

# INSTRUCTIONS AND PARTS MANUAL

## CIR-0

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-CIRO-IPM-0310



**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.**

# **CIR-O**

## **PRECISION CIRCLE BURNER, BEVELER AND WELDER**

### **INSTRUCTION AND PARTS MANUAL**

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

# TECHNICAL DATA

**Power Requirement:** 120 VAC/50-60/1    240 VAC/50-60/1    42 VAC/50-60/1

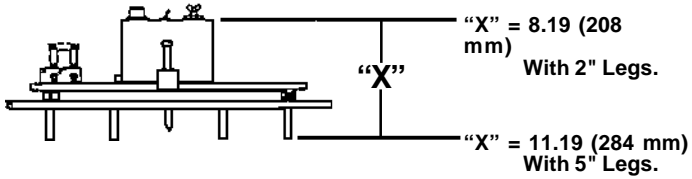
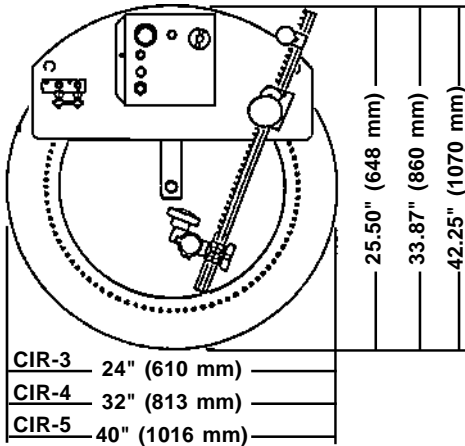
CIR-3303	CIR-3323	CIR-3313
CIR-4404	CIR-4424	CIR-3313
CIR-5505	CIR-5525	CIR-5515

<b>Cutting Range:</b>	<b>Inside Diameter</b>	<b>Outside Diameter</b>
CIR-3301,3323,3313	3"-14" (75-356 mm)	26"-56" (660-1422 mm)
CIR-4404,4424,4414	3"-22" (75-559 mm)	34"-64" (864-1626 mm)
CIR-5505,5525,5515	3"-30" (75-760 mm)	42"-72" (1060-1830 mm)

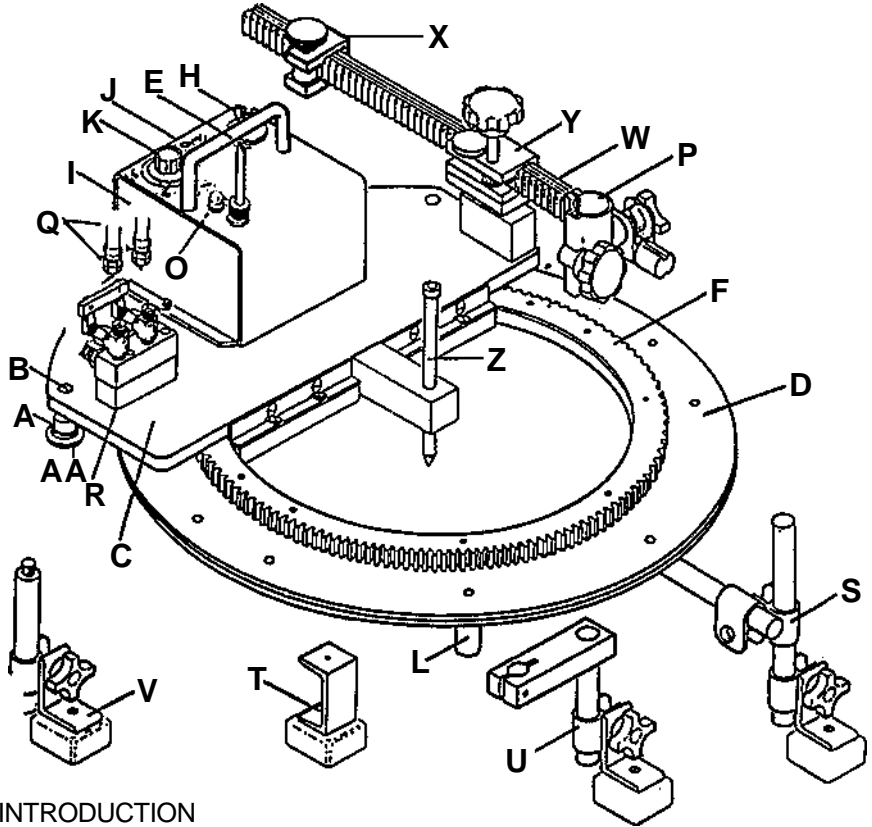
<b>Net Weight:</b>	<u>CIR-3303,3323,3313</u>	<u>CIR-4404,4424,4414</u>	<u>CIR-5505,5525,5515</u>
	48 lbs. (21.8 kg)	65 lbs. (29.5 kg)	90 lbs.(40.9 kg)

<b>Shipping Weight:</b>	66 lbs. (30.0 kg)	90 lbs. (40.8 kg)	128 bs. (56.0 kg)
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**Speed Range:** See chart on page 19.



# OPERATING INSTRUCTIONS



## INTRODUCTION

Your new CIR-0 is ready for operation when you receive it. A few minutes spent reading the following will help you become familiar with the operation and capabilities of your machine.

The CIR-0 Carriage (C) should operate freely on the Ring Track (D). The carriage has three adjustable Wheel Logs (A). By loosening the Flat Socket Head Screws (B) these logs may be rotated for adjustment. To check Wheel (AA) adjustment, hold one wheel and move the carriage. When properly adjusted the wheel should barely slip.

The Cam Clutch (E) engages the drive pinion to the Ring Gear (F) by changing the position of the Drive Module (1). The Thumb Nut (H) locks the Cam Clutch (E) in position.

Turning the Potentiometer Knob (K) regulates speed. The Switch (J) controls forward-off-reverse. Throw the switch in the direction you want the carriage to travel.

The CIR-0 is furnished with four symmetrically-located Legs (L). A variety of Magnetic Feet and legs (S), (T), (U), and (V) are available to increase the versatility of the CIR-0 machine.

# OPERATING INSTRUCTIONS (CON'T.)

## POWER SUPPLY

The DC III drive operates on 120 volt, (42VAC), (240VAC), 50/60 Hz. The Circuit Breaker (0) protects the unit against overload or electrical faults,

**CAUTION: IF THE CIRCUIT BREAKER OPENS, FIND AND CORRECT THE CAUSE OF FAILURE BEFORE RESETTING.**

## TORCH

The Torchholder (P) will accept any standard American machine torch (barrel diameter 1-3/8" (34 mm) with 1/4"-square (6 mm) 32-pitch rack). The 32-pitch pinion is standard. Specify a 24-pitch pinion if desired. The Short Hose Assembly (0) connects the torch to the Quick-acting Manifold Assembly (R). The supply hoses are to be connected to the open side of the quick-acting manifold assembly.

Proper torch operation is essential to quality cuts. We suggest that you follow the torch manufacturers' instructions carefully, being sure to use a clean tip of the proper size.

## MAGNETIC SUPPORTS

Several Types of magnetic supports are available for use with the CIR-0 to stabilize the machine as listed below:

- (S) Outrigger Support Assemblies; CON-1010 - used in multiples of two or four to stabilize CIR-0 on plate, cylinders or heads where two legs must be longer than the other two,
- (T) Magnet Foot Assemblies; CIR-9000 - may be used in sets of four or more to position CIR-0 on vertical or out-of-position, flat surfaces.
- (U) Leg and Magnet Foot Assemblies; CON-1040 (four required) - may be used for flat or irregular surfaces.
- (V) Offset Leg and Magnet Assemblies; CIR-9002 (four required) - use with a bevel cutting head or adjustable tip adaptor - to eliminate the "blind" spot under the ring.

## SET UP

A center-punch mark and a radius mark are the only layout required. The Center Pin Assembly (Z) extends below the CIR-0 base and is placed in the center-punch mark. The CIR-0 is then eased down to the work on the center pin. This movement locates the entire machine "on center." The Rack (W) with Torchholder (P) is then positioned over the radius mark.

## OPERATION

In order to provide a smooth start, it is recommended that the starting hole be drilled or pierced inside or outside the radius mark. Center the torch tip over the radius mark and secure the **Rack Stop (X)** firmly against the **Post Assembly (Y)**. [The side of the post assembly to which the rack stop is positioned depends upon whether the material inside or outside the cut is scrap]. Begin the cut from the starting hole and, after carriage travel is begun, move the **Torch Rack (W)** slowly against the **Rack Stop (X)**. This action "feathers-in" the cut eliminating a notch.

# BUG-5100-F DC III DRIVE UNIT

Drive Unit Operation:

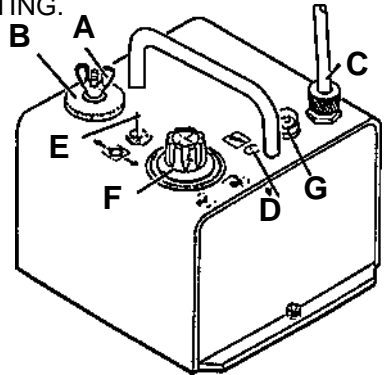
Rotating Cam Knob (B) will move the drive pinion in and out of engagement with the ring gear.

To lock drive into position, tighten the 1/4-28 Wing Nut (A).

To disengage the drive pinion from the ring gear, loosen the 1/4-28 Wing Nut (A) and turn Knob (B) counterclockwise. Turn Knob (B) clockwise to engage the drive pinion with the ring gear, re-tighten the 1/4-28 Wing Nut (A) to lock in position.

When **Power Cord (C)** is plugged into the appropriate power source, **Pilot Light (D)** will glow. **Switch (E)** controls the direction of travel, with the center position set at "OFF". **Knob (F)** controls the speed. Circuit Breaker (G) protects the unit against overload or electrical faults.

**CAUTION: IF THE CIRCUIT BREAKER OPENS, FIND AND CORRECT THE CAUSE OF FAILURE BEFORE RESETTING.**



## TECHNICAL DATA:

### DC III DRIVE UNIT

Power Requirement:	BUG-5100-F	120 VAC/50-60/1
	BUG-5102-F	240 VAC/50-60/1
	BUG-5104-F	42 VAC/50-60/1

Dimensions: 7.12" L x 6.75" W x 6.75" H  
(180 x 172 x 172 mm)

Net Weight: 16 lbs. (7.3 kg)

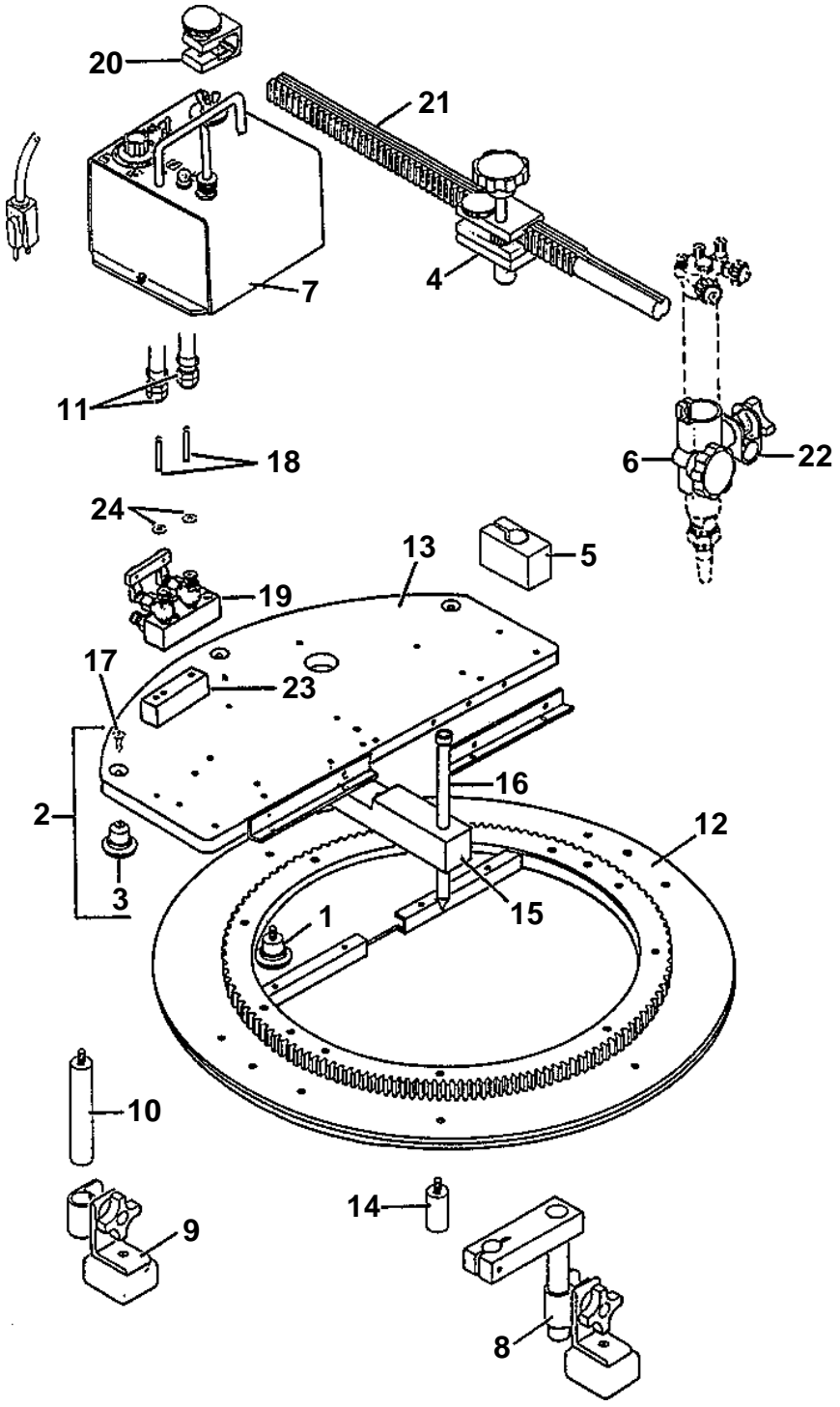
Shipping Weight: 20 lbs. (9.1 kg)

Speed: 2-50 ipm (50-1270 mm/min)  
(Measured at Drive Pinion)

Load Capacity: \*30 lbs. (14 kg)  
[Measured at Drive Pinion]

**\*Note:** Speed and load ratings apply at radius of ring gear. Speed is proportional to radius at any other point, and load rating is inversely proportional to radius.

# EXPLODED VIEW / CIR-O

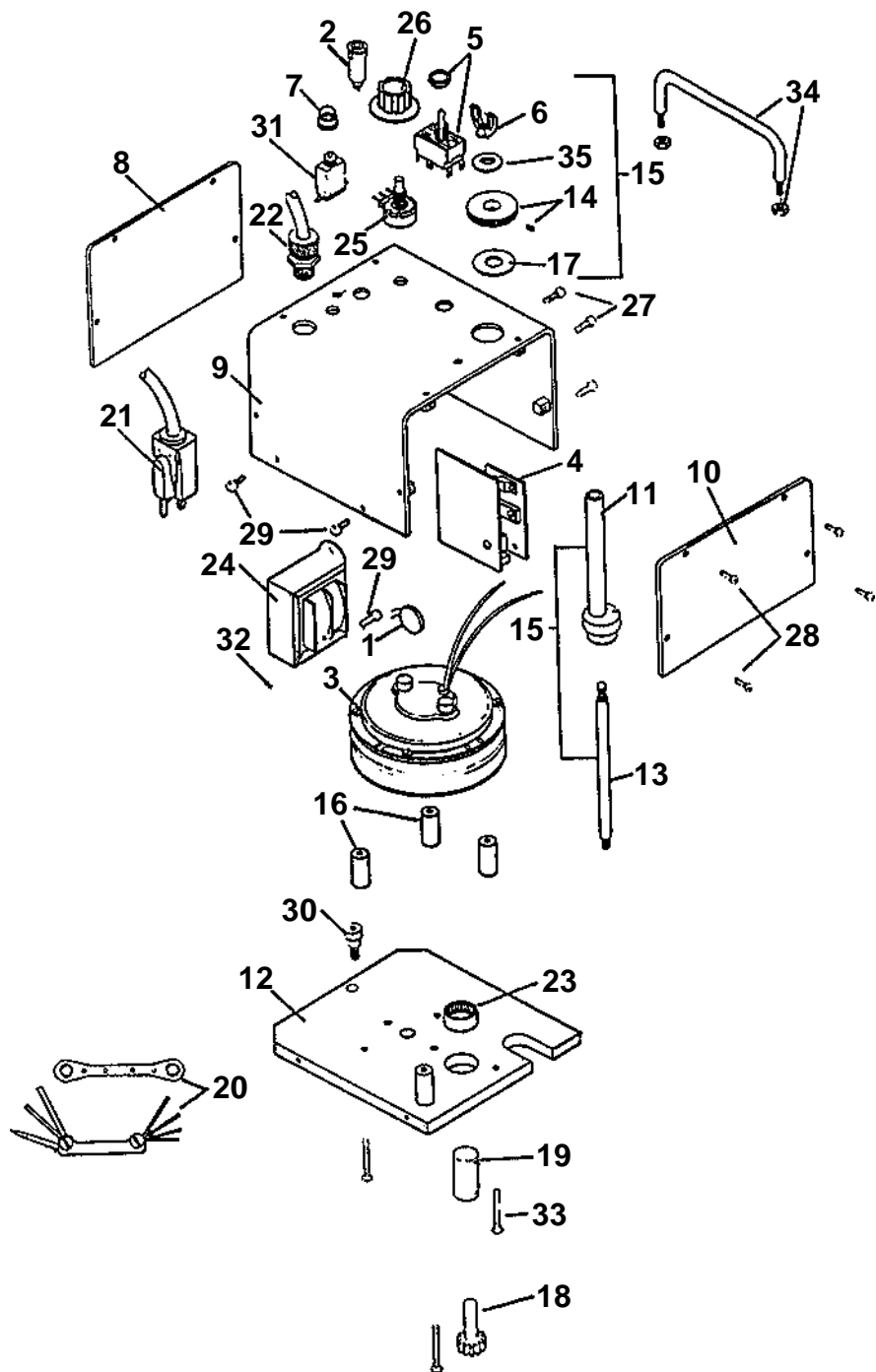


# PARTS LIST / CIR-O

## PARTS LIST / CIR-O

<u>ITEM</u>	<u>PART NO</u>	<u>QTY</u>	<u>DESCRIPTION</u>
1	BUG-1996	2	Fixed Leg & Wheel Assembly
2	BUG-1998	3	Adjustable Leg & Wheel Assembly
3	BUG-2010	5	Wheel w/Bearing
4	BUG-2407	1	Post Assembly (Vertical)
5	BUG-2440	1	Base Post (Block)
6	BUG-2915	1	Torchholder Assembly
7	BUG-5100-F	1	DC III Drive Unit Assembly (150:1) 120 VAC 240 VAC BUG-5102-F 42 VAC- BUG-5104-F
8	CIR-9002	4	Offset Leg & Magnet Foot (Optional)
9	CIR-9020	4	Magnet Foot
10	CIR-9021	4	Leg (Specify Length w/Suffix) Lengths Available: 5" (127 mm) 8" (203 mm) 10" (254 mm)
11	CIR-1010-3	1	Twin Hose Assembly 32" (812 mm) 42" (1066 mm) CIR-1010-4 50" (1270 mm) CIR-1010-5
12	CON-(3,4,5)000	1	Ring & Gear Assembly
13	CON-(3,4,5)041	1	Carriage Plate
14	CON-1003	4	Leg-2" (50 mm)
15	CON-1042	1	Center Pin Support Bar
16	CON-1043	1	Center Pin Assembly 9" (228 mm)
17	FAS-0986	3	Fit Hd Soc Sor 5/16-24 x 5/8
18	FAS-2736	2	Fil Hd Set 10-24 x 2-1/4
19	GOF-3025	1	2-Hose Quick-Acting Manifold
20	HOB-1025	1	Rack Stop
21	PAN-1015	1	Rack 22-5/8" (574 mm)
22	PAN-1033	1	Rod Clamp
23	PAN-1043	1	Spacer
24	WAS-0230	2	#10 Washer

# EXPLODED VIEW / BUG-5100-F DC III DRIVE UNIT



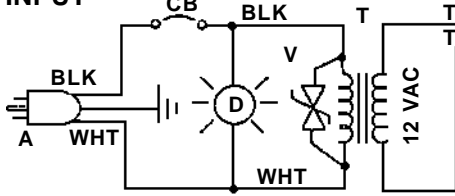
# PARTS LIST I BUG-5100-F DC III DRIVE UNIT

<u>ITEM</u>	<u>PART NO</u>	<u>QTY</u>	<u>DESCRIPTION</u>
* 1	BUG-1393	1	Volt Trap 120 VAC
* 2	BUG-1415	1	Pilot Light 120 VAC
* 3	BUG-1550	1	Gear Motor 150:1
4	BUG-1725	1	Precision Speed Control
5	BUG-2255	1	Toggle Switch
6	BUG-2767W	1	Wing Nut 1/4-28
7	BUG-2924	1	Reset Button Seal
8	BUG-2988	1	End Plate
9	BUG-5111	1	Cover
10	BUG-5112	1	End Plate
11	BUG-5113	1	Cam Clutch
12	BUG-5114	1	Swivel Plate
13	BUG-5116	1	Stud
14	BUG-5119	1	Knob
15	BUG-5120	1	Cam Clutch Assembly (includes Items 6,11,13,14,17,35)
16	BUG-5121	4	Stand Off
17	BUG-5122	1	Delrin Washer
18	BUG-5128	1	Drive Pinion w/Long Shaft
19	BUG-5131	1	Sleeve
20	BUG-9444	1	Tool Kit
*21	BUG-9445	1	Power Cord 120 VAC
22	BUG-9446	1	Cord Grip
23	BUG-9614	1	Needle Bearing
*24	BUG-9675	1	Transformer 120 VAC
25	BUG-9677	1	Potentiometer
26	BUG-9687	1	Knob
27	FAS-0112	2	Pan Hd Scr 6-32 x 1/4
28	FAS-0114	8	Pan Hd Scr 6-32 x 3/8
29	FAS-0124	7	Pan Hd Scr 8-32 x 3/8
30	FAS-0654	1	Soc Hd Shidr Scr 5/16 x3/8 x1/4-20
*31	BUG-2923	1	Circuit Breaker w/Reset .7A
32	FAS-1320	2	Hex Nut 8-32
33	FAS-2824	4	Fit Hd Slit Scr 8-32 x 1-3/4
34	GOF-3019	1	Handle
35	WAS-0240	1	1/4 Washer

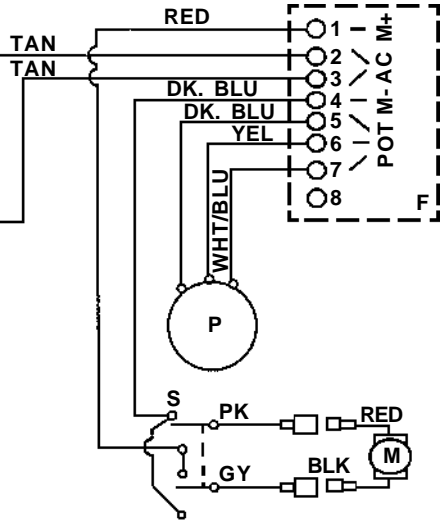
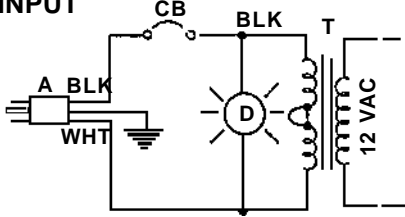
\*See Electrical Component Chart for 240 VAC and 42 VAC part numbers.

# WIRING DIAGRAM / BUG-5100-F DC III DRIVE UNIT

120 (42) VAC  
INPUT



240 VAC  
INPUT



## ELECTRICAL COMPONENT CHART

ITEM	DESCRIPTION	PART NUMBER		
		BUG-5100-F 120 VAC	BUG-5102-F 240 VAC	BUG-5104-F 42 VAC
A	Power Cord	BUG-9445	GOF-3115	BUG-9442
CB	Circuit Breaker	BUG-2923 (.7A)	BUG-2952 (.5A)	BUG-2933 (2A)
D	Pilot Light	BUG-1415	BUG-1428	BUG-1427
V	Volt Trap	BUG-1393	BUG-1563	BUG-1393
T	Transformer	BUG-9675	GOF-3112	BUG-1466
M	Gear Motor		* BUG-1550 (150:1)	
F	Precision Speed Control		BUG-1725	
S	Toggle Switch		BUG-2255	
P	Potentiometer Control		BUG-9686	

\* BUG-1600 (50:1)

BUG-1595 (100:1)

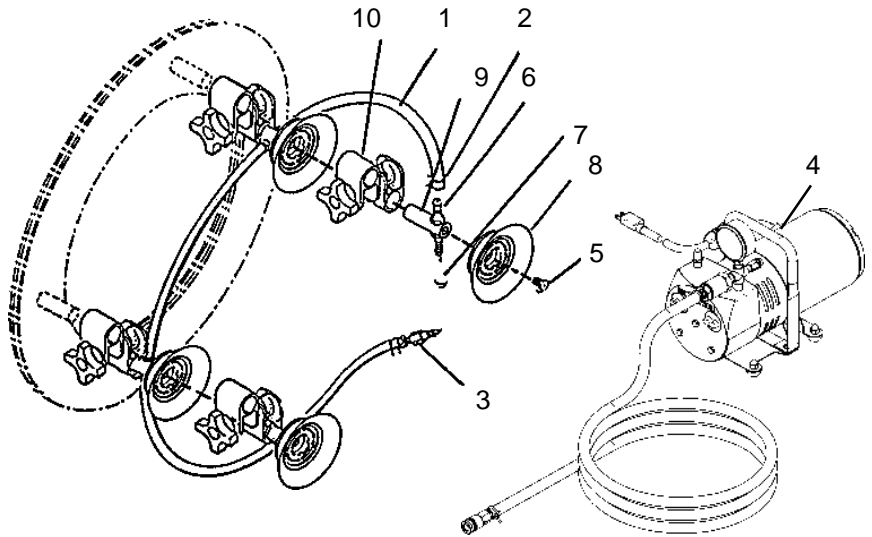
# VACUUM SUPPORT KIT

CON-1006 VACUUM SUPPORT KIT can be mounted on any CIR-0 or CON-0 ring base with standard CON-1003 legs. Vacuum pump kits are available for operation on 120 VAC [ARV-2020] or 240 VAC [ARV-2030]

Each vacuum cup holds 50 lbs (22 kg).

(Dirt and scale block vacuum lines; blow-out when clogged).

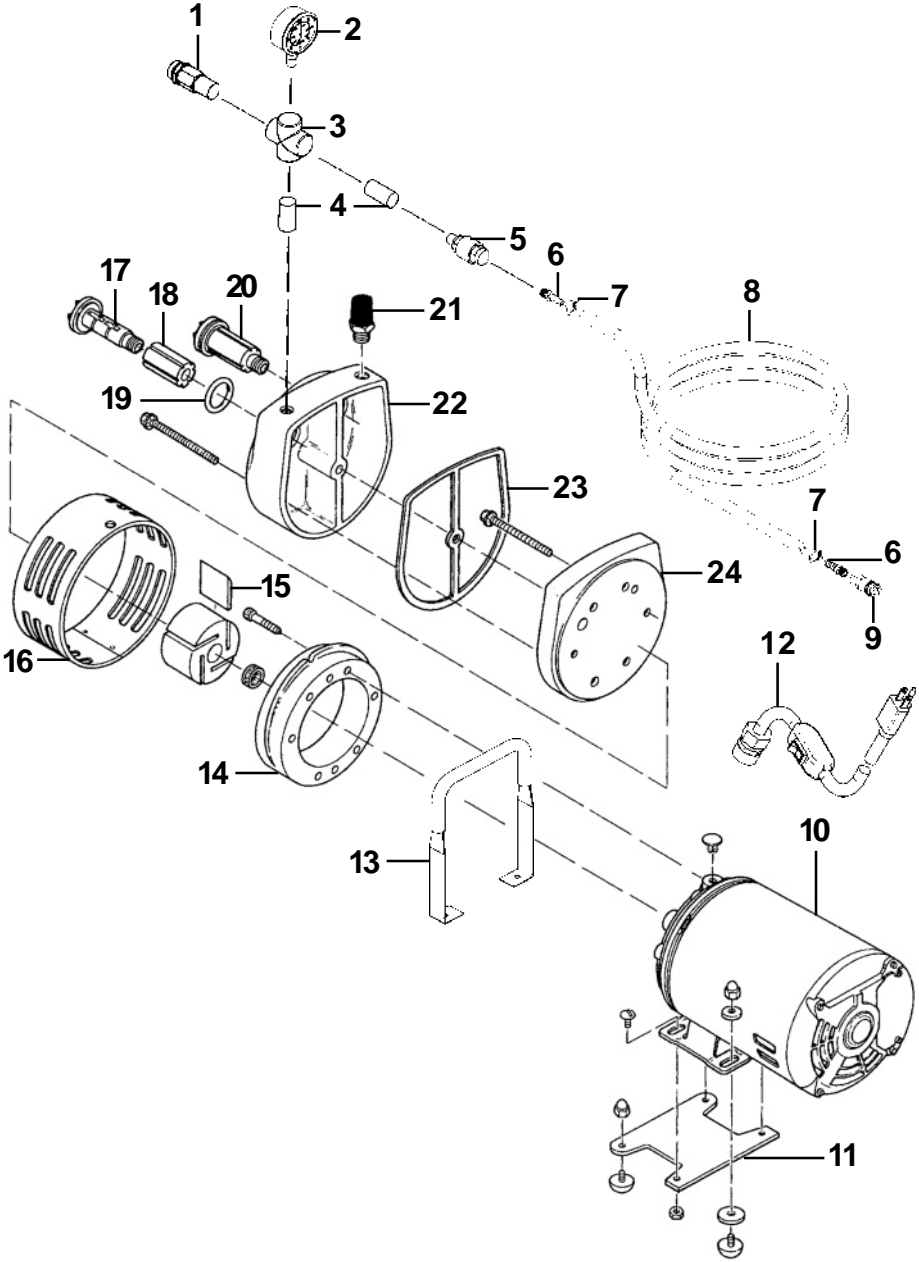
Keep flame 4" (100 mm) away from cups when burning or welding. Silicone vacuum cups will withstand a temperature of 600°F (318° C).



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	ARV-1004-14	Hose 14" (355 mm)
2	ARV-1005	Hose Clamp
3	ARV-1013	Male Quick Connector 1/4 NPT
4	ARV-2020	Vacuum Pump Kit (120 VAC/60 Hz/1 Ph)
	ARV-2030	Vacuum Pump Kit (240 VAC/60 Hz/1 Ph)
5	ARV-1034	Choke Nipple
6	ARV-1107	3/8" Hose Barb 1/4 NPT
7	ARV-1109	Protective Cap
8	ARV-1116	Vacuum Cup (Silicone) 50 lbs. (22 kg)
9	CON-1007	Vacuum Leg
10	CON-1020	Double Swivel Clamp Assembly

Vacuum Pump is not included in CON-1006 Vacuum Support Kit.

# EXPLODED VIEW / VACUUM PUMP



# PARTS LIST / VACUUM PUMP

<u>ITEM</u>	<u>Quantity</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	ARV-2017	1/4" Brass Vacuum Relief Valve
2	1	ARV-2014	Vacuum Gage
3	1	ARV-2018	1/4" NPT Union Cross, Female
4	2	ARV-2012	1/4" NPT Nipple
5	1	ARV-2016	1/4" NPT Brass Check Valve, F
6	2	ARV-1107	3/8" Hose Barb x 1/4" NPT-M
7	2	ARV-1005	11/16" X .112 Thk
8	1	ARV-1004-P	Hose 3/8" ID x 11/16" OD
9	1	ARV-1012	Female Quick Connector
10	1	ARV-2019	Pump
11	1	ARV-1999	Foot Support
12	1	ARV-2021	120 VAC Power Cord w/Switch
13	1	ARV-2013	Handle
14	1	ARV-2011	Body
15	4	ARV-2010	Vane
16	1	ARV-2009	Shroud
17	2	ARV-2003	End Cap
18	2	ARV-2004	Felt
19	2	ARV-2005	O-ring
20	2	ARV-2002	End Cap Assembly
21	1	ARV-2001	Filter / Muffler
22	1	ARV-2006	Muffler Box
23	1	ARV-2007	Gasket
24	1	ARV-2008	End Plate

ARV-2020 VACUUM PUMP KIT, 120 VAC 60 HZ/1 PH

ARV-2030 VACUUM PUMP KIT, 220 VAC 50 HZ/1 PH

The **VACUUM PUMP KITS** are 1/6 HP units that provide 15" (381 mm) Hg. on continuous duty. The ARV-2020/2030 Pump will support 30 vacuum cups.

A Repair Kit, **ARV-1029** 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.

## **LUBRICATION OF ARV-2020 AND ARV-2030 VACUUM PUMP KITS:**

Fill jar to line indicated on "oil level decal" to avoid wetting felt, which would increase oil feed. Use **SOCONY DTE LIGHT OIL OR EQUIVALENT PETROLEUM BASE OIL WITHOUT DETERGENTS**. One filling should last 20-50 hours of operation. For slower feed, pull wick downward so that less wick is exposed to air stream. Using the same oil as above, oil the motor bearings yearly with 1/2 teaspoon or 30 drops.

# TEMPLATE KIT

The purpose of the **TEMPLATE KIT** is to permit cutting of elliptical and obround holes. The manner of accomplishing this job involves dragging the torch barrel against a template which is made 11/16" (18 mm) larger on the radius than the cut-out desired (when using standard US machine torches).

The **TEMPLATE KIT** consists of a master layout template (aluminum sheet), which is used to locate the bolt holes and center on the actual template which should be made from 1/8" (3 mm) masonite or similar material.

A full-size drawing of the shape to be cut, should be made showing a center point, then add 11/16" (18 mm) to the radius. (Because the torch body drags against the template, adding one-half the diameter of the torch to the drawing will put the center of the torch tip in the right position.)

## MAKING THE TEMPLATE

Lay the aluminum master layout template on the masonite board. Transfer the holes from the master by tracing with a pencil or use a quick-drying spray paint. Next, position the oversized drawing, so that the center point is directly over the center on the template and the shape is located symmetrically between the 'leg holes' (see sketch Page 17, number 8. Trace [or spray] the outline onto the template.)

Next, drill the holes in the template. Then, cut-out the outside circle (outside of the template) and the shape to be cut (on the inside).

## MOUNTING THE TEMPLATE

The four CIR-9031 spacer legs should be screwed into the ring gear. (Remove existing 2" (50 mm) legs.) The template is then placed on these legs and the 2" (50 mm) legs, or 5" (127 mm) legs, when using the recommended CON-1040 leg and foot assemblies) are screwed - through the template - into the CIR-9031 spacer legs, which clamp the template under and parallel to the ring gear. Insert four round head screws (see sketch Page 17, number 12) through the template - into the alignment bars (see sketch Page 17, number 7.)

## SET UP

Place the rod [see sketch Page 17. number 5 in the base post on the carriage. Slip the tensioning assembly (see sketch Page 17, number 6) on the rod. Install machine torch in torchholder - make sure torch is straight up-and-down in both planes. Adjust tensioning assembly so that torch maintains firm contact with template when carriage is rotated. Connect hoses. Place machine on work - locate feet and lock in position.

## STARTING THE CUT

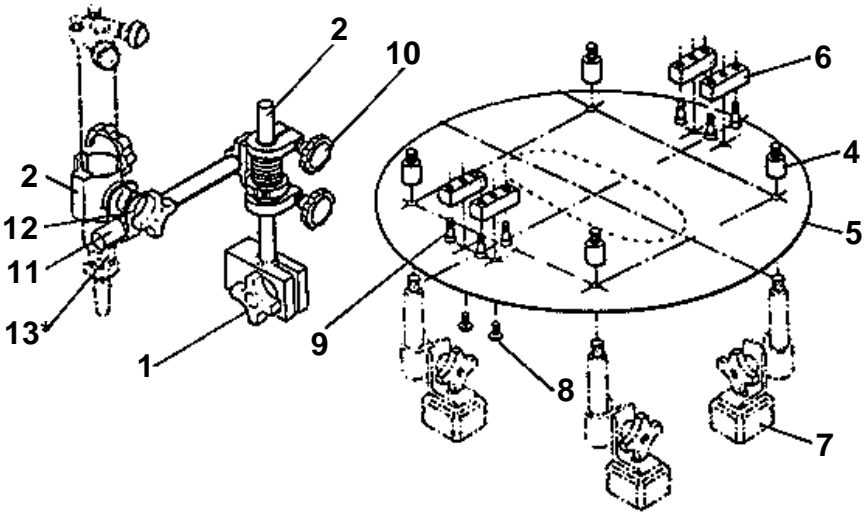
Lock tensioning assembly so that the torch tip is over scrap area, piece - or start the cut in starting hole. When preheat is complete start motor (carriage travel), release tensioning assembly and let it gradually swing to template - (this action 'feathers' the start into the cut.)

# PARTS LIST / TEMPLATE KIT

CIR-9030 [FOR CIR-3]

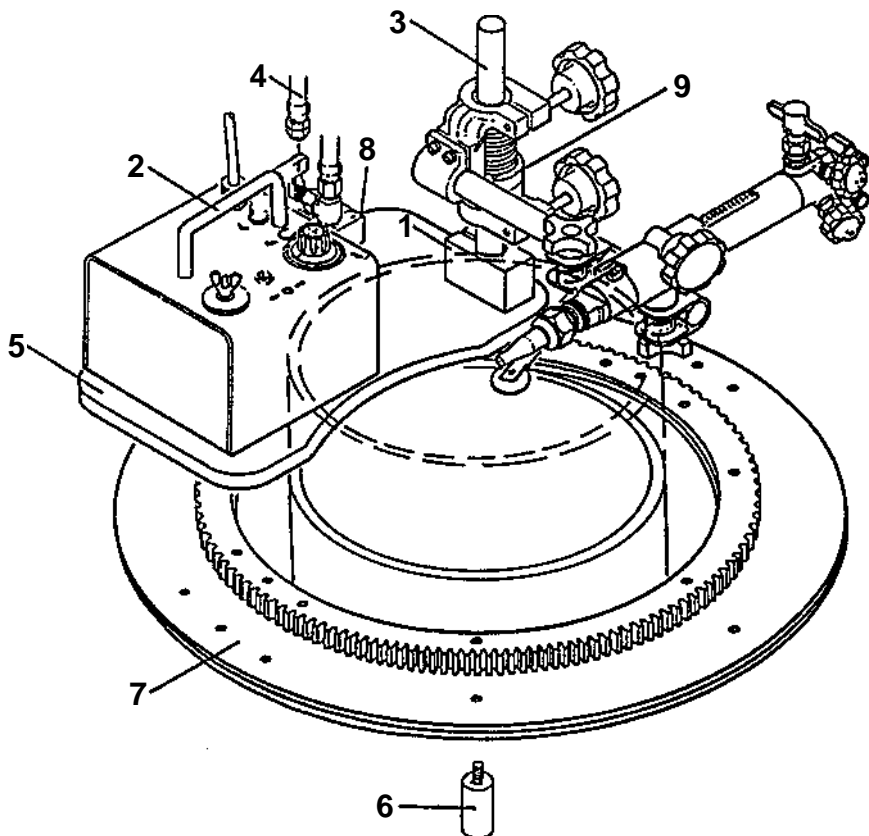
CIR-9040 [FOR CIR-4]

CIR-9050 [FOR CIR-5]



<u>ITEM</u>	<u>PART NO</u>	<u>QTY</u>	<u>DESCRIPTION</u>
1	BUG-2440	1	Base, Post (Block) - Order separately
2	BUG-2915	1	Torchholder Assembly
3	BUG-9180-10	1	1/8" (22 mm) rod, 10" (254 mm) Long
4	CIR-9031	4	Spacer Leg
5	CIR-9032	1	Aluminum Master Template Guide (For CIR-3)
6	CON-1004	4	Alignment Bars (included with Ring Gear Assembly)
7	CON-1040	4	Magnet Foot and Leg Assembly-Order separately-use of 4 recommended with this kit
8	FAS-0257	4	Rnd Hd Scr 1/4-20 x 3/4"
9	FAS-2553	8	Soc Hd Cap Scr 1/4-20 x 1-1/2" (included with Ring Gear Assembly)
10	PAN-1009	1	Tensioner
11	PAN-1018	1	Rod w/Key-10" (254 mm) Long
12	PAN-1033	1	Rod Clamp
13	-----		Torches are not furnished with kit, order separately

# CIR-O WITH ANNULAR CARRIAGE



CIR-3304  
CIR-4405  
CIR-5506

CIR-0 III w/ANNULAR CARRIAGE  
CIR-0 IV w/ANNULAR CARRIAGE  
CIR-0 V w/ANNULAR CARRIAGE

ITEM	PART NO	QTY	DESCRIPTION
1	BUG-2440	1	Base, Post (Block)
2	BUG-5100-F	1	DC III Drive Unit Assembly (150: 1)
3	BUG-9180-10	1	7/8" (22 mm) Rod, 10" (254 mm) Long
4	CIR-1010-3	1	Twin Hose Assembly 32" (812 mm) 42" (1066 mm): CIR-1010-4 50" (1270 mm): CIR-1010-5
5	CIR-5031	1	Carriage Plate-Annular
6	CON-1003	4	Leg 2" (50 mm)
7	CON-(3,4,5)000	1	Ring & Gear Assembly
8	GOF-3025	1	2-Hose Quick-Acting Manifold
9	PAN-1010	1	Panograph Assembly with Torchholder

# CIR-O SPEED RANGE CHART

## Capacities and Speed Ranges

		DIAMETER		DIAMETER		
		INCH	IPM	INCH	IPM	
CIR-III	INSIDE RING	3	.4-8	75	10-210	
		6	.8-16	150	20-420	
		10	.4-28	250	35-700	
		14	2-39	350	50-1000	
	OUTSIDE RING	26	3.5-70	650	90-1805	
		30	4-80	750	105-2100	
		34	4.5-92	850	120-2400	
		38	5.2-105	950	130-2640	
		42	5.7-115	1050	150-3000	
		46	6.3-125	1140	160-3200	
		50	6.8-135	1250	175-3500	
		56	7.6-155	1420	200-4000	
	CIR-IV	INSIDE RING	3	.3-5	75	7-140
			6	.6-11	150	14-280
10			.9-18	250	23-460	
14			1.3-26	350	32-650	
18			1.7-33	450	42-840	
22			2-40	550	50-1000	
OUTSIDE RING		34	3.2-63	850	80-1600	
		38	3.5-70	950	87-1760	
		42	3.9-78	1050	97-1950	
		46	4.3-85	1150	105-2130	
		50	4.6-93	1250	115-2300	
		54	5-100	1350	125-2500	
		58	5.4-110	1450	135-2700	
		64	6-120	1625	150-3000	
CIR-V	INSIDE RING	3	.2-4	75	5-100	
		6	.4-8	150	10-210	
		10	.7-13	250	17-350	
		14	1-19	350	42-500	
		18	1.3-25	450	32-640	
		22	1.5-30	550	38-760	
		26	1.8-37	650	45-900	
		30	2-41	750	52-1050	
	OUTSIDE RING	42	2.9-57	1050	73-1458	
		46	3.2-63	1150	80-1600	
		50	3.4-68	1250	87-1750	
		54	3.7-75	1350	94-1900	
		58	4-80	1450	100-2000	
		62	4.3-85	1550	105-2150	
	66	4.5-90	1650	115-2300		
	72	4.9-100	1825	125-2500		

# TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	REMEDY
Does not run- Indicator light off.	No power to machine.	Check power line supply voltage. Plug in line cord firmly.
Does not run, indicator light off. Circuit breaker tripped.	Wiring shorts.	Disconnect machine and examine internally; rewire at fault.  If none found, throw direction switch to 'OFF', reset breaker and plug in.
	Shorted motor.	If breaker does not trip, replace drive unit.
	Faulty speed control board.	If breaker trips again, replace control board.  (OR)
Does not run. indicator light on.	Burned out transformer.	Replace transformer.
	Bad connection.	Check wiring connections, 12 VAC should appear across secondary of transformer.  Tighten terminal screws on speed control board.
Unit runs, but no control over speed.	Faulty speed control board.	If DC Volts = 0 across leads to motor; replace control board.
	Faulty speed control board.	Replace control board. (Check connection first).

**NOTE:**

Make sure unit is pugged into correct voltage.  
(120 VAC, 240 VAC, 42 VAC) corresponding to model number rating.

12 VAC should appear across secondary of transformer in all DC III Drive Units.

# 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.**