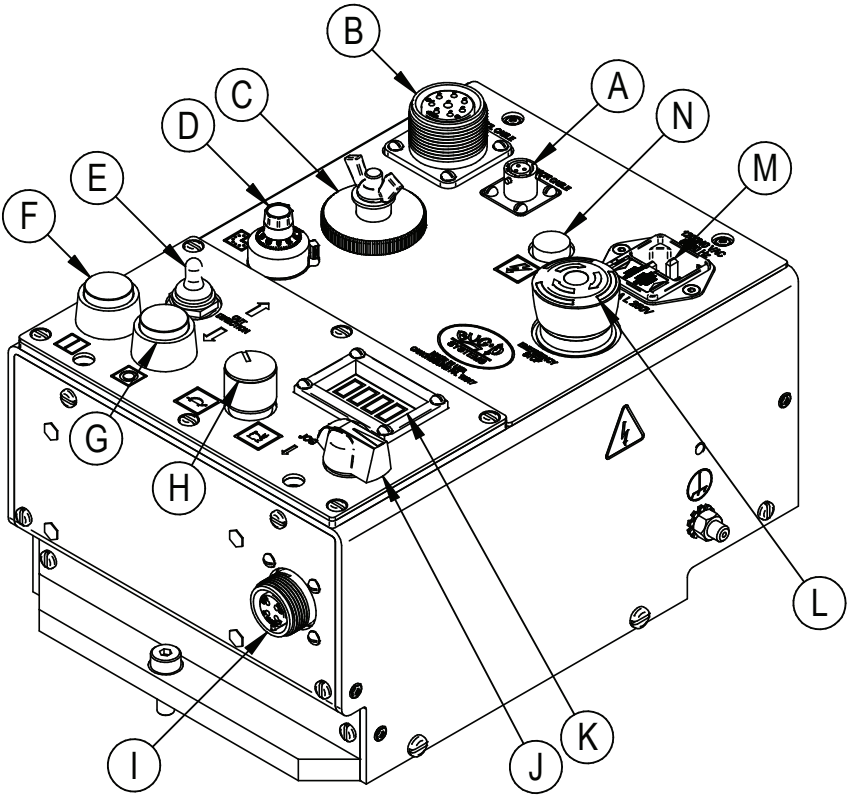
Load

Capacity: 13 lbs. (6 kg) vertical
60 lbs. (27 kg) horizontal

Operating

Temperature: 32°F - 104°F (0°C - 40°C)

CONTROLS / DC-IV MAX DRIVE



A. BREAK-AWAY SENSOR CABLE CONNECTOR:

Connects to a torch-mounted sensor that can sense an obstruction with the torch (break-away) and shuts down power the DC-IV MAX.

B. CONTROL CABLE CONNECTOR:

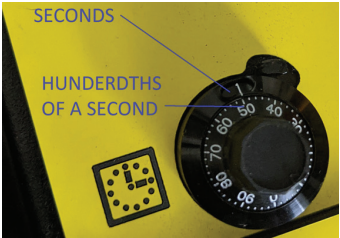
Provides the interface signals (trigger and arc established) between the power source and the DC-IV MAX.

C. CLUTCH ENGAGEMENT/DISENGAGEMENT:

Provides the capability to engage or disengage the DC-IV MAX from the rail.

D. PIERCE TIMER CONTROL:

Sets a delay (0-5 seconds) between the time the arc is established and when the DC-IV MAX begins to move. The digit on top of the pot sets the integer part of the time in seconds. The number on bottom sets the fractional part of the time and it is in 1/100th of a second. For example, the pot shown below is set to 1.5 seconds which is 1s + 50/100s.



CONTROLS / DC-IV MAX DRIVE, CONT'D.

E. CUT DIRECTION SWITCH:

Determines the forward or reverse direction of travel of the DC-IV MAX when the start button is pressed.

F. START BUTTON:

Initiates a command to the DC-IV MAX causing it to begin the one button start sequence.

G. STOP BUTTON:

Initiates a command to the DC-IV MAX causing it to stop the one button start sequence.

H. SPEED CONTROL:

Sets the desired travel speed of the DC-IV MAX; 2.5 -100 ipm (0-254 cm/min). The machine will cut and jog at the set speed.

I. LIMIT SWITCH INTERFACE CONNECTOR:

Provides the interface between the optional external limit switches and the DC-IV MAX.

J. JOG DIRECTION SWITCH:

Moves the DC-IV MAX forward or reverse and is typically used to set the starting position.

K. SPEED DISPLAY:

Displays the current travel speed of the DC-IV MAX in either ipm or cm/min.

L. EMERGENCY STOP:

Immediately cuts power to the DC-IV MAX and will cause it to stop if moving.

M. POWER ENTRY MODULE:

Provides 120/240 VAC 50/60 Hz input and current protection for the DC-IV MAX.

N. POWER INDICATOR:

Illuminates when external 120/240 VAC 50/60 Hz AC power is applied to the DC-IV MAX.

OPERATION INSTRUCTIONS AND DETAILS

Make sure the machine has power by checking the pilot light. If the pilot light is not lit, check that the emergency stop is not engaged.

The jog switch along with the manual racking is generally used to move the machine into the starting position and set the torch angles and height.

The speed pot, the cut direction and pierce time are set to the desired values. Pressing the start button begins the “one button start sequence”. This sequence performs the cut without intervention.

One button start sequence details:

1. After pressing start button(F), the machine sends a trigger command to the plasma power source.
2. If within a second or 2, the machine does not get an “arc established” signal from the power source, the sequence ends. This removes the trigger command to the power source.
3. If the machine did get an arc established signal, the DC-IV waits for the set pierce time after receiving the arc established signal.
4. After the pierce time expires, the machine begins moving at the set speed.
5. While moving and cutting, the machine waits for the arc established signal from the power source to be removed or the stop switch to be pressed and then terminates the one button start sequence shutting down the travel and power source.

The one button start sequence will be halted in any of the above steps for any of the following reasons:

- The stop button is pressed.
- A limit switch is hit.
- The emergency switch is pressed.
- The torch breakaway has broken away or the break-away sensor cable has been damaged or disconnected. In this case, the display will go blank while the pilot light is still lit. Remedy cause so that the display is now lit again and the machine is operational.
- Power to the machine has been removed.
- The pendant cable or the control cable is disconnected.

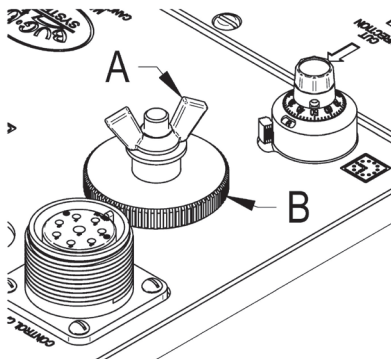
Caution: Before relying on the machine to stop at the end of a work piece, ensure the power source supports it and that it is set in a mode that supports it.

For the machine to stop on its own without limit switches, the power source must remove the “arc established” signal at the end of the plate. Some power sources have modes that continually arc even when there is no plate and as such do not remove the “arc established” signal. Examples of these power source modes are: Power source modes for cutting over rats holes or mesh, power source gouging modes. In this case where the power source does not remove the arc established signal when there is no plate, use one of the following solutions: change the power source to a mode that does remove the arc established signal at the end of the plate, use the limit switch kit, or manually press the stop button at the end of the plate.

OPERATION INSTRUCTIONS AND DETAILS, CONT'D.

Manual Clutch:

A manual clutch is provided to make installing the bug on the rail or moving it long distances down a track quick and easy. The clutch should be dis-engaged before sliding the machine onto a rail. To dis-engage the clutch, loosen the wing nut(A) and turn the cam-knob(B) fully counter clockwise to disengage the pinion from the rack. The machine can now be slid onto or down the rail. To re-engage the clutch, turn the cam-knob(B) fully clockwise to engage the pinion to the rack. Retighten the wing nut(A) to lock the clutch into position.

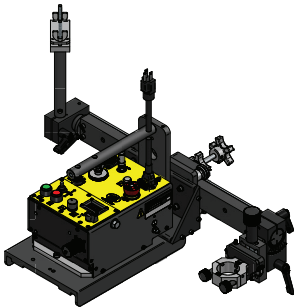


DC-IV MAX BASE KITS & ACCESSORY LIST

DC-IV MAX BASE KITS:

These kits include the machine, the carriage for rigid or semi-flex rails), the HD racking with torch holder and strain reliefs.

100-0701-120	DC-IV MAX Drive 120VAC, CE
100-0701-120-CSA	DC-IV MAX Drive 120VAC, CE, CSA
100-0701-240	DC-IV MAX Drive 240VAC, CE



Additional parts required for operation:

- Any Aluminum Rigid or Semi-flex rail
- DC IV MAX to plasma interface cable (see below for part numbers)
- Torchholder if the torch being used is not 1.75 inch dia (see below for part numbers)

List of DC-IV accessories and optional items:

Power source interface cables:

This cable attaches the DC-IV to the power source. Pick the cable specific to the power source being used and matched to the torch cable length.

- Hypertherm Powermax Series. Replace -xx length in foot. Options (25, 50)
100-0584-xx DC IV MAX TO PLASMA INTERFACE CABLE
- Hypertherm maxpro 200. Replace -xx length in foot. Options (25, 50)
100-0705-xx DC IV MAX TO PLASMA INTERFACE CABLE)

Torch holders:

Torch holders are interchangeable to accommodate different diameter torches.

PWS-4486	TORCH HOLDER ASSEMBLY, 1.75 DIA TORCH (PWS-4486 is included in the DC-IV MAX BASE KITS)
100-0598	TORCH HOLDER ASSEMBLY, 1.39 DIA TORCH (HAS SLOT TO ACCOMMODATE TORCHES WITH RACK)
100-0608	TORCH HOLDER ASSEMBLY, 1.43 INCH DIA TORCH

DC-IV MAX BASE KITS & ACCESSORY LIST CONT'D.

DC-IV MAX PENDANT CONVERSION KIT:

The DC-IV MAX PENDANT CONVERSION KIT remotes the control panel from the DC-IV bug to a remote hand held pendant. Controls Remoted: Cut Direction Switch, Start Button, Stop Button, Speed Control, Jog Direction Switch, Speed Display. This kit can easily be installed in the field. See the DC-IV MAX Pendant Conversion Kit section for more information.

100-0695	DC-IV MAX Pendant Conversion Kit (requires a pendant cable sold separately)
GOF-4160-xx	Pendant Cable, xx foot (specify length in foot) Standard Lengths: 10,15,25,30

Limit Switch Kit:

The limit switch kit adds limit stops that halt motion and cutting when these limit stops are hit. The stop position is set by where the limit stops are placed on the rail. Properly installed limits will prevent the bug from running off the end of a rail.

When is the limit kit needed: The built in auto stop feature of the DC-IV that stops the machine at the end of the plate without limit switches is power source mode dependent. The bug watches the power source's arc established signal and waits for it to be de-asserted. When the arc established signal is de-asserted, the bug stops. In some modes, the power source does not de-assert the arc established signal at the end of a plate and as such the machine does not auto stop. Modes for arc gouging and cutting mesh are two such examples. The limit kit is not power source mode dependent and works when arc gouging, mesh cutting or oxy fuel cutting.

100-0697	LIMIT SWITCH KIT
----------	------------------

Torch and Rail Alignment Guide:

This tool is designed to ease rail and torch setup prior to the cut. It acts as a jig that sets work piece edge to rail distance. The jig also sets up the torch for bevel cuts so that the bottom of the cut is at the edge of the work piece. This is done using the edge offset number in the cut charts along with the jig. Cut charts are included for hyperthem powermax 125 and maxpro 200 power sources in the manual for this tool. (Further information included in the manual for the guide)

100-0601	TORCH AND RAIL ALIGNMENT GUIDE
----------	--------------------------------

Oxy Fuel Kit:

Provides a manifold with solenoid for attaching 3-hose torches to the DC-IV MAX. The kit provides a single on/off manual control for preheat gas valves. The cutting gas solenoid is controlled by the DC-IV MAX. If auto stop at end of cut is desired, the limit kit will also be required. (Additional information available in the Documentation for DC-IV MAX accessories section)

100-0699	OXY FUEL KIT, DUAL VOLTAGE SOLENOID
----------	-------------------------------------

DC-IV MAX BASE KITS & ACCESSORY LIST CONT'D.

HARDSHELL PELICAN CASE:

A hardshell Pelican case is available for shipping and storage.

100-0714

PELICAN CASE



DC-IV MAX BASE KITS & ACCESSORY KIT, CONT'D.

Spare parts Kit:

100-0698 SPARE PARTS KIT, DC-IV MAX, ALL VARIANTS

PART #	DESCRIPTION	QTY
100-0618	Relay, 24V, 10A, 2PDT	4
100-0693	Fuse, 2A, 250V	4
BUG-1740-1	Modified Speed Card	1
BUG-1764	Display Board	1
LED-2111	LED Power Indicator 120/240V	1
100-0645-001	12VDC Power Supply 120/240V Input	1
PWS-0249	Toggle Switch Boot	1
100-0638	Control Panel Legend Plate	1
100-0628	Top Cover Legend Plate	1
100-0940	Proximity Sensor Assembly	1
GOF-3014	Drive Pinion w/Key Set Screw	1
100-0656	Start Button (Green)	1
100-0657	Stop Button (Red)	1
MUG-1192	Rotary Switch w/Knob	1
PWS-0246	Knob, Black, Matte	1
100-0668	Timing Potentiometer & Harness	1
100-0669	Speed Potentiometer & Harness	1
100-0555	Dial Scale, 15 turn	1
CWO-6335	Toggle Switch, Cut Direction	1
100-0605	Shaft Lock	1

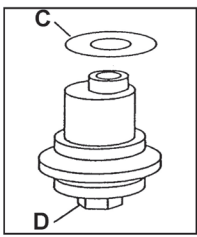
ROUTINE SERVICE AND MAINTENANCE

Daily Maintenance items:

- Check the carriage and heavy duty racking group for proper wheel alignment (see below).
- Check for damaged cables.
- Check for obstructions by the rail that impede the motion of the machine.
- Check that any cables being pulled by the machine are not in a position that will cause them to be caught on something.

CARRIAGE AND HEAVY DUTY RACKING GROUP WHEEL ADJUSTMENT AND ALIGNMENT

Always check for proper carriage wheel adjustment before using the machine. To check the alignment, dis-engage the drive pinion. If the carriage is not on a rail, put it on a rail. The wheels should slide into the track V-grooves and the carriage will move smoothly along the track if the wheels are properly aligned. The wheels along one side of the carriage have stainless steel shim washers underneath(C). These wheels are adjustable. Readjust these wheels (if necessary) by rotating the hex bolt(D) of the wheel assembly with a 1/2" wrench. Grasp the sides of the carriage. The wheels are too loose if it is possible to move the carriage from side to side or up and down. Use a finger to keep one of the adjustable wheels from rotating as the carriage is manually pushed along the track. The wheels are adjusted too tight if firm finger pressure is not enough to prevent wheel rotation. They are too loose if the wheel is easily stopped. Repeat the process for the other adjustable wheel.



POWER SOURCE CONTROL CABLE CONNECTOR INTERFACING

The DC-IV MAX connects and interfaces to the plasma power source or an oxy-fuel manifold through the Control Cable Connector. Pre-configured cables that connect the power source to the bug are available for some plasma power sources. They are listed in the DC-IV MAX specific accessories section.

Control Cable Connector Pinout

Pin	Signal Description	Input/Output	Interface Details
A	Switched AC for solenoid	Output	120 or 240VAC depending on machine
B	Earth Ground	Output	Earth Ground
C	AC for solenoid	Output	120 or 240VAC depending on machine
D	Trigger	Output	Relay Contacts
E	Trigger	Output	Relay Contacts
F	OK to move / Arc Established +	Input	Relay Contact or open collector(24V)
G	OK to move / Arc Established -	Input	Relay Contact or open collector(24V)

Note: The inputs on F and G power a small 24VDC relay to isolate the signal.

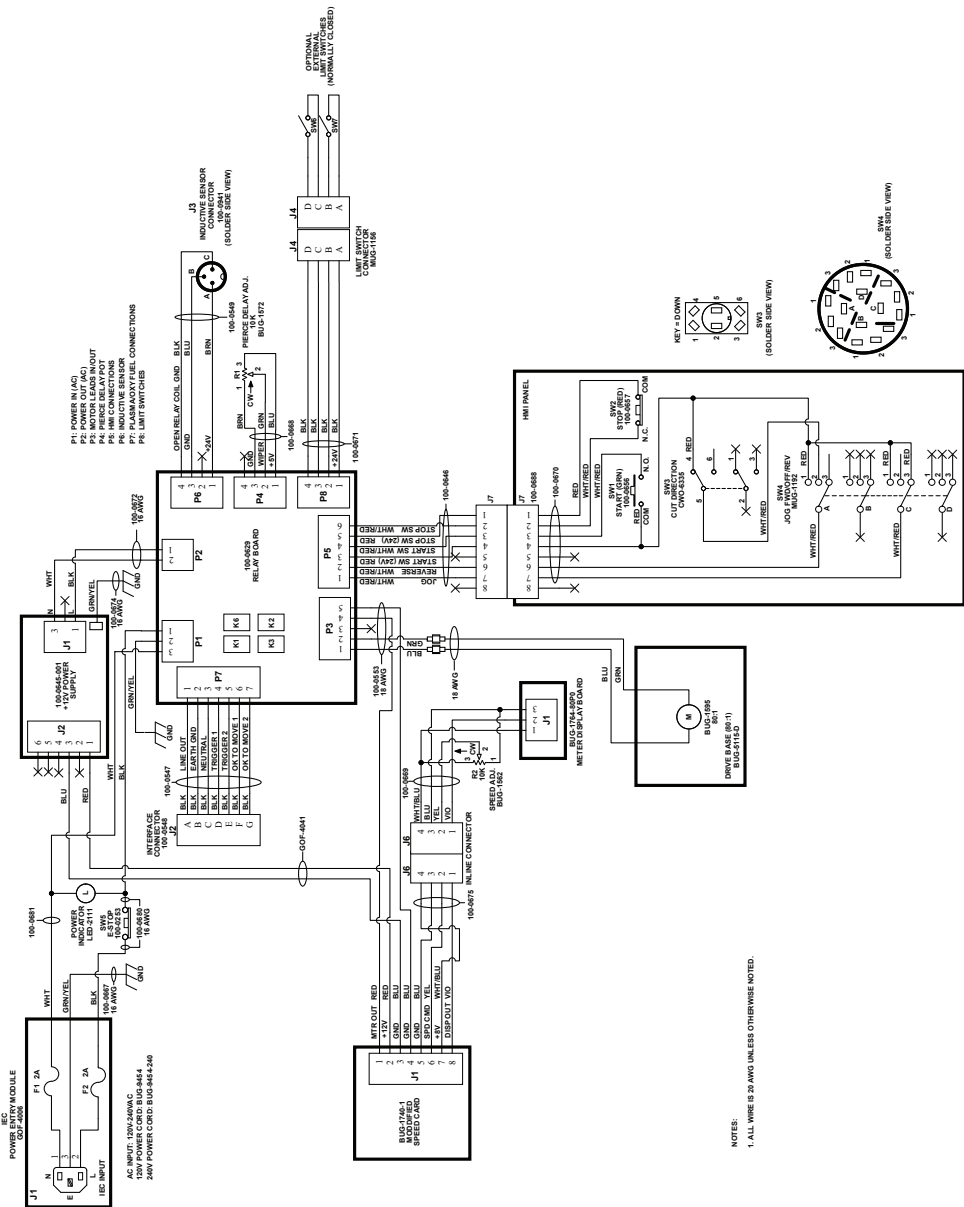
Control Cable Connector connections when hooking up to plasma power sources:

- Pins D and E must be connected to trigger the plasma power source.
- Pins F and G must be connected to tell the bug the plasma arc has been established.
- Pins A, B and C are not used.

Control Cable Connector connections when hooking up to Oxy-Fuel manifolds:

- Pins A,B and C are used to turn on the oxy-fuel solenoid.
- Pins D and E must be fed back in to pins F and G. Here the trigger is fed into the Arc Established so the bug thinks the arc has been established as soon as the trigger is output. CAUTION: As the Arc Established will never be removed until the trigger is gone, the machine will not auto stop at the end of the plate. Either use the limit kit or manually stop the machine.

OVERALL WIRING DIAGRAM / DC-IV MAX (100-0701-WD)



NOTES:
1. ALL WIRE IS 20 AWG UNLESS OTHERWISE NOTED.

TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	REMEDY
Does not run, indicator light off.	E-stop enabled.	Ensure that the E-stop is not enabled.
	No power to machine.	Check power line supply voltage. Plug in line cord firmly.
	Fuses blown.	Replace fuses.
	Wiring shorts.	Disconnect machine and examine internally; rewire at fault.
	Faulty speed board.	Replace speed board if found to be faulty.
	Defective power supply board.	Replace power supply board.
Does not run, indicator light on, speed display off.	Torch improperly positioned, sensor not detecting torch	Reposition torch to align correctly.
	Bad break-away sensor wiring.	Check for damaged/disconnected break-away sensor wiring external to the bug and then internally.
	Faulty speed control board.	Replace speed control board if 12V is supplied to pins 2 and 3, and speed display is still not lit.
	Faulty power supply board.	Check for 12V on power supply board, check power indicator LED on power supply board is lit when board is powered. Replace board if not.
	Faulty relay, K4.	Ensure relay K4 is triggered when torch sensor is properly connected, if not replace K4.

TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	REMEDY
Does not run when jogged or start pressed, indicator light on, speed display powered on.	Limit switch triggered or limit switch plug not installed.	Move machine away from limit stop so that limit switch is not pressed, install limit kit plug on machine.
	Bad connection on 8 pin control connector.	Check 8 pin connector on control panel and resolve if fault found.
	Faulty relay K5.	Replace relay K5.
Indicator light on, speed display powered on, audible click followed by no arc being established and a second click.	Faulty relay K1.	Replace relay K1
Indicator light on, speed display powered on, arc established but no movement.	Bad connection	Check wiring from power source and repair any faults.
	Faulty relay K3	Replace relay K3.
No speed control.	Faulty speed control board.	Replace speed control board.
Pierce delay time not setting as desired, but otherwise functional.	Faulty pierce delay control.	Replace pierce delay control.
	Faulty relay control board.	Replace relay control board.

TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	REMEDY
DC-IV Max motion does not stop at the end of the plate and arc stays lit.	The DC-IV Max relies on a signal from the power source to stop machine motion once the arc is no longer lit, this signal is not being sent.	Ensure the power source is set to “Non-continuous pilot arc” mode. In “Continuous pilot arc” mode, the arc does not get turned off at the end of the plate and so motion continues. Refer to the power source manual for more information on modes.

If none of the above problems match the experience you are having, please contact Bug-o support. Bug-o offers repair services if you are unable to resolve a problem yourself.

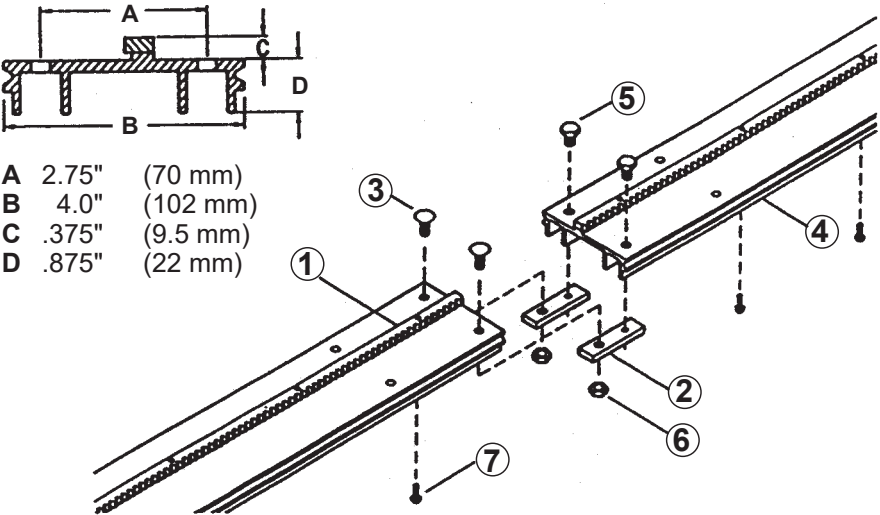
ALUMINUM RIGID RAIL / “ARR”

ALUMINUM RIGID RAIL is a rigid channel section made of high quality alloy to machine tool tolerance as in the sectional view shown below. A machined gear rack is mounted on the rail, with which the drive pinion of the carriage meshes. The wheels of the carriage travel in opposed grooves at either side of the rail, locking the carriage to the rail. Heavy duty [H.D.] aluminum four-legged rigid rail is supplied in two lengths: ARR-1080 [93-1/2" (2.37 m)] called 8" (2.37 m) rail and ARR-1085 [46-1/2" (1.18 m)] called 4' (1.18 m) rail - see insert below. Extra heavy duty aluminum four-legged rigid rail: ARR-1250 [93-1/2" (2.37 m)] called 8' (2.37 m) rail and ARR-1200 [46-1/2" (1.18 m)] called 4' (1.18 m) rail, is also available.

RAIL FOR LONGER SPANS:

When unsupported rail paths longer than 93-1/2" (2.37 m) nominal 8" (2.37 m) rail are required, multiple sections of standard rail are mounted on plate, I-beam, channel or box sections.

ARR-1080 / H.D. ALUMINUM RIGID RAIL 8" (2.37 m)



PARTS LIST		
ITEM	PART #	DESCRIPTION
1	ARR-1006	RACK
2	ARR-1027	SPLICE BAR
3	ARR-1028	CARRIAGE BOLT
4	ARR-1081	RAIL EXTRUSION
5	FAS-0375	HEX HD CAP SCREW 5/16-18 x 1/2 LONG
6	FAS-1370	HEX NUT 5/16-18
7	FAS-1445	S.T. PAN HD SCREW 10-32 x 1/2

Aluminum Rigid Rail can be rolled to a radius of 15' (5 m) and larger for use on curved surfaces.

STANDARD MAGNET ASSEMBLIES

MAGNET PLATE ASSEMBLIES mount on ARR rail quickly and conveniently right on the work surface. Magnets cannot exert maximum pull on dirty material. Remove excessive paint, scale and rust from the area on which the magnets will be placed.

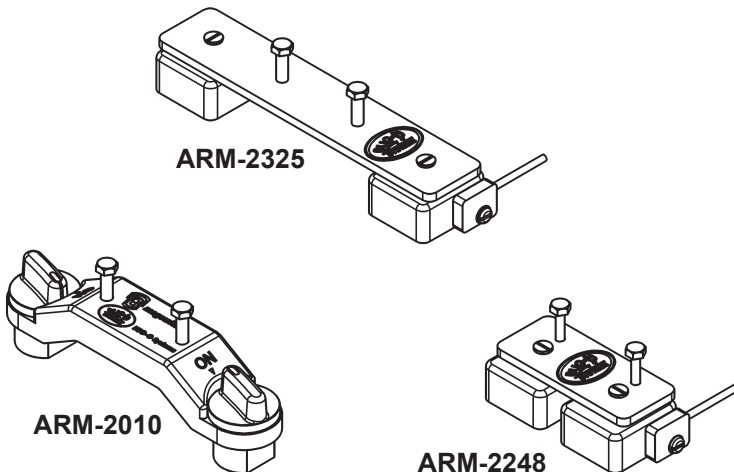
KEEP MAGNETS CLEAN - before positioning, wipe off magnetic particles which adhere to the poles.

For **MAXIMUM HOLDING POWER** on swivel magnets, press down on top of each side of magnet...then rotate until it holds firmly. The magnet will retain its magnetism indefinitely - to preserve the magnet casing, keep torch 4" (100 mm) away from magnets when burning. Use various thicknesses of keepers to decrease the magnetic pull when required.

ARM-2248 - Magnet bar, short; compact for positioning in hard-to-reach or restricted areas. This assembly holds up to 200 lbs. (91 kg) on a flat, clean steel surface.

ARM-2010 - The New, Bug-O/ Mag-switch, Switchable On/Off Rare-Earth magnet assembly provides for quick rail positioning without fighting the magnet. The lighter weight, at just 1.7 lb. (.77 kg), less than all other magnet assemblies, improves handling. 200 lb. (90 kg) holding capacity. Fits standard ARR-rails.

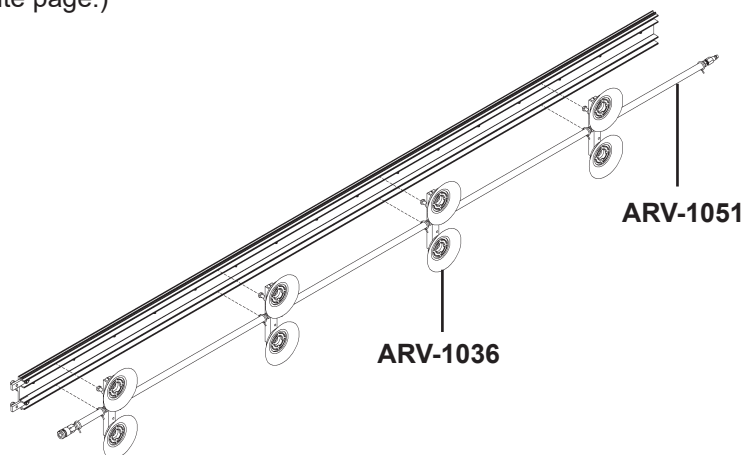
ARM-2330 - Low profile magnet assembly with quick release lever; for use on jobs that have height restrictions. This assembly holds up to 200 lbs. (91 kg) on a flat, clean steel surface.



NOTE: Use four magnet assemblies per 8' (2.37 m) section and use two magnet assemblies per 4' (1.18 m) section.

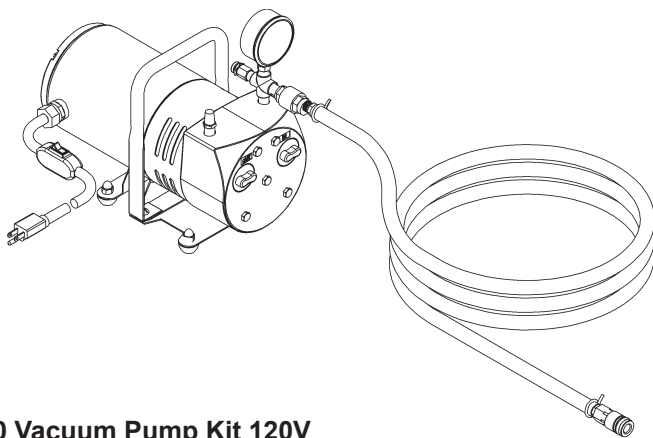
VACUUM SUPPORT KIT

The standard Vacuum Support Kit, ARV-1080, consists of four (4) bars (with 8 cups) and associated hose and fittings. Some applications may require additional ARV-1036 Vacuum Support Bar assemblies. (See exploded view opposite page.)



ARV-1080 Vacuum Support Kit

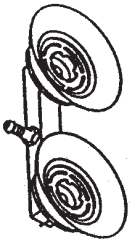
Vacuum bars require a source of vacuum, which is provided by a Vacuum Pump Kit (ARV-2020 [120 VAC]; ARV-2030 [240 VAC]). (See page 18 exploded view.)



ARV-2020 Vacuum Pump Kit 120V ARV-2030 Vacuum Pump Kit 240V

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

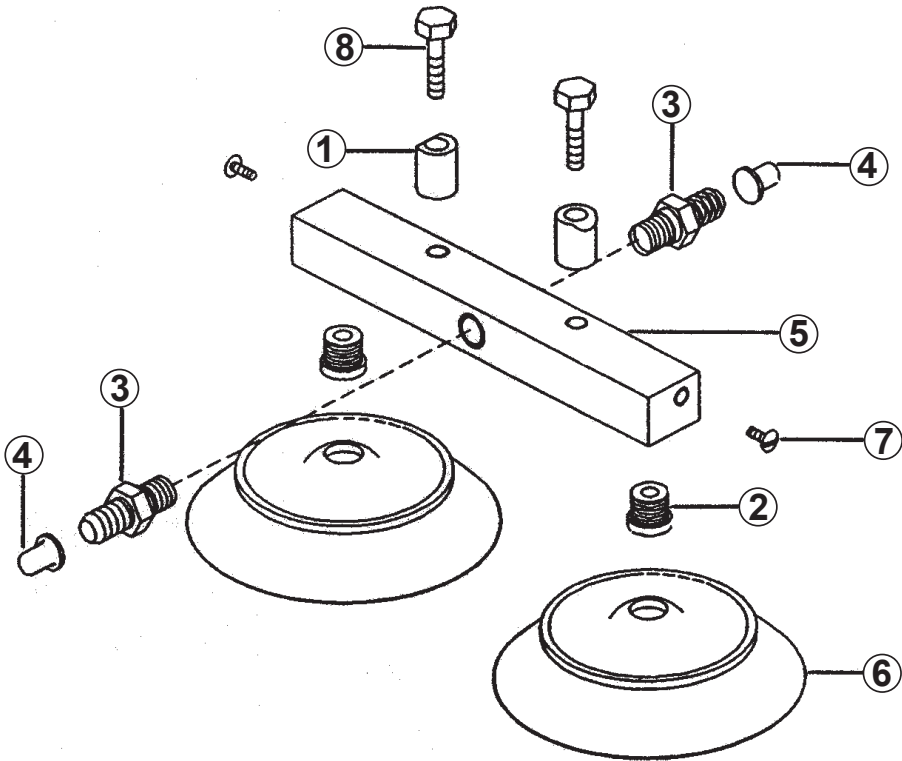
ARV-1036 INTERMEDIATE VAC SUPPORT BAR



VACUUM CUPS are used for mounting the rail to the workpiece when magnet bars will not hold. EXAMPLE: Stainless steel or nonferrous surfaces. The surface must be smooth and nonporous.

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

ARV-1036 VACUUM SUPPORT KIT / EXPLODED VIEW

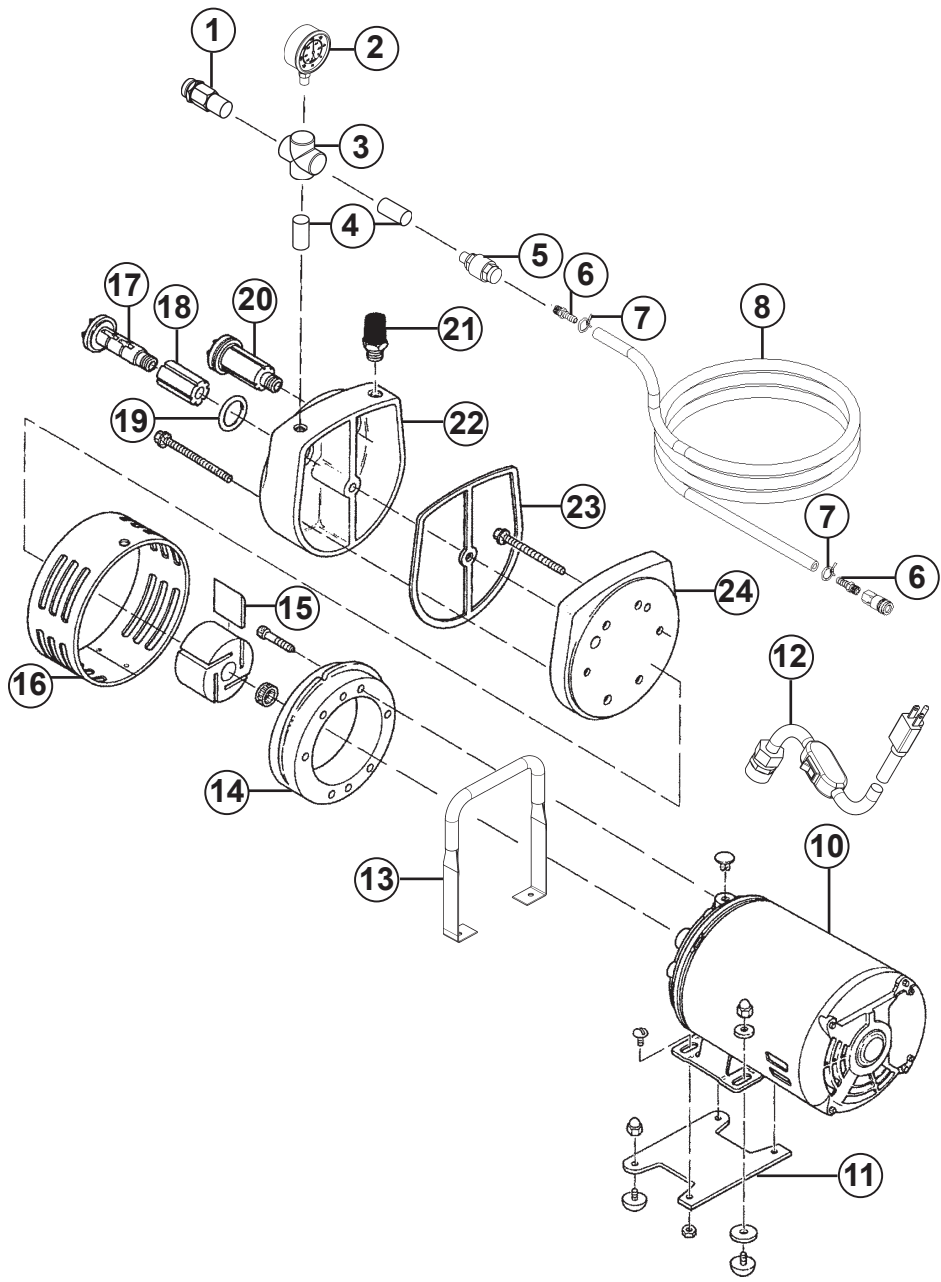


ARV-1036 VACUUM SUPPORT KIT / PARTS LIST

PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	ARR-9008	SPACER TUBE	2
2	ARV-1034	CHOKE NIPPLE	2
3	ARV-1107	3/8 HOSE BARB x 1/4 NPT-M	2
4	ARV-1109	PROTECTIVE CAP	2
5	ARV-1111	SUPPORT BAR	1
6	ARV-1116	VACUUM CUP (SILICONE)	2
7	FAS-0252	RND HD SCR 1/4-20 x 1/4	2
8	FAS-2372	HEX HD CAP SCR 5/16-18 X 1-1/4	2

NOTE: Keep flame or arc at least 4" (100 mm) away from vacuum cups. Vacuum Cups can be used on preheated material to 600° F (318° C). Each vacuum cup exerts a maximum pull of 50 lbs. (22.5 kg).

EXPLODED VIEW / VACUUM PUMP



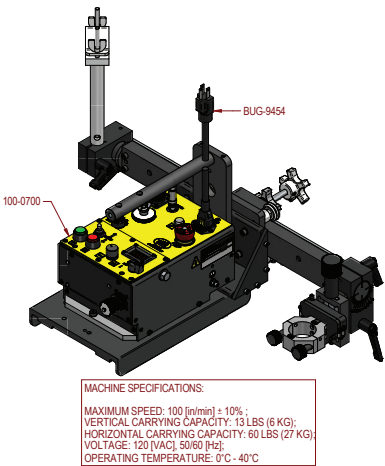
PARTS LIST / VACUUM PUMP

PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	ARV-2017	1/4" BRASS VACUUM RELIEF VALVE	1
2	ARV-2014	VACUUM GAGE	1
3	ARV-2018	1/4" NPT UNION CROSS, FEMALE	1
4	ARV-2012	1/4" NPT NIPPLE	2
5	ARV-2016	1/4" NPT BRASS CHECK VALVE, F	1
6	ARV-1107	3/8" HOSE BARB x 1/4" NPT-M	2
7	ARV-1005	11/16" X .112 THK	2
8	ARV-1004-P	HOSE 3/8" ID x 11/16" OD	1
9	ARV-1012	FEMALE QUICK CONNECTOR	1
10	ARV-2019	PUMP	1
11	ARV-1999	FOOT SUPPORT	1
12	ARV-2021	120 VAC POWER CORD W/SWITCH	1
13	ARV-2013	HANDLE	1
14	ARV-2011	BODY	1
15	ARV-2010	VANE	4
16	ARV-2009	SHROUD	1
17	ARV-2003	END CAP	2
18	ARV-2004	FELT	2
19	ARV-2005	O-RING	2
20	ARV-2002	END CAP ASSEMBLY	2
21	ARV-2001	FILTER / MUFFLER	1
22	ARV-2006	MUFFLER BOX	1
23	ARV-2007	GASKET	1
24	ARV-2008	END PLATE	1

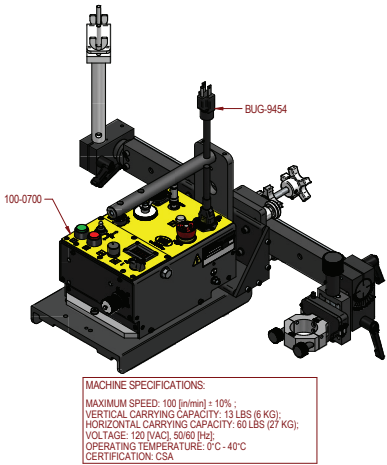
A Repair Kit is available for the **ARV-2020** and **ARV-2030** pumps. The kit contains (4) vanes, (1) body gasket, filter felts for the muffler, oiler filter, oiler wick, a cover gasket and separator felt for the oiler filter.

DC-IV MAX EXPLODED VIEWS / BASE KIT

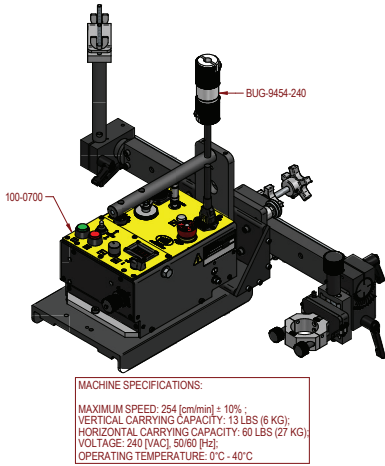
100-0701-120



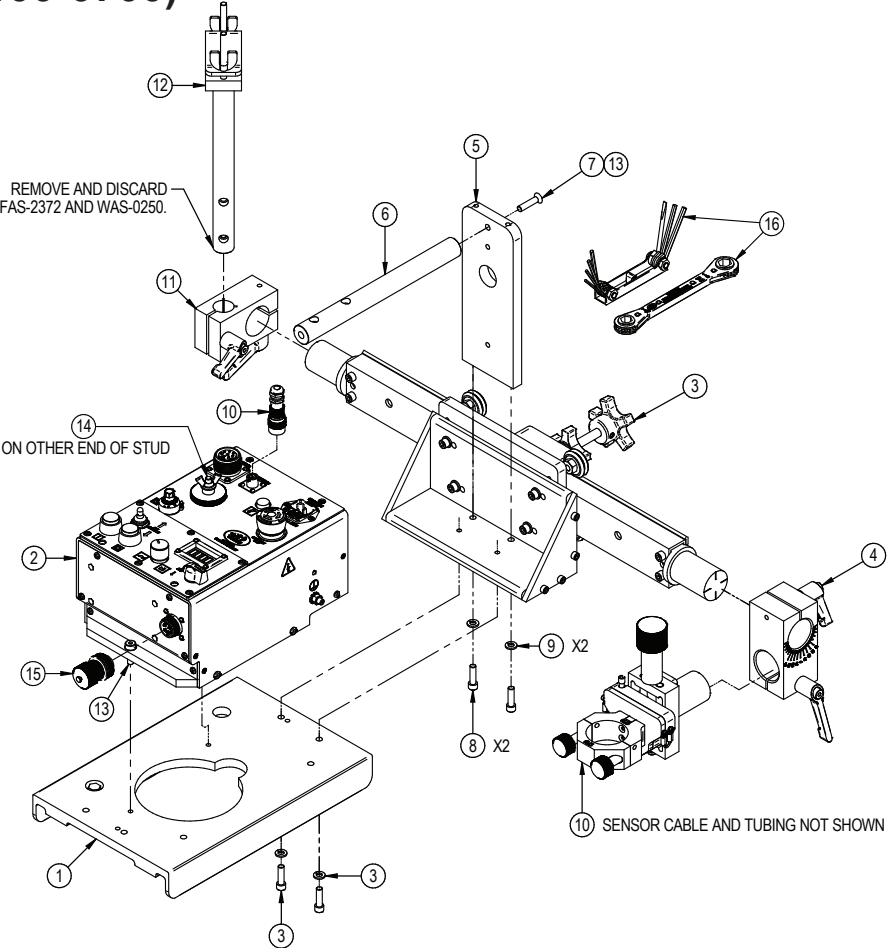
100-0701-120-CSA



100-0701-240



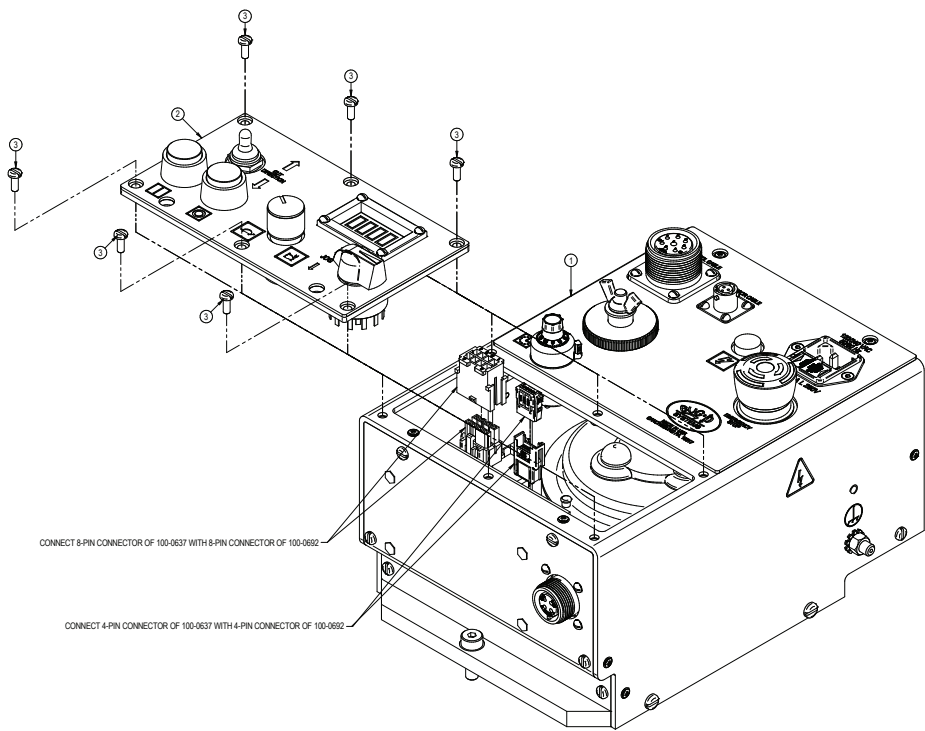
EXPLODED VIEW / PARTS LIST / TRACTOR (100-0700)



PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	BUG-5250	CARRIAGE 12" (305MM)	1
2	100-0631	DC IV DRIVE (80:1) 120/240 VAC	1
3	100-0496	EXTRA HEAVY DUTY RACKING, 19"	1
4	100-0561	RIGHT ANGLE CLAMP	1
5	BUG-5959	HANDLE MOUNT PLATE	1
6	BUG-2666	ANCHOR POST	1
7	FAS-0959	1/4-20 X 1" FLAT HD SOCKET	1
8	FAS-0558	SOC HD CAP 1/4-20 X 7/8	2
9	WAS-0243	1/4" SPLIT LOCK WASHER	2
10	100-0569	TORCH HOLDER ASSEMBLY	1
11	BUG-5182	RIGHT ANGLE CLAMP	1
12	BUG-2668	CABLE ANCHOR BRACKET	1
13*	N/A	LOCTITE® 222MS™ THREADLOCKER, OR SIMILAR	AS REQUIRED
14*	N/A	RC635 GREEN LOCTITE (OR SIMILAR)	AS REQUIRED
15	100-0719	LIMIT KIT PLUG	1
16	BUG-9444	TOOL KIT	1

* ITEM NOT SHOWN.

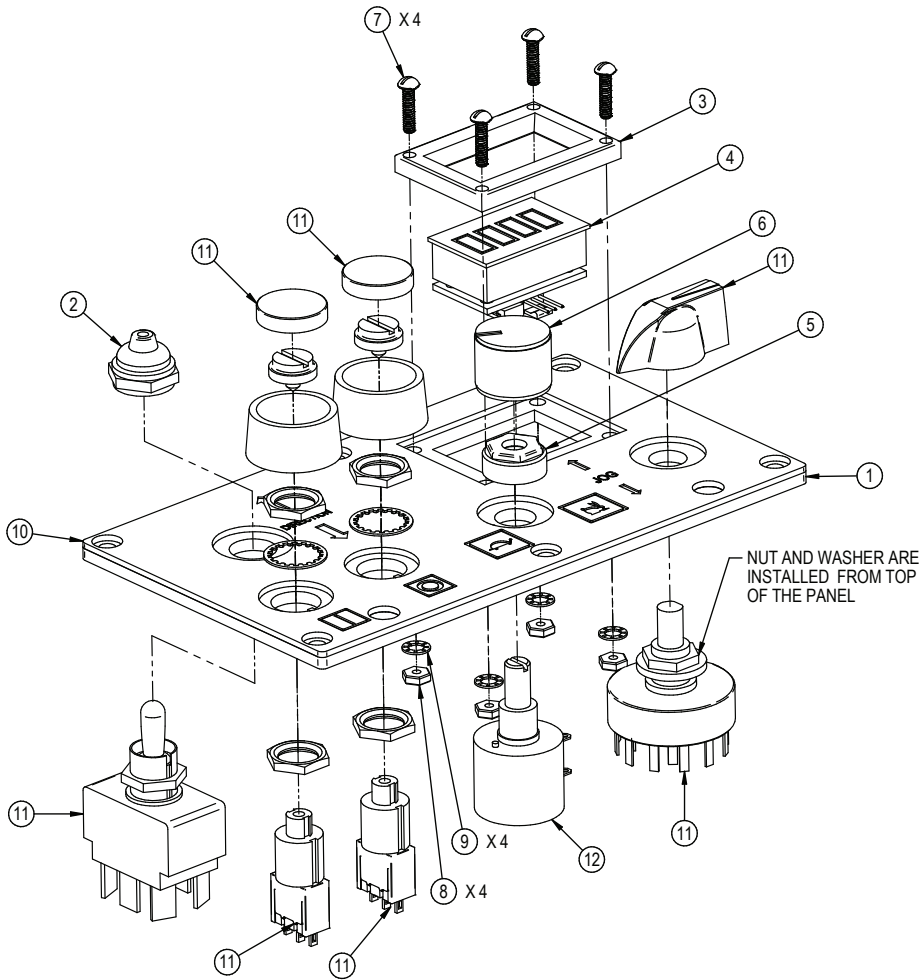
EXPLODED VIEW / PARTS LIST / DC-IV MAX DRIVE (100-0631)



NOTE: WIRES NOT SHOWN.

PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-0692	DC-IV MAX (80:1) COMMON ASSEMBLY	1
2	100-0637	CONTROL PANEL ASSEMBLY	1
3	FAS-0114	PAN HD SCR 6-32 X 3/8 BLACK	6

EXPLODED VIEW / PARTS LIST / CONTROL PANEL (100-0637)

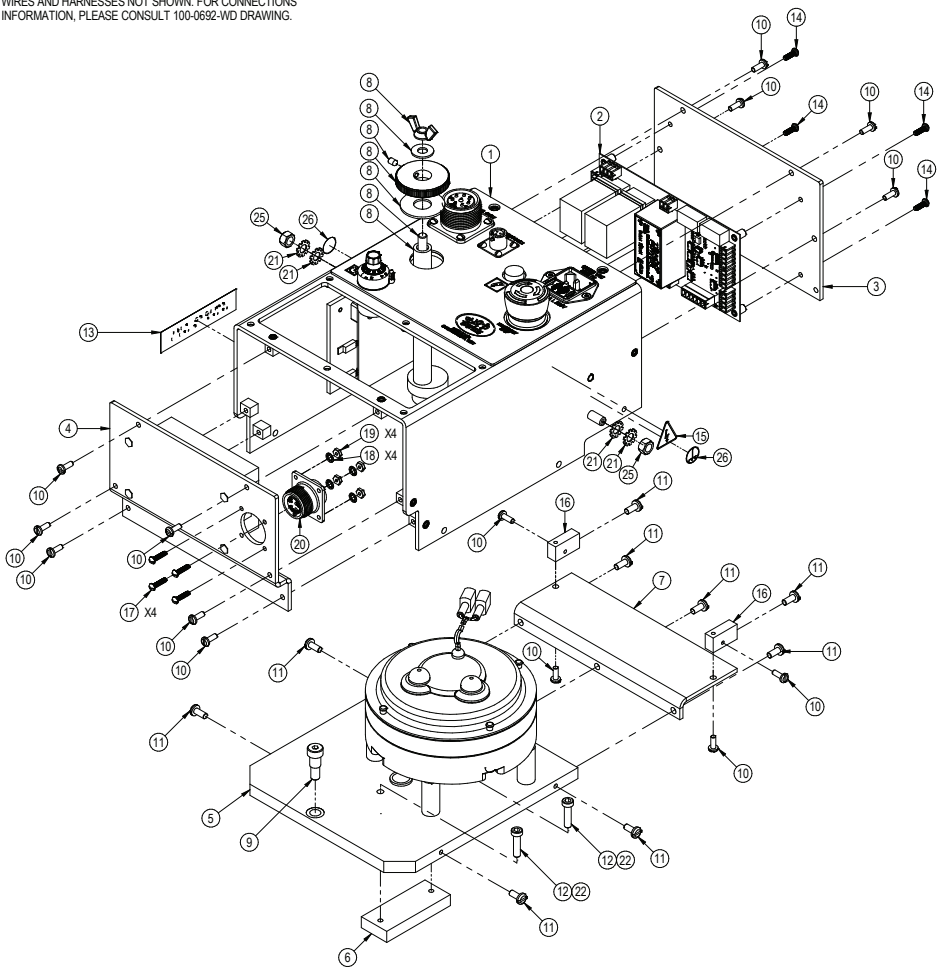


PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-0636	CONTROL PANEL	1
2	PWS-0249	BOOT HALF TOGGLE 15/32	1
3	MDS-1011	DISPLAY BEZEL	1
4	BUG-1764	METER DISPLAY BOARD ASSY	1
5	100-0605	SHAFT LOCK	1
6	PWS-0246	KNOB BLK/ MATTE	1
7	FAS-0205-B	#4-40 X 1/2 ROUND HEAD, BLACK	4
8	FAS-1305	HEX NUT 4-40	4
9	WAS-0201	#4 INTERNAL STAR LOCKWASHER	4
10	100-0638	CONTROL PANEL LEGEND PLATE	1
11	100-0670	HMI PANEL HARNESS	1
12	100-0669	SPEED POT AND SPEED DISPLAY HARNESS	1

EXPLODED VIEW / DC-IV MAX (100-0692)

NOTE

WIRES AND HARNESSES NOT SHOWN. FOR CONNECTIONS
INFORMATION, PLEASE CONSULT 100-0692-WD DRAWING.

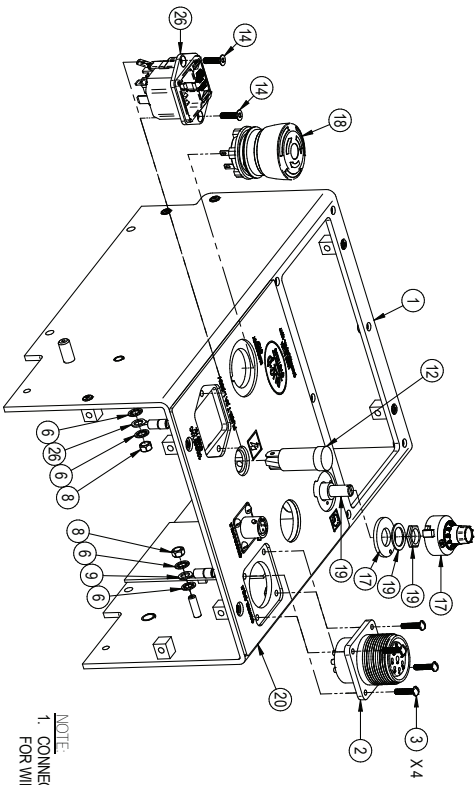


PARTS LIST / DC-IV MAX (100-0692)

PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-0679	TOP COVER COMMON ASSEMBLY	1
2	100-0629-001	RELAY CONTROL BOARD	1
3	100-0640	FRONT PANEL	1
4	100-0639	BACK PANEL ASSEMBLY	1
5	BUG-5115-D	DRIVE BASE (80:1)	1
6	100-0536	COVER BAR	1
7	100-0519	BOTTOM COVER	1
8	BUG-5120	CAM CLUTCH ASSY.	1
9	FAS-0654	SOC HD SHR 5/16X3/8X1/4-20	1
10	FAS-0114	PAN HD SCR 6-32 X 3/8 BLACK	14
11	FAS-0124	8-32 X 3/8 PAN HD, BLK	9
12	FAS-0537-SS	SOC HD CAP SCR 10-24 X 3/4"	2
13	BUG-2414	LABEL, PRODUCT COVERED BY ONE	1
14	MET-0143-SS	PAN HD PHIL M3 x 10	4
15	100-0429	ELECTRICAL SHOCK LABEL, BX-250	1
16	MPD-1012	MOUNTING BLOCK	2
17	FAS-0205-B	#4-40 X 1/2 ROUND HEAD, BLACK	4
18	WAS-0201	#4 INTERNAL STAR LOCKWASHER	4
19	FAS-1305	HEX NUT 4-40	4
20	100-0671	LIMIT KIT SWITCH HARNESS	1
21	WAS-0242	1/4" EXTERNAL STAR LOCKWASHER	4
22*	N/A	LOCTITE® 222MS™ THREADLOCKER, OR SIMILAR	AS REQUIRED
23*	100-0646	HMI TO CONTROL BOARD INTERFACE HARNESS	1
24*	100-0672	CONTROL BOARD TO POWER SUPPLY HARNESS	1
25	FAS-1351	HEX NUT 1/4-20	2
26	100-0718	STICKER, FRAME OR CHASIS GROUND	2

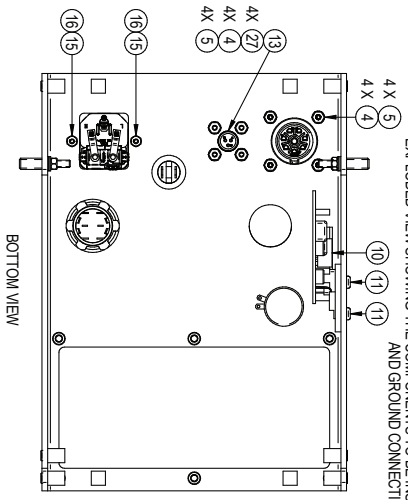
*ITEM NOT SHOWN.

EXPLODED VIEW / TOP COVER COMMON ASSEMBLY (100-0679)

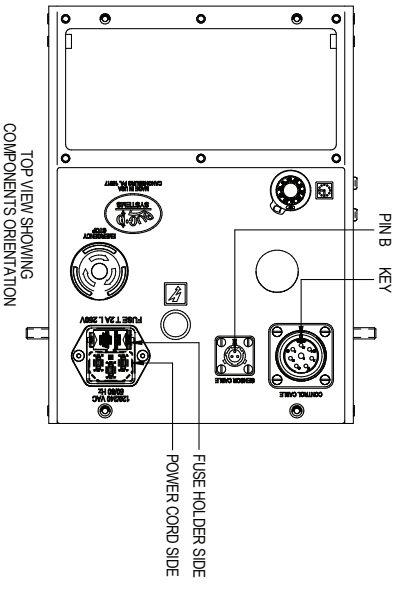


EXPLODED VIEW SHOWING THE COMPONENTS TO BE INSTALLED FROM TOP OF THE MACHINE AND GROUND CONNECTIONS.

NOTE:
1. CONNECTORS AND WIRES NOT SHOWN, SEE 100-0679-WD FOR WIRING INFORMATION.



BOTTOM VIEW



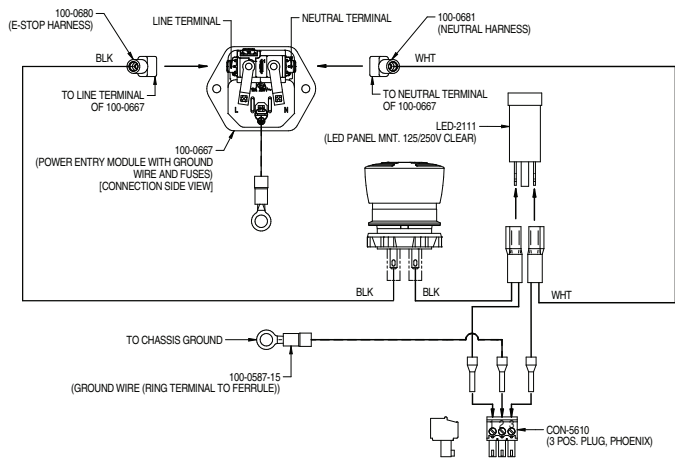
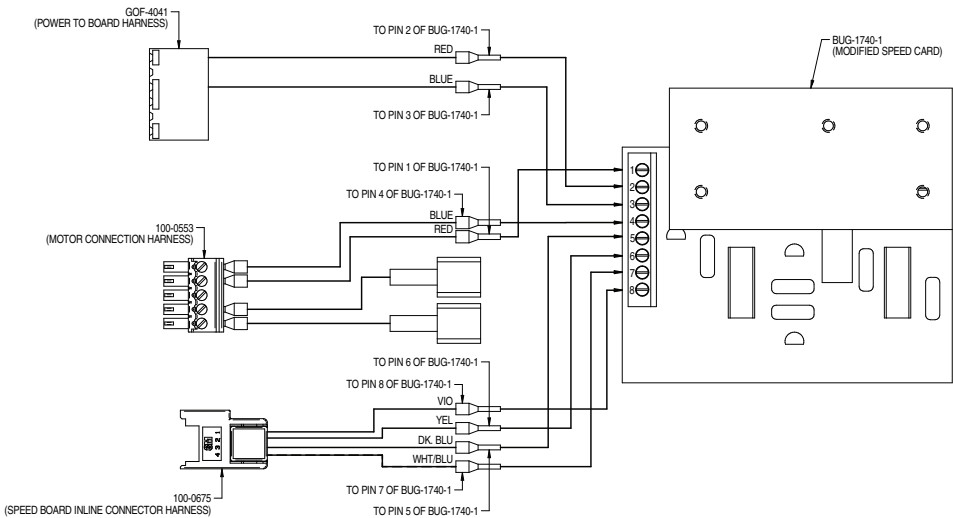
TOP VIEW SHOWING COMPONENTS ORIENTATION

PARTS LIST / TOP COVER COMMON ASSEMBLY (100-0679)

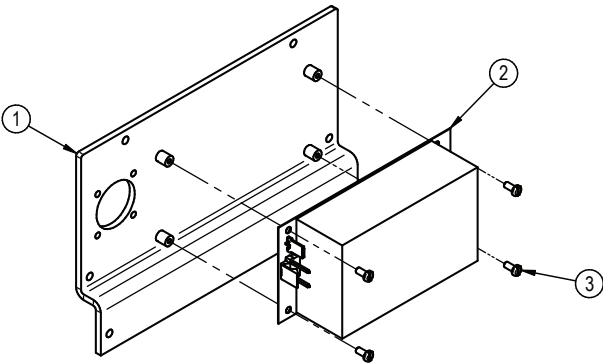
PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-0626	COVER	1
2	100-0547	PLASMA POWER SOURCE INTERFACE CONNECTOR HARNESS	1
3	FAS-0205-B	#4-40 X 1/2 ROUND HEAD, BLACK	4
4	WAS-0201	#4 INTERNAL STAR LOCKWASHER	8
5	FAS-1305	HEX NUT 4-40	8
6	WAS-0221	#8 INTERNAL STAR LOCKWASHER	4
8	FAS-1320	HEX NUT 8-32	2
9	100-0587-15	GROUND WIRE (RING TERMINAL TO FERRULE)	1
10	BUG-1740-1	MODIFIED SPEED CARD	1
11	FAS-0112	PAN HD SLT 6-32 X 1/4 BLK	2
12	LED-2111	LED PANEL MNT. 125/250V CLEAR	1
13	100-0941	PROXIMITY SWITCH CONNECTOR HARNESS	1
14	MET-0944-SS	FLT HD SOC SCR M3 x 12	2
15	WAS-5541-SS	M3 INTERNAL STAR LOCK WASHER	2
16	MET-1340-SS	M3 HEX NUT	2
17	100-0555	DIAL SCALE, 15 TURN	1
18	100-0680	E-STOP HARNESS	1
19	100-0668	TIMING POTENTIOMETER AND CONNECTOR HARNESS	1
20	100-0628	TOP PANEL LEGEND PLATE	1
21*	CON-5610	3 POS. PLUG, PHOENIX	1
22*	100-0681	NEUTRAL HARNESS	1
23*	GOF-4041	POWER TO BOARD HARNESS	1
24*	100-0553	MOTOR CONNECTION HARNESS	1
25*	100-0675	SPEED BOARD INLINE CONNECTOR HARNESS	1
26	100-0667	POWER ENTRY MODULE WITH GROUND WIRE AND FUSES	1
27	FAS-0204	RND HD SLT SCR 4-40 X 3/8 ZINC	4

* ITEMS NOT SHOWN.

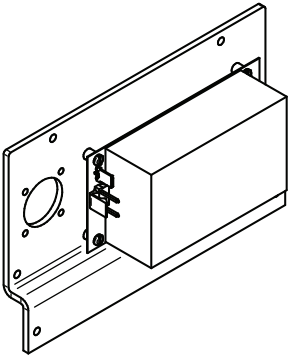
WIRING DIAGRAM / TOP COVER COMMON ASSEMBLY (100-0679-WD)



**EXPLODED VIEW / PARTS LIST / BACK
PANEL ASSEMBLY (100-0639)**



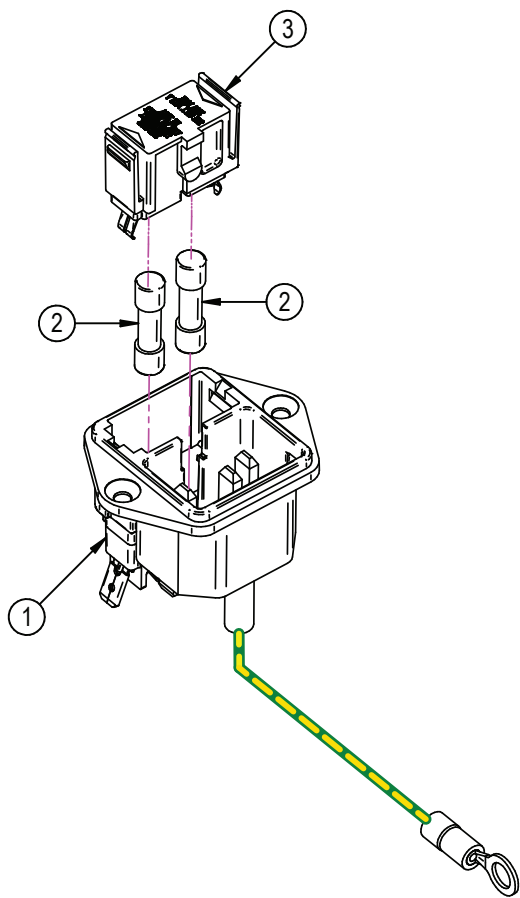
EXPLODED VIEW
SCALE: 1:2



ASSEMBLED VIEW
SCALE: 1:2

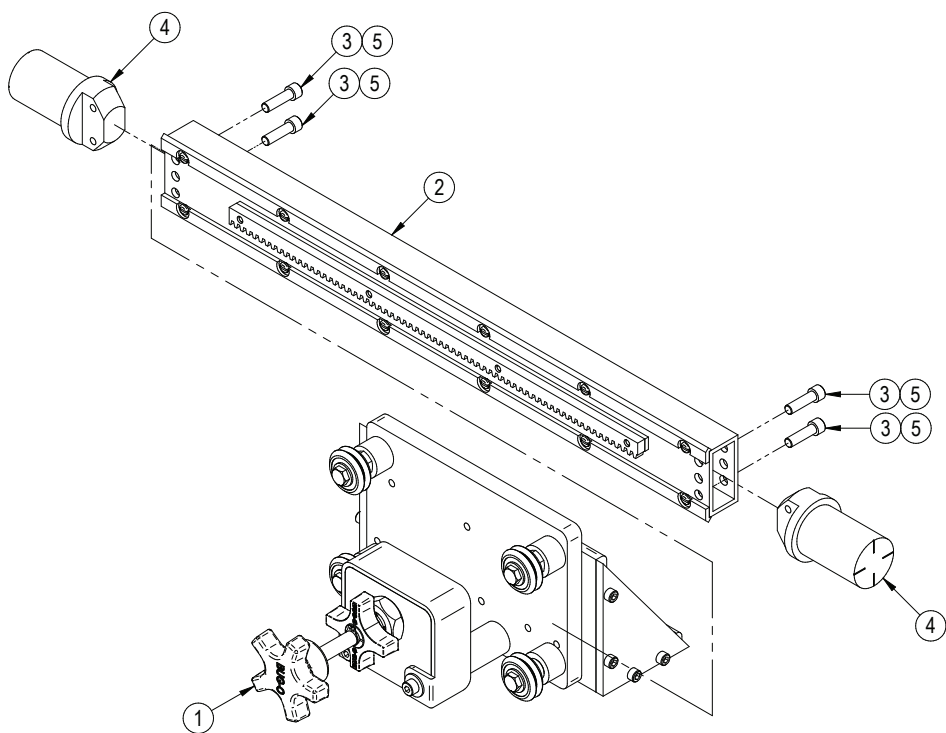
PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-0633	BACK PANEL WITH PRESSED-IN HARDWARE	1
2	100-0645-001	SWITCHING POWER SUPPLY, +12VDC, 6.7A	1
3	FAS-0202	RND HD SCR 4-40X1/4	4

**EXPLODED VIEW / PARTS LIST / TOP
POWER ENTRY MODULE WITH GROUND
WIRE AND FUSES (100-0667)**



PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	GOF-4044	POWER ENTRY MODULE W/GRN	1
2	100-0693	FUSE,2.0A/250V,SLO-BLO 5X20MM	2
3	GOF-4007	FUSE DRAWER,PWR ENTRY MODULE	1

EXPLODED VIEW / PARTS LIST / EXTRA HEAVY DUTY RACKING (100-0496)

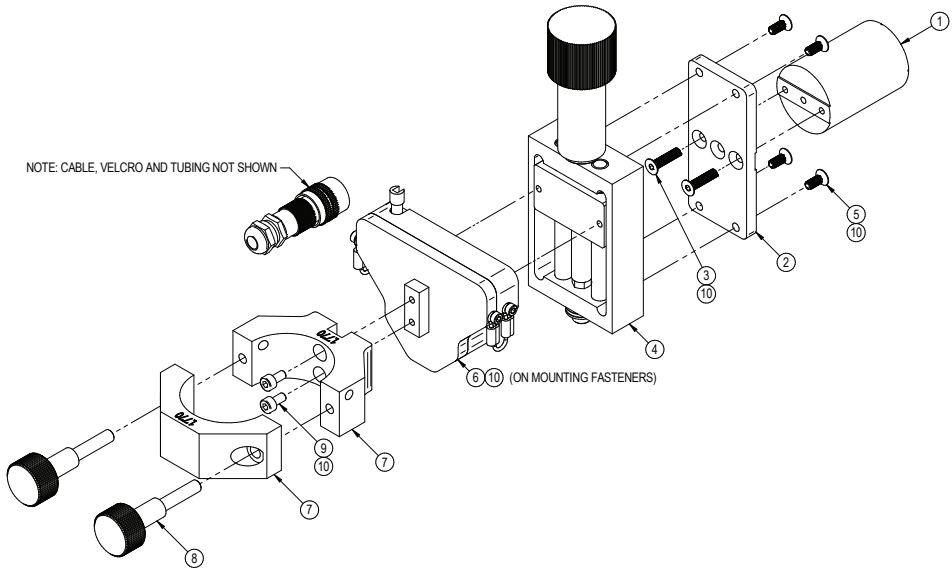


PARTS LIST

ITEM	PART #	DESCRIPTION	QTY
1	100-0443	MANUAL ADJUSTABLE RACKER BLOCK FOR ABR TUBES	1
2	ABR-1070	V-GUIDE WAYS 19"	1
3	FAS-0558	SOC HD CAP 1/4-20 X 7/8	4
4	100-0557	SWIVEL ADAPTOR	2
5*	N/A	LOCTITE® 222MS™ THREADLOCKER, OR SIMILAR	AS REQUIRED

*ITEM NOT SHOWN.

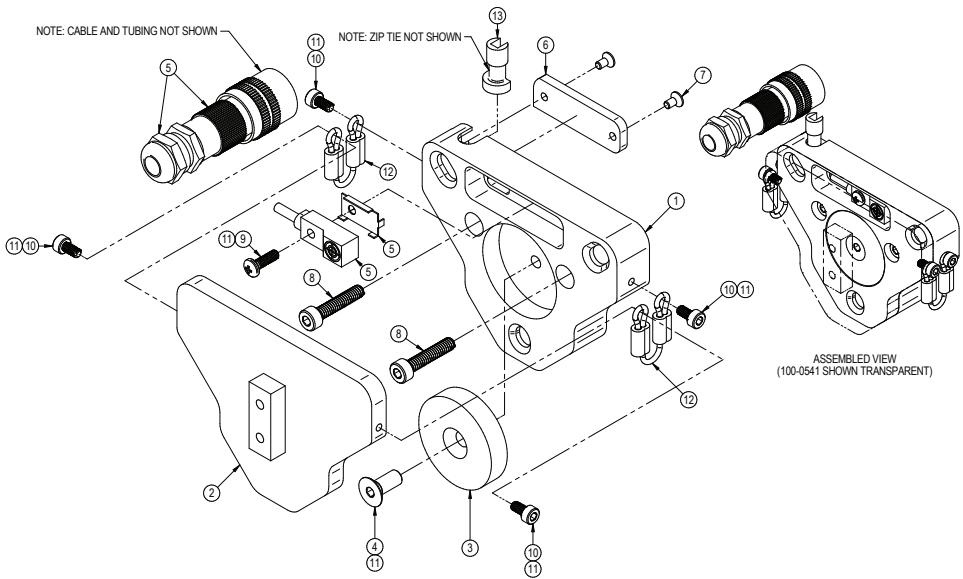
EXPLODED VIEW / PARTS LIST / TORCH HOLDER ASSEMBLY (100-0569)



PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-0563	TORCH HOLDER ROD	1
2	100-0564	HEIGHT SLIDE MOUNTING PLATE	1
3	MET-0958-SS	FLT HD SOC SCR M4 X 18	2
4	100-0559	SLIDE BLOCK ASSEMBLY	1
5	MET-0953-SS	FLT HD SOC SCR M4 X 10	4
6	100-0571	BREAKAWAY ASSEMBLY	1
7	PWS-4486	SPIN ARC TORCH HOLDER BLOCK	1
8	100-0560	KNURLED KNOB W/ M6 EXTERNAL THREAD	2
9	MET-0552-SS	SOC HD CAP SCR M4 x 8, STAINLESS STEEL	2
10*	N/A	LOCTITE® 222MS™ THREADLOCKER, OR SIMILAR	AS REQUIRED

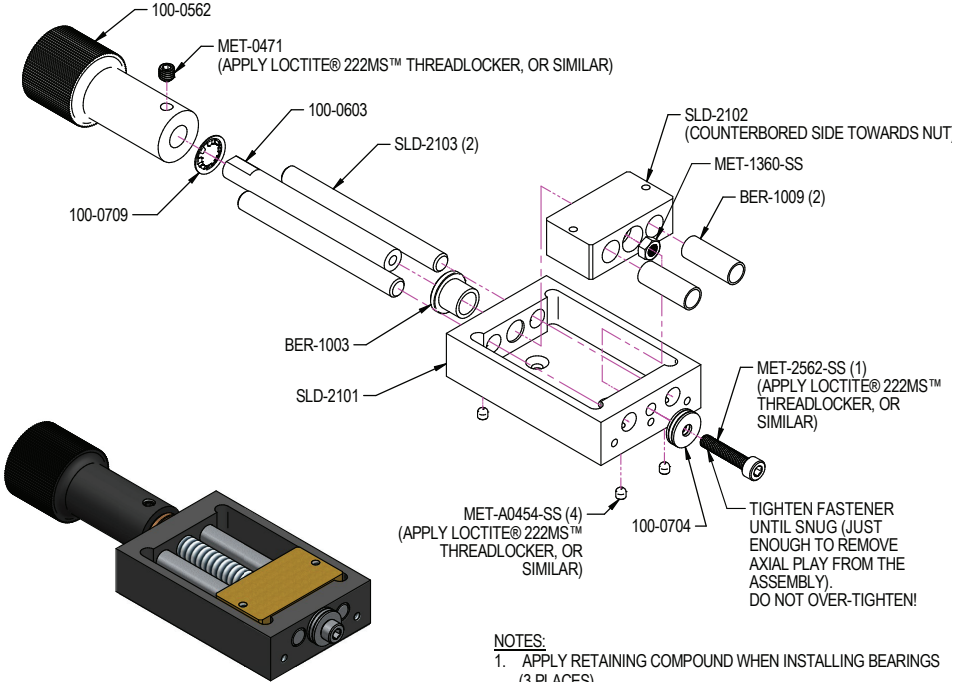
* ITEM NOT SHOWN.

EXPLODED VIEW / PARTS LIST / BREAKAWAY ASSEMBLY (100-0571)



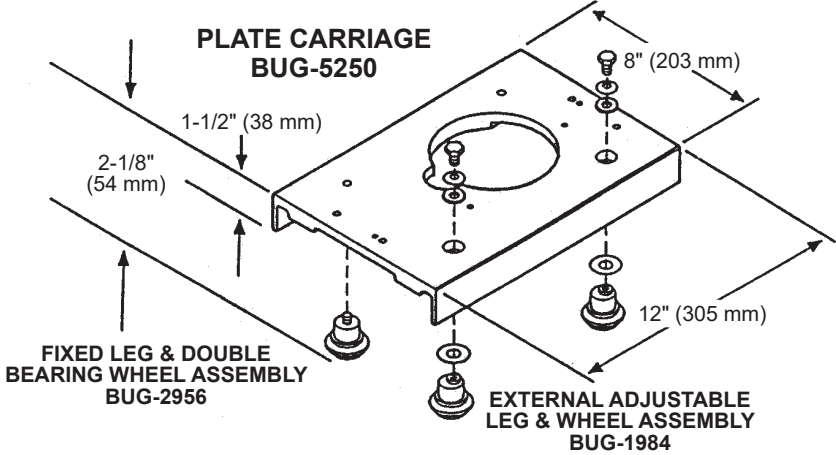
PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-0540	TORCH HOLDER BREAKAWAY ADAPTER	1
2	100-0541	TORCH HOLDER MOUNT PLATE	1
3	100-0565	ROUND MAGNET	1
4	100-0566	FLT HD SOC CAP SCR M5-0.8 X 12mm	1
5	100-0940	PROXIMITY SENSOR ASSEMBLY	1
6	100-0542	TORCH HOLDER BACK COVER	1
7	100-0567	FLT HD SOC CAP SCR M2.5-0.45 X 5mm	2
8	MET-0559-SS	SOC HD CAP SCREW M4 X 20	2
9	MET-0143-SS	PAN HD PHIL M3 x 10	1
10	MET-0541-SS	SOC HD CAP SCR M3 X 6	4
11*	N/A	LOCTITE® 222MS™ THREADLOCKER, OR SIMILAR	AS REQUIRED
12	100-0589	BREAKAWAY CATCH CABLE ASSEMBLY	2
13	100-0606	CORRUGATED LOOM TUBING ADAPTER	1

EXPLODED VIEW / SLIDE BLOCK ASSEMBLY (100-0559)



CARRIAGE FOR DC-IV MAX DRIVE UNITS

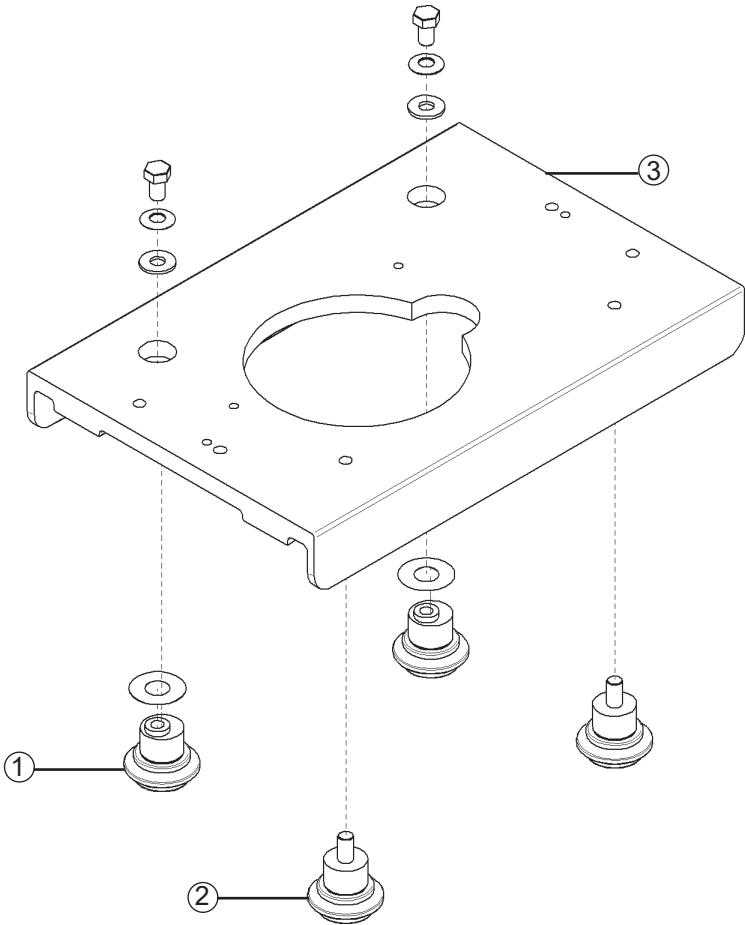
BUG-O SYSTEMS CARRIAGES are made of high-strength, lightweight aluminum alloys. The carriage wheels ride in opposed recessed grooves or ways in the ARR rails, locking the carriage to the rail in all positions. The pinion from the drive unit goes through the carriage and engages the rack on the rail, providing a positive drive. Two of the four wheels on each carriage are adjustable. The wheels contain permanently lubricated, sealed bearings. All steel components are plated to resist corrosion.



Carriage Chart

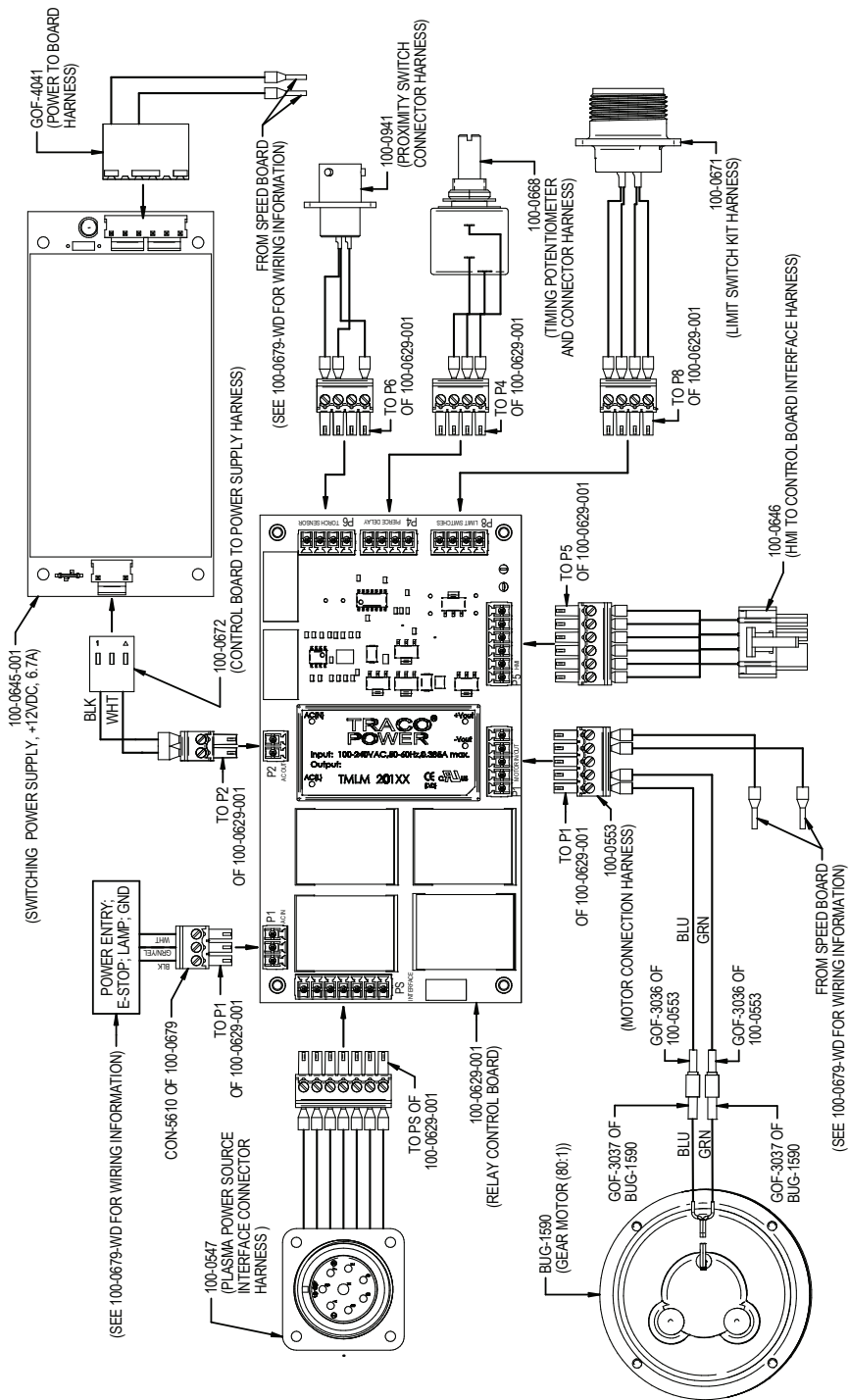
NUMBER	DESCRIPTION	NUMBER OF WHEELS	LOAD CAPACITY		DIMENSIONS H x W x L	
			Lbs	Kg	INCHES	MM
BUG-5250	12" Carriage	4	100	45	2-1/8x8x12	54x203x305

EXPLODED VIEW / PARTS LIST / CARRIAGE (BUG-5250)

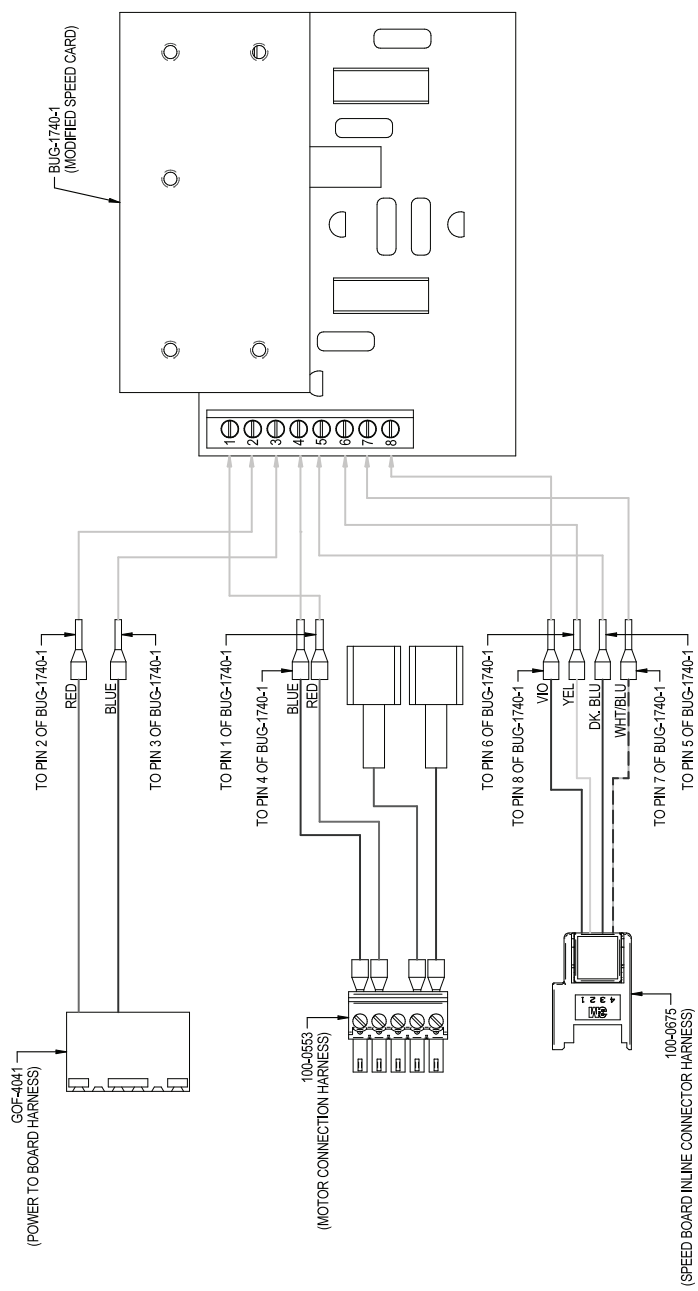


PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	BUG-1984	EXTERNAL ADJUSTABLE LEG & WHEEL ASSEMBLY	2
2	BUG-2956	FIXED LEG & WHEEL ASSEMBLY	2
3	BUG-5249-12	CARRIAGE 12"	1

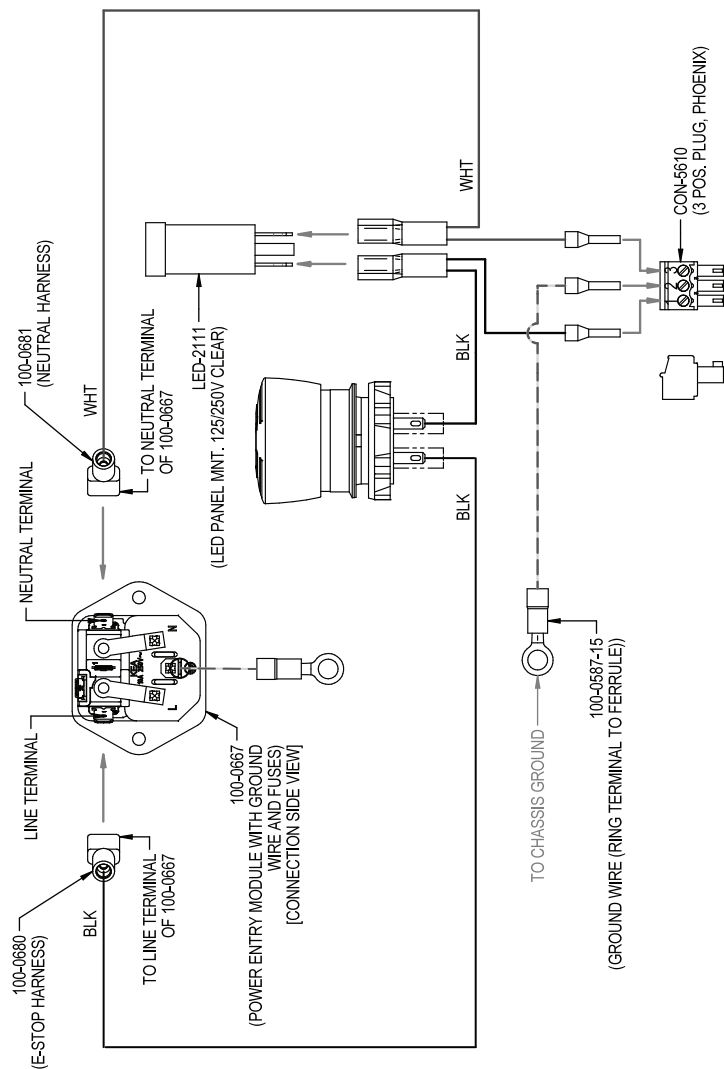
WIRING DIAGRAM / POWER SUPPLY, RELAY BOARD AND MOTOR (100-0692-WD)



WIRING DIAGRAM / SPEED CARD (100-0679-WD-1)

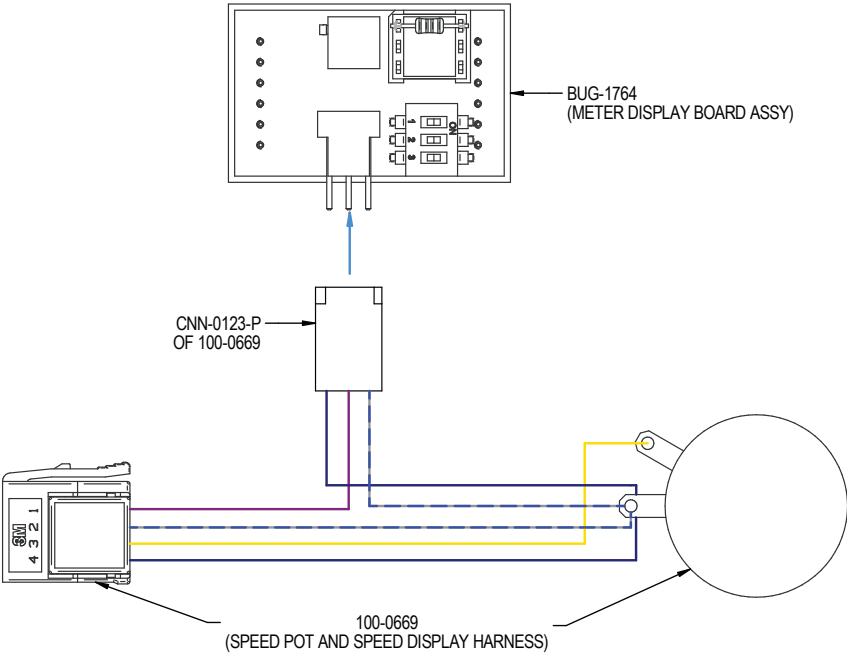


WIRING DIAGRAM / E-STOP AND POWER ENTRY (100-0679-WD-2)

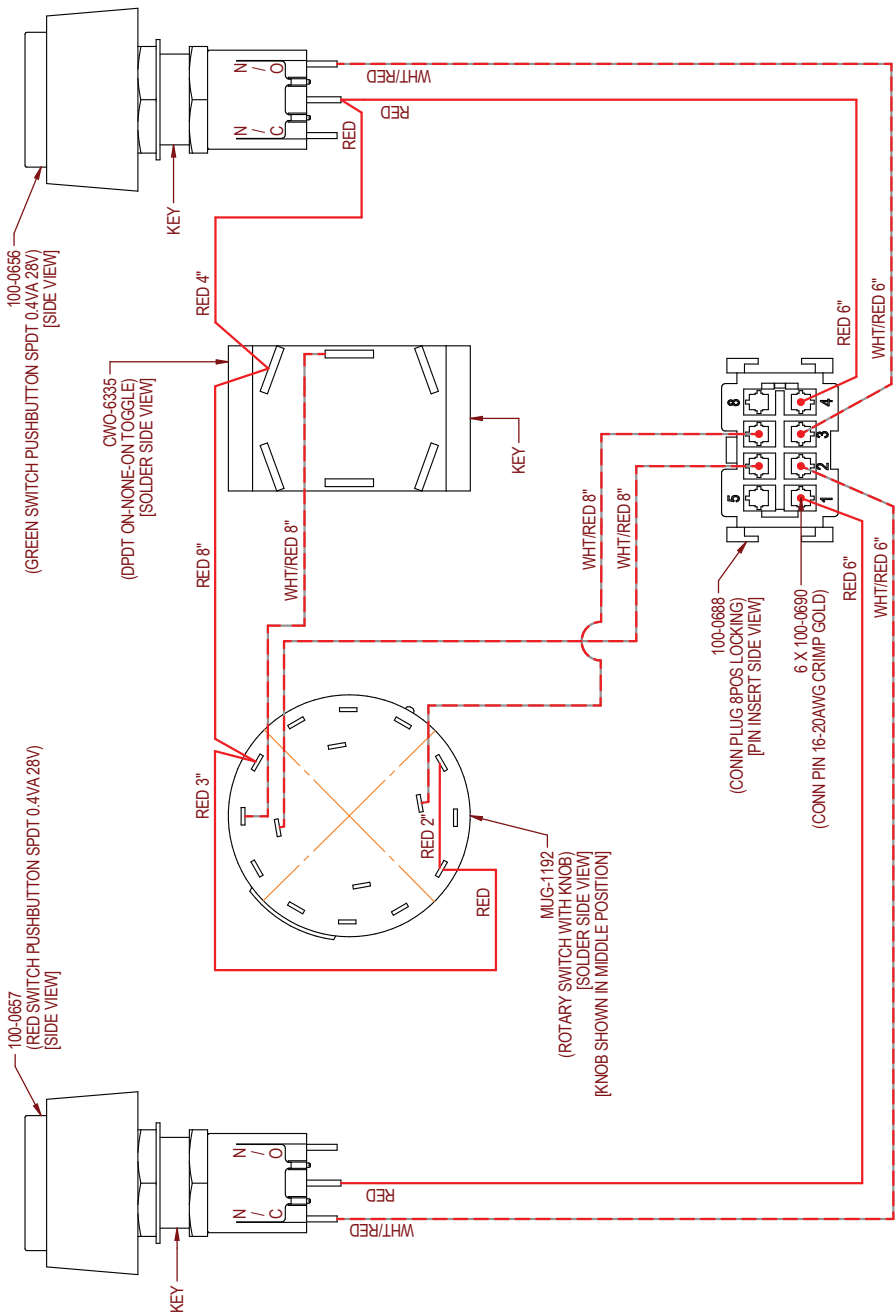


NOTE:
1. ASSEMBLE COMPONENTS INTO THE COVER AS PER 100-0679 DRAWING BEFORE CONNECTING THE WIRE HARNESSES SHOWN ON THIS PAGE.

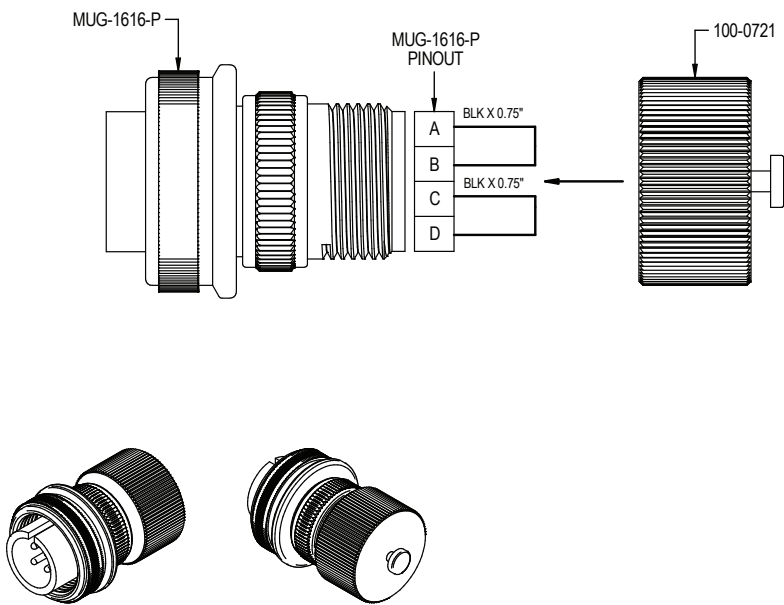
WIRING DIAGRAM / SPEED POT AND SPEED DISPLAY (100-0637-WD)



WIRING DIAGRAM / HMI PANEL HARNESS (100-0670)



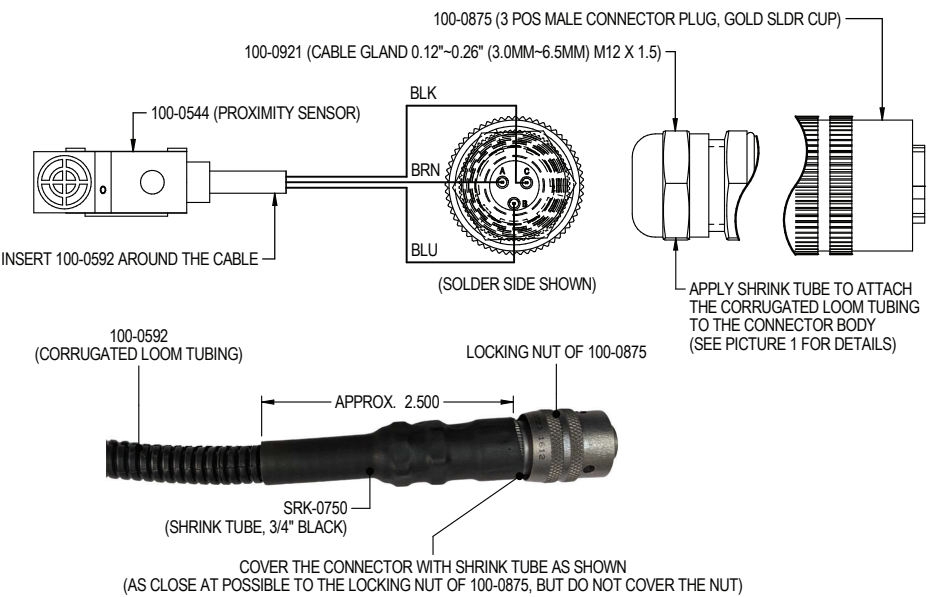
WIRING DIAGRAM / LIMIT KIT PLUG (100-0719)



ASSEMBLED VIEWS

NOTE: REMOVE CHAIN FROM DUST CAP BEFORE INSTALLING.

PROXIMITY SENSOR ASSEMBLY (100-0940)



PICTURE 1

DC-IV MAX PENDANT CONVERSION KIT (100-0695)

Description: The DC-IV MAX PENDANT CONVERSION KIT removes the control panel from the DC-IV bug to a remote hand held pendant. This is a factory or field installed kit. One of the pendant cables from the list below is also required to install this kit.



Controls Removed

- Cut Direction Switch
- Start Button
- Stop Button
- Speed Control
- Jog Direction Switch
- Speed Display

Compatible pendant cable numbers:

- GOF- 4160-10 10ft Pendant Cable
- GOF- 4160-15 15ft Pendant Cable
- GOF- 4160-25 25ft Pendant Cable
- GOF- 4160-30 30ft Pendant Cable

Note: These pendant cables are wired 1:1 except pins S and T which are not connected. Shield is connected to connector case.

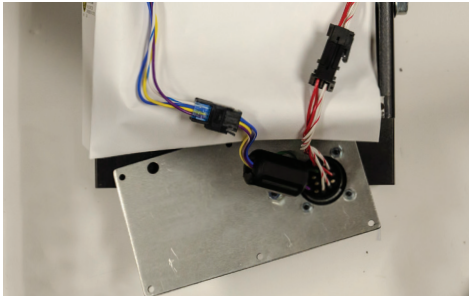
CONVERSION TO PENDANT

①



Remove the six (6) FAS-0114 securing the control panel, 100-0637, to the base machine, 100-0692, as pictured.

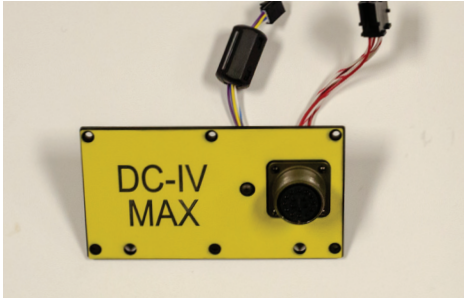
②



Disconnect the two (2) inline connectors attached to the control panel, 100-0637, by releasing the locking mechanism on each connector.

CONVERSION TO PENDANT, CONT'D.

③



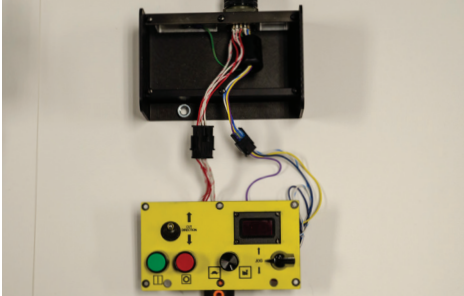
Replace the control panel, 100-0637, with Pendant Connection Plate, 100-0642, shown, by connecting the two inline connectors to the base machine.

④



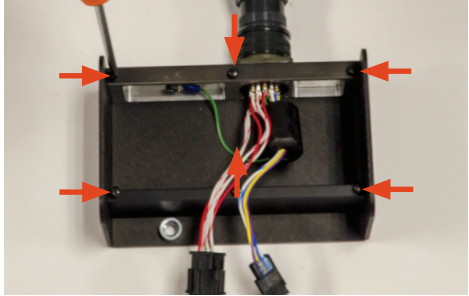
Reinstall the six (6) FAS-0114 removed in step 1., securing the Pendant Connection Plate, 100-0642, to the base machine.

⑤



Connect the two (2) inline connections on the Pendant, 100-0695, to the Control Panel, 100-0637, as shown.

⑥



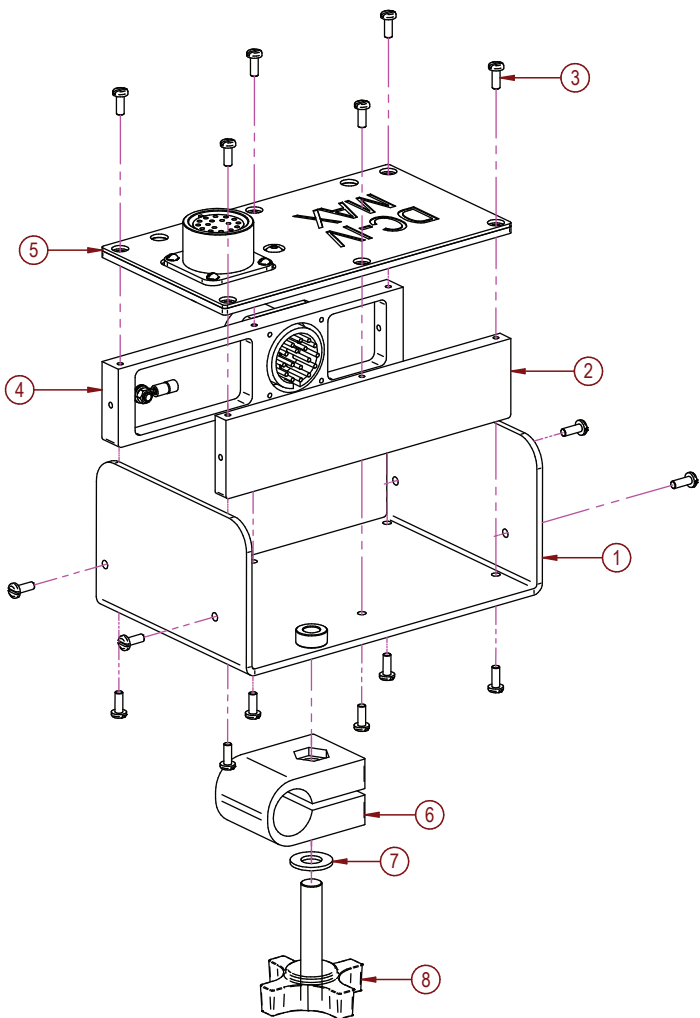
Use the six (6) fasteners, FAS-0114, provided with the Pendant Kit, 100-0695, to secure the control panel, 100-0637, to the Pendant, 100-0695, as shown.

⑦



Install Pendant Cable, GOF-4160-XX, connecting the base machine to the pendant, as shown.

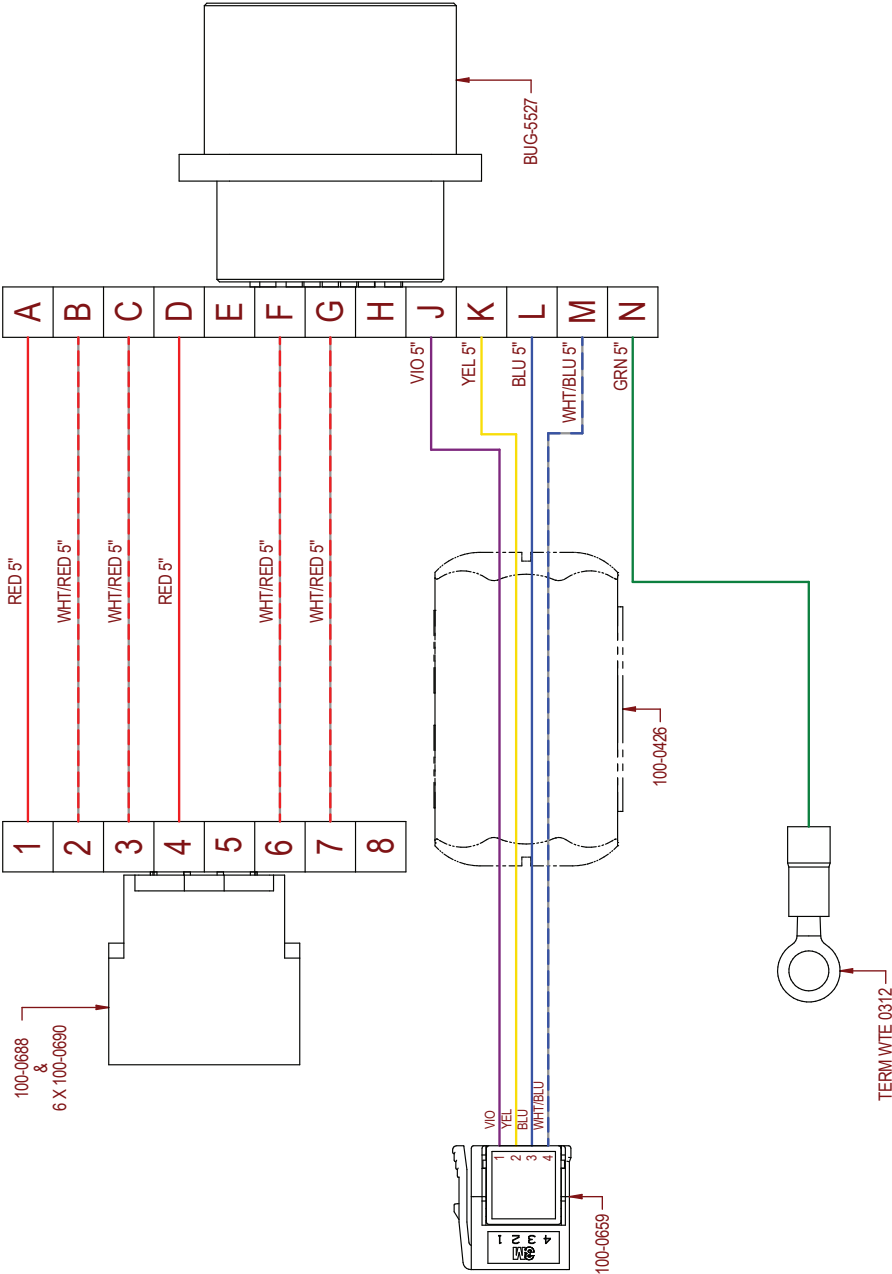
EXPLODED VIEW / PARTS LIST / DC-IV MAX PENDANT ASSEMBLY (100-0695)



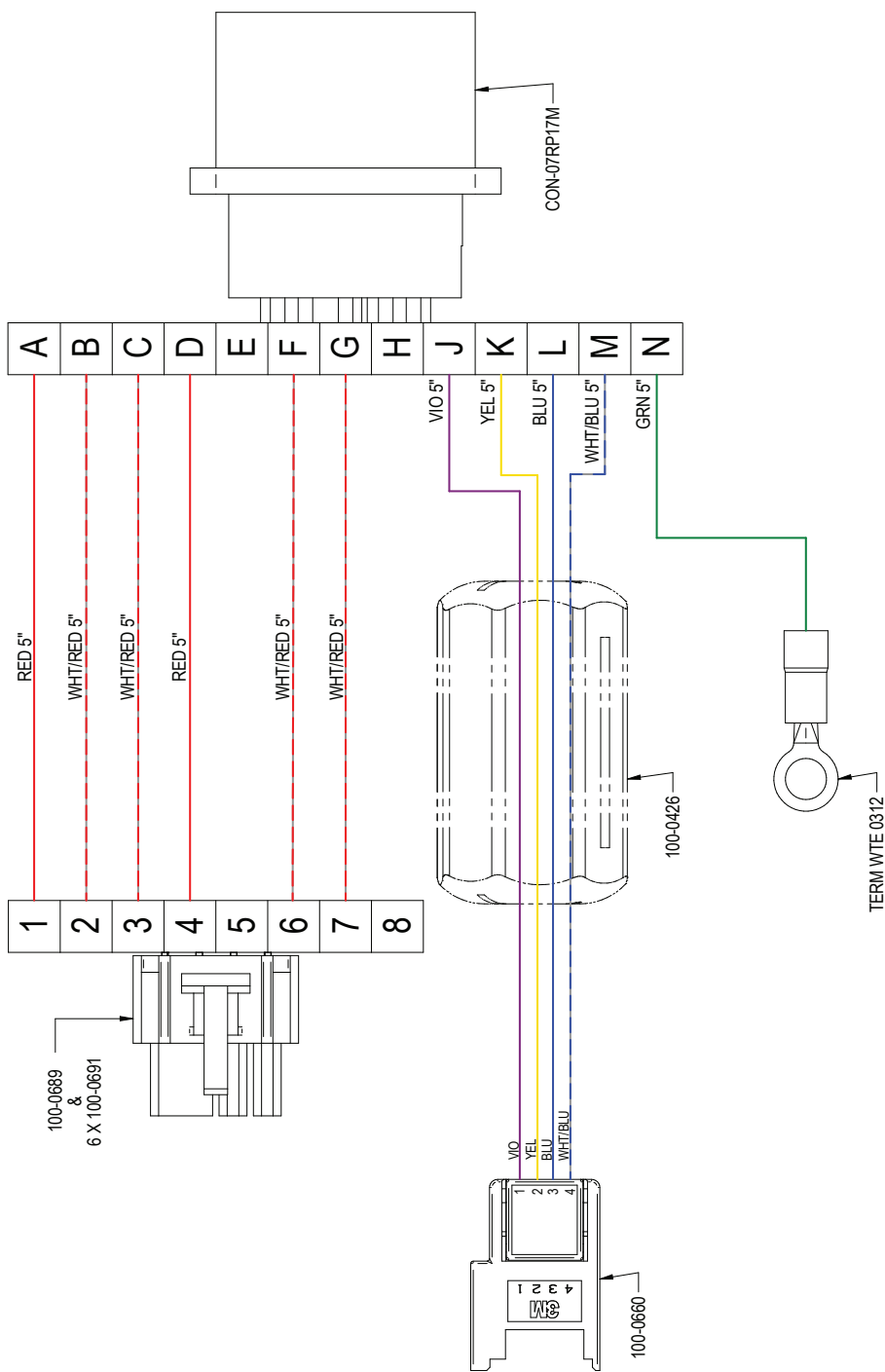
PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-0644	PENDANT REAR PANEL ASSEMBLY	1
2	100-0647	PENDANT FRONT PLATE	1
3	FAS-0114	PAN HD SCR 6-32 X 3/8 BLACK	16
4	100-0696	PENDANT BACK PLATE ASSEMBLY	1
5	100-0642	PENDANT CONNECTION PANEL ASSEMBLY	1
6	PAN-1033	ROD CLAMP	1
7	BUG-2034	TEFLON WASHER 3/40DX3/8IDX1/16	1
8	BUG-2436	KNOB SCREW	1

NOTE: INLINE CONNECTORS, WIRES AND FERRITE BEADS NOT SHOWN.

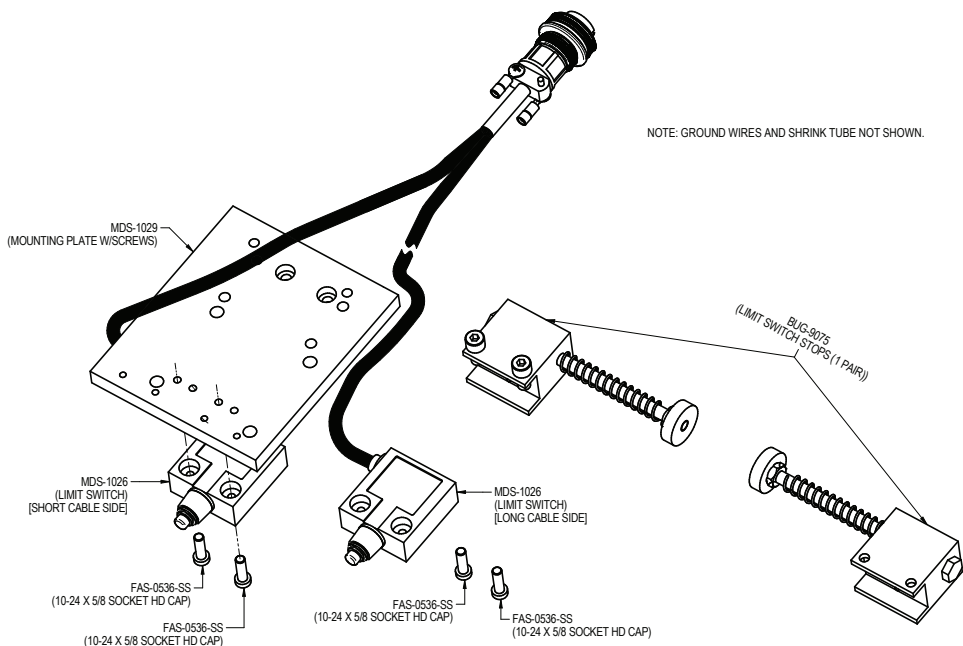
REMOVABLE PENDANT PANEL HARNESS (100-0676)



PENDANT HARNESS (100-0677)



LIMIT SWITCH KIT (100-0697)



Limit Switch Kit:

The Description: The limit switch kit adds limit stops that halt motion and cutting when these limit stops are hit. The stop position is set by where the limit stops are placed on the rail. Properly installed limits will prevent the bug from running off the end of a rail.

When is the limit kit needed: The built in auto stop feature of the DC-IV that stops the machine at the end of the plate without limit switches is power source mode dependent. The bug watches the power source's arc established signal and waits for it to be de-asserted. When the arc established signal is de-asserted, the bug stops. In some modes, the power source does not de-assert the arc established signal at the end of a plate and as such the machine does not auto stop. Modes for arc gouging and cutting mesh are two such examples. The limit kit is not power source mode dependent and works when arc gouging, mesh cutting or oxy fuel cutting.

100-0697 LIMIT SWITCH KIT

Operational note: The machine will not drive out of a limit stop. Pull the limit stop plunger away from the limit switch to allow motion or manually move the machine from the stop using the clutch.

LIMIT SWITCH KIT (100-0697), CONT'D.

Limit Switch Kit Installation:

1. Remove the 100-0719 Limit Kit Plug. See figure 1.

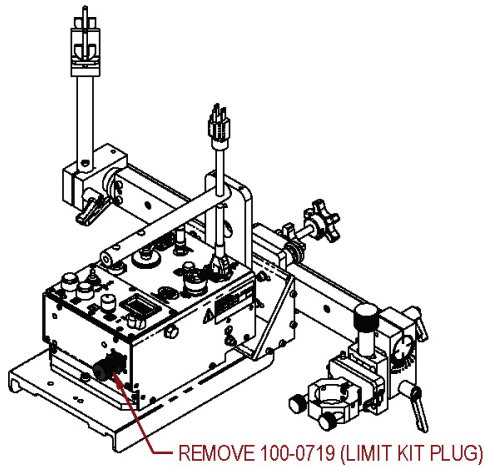


FIGURE 1.

ILLUSTRATION SHOWING THE REMOVAL OF LIMIT KIT PLUG.

2. Install the rear limit switch. See figure 2.
3. Install the limit switch kit connector (MUG-1616) to the back of the machine as shown in figure 2.

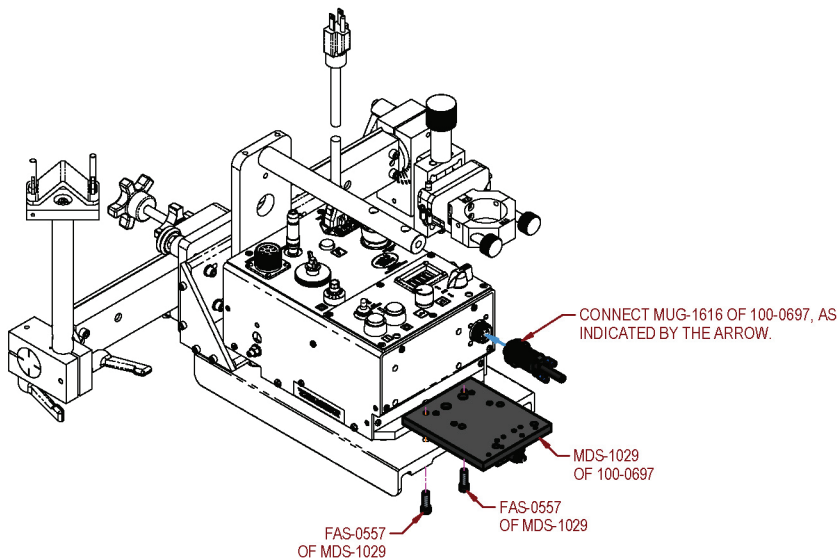


FIGURE 2.

ILLUSTRATION SHOWING INSTALLATION OF CONNECTOR REAR LIMIT SWITCH.

LIMIT SWITCH KIT (100-0697), CONT'D.

4. Install the front limit switch. See figure 3.

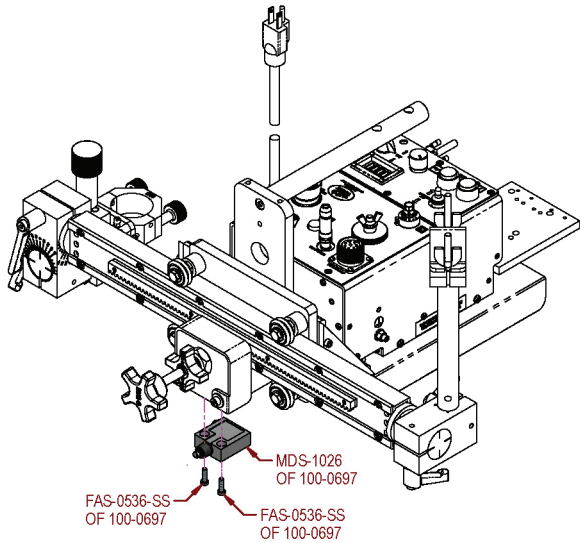
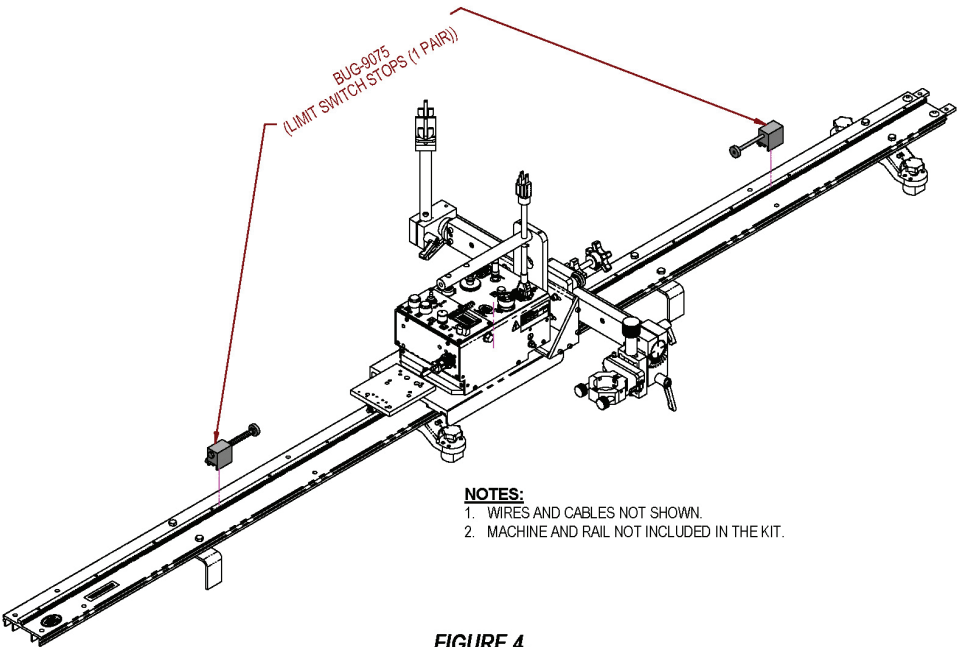


FIGURE 3.

ILLUSTRATION SHOWING INSTALLATION OF FRONT LIMIT SWITCH

5. Install the machine on the rail.
6. Install the limit switch stops in the desired location on the rack. See figure 4.



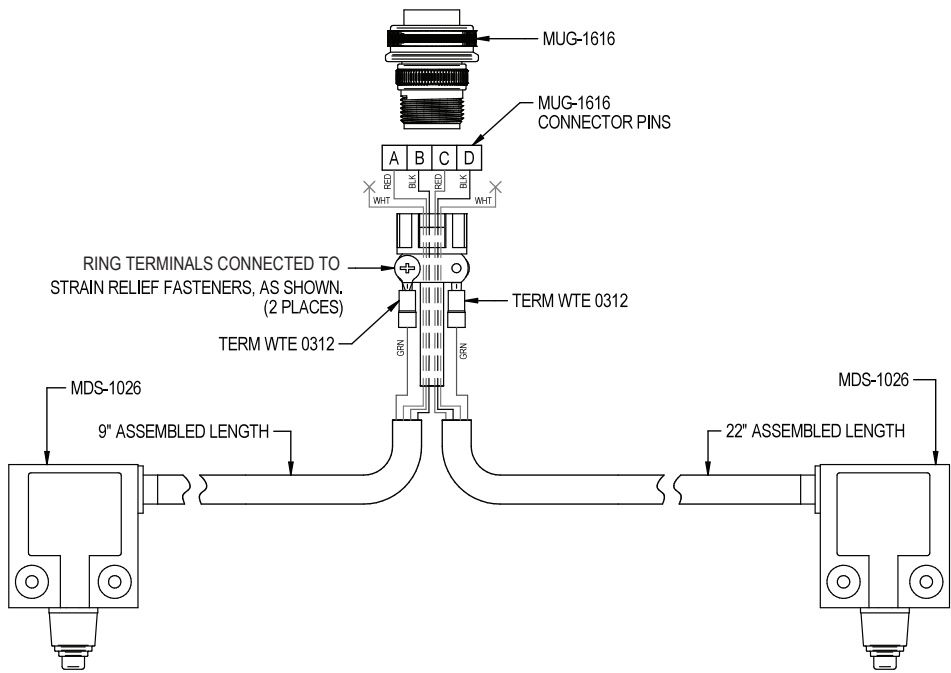
NOTES:

- 1. WIRES AND CABLES NOT SHOWN.
- 2. MACHINE AND RAIL NOT INCLUDED IN THE KIT.

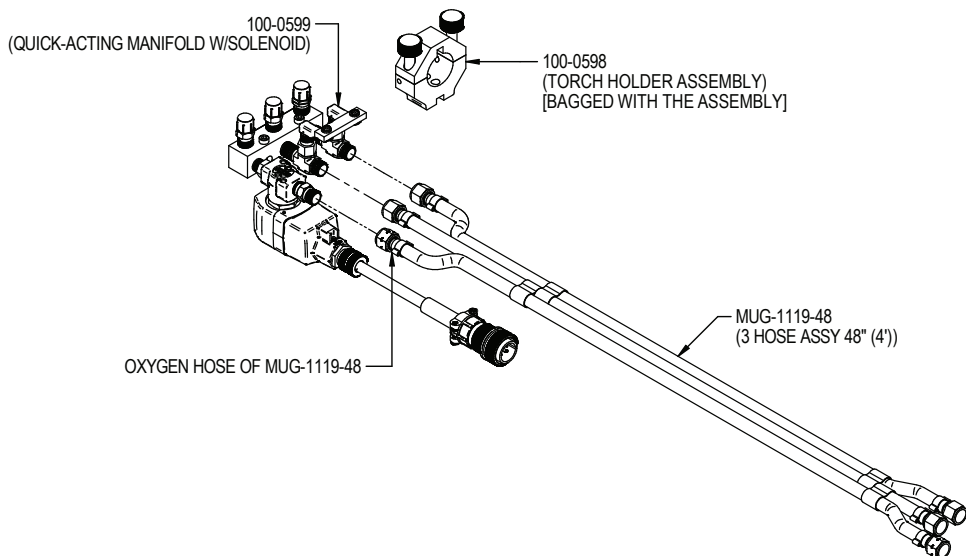
FIGURE 4.

ILLUSTRATION SHOWING LIMIT SWITCH STOPS INSTALLATION.

LIMIT SWITCH KIT (100-0697-WD)



OXY FUEL KIT, DUAL VOLTAGE SOLENOID (100-0699)



Description: The oxy-fuel kit provides a single on/off manual control for preheat gas valves. The cutting gas solenoid is controlled by the DC-IV MAX.

Additional Required parts:

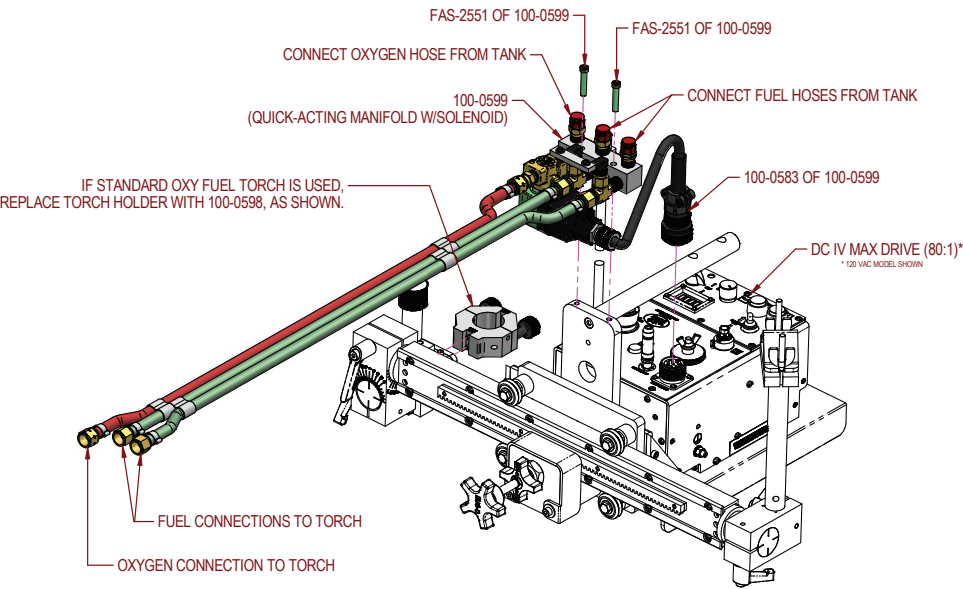
- 3 hose cutting torch
- 3 hose assembly for gasses from the gas bottles/regulators to the manifold block
- Flashback arrestors
- Torch holder to fit the gun if the torch does not fit the standard 1.39 inch diameter holder(100-0598) that comes with this kit or the 1.75 inch diameter torch holder(PWS-4486) that comes with the DC-IV MAX.
- If auto stop at end of cut is desired, the limit kit will also be required. Since there is no power source, the feedback for the machine to stop is not there. A limit kit can be used to provide the feedback needed.

Included Torch holder part number:

100-0598 Torch holder Assembly. For 1.39" diameter machine torches with or without a rack.

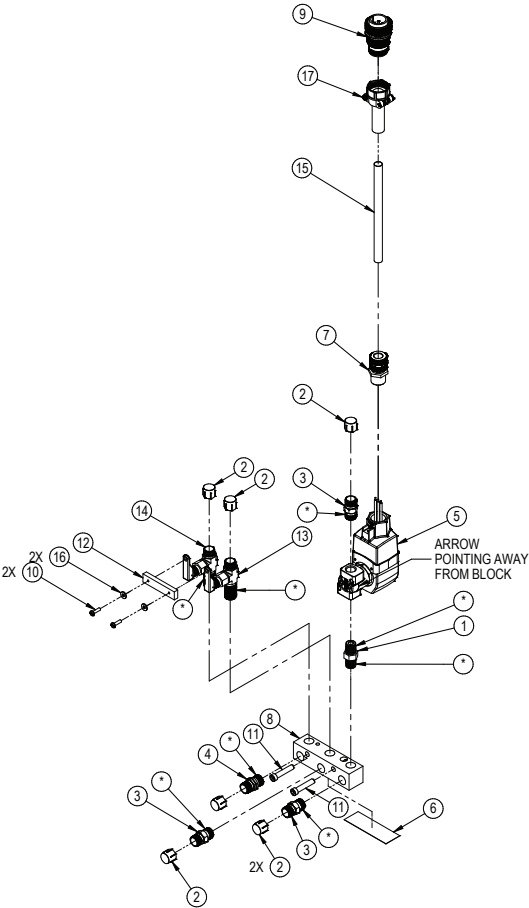
Notes: This solenoid in this kit works on 120 or 240VAC machines.

OXY FUEL KIT, DUAL VOLTAGE SOLENOID (100-0699), CONT'D.



NOTE: FOR THE LIST OF ITEMS INCLUDED IN THE OXY FUEL KIT, PLEASE CONSULT 100-0699 DRAWING.

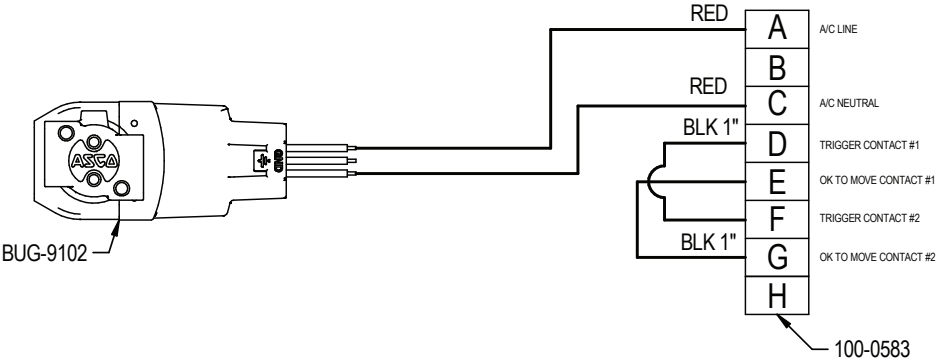
EXPLODED VIEW / PARTS LIST / QUICK-ACTING MANIFOLD W/SOLENOID (100-0599)



PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	ARV-1125	1/4 NPT CLOSE NIPPLE BRASS	1
2	BUG-2062	MALE THREAD PROTECTOR	6
3	BUG-9096	OUTLET BUSHING, OXYGEN	3
4	BUG-9097	OUTLET BUSHING, FUEL GAS	1
5	BUG-9102	MAGNETIC VALVE 120V (GEN CONT)	1
6	BUG-9109	MAXIMUM PRESSURE LABEL	1
7	BUG-9217-P	CORD GRIP	1
8	BUG-9897	BLOCK (3 HOSE)	1
9	100-0583	CABLE PLUG 8-PIN	1
10	FAS-0115	6-32 X 1/2 PAN HEAD, ZINC	2
11	FAS-2551	SOC HD CAP SCR 1/4-20 X 1-1/4	2
12	GOF-3028	BAR	1
13	GOF-3032	TOGGLE VALVE, RIGHT HAND	1
14	GOF-3033	TOGGLE VALVE, LEFT HAND	1
15	MUG-1582	#4 BLACK FIBERGLASS SLEEVING	1
16	WAS-0210	#6 SAE FLAT	2
17	CSR-3057-10A	CORD STRAIN RELIEF, SIZE 18	1
18**	CIR-1012	HOSE NUT, OXYGEN	2
19**	CIR-1013	1/4" HOSE NIPPLE	3
20**	CIR-1014	HOSE NUT, FUEL GAS	1

**NOT SHOWN
CIR-1012, CIR-1013 AND CIR-1014 BAGGED WITH ASSEMBLY

WIRING DIAGRAM / QUICK-ACTING MANIFOLD W/SOLENOID (100-0599-WD)



BUG-O SYSTEMS INTERNATIONAL

EU DECLARATION OF CONFORMITY

Manufacturer and technical
Documentation Holder:

Bug-O Systems International
a Division of Weld Tooling Corporation
280 Technology Drive
Canonsburg, PA 15317-9564

Hereby declare that machinery: **DC-IV MAX**, including options and accessories

Sales codes: **100-0701** and **100-0600** kits that are all built upon
100-0701
(sales code may also contain prefixes and suffixes)

Is in conformity with Council Directives and amendments:

- 2006/42/EC – Machinery Directive.
- 2014/35/EU – Electromagnetic Compatibility (EMC) Directive
- 2011/65/EU – Restriction of the use of certain hazardous substances (RoHS)

Standards:

- EN 12100:2010 – Safety of Machinery – General principles for design – Risk assessment and risk reduction.
- EN 60204-1:2016 Safety of machinery – Electrical equipment of machines Part 1: General Requirements.
- EN 61000-6-2 Electromagnetic compatibility (EMC) – Part 6-2 Generic standards – Immunity for industrial environments.
- EN 61000-6-4 Electromagnetic compatibility (EMC) – Part 6-4 Generic standards – Emissions for industrial environments.
- EN 50581:2012 Technical documentation for the assessment of electrical and electronic products with respect to restriction of hazardous substances.

The machinery, product, assembly or sub-assembly covered by this Declaration of Conformity must not be put into service until the machinery into which it is to be incorporated (if applicable) is declared in conformity with provisions of the applicable directives(s).

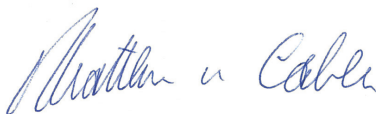
Authorized representative for the compilation of the relevant technical documentation and issuer of EC Declaration of Conformity:

Date of Issue: April 14, 2021

Place of issue: 280 Technology Drive, Canonsburg, PA 15317, USA

Typed Name of Authorized Person: MATTHEW W. CABLE - PRESIDENT

Signature of Authorized Person:



WARRANTY

LIMITED 3-YEAR WARRANTY

MODEL _____
SERIAL NO. _____
DATE PURCHASED: _____
WHERE PURCHASED: _____

For a period ending one (1) year from the date of invoice, Manufacturer warrants that any new machine or part is free from defects in materials and workmanship and Manufacturer agrees to repair or replace at its option, any defective part or machine. HOWEVER, if the invoiced customer registers the Product Warranty by returning the Warranty Registration Card supplied with the product within 90 days of the invoice date, or by registering on-line at www.bugo.com, Manufacturer will extend the warranty period an additional two (2) years which will provide three (3) total years from the date of original invoice to customer. This warranty does not apply to machines which, after Manufacturer's inspection are determined by Manufacturer to have been damaged due to neglect, abuse, overloading, accident or improper usage. All shipping and handling charges will be paid by the customer.

The foregoing express warranty is exclusive and Manufacturer makes no representation or warranty (either express or implied) other than as set forth expressly in the preceding sentence. Specifically, Manufacturer makes no express or implied warranty of merchantability or fitness for any particular purpose with respect to any goods. Manufacturer shall not be subject to any other obligations or liabilities whatsoever with respect to machines or parts furnished by Manufacturer.

Manufacturer shall not in any event be liable to Distributor or any customer for any loss of profits, incidental or consequential damages or special damages of any kind. Distributor's or customer's sole and exclusive remedy against Manufacturer for any breach of warranty, negligence, strict liability or any other claim relating to goods delivered pursuant hereto shall be for repair or replacement (at Manufacturer's option) of the machines or parts affected by such breach.

Distributor's Warranty:

In no event shall Manufacturer be liable to Distributor or to any customer thereof for any warranties, representations or promises, express or implied, extended by Distributor without the advance written consent of Manufacturer, including but not limited to any and all warranties of merchantability or fitness for a particular purpose and all warranties, representations or promises which exceed or are different from the express limited warranty set forth above. Distributor agrees to indemnify and hold Manufacturer harmless from any claim by a customer based upon any express or implied warranty by Distributor which exceeds or differs from Manufacturer's express limited warranty set forth above.

HOW TO OBTAIN SERVICE:

IF YOU THINK THIS MACHINE IS NOT OPERATING PROPERLY, RE-READ THE INSTRUCTION MANUAL CAREFULLY, THEN CALL YOUR AUTHORIZED BUG-O DEALER/DISTRIBUTOR. IF THEY CANNOT GIVE YOU THE NECESSARY SERVICE, WRITE OR PHONE US TO TELL US EXACTLY WHAT DIFFICULTY YOU HAVE EXPERIENCED. BE SURE TO MENTION THE MODEL AND SERIAL NUMBERS.