INSTRUCTIONS AND PARTS MANUAL

DIGITAL WEAVER KIT

K-BUG 5000 RIGID RAIL
K-BUG 5100 HI-FLEX RAIL

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

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 verity both the pinion and wheels are fully engaged before applying power or equipment damage may occur.

3) Do not leave the equipment unattended.

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

DIGITAL WEAVER KIT
K-BUG 5000 / K-BUG 5100

INSTRUCTIONS AND PARTS MANUAL

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INTRODUCTION

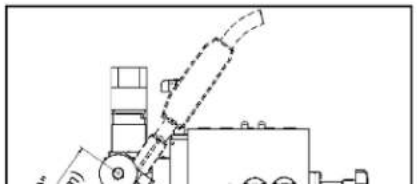
The Bug-O Digital Weaver delivers all position welding on rail; ideal for fillet or butt joints with flat or curved profiles. Weld parameters, including tractor speed, weave speed, weave width, dwell time, puddle build and crater fill are digitally controlled by the on-board control panel and the wireless remote. The Digital Weaver is available in two models: the K-BUG 5000 runs on BUG-O Heavy Duty Aluminum Rigid Rail or Semi-Flex Rail, and the K-BUG 5100 runs on BUG-O Hi-Flex Rail.

FEATURES

- Wireless Remote Control
- Digital displays for weld speed, dwell times, weave width and weave speed
- Independent left, right dwell times
- Linear welding and four weave patterns available
- All weaving starts and ends in center position
- Rack and pinion drive; clutch

TECHNICAL DATA

Power Input	
K-BUG 5000 / K-BUG 5100	120 VAC / 50-60 Hz / 1 Ph
K-BUG 5002 / K-BUG 5102	240 VAC / 50-60 Hz / 1 Ph
Weight	
K-BUG 5000 / K-BUG 5002	17 lb (7.7 kg)
K-BUG 5100 / K-BUG 5102	18 lb (8.2 kg)
Drive Motor	24 VDC, 12 W, 5000 RPM
Travel Speed	1.18 - 35 in/min (3 - 88 cm/min)
Torch Angle	adjustable
Running Angle	90° +/- 3°
Y-Stroke	2.05 in (52 mm)



K-BUG 5000, CONT'D.

CARRIAGE AND RAIL

The K-BUG 5000 is a carriage mounted, rail driven, digitally controlled weaver. Its carriage is compatible with BUG-O Heavy Duty Aluminum Rigid Rail (ARR-1080 or ARR-1085) or Semi-Flex Rail (AFR-3000). Rigid Rail sections are available in 4 ft (1.18 m) and 8 ft (2.37 m) lengths and can be joined for longer spans. Semi-Flex Rail is available in 8 ft (2.37 m) sections, can be bent to minimum radius of 15 ft (5 m), and sections can be joined for longer spans. A variety of mounting options are available for the rail including on/off magnets, vacuum cups and permanent fixturing.

Figure 1: Aluminum Rigid Rail

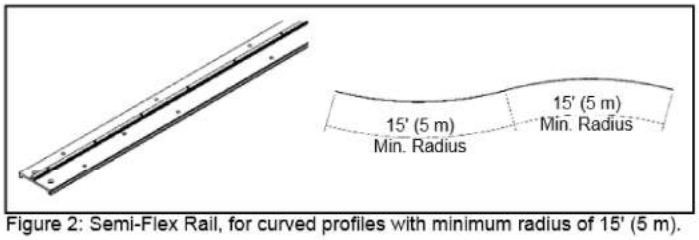


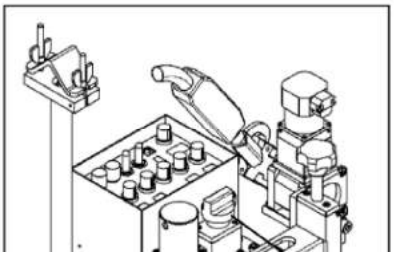
Figure 2: Semi-Flex Rail, for curved profiles with minimum radius of 15' (5 m).

SETUP

1) POSITIONING THE MACHINE ON THE TRACK

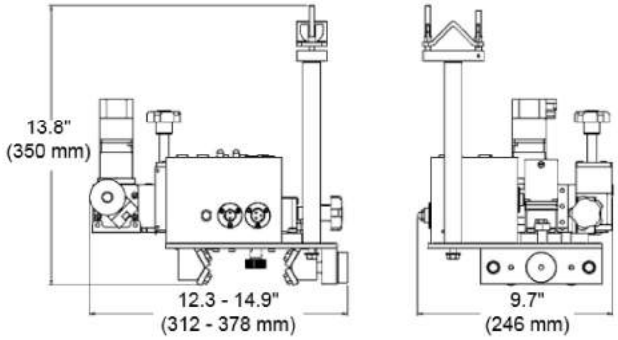
Position the rail using magnet plates or vacuum cups. Wipe the track grooves free of weld splatter and other debris. This will prevent binding and premature rail and wheel wear. Lubricate the rack using a dry spray, if desired, for extended track life.

Turn the wheel engagement knob (A) on the side of the carriage fully counter clockwise to disengage the wheels. Then rotate the Master Drive clutch knob (B) fully counter clockwise to disengage the drive pinion. The carriage can now be placed anywhere on the track. Turn the wheel engagement knob (A)



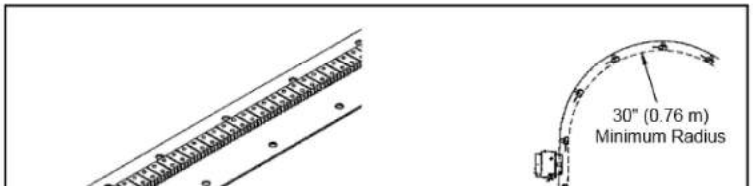
K-BUG 5100

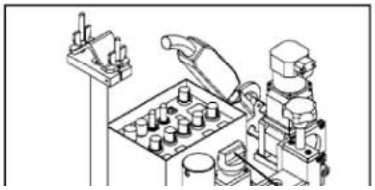
DIMENSIONS



CARRIAGE AND RAIL

The K-BUG 5100 is a carriage mounted, rail driven, digitally controlled weaver. Its carriage is only compatible with Bug-O Hi-Flex Rail (FMD-1050). This wear resistant rail comes in 57.7 in (1.47 m) lengths and can be held in place with vacuum cups or magnets. This rail can be used in straight applications or for bends down to 30 in (0.76 m) radius, in or out. Hi-flex rail can be used on compound curvatures and can be twisted 10° per 24 in (0.6 m) of length.





USER INTERFACE - ONBOARD CONTROL PANEL

The Digital Weaver can be controlled by the onboard control panel or by the wireless remote. The functions of the onboard control panel are described below.

1. **Travel Speed Adjustment Knob** - Rotate knob to adjust carriage travel speed. Turning clockwise (right) will INCREASE speed.
2. **Weave Selection Button -** Press this button to scroll through the available weave patterns and select the desired weave. The number in Display B indicates the selected weave pattern.
3. **Weld Contact Switch** - When switched to AUTO, the weld contact will close when the Start button is pushed and weld cycle will end when Stop button is pushed. When switched to OFF, the Start and Stop buttons will only control carriage travel.
4. **Travel Direction Switch** - Set switch to determine direction of carriage travel. Travel direction should be set *before* carriage travel is started.

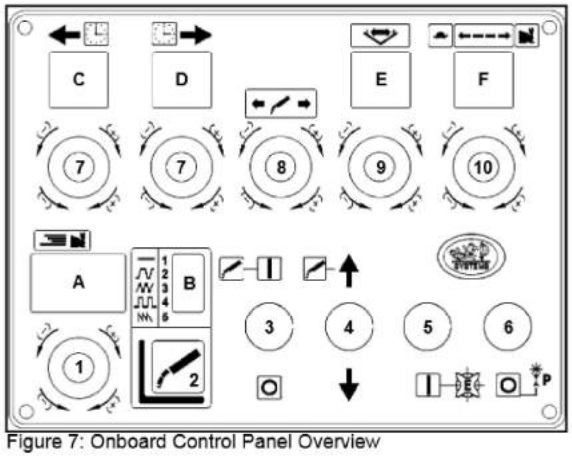
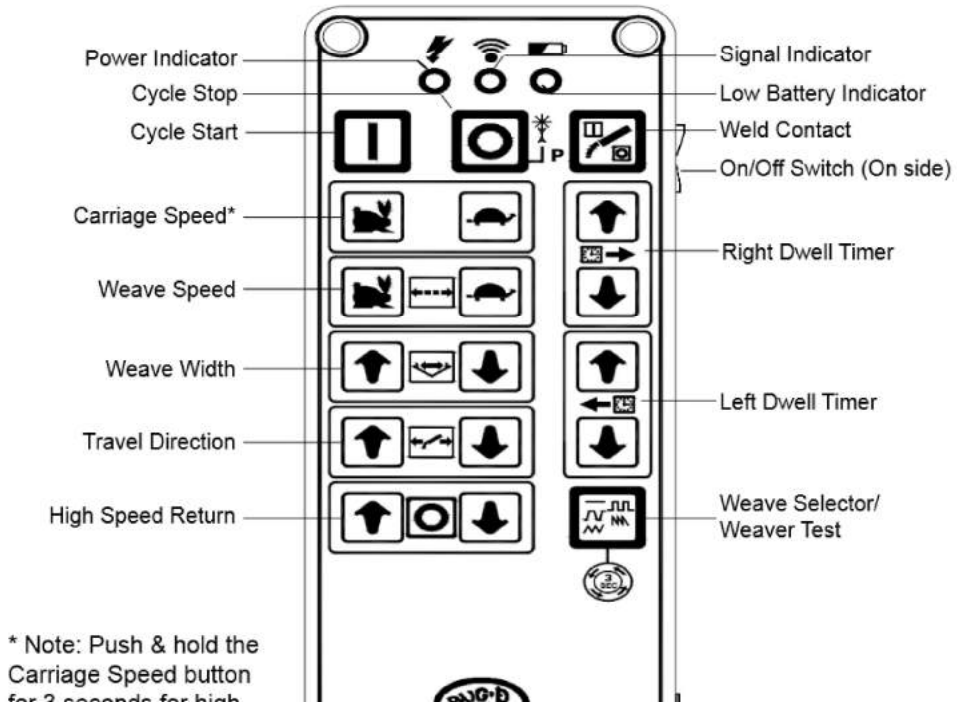


Figure 7: Onboard Control Panel Overview

5. **Start Button** - Push button to start carriage travel. Carriage will travel in the direction selected by the Travel Direction Switch. Weld contact will close if the Weld Contact Switch is set to AUTO.
6. **Stop Button** - Push button to stop carriage travel. If Weld Contact Switch is set to AUTO, torch will return to center and crater fill will be performed.
7. **Dwell Time Adjustment -** Increase or decrease dwell time by turning the adjustment knob. The

USER INTERFACE - WIRELESS REMOTE CONTROL

The Digital Weaver includes a wireless remote that can be used to control the machine. Magnets in the back of the remote allow for easy storage on the machine. The remote has a range of 33 ft (10 m). Each remote communicates at a unique frequency, allowing multiple machines to operate in close proximity without interference.



PARAMETER SETTINGS

Advanced welding 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 AC 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 Travel Speed display.
3. To adjust the parameter setting, turn the Travel Speed Adjustment knob. Turning to the right, or 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	Weave speed with Center Return	0 - 99	99	sec
n.3	Maximum Weave Width	0 - 90	5	Degree
n.4	Center Move Width	--	360	Degree
n.5*	Center Move Length	1 - 60	2	Pulse
n.6*	Diff Value of travelling speed	1 - 20	10	
n.7*	Signed data auto diff speed	1 - 7	7	
n.8	Motor emcy Auto Stop Time	0.0 - 9.9	3	sec
n.9*	Travel Motor Reducer Ratio	20 - 200	40	
n.a*	Weaving Motor Ratio	20 - 200	100	
n.b*	Travel Wheel Diameter	0.0 - 99.9	22.5	mm
n.c*	Demonstration Mode	On / Off	Off	
n.d	Operating Units	U1 / U2	U2	U1 (cm/min), U2 (in/min)

* Indicates parameters that are NOT to be changed by the user.

INSTALLATION AND OPERATION

1. Welding Preparation - Secure the necessary welding supplies
   - Welding Power Source
   - Wire Feeder
   - Shielding Gas, with pressure and flow regulators and appropriate fittings
   - Torch for gas shielded automated welding
   - Basic Weld Prep Tools
2. Install rail on work piece
   - Ensure clean surface at rail mounting points. Effectiveness of magnets or vacuum cups is reduced on dirty or irregular surface.
3. Install carriage on rail
   - Open carriage, slide on rail. Slide back & forth to align wheels.
   - Close carriage / engage clutch.
4. Welding Process
   - Plug machine into an A/C power source of appropriate voltage.
   - Insert torch and position torch for desired lead/lag angle to match the weld joint.
   - Position carriage so weld torch is at desired weld starting point.
   - Connect weld contact cable to machine, wire feeder and welding power source.
   - Set desired welding parameters - Weave Width, Dwell times, Weave type.
   - Verify adequate Shielding Gas Supply
   - Start Welding - Switch Weld Contact switch to AUTO, verify desired travel direction is set and travel speed is > 0 in/min and press Start button
   - Press Stop button when welding is complete. Turn Weld Contact switch to OFF.
   - Confirm Welding End.

CABLE INTERCONNECT DIAGRAM

MAINTENANCE

The K-BUG carriage should be periodically checked and cleaned to maximize service life.

Before use:

Check all screws in the torch clamp and guide rollers. Tighten as needed. Loose fasteners may cause uneven travel or inconsistent weld quality.

During use:

Monitor wheels, motors and welding torch for abnormal noise or overheating.

After each use:

1. Clean control panel to remove dust and other debris.
2. Inspect carriage base, wheels, guide rollers, slide adjustment, magnets 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.

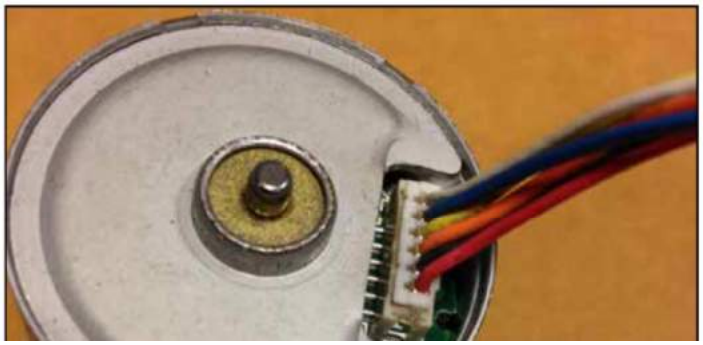
TROUBLESHOOTING

Symptom	Cause	Repair
Control panel Display is not LIT	Disconnected Control Cable	Verify control cable is properly connected to machine.
	Faulty Control Cable	Replace cable.
	Control Box 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

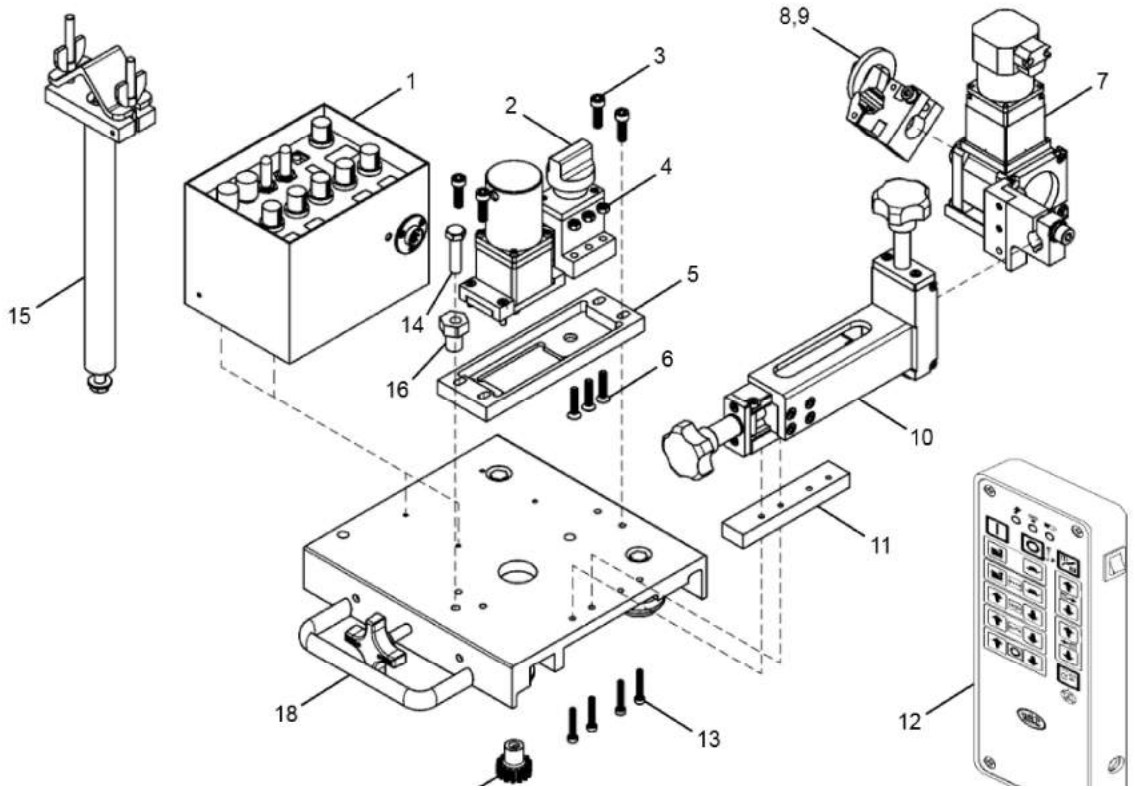
TROUBLESHOOTING, CONT'D.

K-BUG ERROR LIST

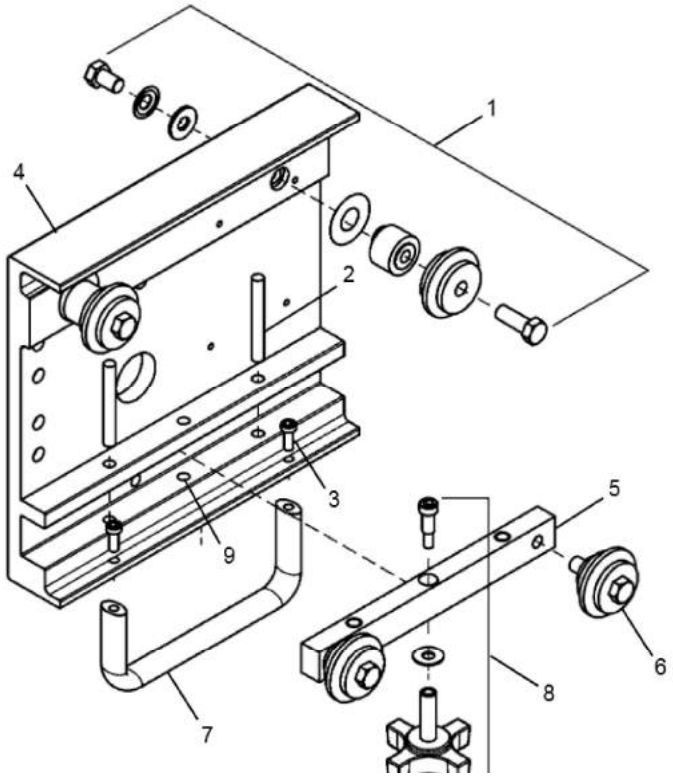
NO.	SYMPTOM	CAUSE	SOLUTION
E-03	Motion Stop	Main PCB EET ROM Error	Main PCB Replacement
E-05	Travelling Stop	Auto-Stop Travelling Motor may be overloaded / shorted	Push and release Stop Button IF UNRESOLVED: 1. Check for loose wiring connection at drive motor and weave motor if equipped (see below).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



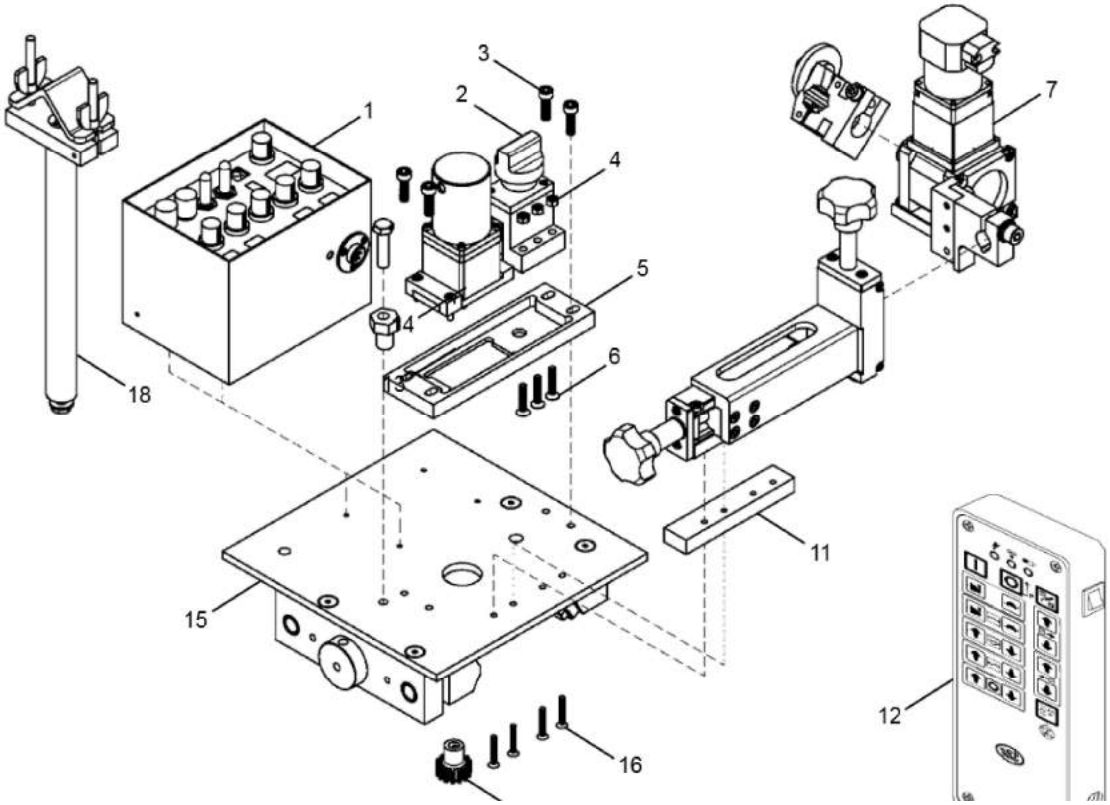
K-BUG 5000 DIGITAL WEAVER KIT / EXPLODED VIEW / PARTS LIST



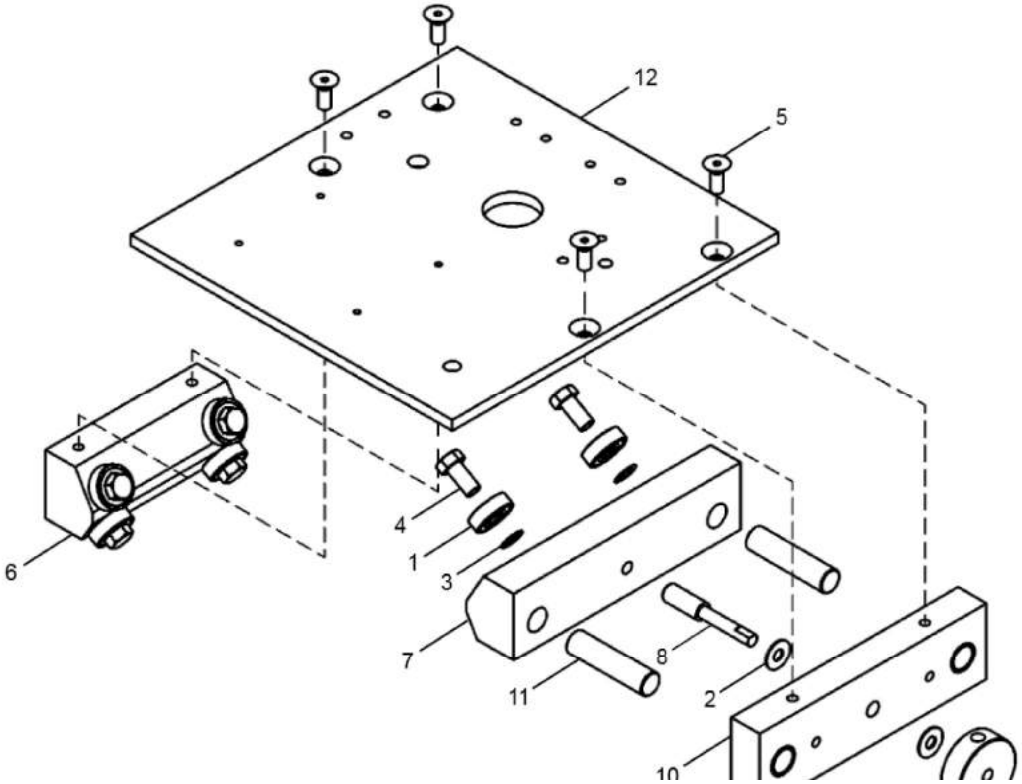
KBUG-5010 STANDARD CARRIAGE / EXPLODED VIEW / PARTS LIST



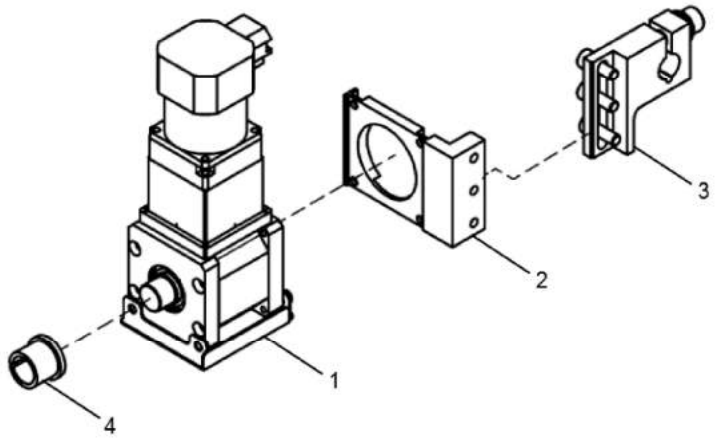
K-BUG 5100 DIGITAL WEAVER KIT / EXPLODED VIEW / PARTS LIST



KBUG-5110 HI-FLEX CARRIAGE / EXPLODED VIEW / PARTS LIST

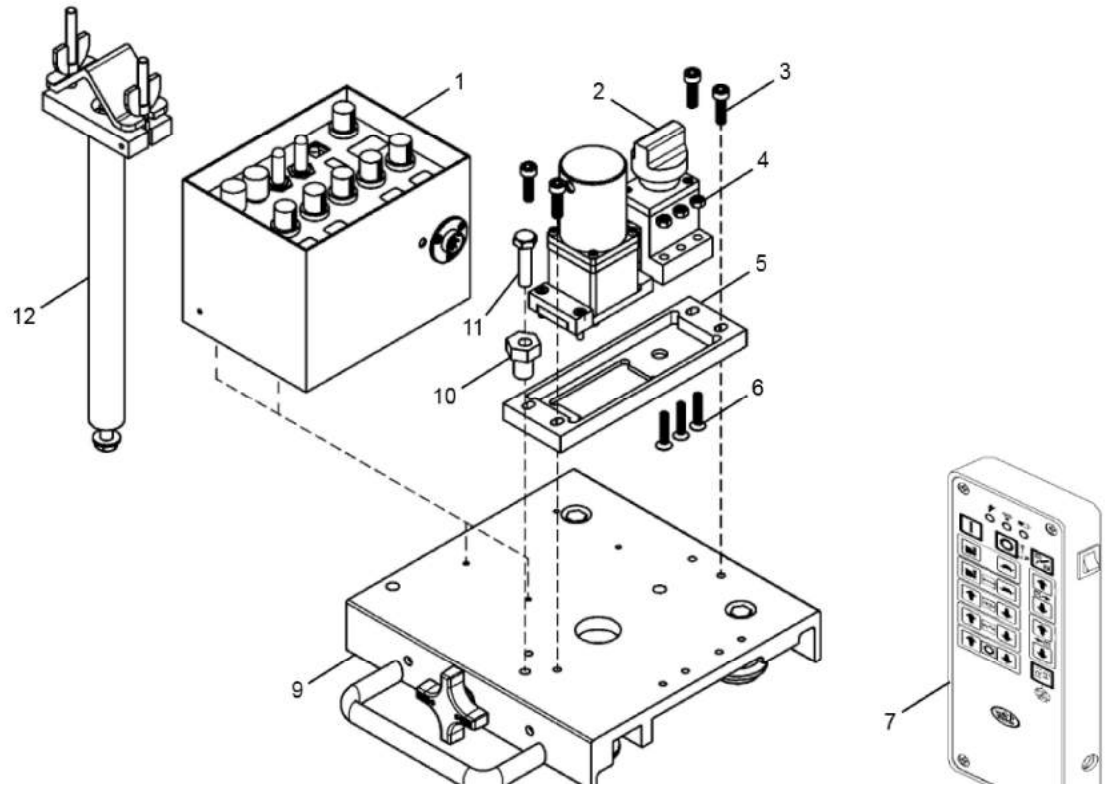


KBUG-5080 WEAVER ASSEMBLY / EXPLODED VIEW / PARTS LIST

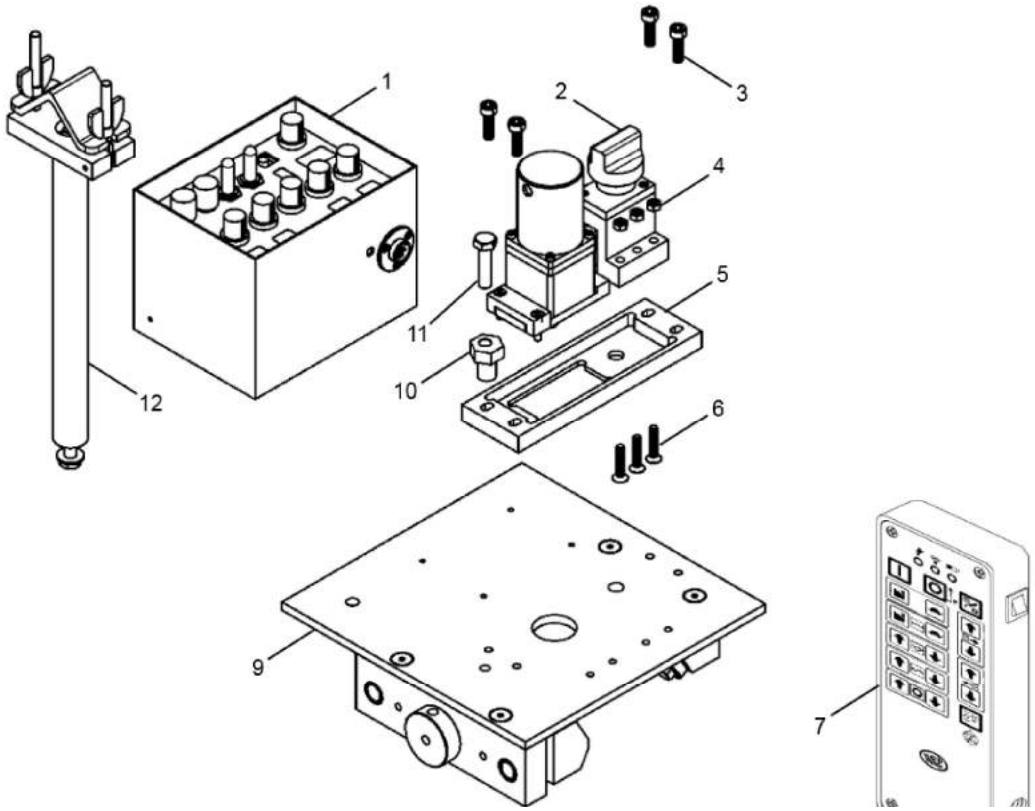


ITEM	QTY	PART NO.	DESCRIPTION
1	1	KBUG-3070	Weaver Motor Assembly
2	1	KBUG-5088	Weaving Bracket
3	1	KBUG-5089	Weaving Slide Clamp
4	1	KBUG-3076	Micarta Bushing

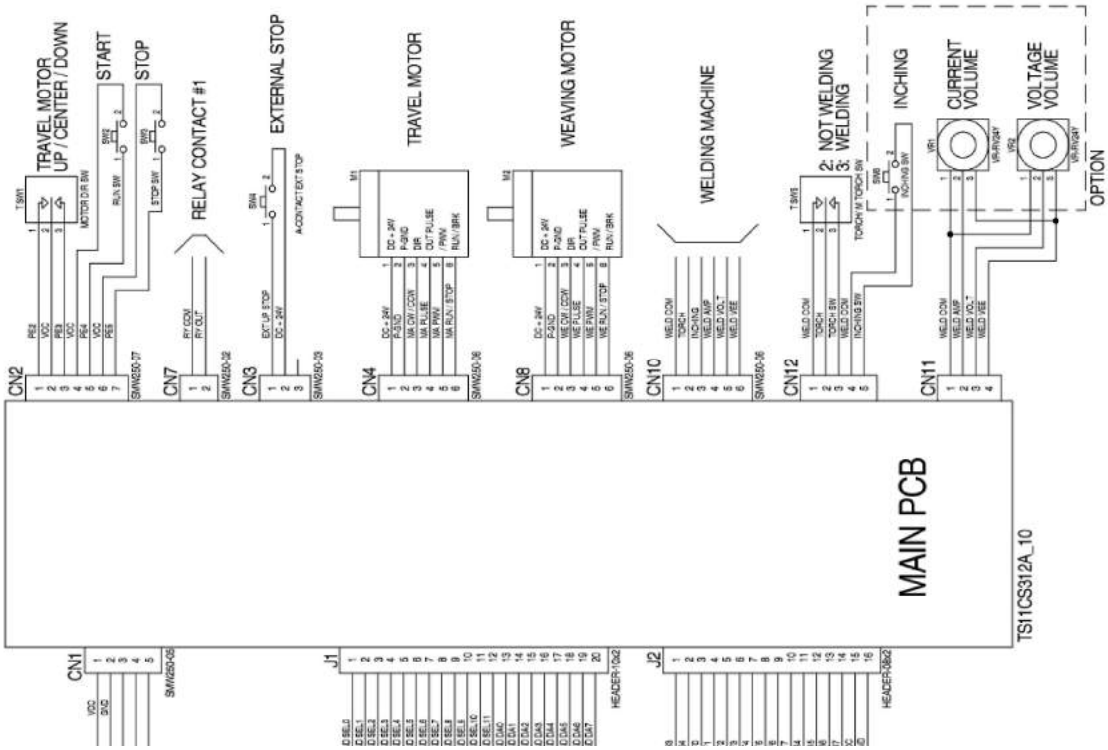
K-BUG 5060/5062 DIGITAL DRIVE UNIT / EXPLODED VIEW / PARTS LIST



K-BUG 5160/5162 DIGITAL DRIVE UNIT / EXPLODED VIEW / PARTS LIST

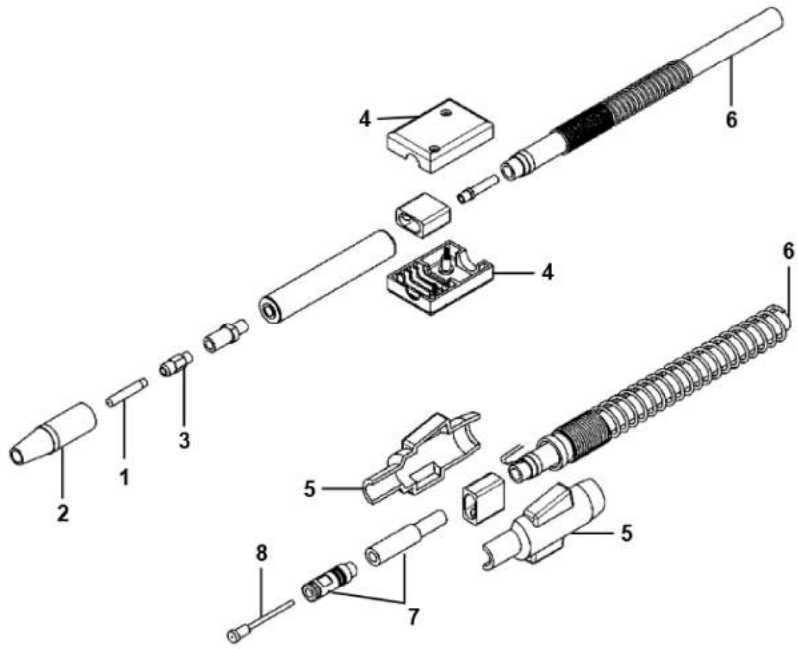


K-BUG 5000 & K-BUG 5100 WIRING DIAGRAM



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, 116, 564
Connector Type: E (Euro), L (Lincoln ¾"), M (Miller), T (Lincoln, small)



PARTS LIST	WIRE SIZE

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 Manufacture'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