

INSTRUCTIONS AND PARTS MANUAL

STAND ALONE PENDULUM WEAVER

K-BUG 5050

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-KBUG-5050-IPM-0115

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



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

A DIVISION OF WELD TOOLING CORPORATION



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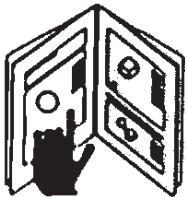
SAFETY

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 equipment when wet or standing in a wet location.
- 2) The unused connectors have power on them. Always keep the unused connectors covered with the supplied protective panels. Operation of the machine without the protective panels may result in injury.
- 3) Never open the equipment without first unplugging the power cord or serious injury may result.
- 4) 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.
- 5) 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 Electric 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) Always verify both the pinion and wheels are fully engaged before applying power or equipment damage may occur.
- 3) Do not leave the equipment unattended.
- 4) Remove from the work site 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.

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.

STAND ALONE PENDULUM WEAVER K-BUG 5050

INSTRUCTIONS AND PARTS MANUAL

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INTRODUCTION

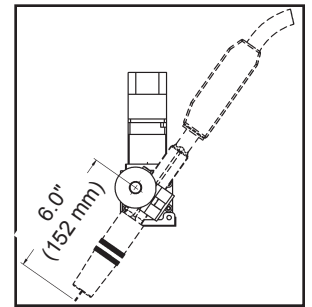
The KBUG Stand Alone Pendulum Weaver is a compact unit designed for use with a torch support and positioner fixture or retrofit to a carriage. Ideal for fillet or butt joints with flat or curved profiles. Motion parameters, including weave speed, weave width, and dwell times are digitally controlled by the remote pendant control. The pendant also offers center steering and interfaces with the welding power source to control the weld contact.

FEATURES

- Compact, lightweight, highly portable
- Remote Control Pendant
- Digital displays for weave speed, weave width, and dwell times,
- Independent left, right dwell times
- All weaving starts and ends in center position

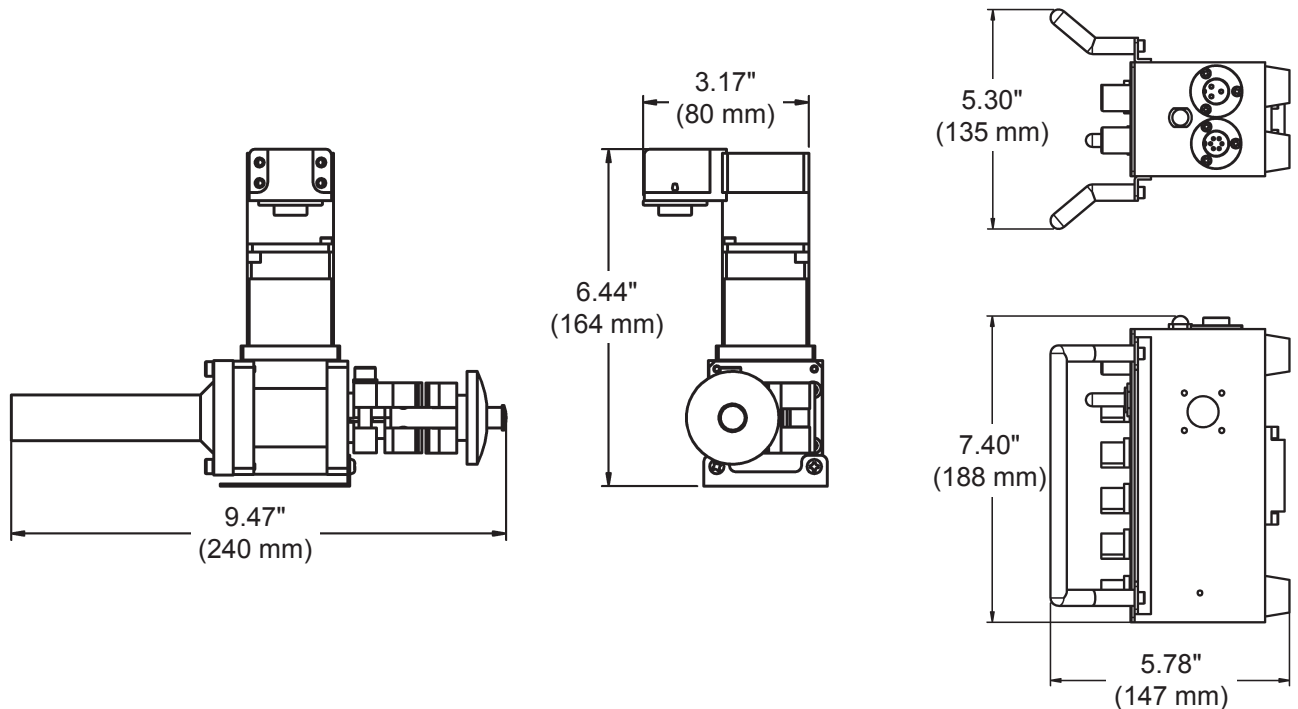
TECHNICAL DATA

Power Input	
K-BUG 5050	120 VAC / 50-60 Hz / 1 Ph
K-BUG 5052	240 VAC / 50-60 Hz / 1 Ph
Weight	17 lb (7.7 kg)
Drive Motor	24 VDC, 12 W, 5000 RPM
Torch Angle	adjustable
Running Angle	90° +/- 3°
Weave Speed*	to 247 in/min (to 6274 mm/min)
Weave Width*	to 1.05 in (to 26.7 mm)
Center Move	45° ± 10°
Dwell Time	0 - 9.9 sec.



* When Torch Pivot-to-Tip distance is 6.0 in (152 mm). Increasing Pivot-to-Tip distance will increase maximum weave speed and increase maximum weave width.

DIMENSIONS



SETUP

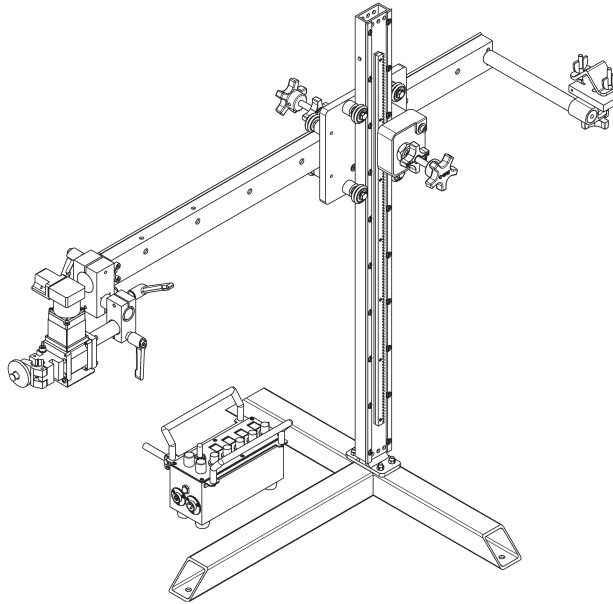
Cables and Connections

K-BUG 5050 is supplied with two cable assemblies -- a power cable and a weave or motor control cable. It is also supplied with a cable connector with which the customer is to fabricate a weld contact interface cable with the welding power source.

- The power cable connects at the 3-pin panel connector.
- The weave or motor control cable connects at the 5-pin panel connector.
- The weld contact cable connects at the 2-pin panel connector on the side of the pendant control.

Mounting to a Torch Support

The K-BUG 5050 can be mounted onto a torch support to be used with a positioner. In the figure below, it is shown mounted on a BUG-O FTS-1020 Torch Support. To do this, remove the Swivel Connector (CON-1020) and Torch Holder (BUG-2708) from the torch support. Then mount the Right Angle Clamp (BUG-5462) of the weaver onto the 7/8" post (BUG-9180-4).



Mounting to a Carriage

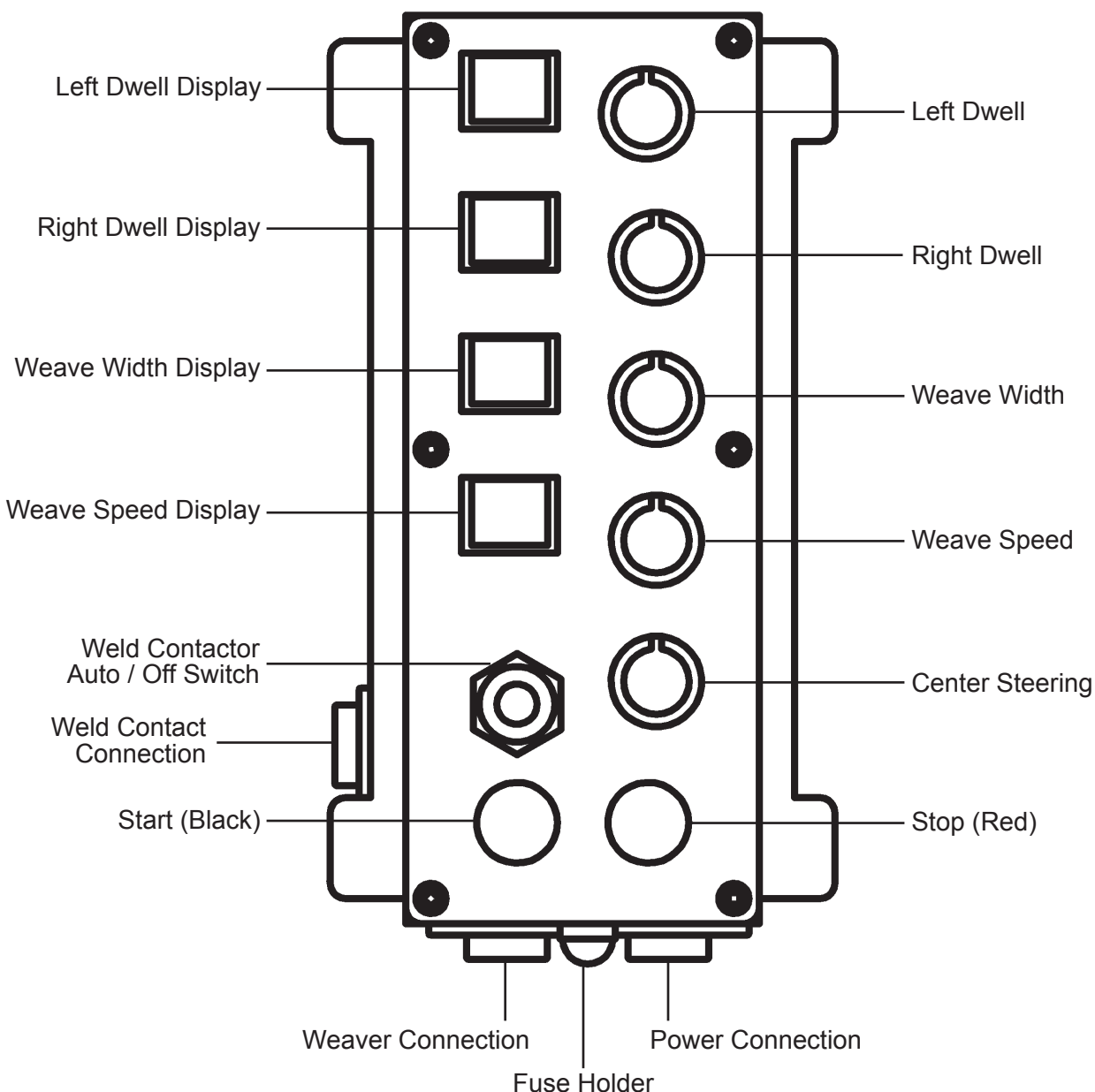
The K-BUG 5050 can also be retrofitted to a carriage. Additional parts, KBUG-5089 and KBUG-5088, to provide X-Y racking are required to achieve this.

Mounting to a Fixture

The K-BUG 5050 can be permanently mounted to any customer designed fixture or work cell.

USER INTERFACE - REMOTE CONTROL PENDANT

The Stand Alone Pendulum Weaver includes a wired pendant that is used to control the weave parameters.



The Control Pendant includes four digital displays. In addition to displaying real-time values during welding, the displays are used when presetting parameters (as described on page 8).

DISPLAY INITIAL VALUES				
Display	Description	Range	Value	Unit
A	Left Dwell	0.0 - 9.9	3	sec
B	Right Dwell	0.0 - 9.9	3	sec
C	Weaving Width	0 - 99	30	%
D	Weaving Speed	0 - 99	30	%

Note: The values shown above represent factory settings only. After first use, the machine will store and recall last known values as input by the operator.

PARAMETER SETTINGS

Advanced parameters, like Puddle Build-up and Crater Fill are maintained in a hidden menu. The user must access this Parameters Menu to view and change these settings.

1. While holding down the Start button, plug the machine into an A/C power source of appropriate voltage.
2. The active parameter (i.e. "n.0") will be displayed in the Left Dwell display. The current setting for the active parameter (i.e. "1.0") will be displayed in the Right Dwell Speed display.
3. To adjust the parameter setting, turn the Left Dwell knob. Turning clockwise will increase the value; counterclockwise will decrease the value.
4. Press and release the Start button to scroll through the parameters.
5. When finished setting (all) values, press the Stop button and unplug the machine.

Display	Description	Range	Default	Unit
n.0	Puddle Build-up	0.0 - 9.9	1	sec
n.1	Crater Fill	0.0 - 9.9	1	sec
n.2	Weaving center	10 - 99	99	% (of Max speed)
n.3	Weaving Angle (Width)	0 - 90	5	
n.4	Number of Min.	6 - 60	6	Pulse
n.5	Weaving Reduction Gear Ratio	20 - 200	1000	x10
n.6	Demonstration Mode	On / Off	Off	

INSTALLATION AND OPERATION

1. Welding Preparation - Secure the necessary welding supplies
 - Welding Power Source and Wire Feeder
 - Shielding Gas, with pressure and flow regulators and appropriate fittings
 - Torch for gas shielded automated welding
 - Basic Weld Prep Tools
2. Welding Process
 - Connect the control pendant to an A/C power source of appropriate voltage.
 - Mount weaver to torch support or carriage.
 - Insert torch and position torch for desired lead/lag angle to match the weld joint and so weld torch is at desired weld starting point.
 - Set desired weave parameters - Weave Width, Weave Speed and Dwell times.
 - Verify adequate Shielding Gas Supply, if required.
 - Start Welding - Switch Weld Contact switch to AUTO and press Start button.
 - Press Stop button when welding is complete. Turn Weld Contact switch to OFF.
 - Confirm Welding End.

MAINTENANCE

The weaver unit should be periodically checked and cleaned to maximize service life.

Before use:

Check all screws in the torch clamp. Tighten as needed. Loose fasteners may cause inconsistent weld quality.

During use:

Monitor motor and welding torch for abnormal noise or overheating.

After each use:

1. Clean control panel to remove dust and other debris.
2. Inspect slide adjustment and torch for weld spatter or other debris. Clean as needed.
3. Inspect power cable and torch cable for cracked, cut or damaged insulation. Replace as needed.
4. Inspect connectors for damaged pins or loose connections. Replace as needed.

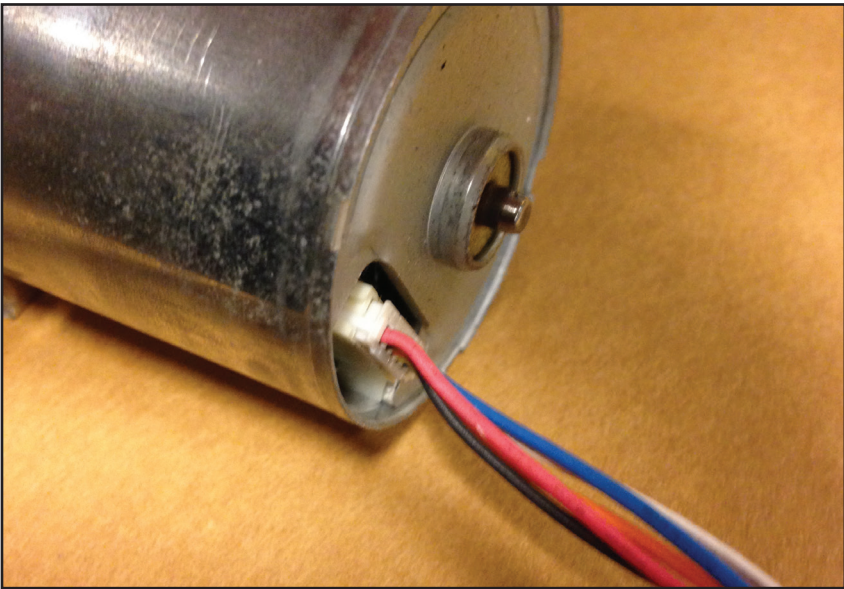
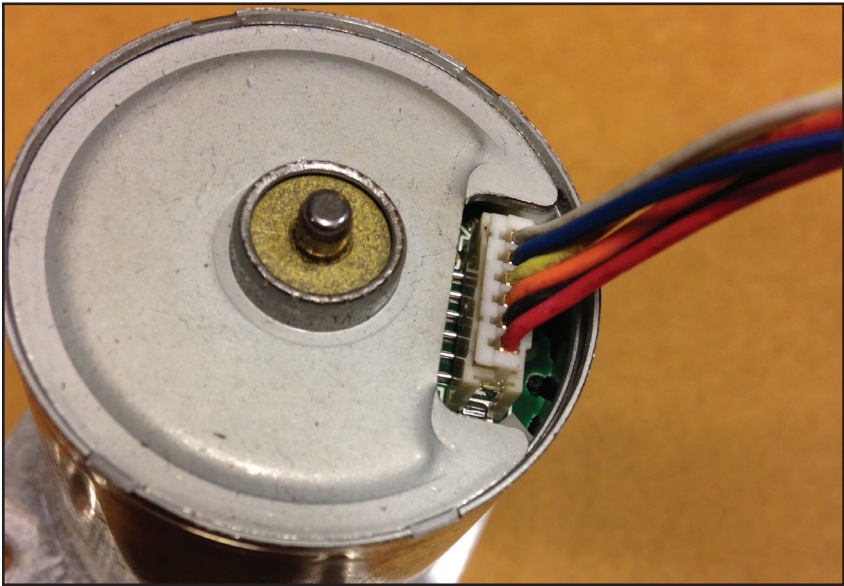
TROUBLESHOOTING

Symptom	Cause	Repair
Control Pendant Display is not LIT	Disconnected Power Cable	Verify power cable is properly connected to machine.
	Faulty Power Cable	Replace cable.
	Control Pendant Fuse Tripped or Disconnected	Replace fuse. If problem persists, contact service rep.
No Arc when Start button is pressed	Weld Contact switch set to OFF	Turn Weld Contact switch to AUTO.
	Loose contact of Welding Leads	Check ground connections. Verify good contact on clean, unpainted surface.
	Bad or incorrectly wired Weld Contact switch	Check Wiring. Replace switch, if needed.
	Weld Contact Cable is bad or improperly connected	Verify cable is correctly connected. Replace cable if bad.
	Weld Power Source turned OFF	Turn ON Weld Power Source
Torch targets wrong position	Loose fastener on Torch Clamp	Check and tighten screws, replace if needed.
Arc continues after Stop button is pressed	Crater Fill timer has not timed out.	Check timer settings and adjust if needed.
	Faulty or incorrectly wired Stop button	Check Wiring. Repair as needed.

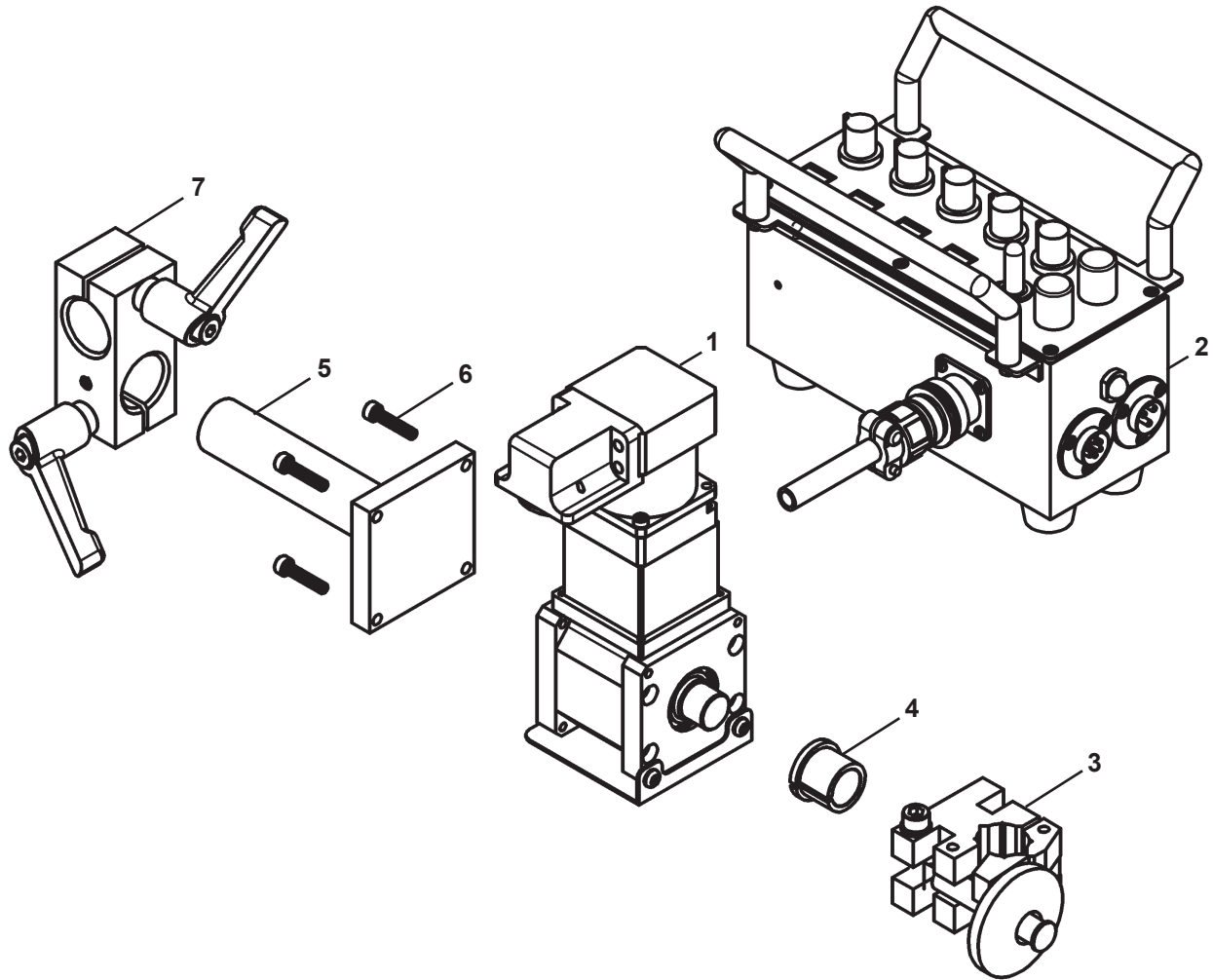
TROUBLESHOOTING, CONT'D.

K-BUG ERROR LIST

NO.	SYMPTOM	CAUSE	SOLUTION
E-03	Motion Stop	Main PCB EET ROM Error	Main PCB Replacement
E-05	Travelling Stop	Auto-Stop Travelling Motor may be overloaded / shorted	Push and release Stop Button IF UNRESOLVED: 1. Check for loose wiring connection at drive motor and weave motor if equipped (see below). 2. Replace motor or motor reducer 3. Replace main PCB



K-BUG 5050 STAND ALONE PENDULUM WEAVER / EXPLODED VIEW / PARTS LIST

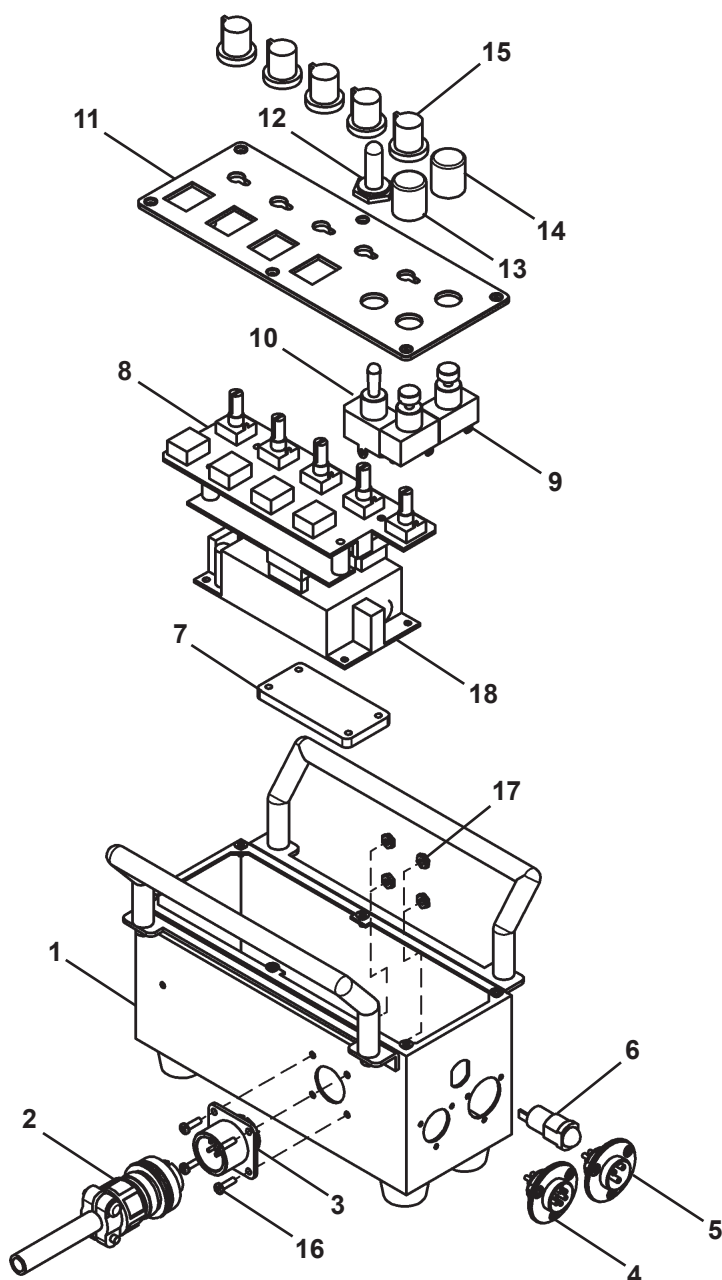


<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	KBUG-3070	Weave Motor Assembly
2	1	KBUG-6085	Control Pendant with Weld Contact
3	1	KBUG-3120	Torch Clamp Assembly
4	1	KBUG-3076	Bushing
5	1	KBUG-5055	Stand Alone Weaver Mount
6	4	MET-0559-SS	Screw, Soc Hd Cap, M4 x 20 (Included with Item 5)
7	1	BUG-5462	Right Angle Clamp
*	2	KBUG-1131	Fuse
*	1	KBUG-1174	Power Connector, 3 Pin
*	1	KBUG-1175	Weave Connector, 5 Pin
*	1	KBUG-2274-15**	Power Cable, 120V, 15 ft (4.6 m)
*	1	KBUG-2275-8	Weaver Cable Assembly, 5-T, 8 ft (2.4 m)
*	1	KBUG-1003	Hex Key Set, Metric

* Not Shown

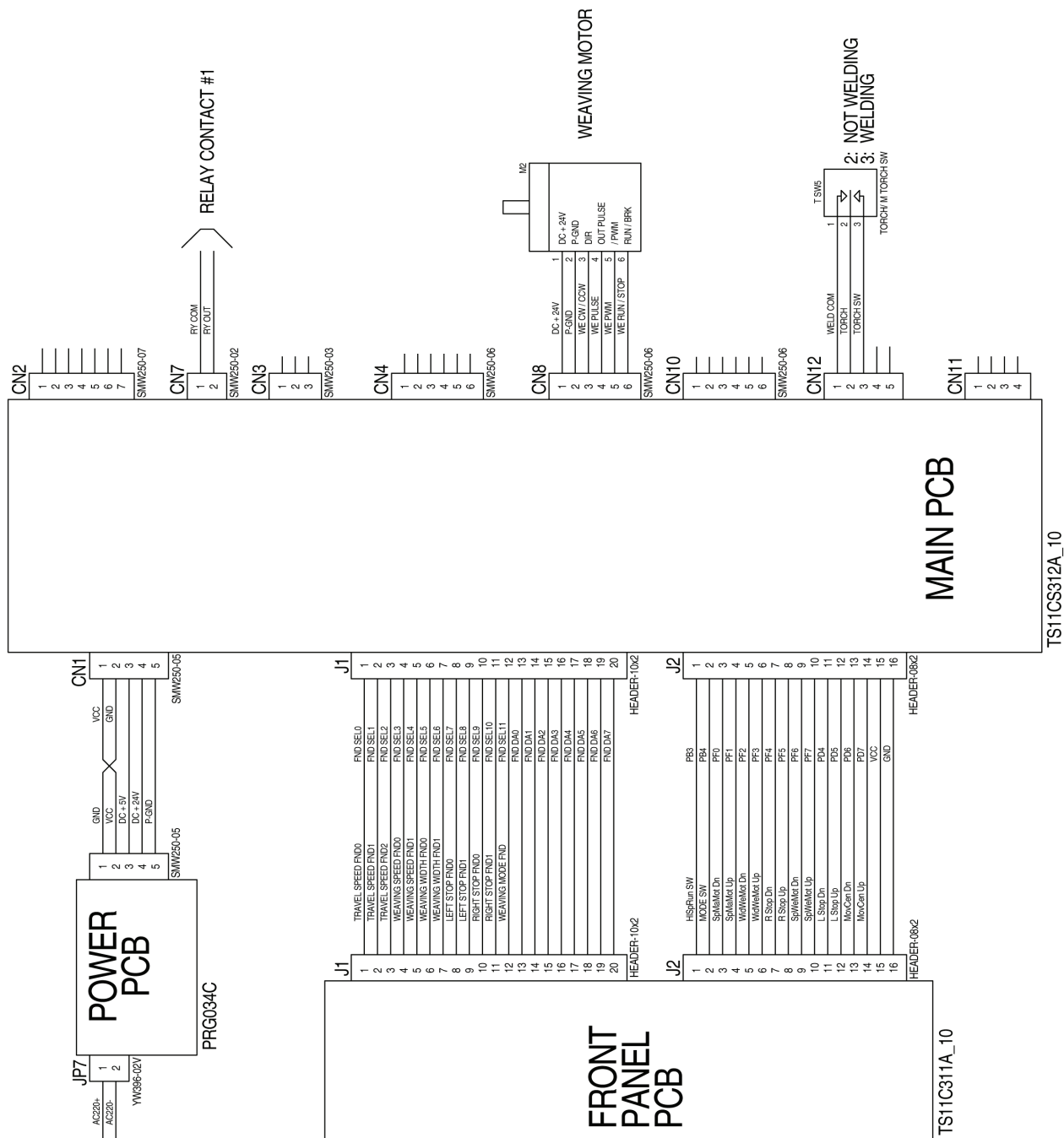
** Power Cable for K-BUG 5052 (240 VAC) is KBUG-2272-15.

KBUG-6085 CONTROL PENDANT / EXPLODED VIEW / PARTS LIST



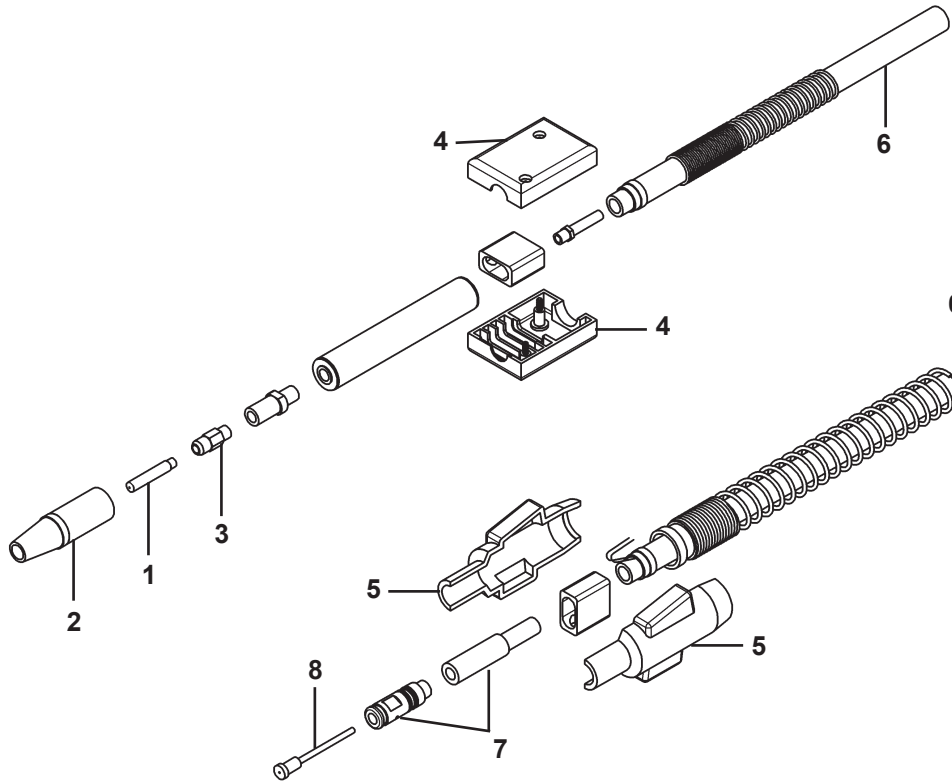
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	KBUG-6084	Pendant Housing
2	1	BUG-9487	Cable Connector, 2T, F (Weld Contact)
3	1	BUG-9486	Panel Connector, 2T, M (Weld Contact)
4	1	KBUG-3116	Panel Connector, 5T, M (Weaver)
5	1	KBUG-1132	Panel Connector, 3T, M (Power)
6	1	KBUG-1131	Fuse (Holder)
7	1	KBUG-6087	Magnet Plate
8	1	KBUG-6088	Wearing PCB
9	2	KBUG-3112	Push Button
10	1	KBUG-3114	Toggle Switch
11	1	KBUG-6086	Face Plate (or Top Panel)
12	1	KBUG-1122	Toggle Switch Cover
13	1	KBUG-1128	Push Button Cover, Black
14	1	KBUG-1127	Push Button Cover, Orange
15	5	KBUG-1129	Volume Knob
16	4	FAS-0504	Screw, Soc Hd Cap, 4-40, 3/8
17	4	FAS-1305	Hex Nut, 4-40
18	1	KBUG-6089	Power PCB

K-BUG 5050 STAND ALONE WEAVER / WIRING DIAGRAM



SBG-450- - GUN & CABLE ASSEMBLY / EXPLODED VIEW / PARTS LIST

Whip Length: 15 (15 ft / 4.6 m) or 25 (25 ft / 7.6 m)
 Wire Size: .035, .040, .045, .052, 1/16, 5/64
 Connector Type: E (Euro), L (Lincoln 3/4"), M (Miller), T (Lincoln, small)



PARTS LIST				WIRE SIZE					
ITEM	QTY	PART NO.	DESCRIPTION	.035 (.9 mm)	.040 (1.0)	.045 (1.2)	.052 (1.4)	1/16 (1.6)	5/64 (2.0)
1	1	BUG-3159-35	16S-35 (.9 mm) Contact Tip	X					
1	1	BUG-3159-45	16S-45 (1.2 mm) Contact Tip			X			
1	1	BUG-3159-52	16S-52 (1.4 mm) Contact Tip				X		
1	1	BUG-3159-116	16S-116 (1.6 mm) Contact Tip					X	
1	1	BUG-3159-564	16S-564 (2.0 mm) Contact Tip						X
1	1	PWS-4436-1.0	16S-40 (1.0 mm) Contact Tip		X				
2	1	PWS-4447	27S62 H.D. Nozzle 5/8"	X	X	X	X	X	X
3	1	PWS-4449	PX57HD Gas Diffuser	X	X	X	X	X	X
4	1	CWO-8017	Case w/ Binder Screws (Front)	X	X	X	X	X	X
5	1	PWS-4411	Case w/ Binder Screws (Back)	X	X	X	X	X	X
6	1	STW-3044	450 Amp Cable	X	X	X	X	X	X
7	1	R174-T	Connector, Small Lincoln						
7	1	R174-L	Connector, 3/4" Lincoln						
7	1	R174-M	Connector, Miller						
7	1	R174-X	Connector, Euro						
8	1	CWO-8009	44-3545-15 Cable Liner	X	X	X			
8	1	CWO-8011	44-116-15 Cable Liner				X	X	
8	1	CWO-8012	44-564-15 Cable Liner						X
**	1	SBG-1004	Gas Hose Assembly	X	X	X	X	X	X
**	2	SBG-1005	Gas Hose Clamps	X	X	X	X	X	X

** Not shown. Required only with standard Lincoln guns (SBG-450-L).

WARRANTY

LIMITED WARRANTY

MODEL _____
SERIAL NO. _____
DATE PURCHASED: _____

FOR A PERIOD OF TWELVE (12) MONTHS FROM DELIVERY, BUG-O SYSTEMS WARRANTS TO THE ORIGINAL PURCHASER (DOES NOT INCLUDE AUTHORIZED DISTRIBUTORS), THAT A NEW MACHINE IS FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP AND AGREES TO REPAIR OR REPLACE, AT ITS OPTION, ANY DEFECTIVE PARTS OR MACHINE. THIS WARRANTY DOES NOT APPLY TO MACHINES, WHICH AFTER OUR INSPECTION, ARE DETERMINED TO HAVE BEEN DAMAGED DUE TO NEGLIGENCE, ABUSE, OVERLOADING, ACCIDENT OR IMPROPER USAGE. ALL SHIPPING AND HANDLING CHARGES WILL BE PAID BY CUSTOMER.

BUG-O SYSTEMS MAKES NO WARRANTY OF MERCHANTABILITY AND MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, BEYOND THE WARRANTY EXPRESSLY SET FORTH ABOVE. BUYER'S REMEDY FOR BREACH OF WARRANTY, HEREUNDER, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF NON-CONFORMING PARTS AND MACHINES. UNDER NO CIRCUMSTANCES SHALL CONSEQUENTIAL DAMAGES BE RECOVERABLE.

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 HE 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.