

# INSTRUCTIONS AND PARTS MANUAL

## SPEED WEAVER II

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-SPWV-IPM-0114

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



**BUG-O SYSTEMS**  
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 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.**

# **SPEED WEAVER II**

## **INSTRUCTION AND PARTS MANUAL**

**BUG-5300 120 VAC/50-60/1**  
**BUG-5302 240 VAC/50-60/1**  
**BUG-5304 42 VAC/50-60/1**

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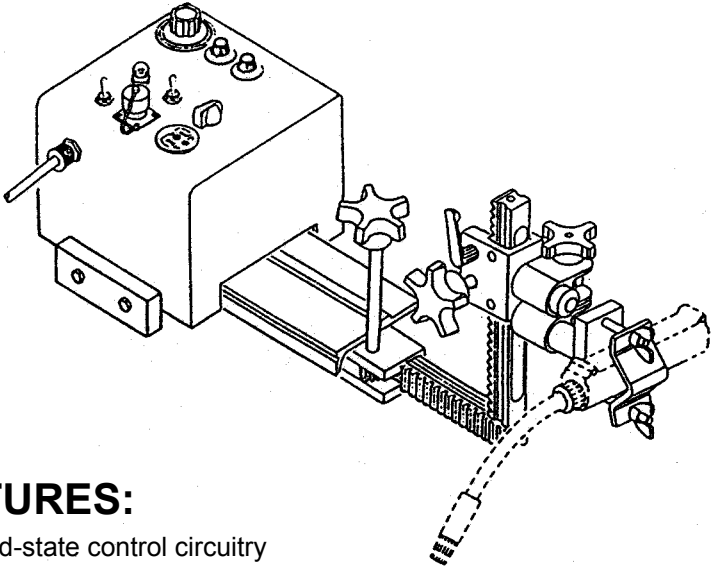
**THIS PRODUCT IS COVERED BY ONE OR  
MORE PATENTS WORLD WIDE.**

# INTRODUCTION:

The SPEED WEAVER II is a compact, precision, all-position machine, designed for maximum versatility in oscillation. Its solid-state controls with graduated dials provide adjustable and readily repeatable control of critical weld parameters.

The unit will oscillate up to 160 cycles per minute at a stroke of .125" (3 mm). A stroke adjustment of .125 to 2" (3 to 51 mm), a wide speed range of 6 to 152 ipm (152 to 3810 mm/m), and independently adjustable left and right dwell time of 0 to 3 seconds will cover any commonly encountered welding requirements.

The Speed Weaver II is designed to mount on any BUG-O carriage or fixture. Its lightweight permits easy movement of the machine from one welding location to another.



# FEATURES:

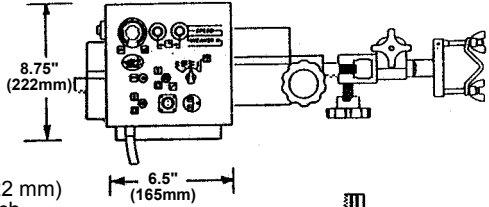
- All Solid-state control circuitry
- Non-contact proximity sensors for end of stroke limits
- Minimum stroke .125" (3 mm) to 2" (51 mm) maximum
- High speed oscillation - 160 cycles/min at .125" (3 mm) stroke
- Wide speed range, 6-150 ipm (152-3810 mm/m)
- New welding mode: tractor stop during dwell
- Positive holding torque during dwell
- Independent dwell control, each side, 0-3 seconds
- Digital dial control with lock for weave amplitude
- Straight line mode: (stringer pass)

# TECHNICAL DATA

## Power

Requirement - 60 watts at rated voltage:

<b>BUG-5300</b>	<b>120 VAC/50-60/1</b>
<b>BUG-5302</b>	<b>240 VAC/50-60/1</b>
<b>BUG-5304</b>	<b>42 VAC/50-60/1</b>



**Dwell Time:** 0 to 3 secs. each side

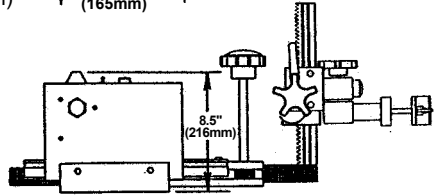
**Dimensions:** 6.5"H x 8.5"L x 8.75"W  
(165 mm x 216 mm x 222 mm)  
not including rail and torch mounting

**Net Weight:** 19 lbs. (8.6 kg)

**Shipping Weight:** 22 lbs. (10 kg)

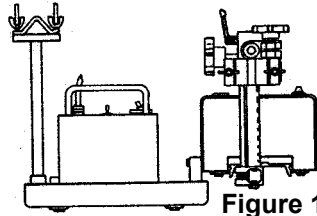
**Linear Speed:** 6 to 150 ipm  
(152-3810 mm/m)

**Stroke:** .125" to 2" (3 to 51 mm)



**Cycles / Minute:** (Maximum speed, zero dwell left and right)

<b>Stroke:</b>	(in.)	.125	.25	.50	1.0	2.0
	(mm)	3	6	12	25	51
<b>Cycles:</b>		160	120	85	60	37



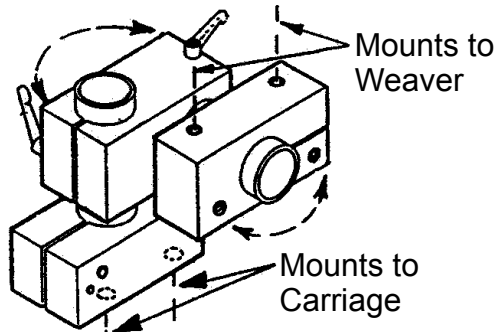
**Figure 1**

## ASSEMBLY AND OPERATION ASSEMBLY:

### MOUNTING:

The Weaver is normally mounted on a BUG-O drive carriage; bolt the mounting bar on the Weaver to the front end of the carriage or fixture (Fig. 1).

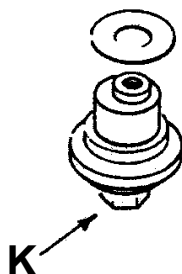
(Fig. 2) A swivel mount is available for mounting the Weaver so that it can pivot around 2 axis. This enables it to make fillet weld or other angled-weave welds. The swivel mount bolts to the carriage and the Weaver in turn bolts to the swivel mount.



**BUG-5195 Weaver Swivel Mount  
Figure #2**

# WHEEL ADJUSTMENT

The gauge of the wheels is adjusted to the supplied rail before being shipped. The wheels on the forward side of the Weaver are externally adjustable - they have stainless shim washers under them. If it is ever necessary to readjust them, rotate the Hex Head Bolt (**K**) with a 1/2" wrench until the wheels are snug in the rail groove but can still be forced to slip with finger pressure.



## CROSS-RAIL INSERTION:

To insert the rail, turn the mode selector switch to any of the three weave positions, with the power off. Plug in the Weaver power cord.

Insert the rail from the right, guiding the rail into each pair of wheels successively, until the rack meshes with the drive pinion, then throw the power switch on. The rail will start oscillating automatically.

## WELD CONTACTS:

For weld contact control, remove the trigger-switch leads from the welding gun and connect them to the "amphenol" plug provided, that mates with the connector on the Weaver panel.

## OPERATION:

1. Setup the rail on the work, parallel to, and at a suitable distance from the weld joint, using magnet bars, vacuum cups, or other fastening means.
2. De-clutch the drive on the BUG-O carriage and slide it along the rail to the desired location with the Weaver mounted on it. Engage the drive clutch.
3. Rack the welding gun into position, set the nozzle angle and clamp in place. Run the welding cable through the cable anchor and clamp in place.
4. Set the weave speed and dwell left and right by the control knobs on the panel, set the weave amplitude on the dial counter, and rotate the **MODE** selector switch to the weave position for the welding mode desired.
5. Set the speed and direction of travel of the tractor drive, and plug the BUG-O power cord into the Weaver outlet.
6. Plug the Weaver cord into the power outlet and throw the power switch on. After checking all settings and operations, push the weld contact switch to the "On" position to start welding.

The machine will now travel down the track weaving a perfectly uniform weld precisely to the parameters set until shut off.

# FUNCTION AND CONTROLS

1. The Speed Control Knob (**A**) sets the traverse speed of the cross rails: turn clockwise to increase speed. Common weaving speeds are from "20" to "30" on the graduated dial.
2. Two Dwell Control Knobs (**B, C**) set the time interval that the torch dwells at each end of the stroke - one control for each side. Dwell time can be set from 0 to 3 seconds independently for left and right side of weave.
3. The Amplitude Control Knob (**D**) on the side of the machine sets the length of the weave stroke between .125 and 2" (3 to 51 mm). The dial counter reads 100 for every .125" (3 mm) of stroke, eg. a reading of 0300 would give a .375" (9.5 mm) weave. The dial counter has a lever on the bottom that locks the amplitude setting.
4. Power Controls.  
Toggle Switch (**E**) is used to turn power **ON** and **OFF** to the machine. Circuit Breaker (**F**) is rated at 0.7A (.5A for 240V) and provides protection against overloads. If it pops up it can be reset by pushing down.

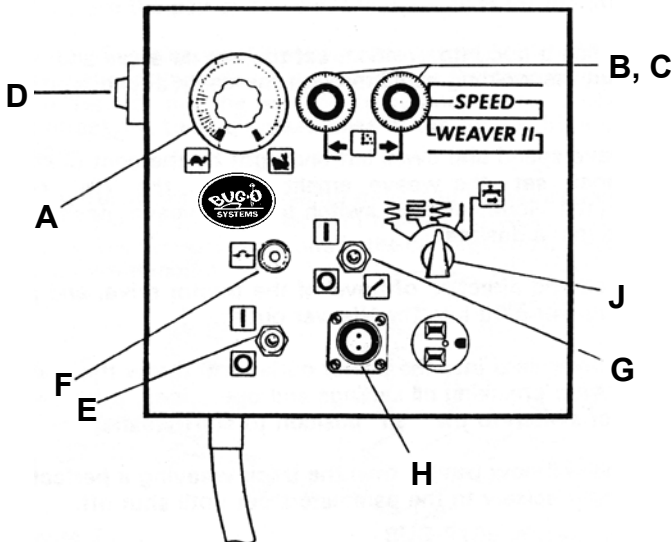
**CAUTION:** Find and correct the cause of overload before resetting.

## 5. Weld Contact Controls.

Toggle Switch (**G**) turns the Weld contacts **ON** when momentarily pushed forward and released, and turns them **OFF** when pushed back.

The Weld Contacts are wired into the terminals on the "Amphenol" Connector (**H**); the leads from the trigger switch on the welding gun should be connected to the mating connector provided.

**NOTE:** The Weld Contacts will also shut off if the power to the Weaver is interrupted or turned off for any reason.



6. Mode Selector Switch.

The 5-position Switch (**J**) is used to select any one of four welding modes, described below, or to eject the cross rail.



**A. RUN:** In this mode, power to the tractor is always on, and the tractor travels continuously both during weave and dwell. Weave speed and dwell time both affect the weld patterns.



**B. STEP:** The tractor travels only during dwell, and stops during the oscillator cross stroke. Changing weave speed does not affect the weld pattern, dwell time does.



**C. TRACTOR STOP ON DWELL:** This is a new mode that has proven very advantageous in certain cases. The tractor and oscillator travel simultaneously during the weave stroke, both stop during dwell. Dwell time thus does not affect the weld pattern, it controls the weld deposit on each side.

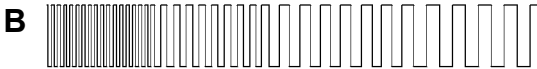


**D. NO WEAVE:** In this mode oscillation is stopped and only the tractor moves, to make stringer passes.



**E.** Switching to the fifth position will eject the rail.

**WELD PATTERNS:**



When mounted on a tractor plugged into its panel, the Weaver produces the above weld patterns; shown for increasing dwell time or tractor speed from left to right.

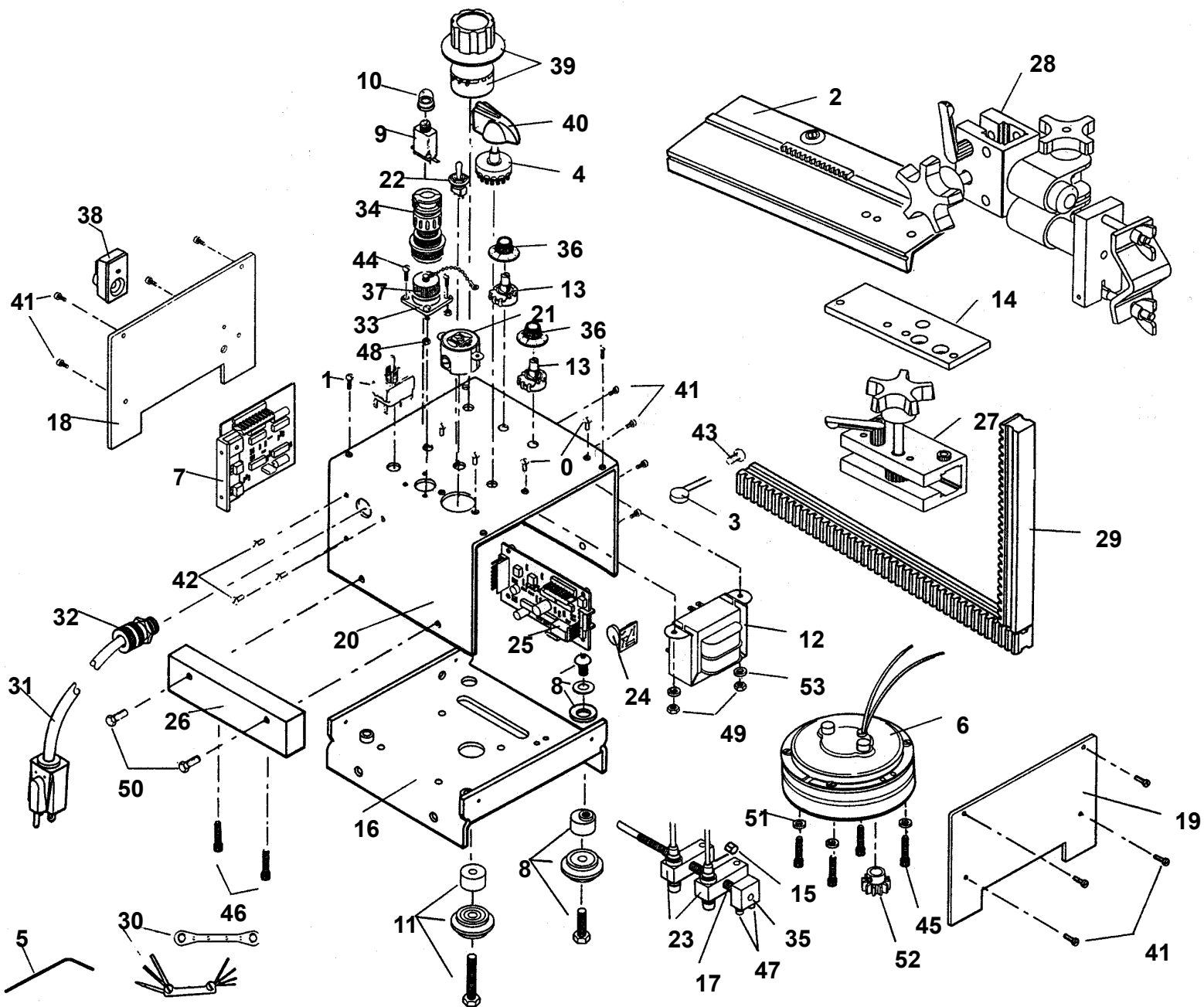


# BUG-5300 SPEED WEAVER II / PARTS LIST

<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	ARM-2279	Toggle Switch (Power)
2	1	ARR-1150	Cross Rail Assembly
* 3	1	BUG-1393	Volt Trap 120 VAC
4	1	BUG-1548	Rotary Switch (Mode Select)
5	1	BUG-1577	Short Arm Hex Key
6	1	BUG-1600	Gear Motor (50:1)
7	1	BUG-1770	Motor Control Board
8	2	BUG-1982-N	Nylon Ext Adj Leg & Wheel Assembly
* 9	1	CIR-5247	Circuit Breaker 0.7 Amp
10	1	BUG-2924	Reset Button Seal
11	2	BUG-2956-N	Nylon Fixed Leg & Wheel Assembly
* 12	1	BUG-5001	Transformer 120 VAC
13	2	BUG-5054	Potentiometer, 500K (Dwell)
14	1	BUG-5308	Rackholder Adaptor Plate
15	1	BUG-5309	Spacer
16	1	BUG-5311	Base
17	1	BUG-5312	Screw
18	1	BUG-5313	Side Panel
19	1	BUG-5314	Side Panel
20	1	BUG-5319	Cover
21	1	BUG-5321	Power Receptacle
22	1	BUG-5323	Toggle Switch (Weld Contact)
23	1	BUG-5385	Sensor Assembly (includes both sensors)
24	1	BUG-5333	Tractor Switch
25	1	BUG-5335	Weaver Circuit Board
26	1	BUG-5339	Mounting Bar
27	1	BUG-5451	3.5" Rackholder
28	1	BUG-5455	Gun Mounting Group
29	1	BUG-9198	Right Angle Rack
30	1	BUG-9444	Tool Kit
* 31	1	BUG-9445	Power Cord 120 VAC
32	1	BUG-9446	Cord Grip
33	1	BUG-9486	Panel Connector, 2-T, M
34	1	BUG-9487	Cable Connector, 2-T, F
35	1	BUG-9603	Pillow Block
36	2	BUG-9621	Knob
37	1	BUG-9628	Cap & Chain Assembly
38	1	BUG-9676	Dial Counter
39	1	BUG-9686	Potentiometer Control
40	1	BUG-9694	Knob
41	14	FAS-0114	Pan Hd Scr 6-32 x 3/8 Lg
42	3	FAS-0124	Pan Hd Scr 8-32 x 3/
43	2	FAS-0155	Pan Hd Scr 1/4-20 x 1/2
44	4	FAS-0204	Rnd Hd Slit Scr 4-40 x 3/8 Zinc
45	4	FAS-0527	Soc Hd Cap Scr 8-32 x 3/4 Lg
46	2	FAS-0559	Soc Hd Cap Scr 1/4-20 x 1" Lg
47	2	FAS-0735	Fil Hd Scr 10-24 x 1/2 Lg
48	4	FAS-1305	Hex Nut 4-40
49	3	FAS-1320	Hex Nut 8-32
50	2	FAS-2351	Hex Hd Cap Scr 1/4-20 x 1 1/4 Lg
51	4	GOF-3012	Stand-off
52	1	GOF-3014	Pinion
53	3	WAS-0221	# 8 Internal Star Lockwasher

See Electrical Component Chart for 240 VAC and 42 VAC part numbers.

# BUG-5300 / EXPLODED VIEW





# ELECTRICAL COMPONENT CHART

ITEM	DESCRIPTION FUNCTION	PART NUMBER		
		120 VAC BUG-5300	240 VAC BUG-5302	42 VAC BUG-5304
VT	Volt Trap	BUG-1393	BUG-1563	BUG-1393
PC	Power Cord	BUG-9445	GOF-3115	BUG-9445
CB	Circuit Breaker	CIR-5247	BUG-2952	BUG-2933
PO	Power Socket	BUG-5321	BUG-9595	BUG-5321
T	Transformer	BUG-5001	BUG-5002	BUG-5003
MCB	Motor Control Board		BUG-1770	
TCB	Tractor Switch		BUG-5333	
WCB	Weaver Circuit Board		BUG-5335	
SW1	Power ON-OFF Switch		ARM-2279	
WT	Connector-Weld Contact		BUG-9486	
SW2	Toggle Sw.-Weld Cont.		BUG-5323	
SW3	Rotary Sw.-Mode Select		BUG-1548	
PI	Speed Pot., 1 OK		BUG-9686	
P2,P3	Dwell Pot. L&R		BUG-5054	
SN	Sensor Assy. L&R		BUG-5385	
M	Gear Motor		BUG-1600	

## TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	REMEDY
Machine dead.	No Power.	Check supply line for power Plug power cord in firmly.
	Circuit-breaker popped.	Find cause of overload correct and reset breaker.
Weaver runs, tractor dead.	Bad tractor switch.	Replace tractor switch BUG-5333 (plug in on Weaver board).
Weaver does not stop in dwell.	Faulty speed board.	Replace speed board BUG-1770

# KITS

## BUG-1916

### DC SPEED WEAVING KIT (120/50-60/1)

#### Includes:

1 BUG-0343

BUG-O DC-IV  
1.5-30 ipm (38-762 mm/min)

#### Includes:

1 BUG-9444

Tool Kit

1 BUG-5300

Speed Weaver II

1 BUG-5195

Weaver Swivel Mount

1 BUG-2975

Cable Mounting Assembly

1 ARR-1080

H.D. Rigid Rail 93-1/2" (2.37 m)

1 ARR-1085

H.D. Rigid Rail 46-1/2" (1.18 m)

5 ARM-2325

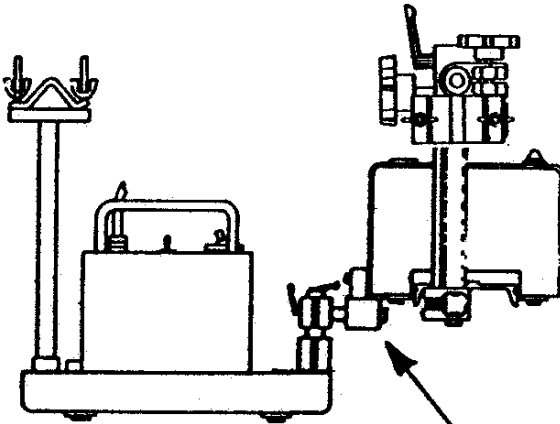
Magnet Bar, Swivel w/Release

## BUG-1917

Same as above, except with  
240 VAC BUG-O DC-IV BUG-0443  
and Speed Weaver II BUG-5302

## BUG-1918

Same as above, except with  
42 VAC BUG-O DC-IV BUG-0543  
and Speed Weaver II BUG-5304



**BUG-5195**  
**Weaver Swivel Mount**

# WARRANTY

<b>LIMITED 3-YEAR WARRANTY</b>
------------------------------------

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](http://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 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.**