

INSTRUCTIONS AND PARTS MANUAL

STIFFENER WELDER

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-STIFW-IPM-0219

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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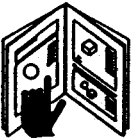
SAFETY

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.

STIFFENER WELDER INSTRUCTION AND PARTS MANUAL

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28.....	Troubleshooting
29.....	Warranty

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

INTRODUCTION

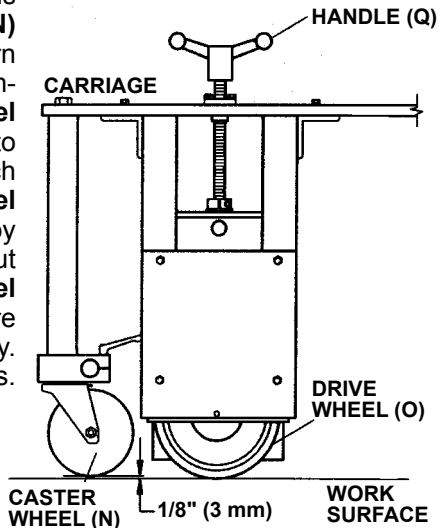
- The BUG-O STIFFENER WELDER mechanizes two heavy duty wire feeders to weld "I", "T", and "Angle" stiffeners on one or both sides simultaneously.
- The standard machine can be set up for continuous or intermittent fillet welds on stiffeners with flange widths of 0" - 12" (0 mm - 300 mm) and heights of 3"-16" (75 mm - 400 mm).
- The stiffener welder rides on four large caster wheels which make it easy to move the unit. Four guide wheels steer the unit along the stiffener and two floating, spring loaded arms with "V" rollers and spatter guards carry the welding torches and follow the joint [riding over tack welds].
- A heavy duty drive unit moves the stiffener welder along the work.

ASSEMBLY INSTRUCTIONS

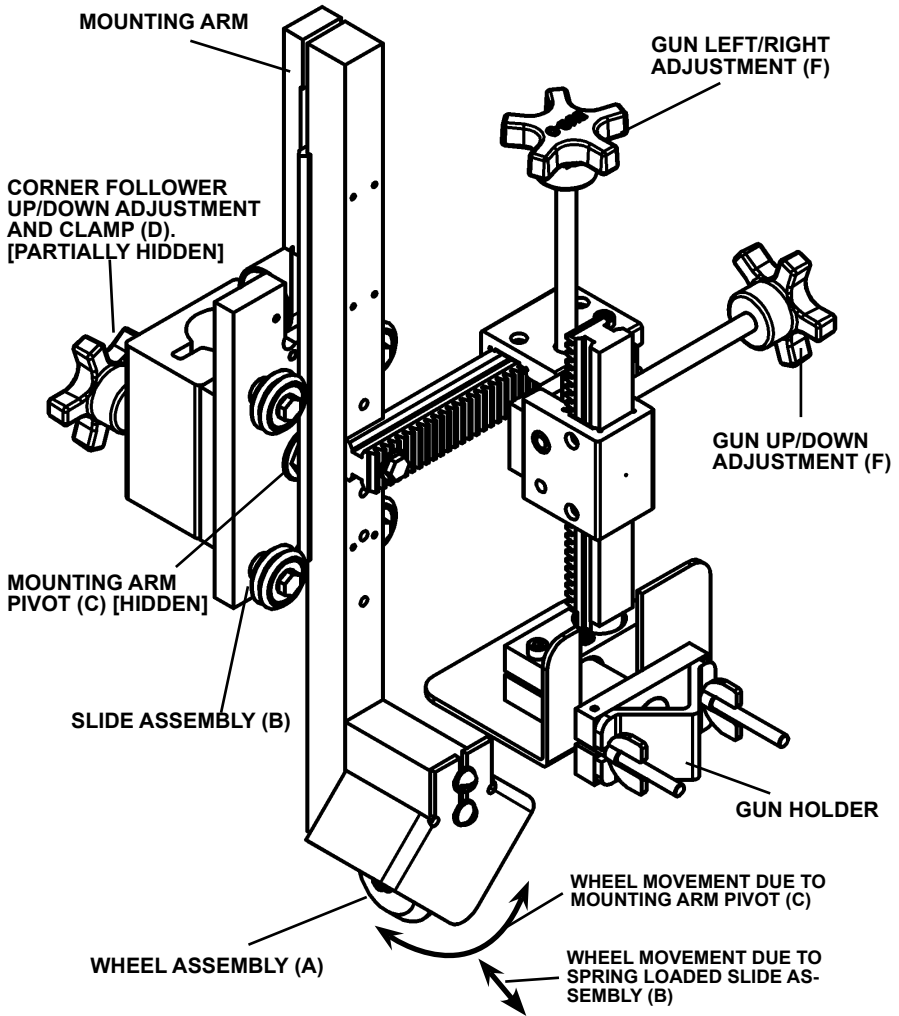
1. Unpack the STIFFENER WELDER and place on a flat surface.
2. Mount bars with floating torch mounts in the appropriate holes at the front of the carriage assembly [see page 7].
3. Mount the wire reels at the rear of the carriage.
4. Connect the wire feed cables to the wire feed motors and secure with set screw.
5. Since two (2) power sources are required - keep the power lead control cable separated - one pair "left" and one pair "right".
 - Connect "left" pair of left wire feed motor [power lead] and left LN-9F control box [bottom of box-amphenol connector].
 - Connect **Corner Followers**.

OPERATION / BUG-3230 DRIVE UNIT ASSEMBLY

The **BUG-O STIFFENER WELDER** is supported by four **Caster Wheels (N)** for easy (positioning) movement. Turn the **Handle (Q)** counterclockwise to engage the hardened rubber **Drive Wheel (O)**. The **Caster Wheel (N)** adjacent to the **Drive Wheel (O)** should not touch the work surface when the **Drive Wheel (O)** is engaged. Raise the **Carriage** by lowering the **Drive Wheel (O)** about 1/8" (3 mm) below the **Caster Wheel (N)** as shown at right. This will ensure that the **Carriage** will drive properly. See page 6 for the power connections.

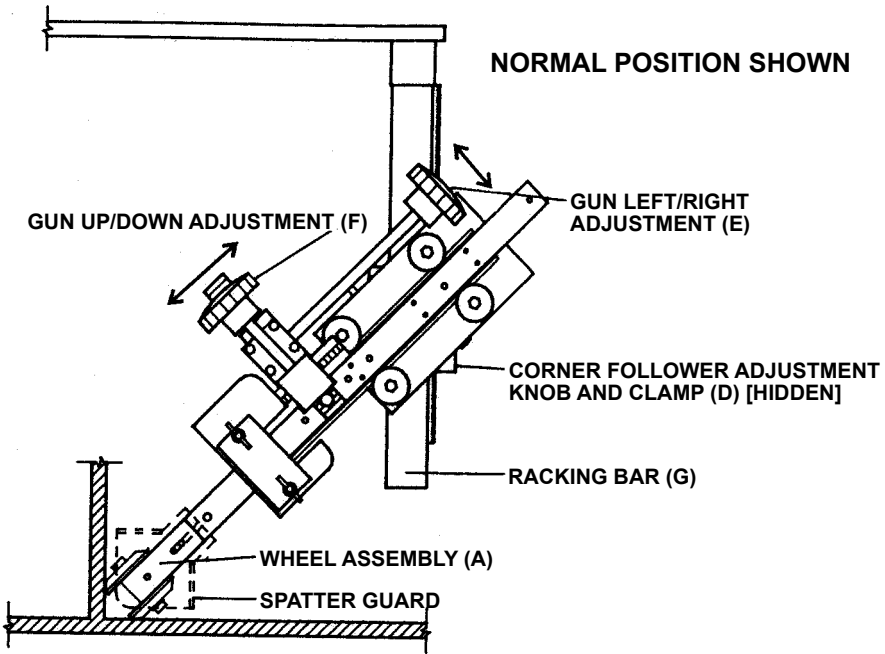


HEAVY DUTY CORNER FOLLOWER

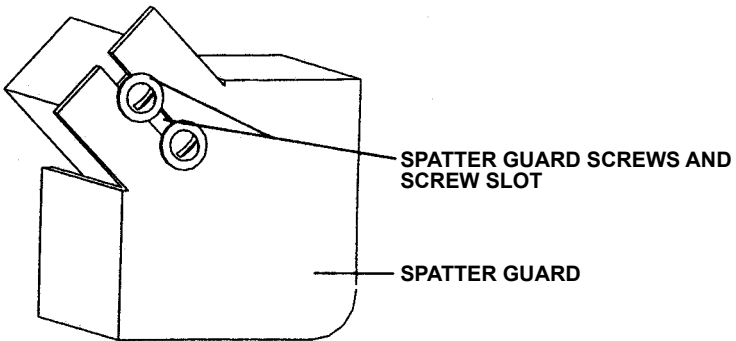


The **Stiffener Welder** has two spring loaded corner followers which keep the welding guns aligned while the unit is running. The spring loaded **Slide Assembly (B)** holds the **Wheel Assembly (A)** in the workpiece corner and enables the wheel to ride over tack welds. The **Mounting Arm Pivot (C)** enables the wheel and gun to maintain a constant work angle. The entire corner follower can be adjusted up and down using an **Adjustment Knob and Clamp (D)**. Once the corner follower's height is set, the gun can be adjusted **Left/Right (E)** and **Up/Down (F)** using the appropriate knobs.

HEAVY DUTY CORNER FOLLOWER(CON'T.)

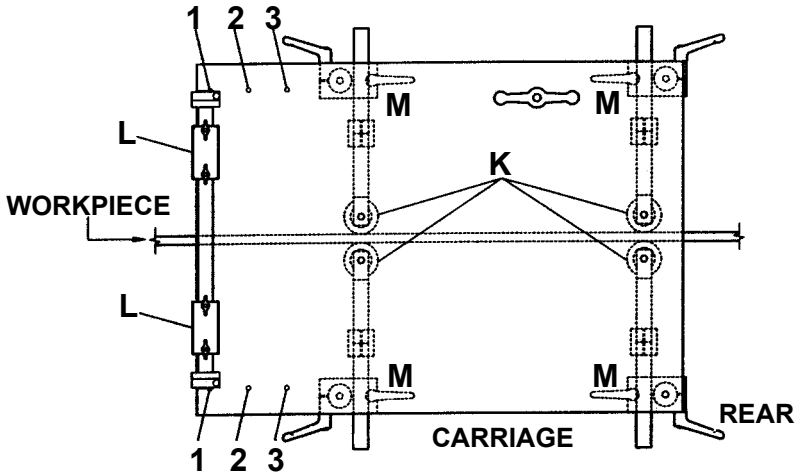


Three adjustments are used to achieve the shown normal work position. The **Corner Follower Adjustment Knob and Clamp (D)** are used to move the gun up and down the **Racking Bar (G)**. The corner follower will pivot as required at the racking bar to center the **Wheel Assembly (A)** in the workpiece corner. Two knobs are used to move the **Gun Up/Down (F)** and **Left/Right (E)** once the **Wheel Assembly (A)** is centered in the workpiece corner.



The spatter guard height is adjusted by loosening the spatter guard screws and sliding the guard up or down. Retighten the screws.

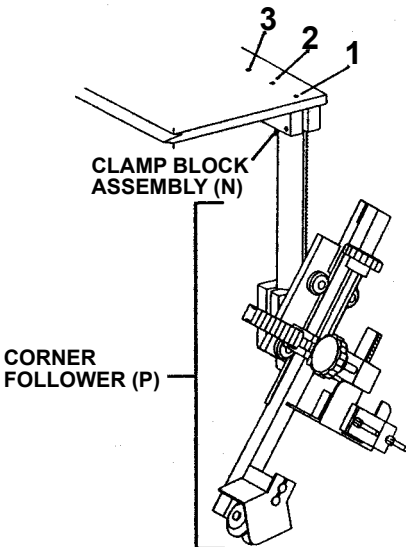
---> DIRECTION OF TRAVEL WHEN WELDING --->



The carriage has four **Adjustable Guide Wheels (K)** for quick adjustment or change. Use the **Adjustable Clamp Levers (M)** to set the guide wheels so that the workpiece (STIFFENER) is centered under the carriage.

Two **Fits-All Clamps (L)** are mounted on a bar at the front of the carriage to clamp the power and cables for each wire feeder, and act as a strain reliever.

DO NOT PUT THE WIRE FEED CABLE (w/ TORCH) IN THESE CLAMPS!

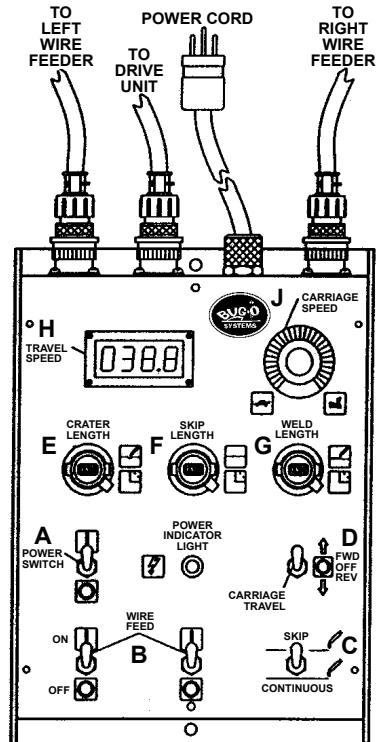


At the front of the carriage, three holes (1), (2), and (3) are located on both the left and right hand sides of the deck plate. Holes (1) and (2), or (2) and (3) are used to bolt the **Clamp Block Assembly (N)** that holds the **Corner Follower (P)**.

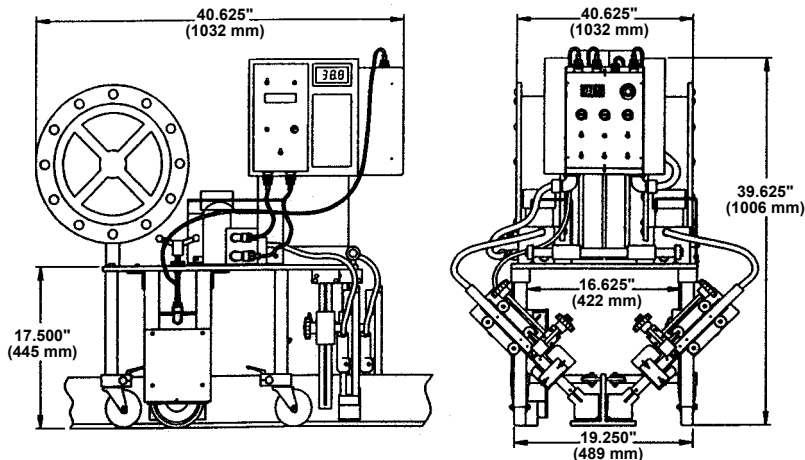
By selecting the proper holes, it is possible to mount the guns opposite each other or staggered by 2-1/2" (64 mm).

OPERATING INSTRUCTIONS

- Connect the power sources to the LN-9F wire feeders. (Refer to the LN-9F manual).
 - Power for the BUG-O drive (120 VAC, 50/60, 1 PH) is taken from the "right" LN-9F control box via a line connector. Therefore, the "right" power source control cable must be connected and the power source turned "ON" to provide power to the BUG-O Control Box.
- Turn the lower trigger interlock toggle switch on both LN-9F's to the "OFF" position.
 - Make sure **Wire Feed Switches (B)** are "OFF".
- Turn the power source "ON" and feed the wire from the reels to the torches as follows:
 - Place "**Forward-Off-Reverse Switch (D)**" on BUG-O Control Box in the center "OFF" position.
 - Turn the "**Power Switch (A)**" "ON".
 - Place wire in feed rolls and "inch" wire by "jogging" the wire feed toggle switch on the LN-9F until the wire emerges at the tip of the torch.
 - Position the torch tip and adjust the height for proper stick-out.
- Set the welding travel speed: Put carriage **Travel Direction Switch (D)** in the center "OFF" position and **Skip/Continuous Selector Switch (C)** to "CONTINUOUS". Speed is adjusted with the **Carriage Speed Control (J)**, and the speed will display in the **Digital Readout (H)** in inches per minute.
- Select "Skip" or "Continuous" position on the **Toggle Switch (C)**. If "Skip" is selected:
 - Set **Skip Length (F)** - Turn digital potentiometer clockwise to increase length. Push the lever downward to lock setting.
 - Set **Weld Length (G)** - Turn digital potentiometer clockwise to increase length. Push the lever downward to lock setting. **Note:** The weld length depends on the weld speed and time; and since this control actually sets the weld time, it has to be readjusted if the weld speed is changed.
- Set **Crater Fill Time (E)**: Turn the digital potentiometer clockwise to increase time (usually crater fill time is very short). Push the lever downward to lock setting.
- Select travel direction: For welding, set the travel direction switch "UP" so that the "rear" end (with wire reels) is moving away from the starting position.
- Engage the **Drive Wheel** (see page 4).
- Operate the unit to test the settings.
- When ready to start welding:**
 - Set the voltage and wire speed on LN- 9F's by referring to the operation and instruction manuals provided with the feeders.
 - Turn both wire feed switches on the BUG-O Control Box to "ON" (up).
 - Set the travel direction switch to "FORWARD" (up).
 - Set either Skip or Continuous mode.
 - Turn the power switch "ON" (up) to start welding and travel.



STIFFENER WELDER DIMENSIONS



TECHNICAL DATA

STIFFENER WELDER SUB ARC

Power Requirements:	BUG-3170_*	120 VAC, 50/60, 1 PH
	BUG-3172_*	240 VAC, 50/60, 1 PH
	BUG-3174_*	42 VAC, 50/60, 1 PH
	*Wire sizes available: .035, .045, .052, 1/16"	

Kit Net Weight:	270 lbs. (123 kg) without wire
Shipping Weight:	365 lbs. (166 kg) without wire

STIFFENER WELDER MIG

Power Requirements:	BUG-3180_*	120 VAC, 50/60, 1 PH
	BUG-3182_*	240 VAC, 50/60, 1 PH
	BUG-3184_*	42 VAC, 50/60, 1 PH
	*Wire Sizes available: .035, .045, .052, 1/16", 3/32"	

Kit Net Weight:	270 lbs. (123 kg) without wire
Shipping Weight:	365 lbs. (166 kg) without wire

STIFFENER WELDER FLUX CORE

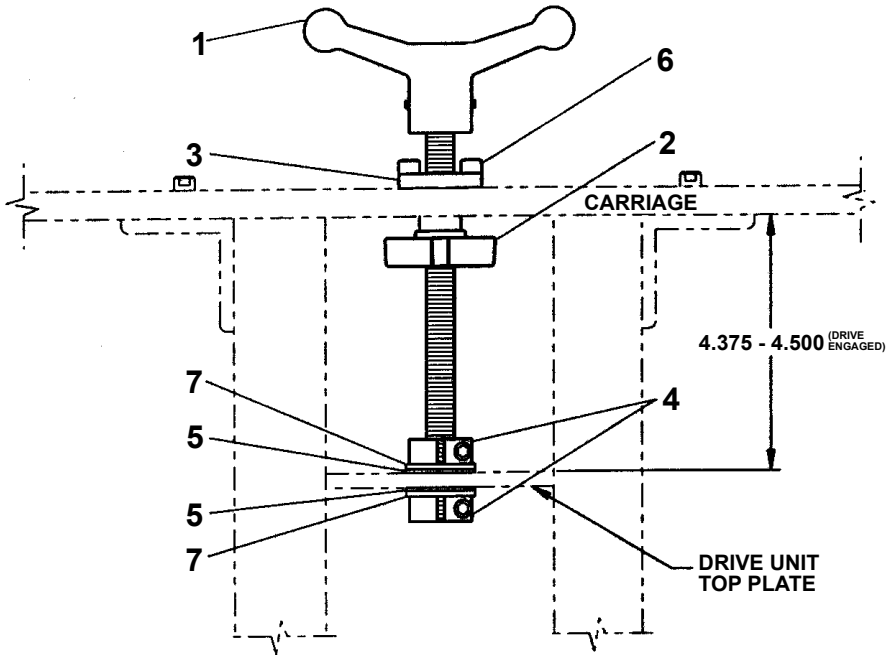
Power Requirements:	BUG-3200_*	120 VAC, 50/60, 1 PH
	BUG-3202_*	240 VAC, 50/60, 1 PH
	BUG-3204_*	42 VAC, 50/60, 1 PH
	*Wire sizes available: .068, 5/64", 3/32", 7/64", .120	

Kit Net Weight:	264 lbs. (120 kg) without wire
Shipping Weight:	360 lbs. (163 kg) without wire

Travel Speed:	3-44 ipm (75-1100 mm/min) Selectable carriage speed readout (in/min or cm/min)
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Controls:	<ul style="list-style-type: none"> • Manual or automatic wire feed. (Cold wire feed for setup). • Independent left and right feed control. • Crater fill time of 0-1.5 sec. • ON/OFF Power Switch • FORWARD/OFF/REVERSE Carriage travel direction select • CONTINUOUS/INTERMITTENT weld select • Weld length timer 1-30 sec. • Skip length timer 1-30 sec.
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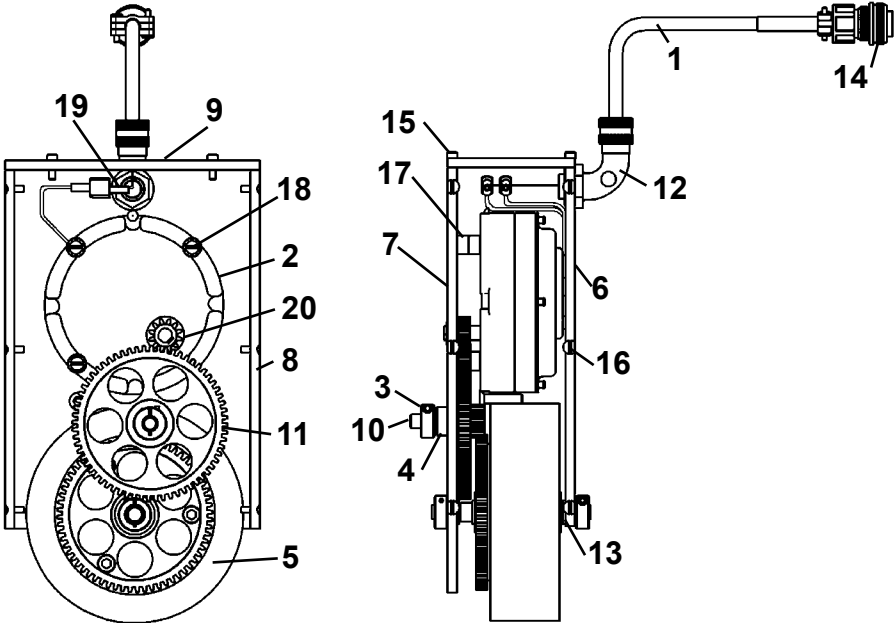
BUG-3145 DRIVE WHEEL ENGAGEMENT ASSEMBLY



PARTS LIST

<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	BUG-3140	Handle w/ Threaded Rod
2	1	BUG-3141	Knob
3	1	BUG-3144	Positioning Hub
4	2	BUG-3146	Locking Threaded Collar
5	2	BUG-5122	Delrin Washer
6	2	FAS-0557	Socket Hd Cap Screw 1/4-20 x 3/4Lg
7	2	WAS-0280	1/2 Washer

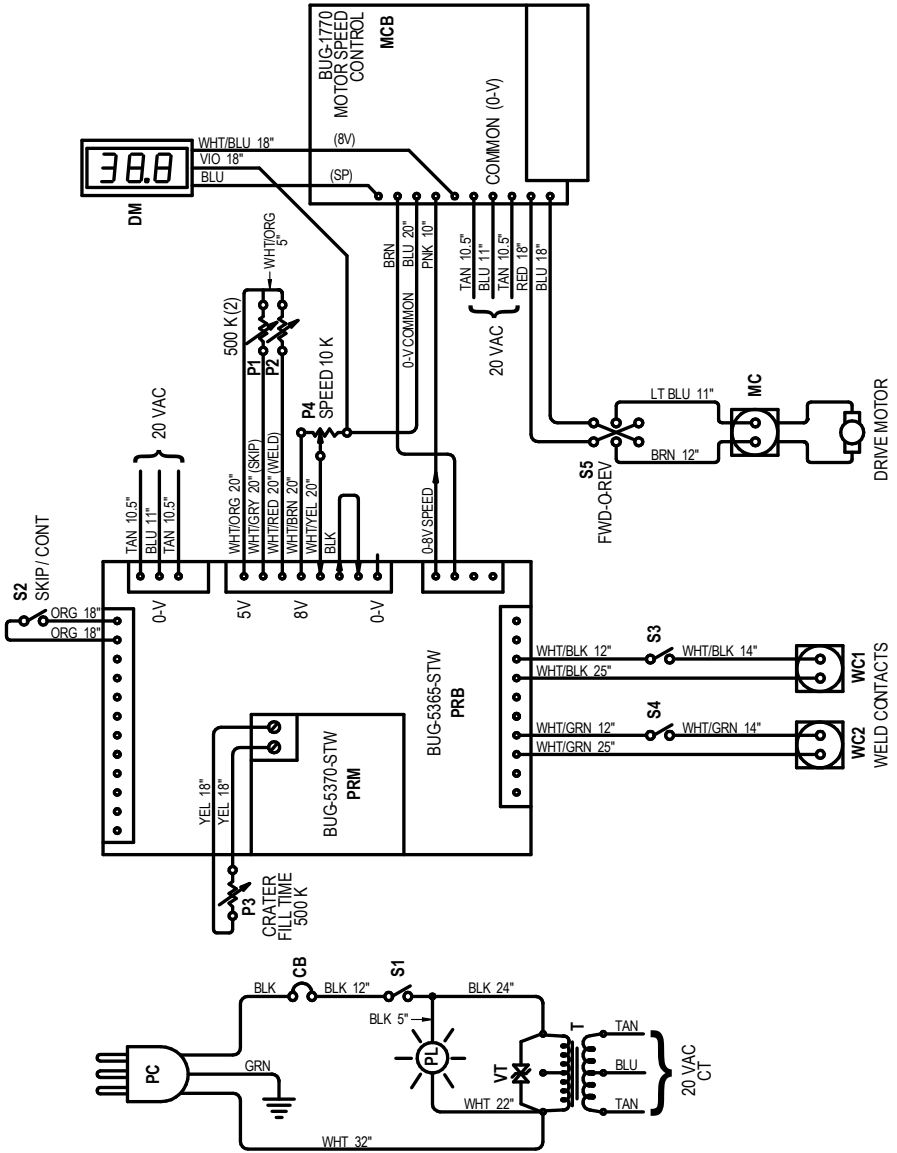
BUG-3230 DRIVE UNIT ASSEMBLY



PARTS LIST

<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	60 in.	900-4-001	2 Cond. 18 AWG. SJO Cord
2	1	BUG-1600	Gear Motor (50:1)
3	3	BUG-2268	Thrust Washer
4	1	HOB-2849	Bearing Pod Assembly
5	1	STW-3235	5.75" Dia. Drive Wheel Assembly
6	1	BUG-3236	Front Plate
7	1	BUG-3237	Back Plate
8	2	BUG-3238	Side Plate
9	1	BUG-3239	Top Plate
10	1	BUG-9012	Locking Collar
11	1	BUG-9013	Gear Assembly
12	1	BUG-9103	Cord Connector, 90 Degree
13	2	BUG-9635	Bearing Flange
14	1	BUG-9857	Cable Connector, 2-T, M
15	4	FAS-0525	Soc Hd Cap 8/32 X 1/2"
16	12	FAS-0825	8-32 X 1/2" Flt Hd. Slot
17	6	GOF-3012	Stand Off
18	3	FAS-2821	Flt Hd Slit Scr 8-32 X 1-1/4"
19	2	GOF-3036	Qd Female, Fully Insulated
20	1	GOF-3014	Drive Pinion W/Key & Set Scr

CONTROL BOX WIRING DIAGRAM



BUG-3280 CONTROL BOX 120 VAC/50-60/1
BUG-3282 CONTROL BOX 240 VAC/50-60/1
BUG-3284 CONTROL BOX 42 VAC/50-60/1

ELECTRICAL COMPONENT CHART

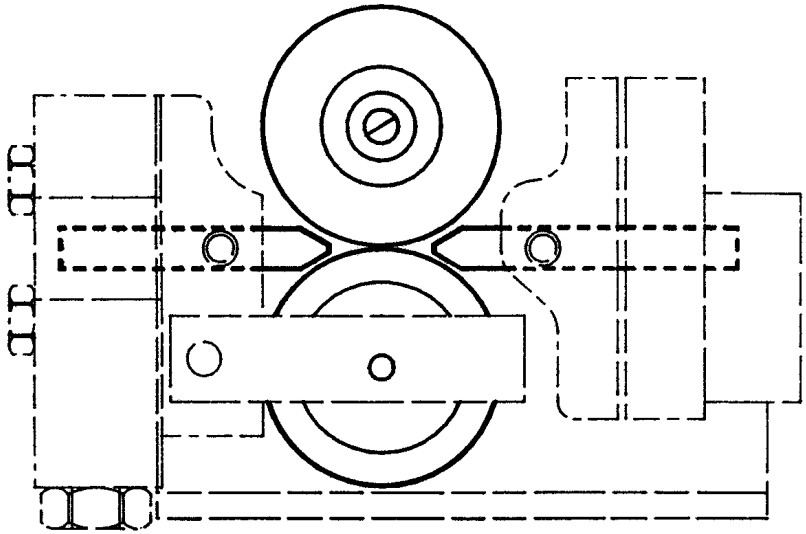
ITEM	DESCRIPTION	BUG-3280 120 VAC	BUG-3282 240 VAC	BUG-3284 42 VAC
CB	Circuit Breaker	BUG-2923	BUG-2952	BUG-2923
MCB	Motor Control Board	BUG-1770-44	BUG-1770-110	BUG-1770-110
PC	Power Cord	BUG-9445	GOF-3115	BUG-9545
PL	Pilot Light	BUG-1415	BUG-1426	BUG-1427
T	Transformer	BUG-5001	BUG-5002	BUG-5003
VT	Volt Trap	BUG-1393	BUG-1563	BUG-1393
DM	Digital Speed Readout	BUG-1761		
MC	Motor Connector	BUG-9856		
P1	Potentiometer, Skip Time	BUG-5054		
P2	Potentiometer, Weld Time	BUG-5054		
P3	Potentiometer, Fill Time	BUG-5054		
P4	Potentiometer, Speed Control	BUG-9686		
PRB	Interface Control Board	BUG-5365-STW		
PRM	Program Module	BUG-5370-STW		
S1	Power Toggle Switch	ABP-1069		
S2	Skip/Continuous Switch	ABP-1069		
S3	Weld Contact Switch #1	ABP-1069		
S4	Weld Contact Switch #2	ABP-1069		
S5	Forward/Off/Reverse Switch	BUG-2255		
WC1	Weld Contact Connector	BUG-9486		
WC2	Weld Contact Connector	BUG-9486		

BUG-3291- _ LN-9F WIRE FEEDER

INCLUDES:

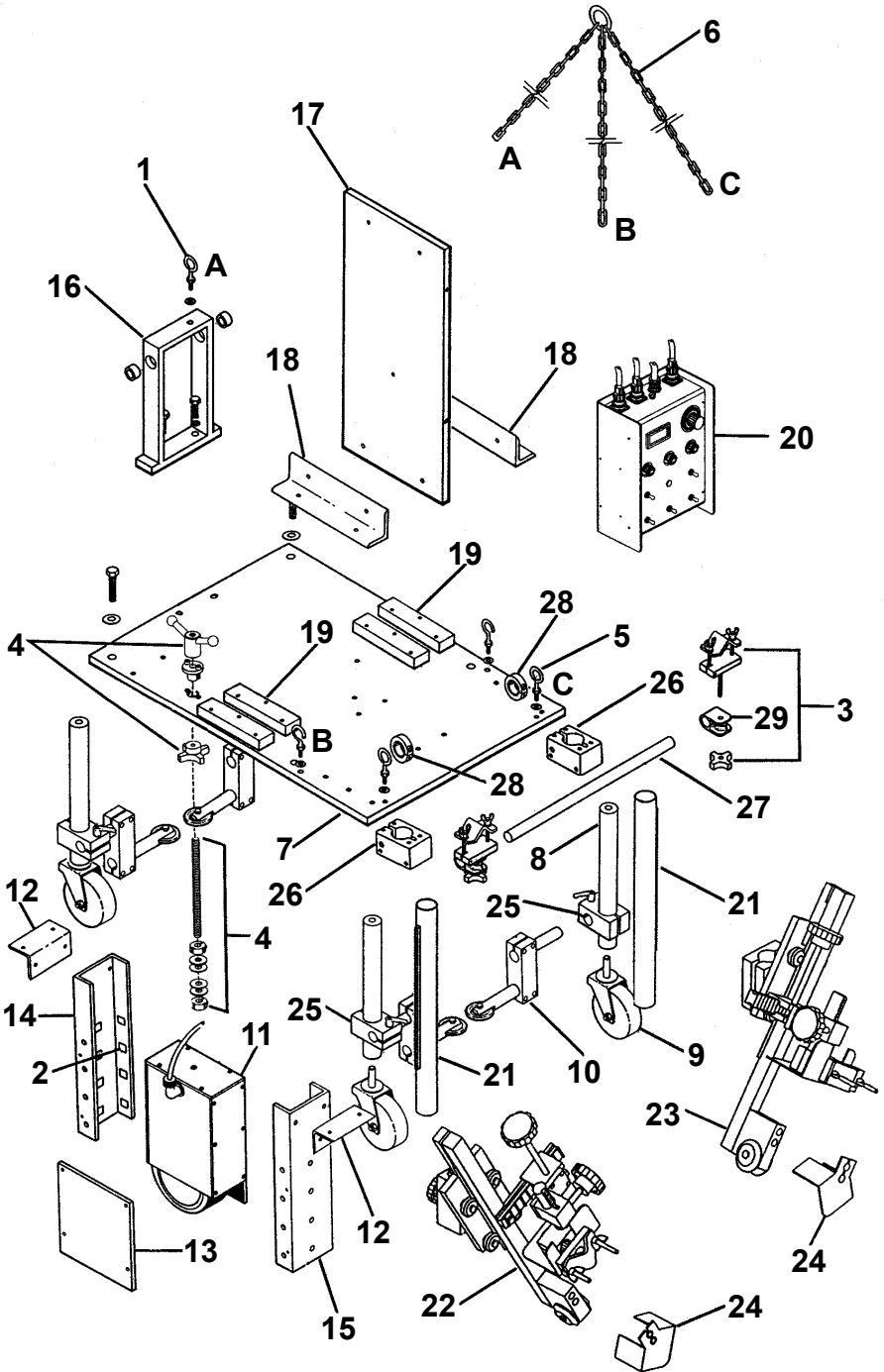
BUG-3150- _ DRIVE ROLL KIT

(REFER TO CHART BELOW FOR WIRE SIZE)



WIRE SIZE	DRIVE ROLL KIT	BUG-3170- SUB ARC	BUG-3180- MIG	BUG-3200- FLUX CORE
.035	BUG-3150-035		X	
.045	BUG-3150-052		X	
.052	BUG-3150-052		X	
1/16	BUG-3150-116		X	
.068	BUG-3150-332			X
5/64	BUG-3150-332	X		X
3/32	BUG-3150-332	X	X	X
7/64	BUG-3150-120			X
.120	BUG-3150-120			X

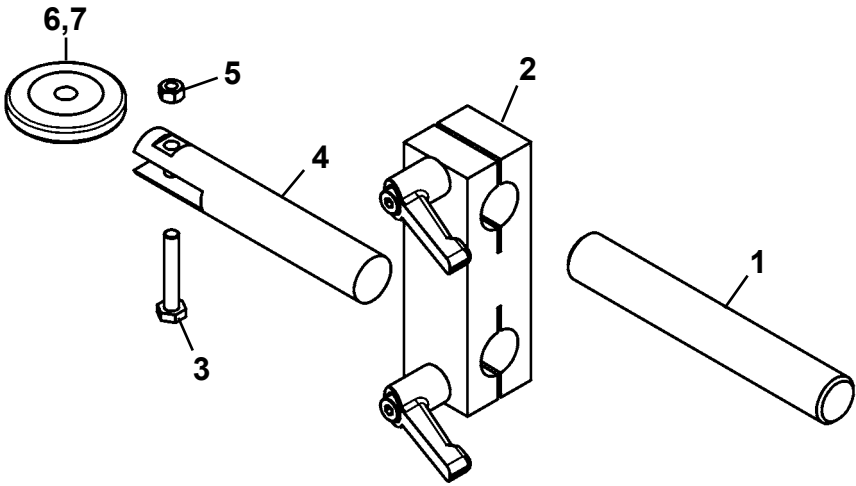
BUG-3190 STIFFENER WELDER WITHOUT FEEDER / EXPLODED VIEW



BUG-3190 STIFFENER WELDER WITHOUT FEEDER / PARTS LIST

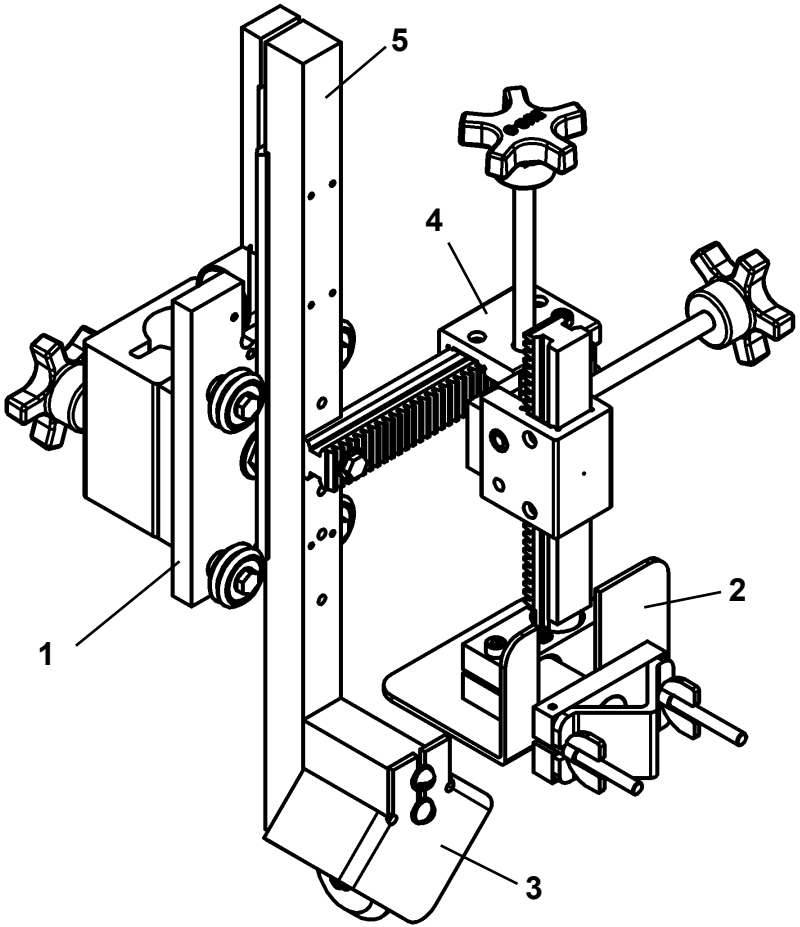
<u>ITEM</u>	<u>PART NO</u>	<u>DESCRIPTION</u>
1	BUG-1083	Eye Bolt - 3/4" ID
2	BUG-2593	Glide "Flat"
3	BUG-2660	Fits-All Clamp
4	BUG-3145	Drive Wheel Engagement Assembly (Exploded View Page 10)
5	BUG-3213	Eye Bolt - 1" ID
6	BUG-3219	Chain Assembly
7	BUG-3221	Deck Plate
8	BUG-3222	Leg
9	BUG-3223	Caster Wheel
10	BUG-3229	Arm and Wheel Assembly (Exploded View Page 18)
11	BUG-3230	Drive Unit Assembly (Exploded View Page 11)
12	BUG-3249	Support Angle
13	BUG-3252	Support Plate
14	BUG-3253-L	Left Hand Channel
15	BUG-3253-R	Right Hand Channel
16	BUG-3270	Spool Bracket
17	BUG-3276	Mounting Plate
18	BUG-3277	Bracket
19	BUG-3278	Spacer
20	BUG-3280	Control Box 120 VAC (Exploded View Page 12)
21	BUG-3320-12	Heavy Duty Tube Rack 12"
22	BUG-3335-L	HD Comer Follower - Left Hand
23	BUG-3335-R	HD Comer Follower - Right Hand (Exploded View Page 19)
24	BUG-3337	Spafter Guard
25	BUG-5182	Right Angle Clamp
26	BUG-5189	Clamp Block Assembly
27	BUG-9180-17	Rod 17"
28	MUG-1515	Collar
29	PAN-1033	Rod Clamp

BUG-3229 ARM AND WHEEL ASSEMBLY EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	BUG-9180-6	Rod 6"
2	BUG-3232	Dropping Bar Assembly
3	FAS-2353	Hex Head Cap Screw 1/4-20 x 1-1/2
4	BUG-3226	Arm
5	FAS-1351	Hex Nut 1/4-20
6	BUG-3227	Wheel
7	BUG-3228	Bearing

BUG-3335- HEAVY DUTY CORNER FOLLOWER EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	BUG-3315	Slide Assembly
2	BUG-3325-L,R	Torchholder Mounting Group, Left or Right
3	BUG-3339	Wheel Assembly
4	BUG-3345	Rackholder Mounting Group
5	BUG-3355	Mounting Arm Assembly

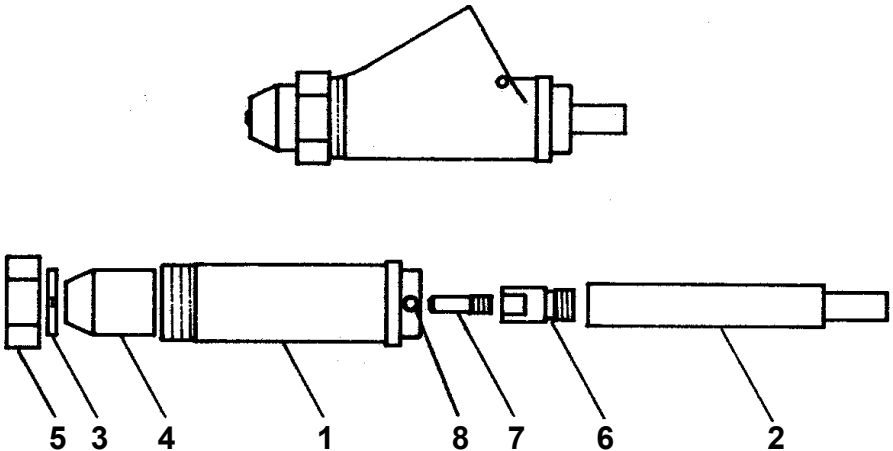
BUG-3170- STIFFENER WELDER SUB ARC 120 V_{AC} / PARTS LIST

INCLUDES: BUG-3190 Stiffener Welder Without Feeder.

The following parts are also included:

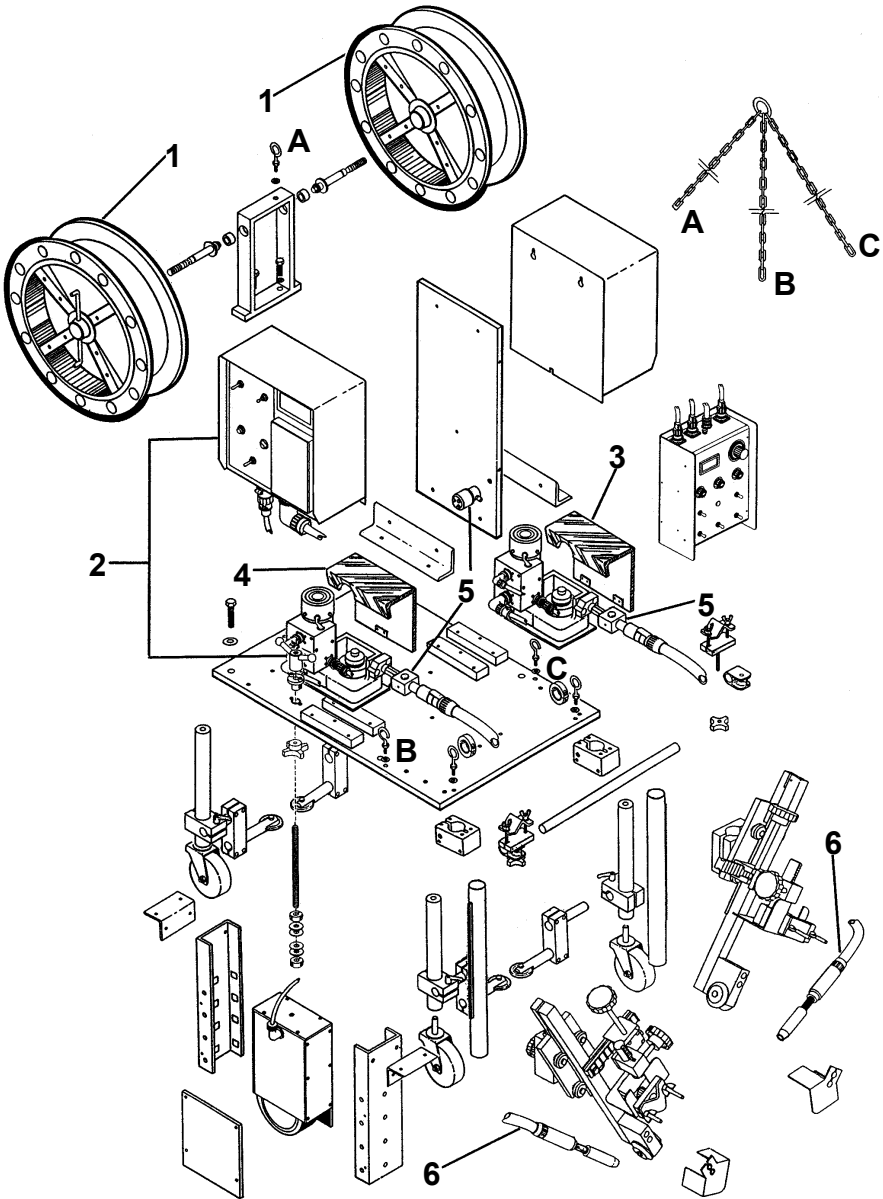
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	BUG-3293	Reel, 60 lbs.
2	BUG-3291	LN-9F Wire Feeder
3	BUG-3205	Wire Feeder Cover Assembly-Right
4	BUG-3207	Wire Feeder Cover Assembly-Left
5	BUG-3148	Flux Hopper
6	BUG-3178	Adaptor Bracket Assembly
7	BUG-1357	Cable Assembly
8	BUG-3160	Nozzle Assembly (See Below)
9	BUG-3175	Clamp

BUG-3160 NOZZLE ASSEMBLY



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	BUG-3161	Cone Body Assembly
2	BUG-3162	Nozzle Body
3	BUG-3163	Locking Ferrule
4	BUG-3164	Flux Cone
5	BUG-3165	Retaining Nut
6	BUG-3166	Tip Adaptor
7	BUG-3167-	Contact Tip
8	FAS-0452	1/4-20 x 1/4 lg Set Screw

BUG-3180_ STIFFENER WELDER MIG / EXPLODED VIEW



BUG-3180- STIFFENER WELDER MIG 120 VAC / PARTS LIST

INCLUDES: BUG-3190 Stiffener Welder Without Feeder. The following parts are also included:

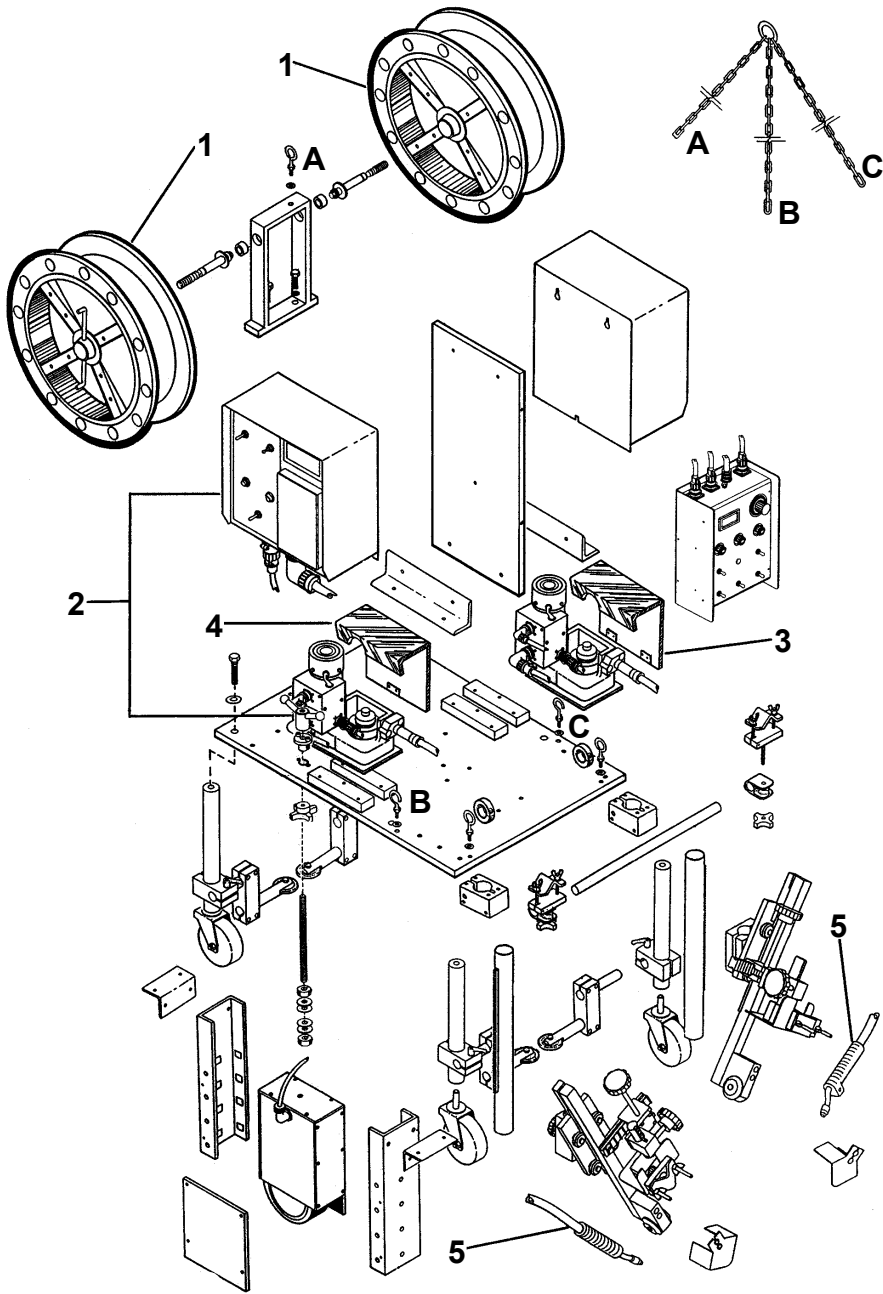
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	BUG-3293	Reel, 60 lbs.
2	BUG-3291	LN-9F Wire Feeder
3	BUG-3205	Wire Feeder Cover Assembly-Right
4	BUG-3207	Wire Feeder Cover Assembly-Left
5	BUG-3157	Adaptor Kit (Includes Solenoid)
6	BUG-3155-	Gun Cable Assembly (See Below)

BUG-3155- GUN CABLE ASSEMBLY



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	BUG-3152	Nozzle
	BUG-3186	Nozzle for 3/32" only
2	BUG-3159	Contact Tip
3	BUG-3156	Gas Diffuser
	BUG-3187	Gas Diffuser for 3/32" only
4	BUG-3149	Conductor Tube Assembly
5	BUG-3154	Liner

BUG-3200- STIFFENER WELDER (FLUX CORE WIRE) / EXPLODED VIEW

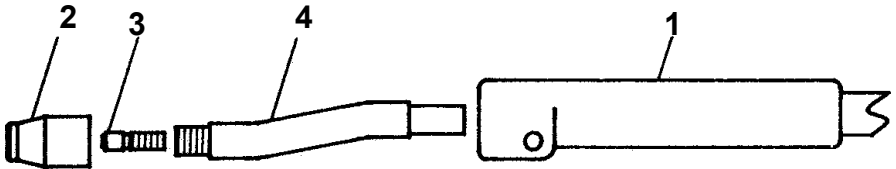


BUG-3200- STIFFENER WELDER (FLUX CORE WIRE) 120 VAC / PARTS LIST

INCLUDES: BUG-3190 Stiffener Welder Without Feeder. The following parts are also included:

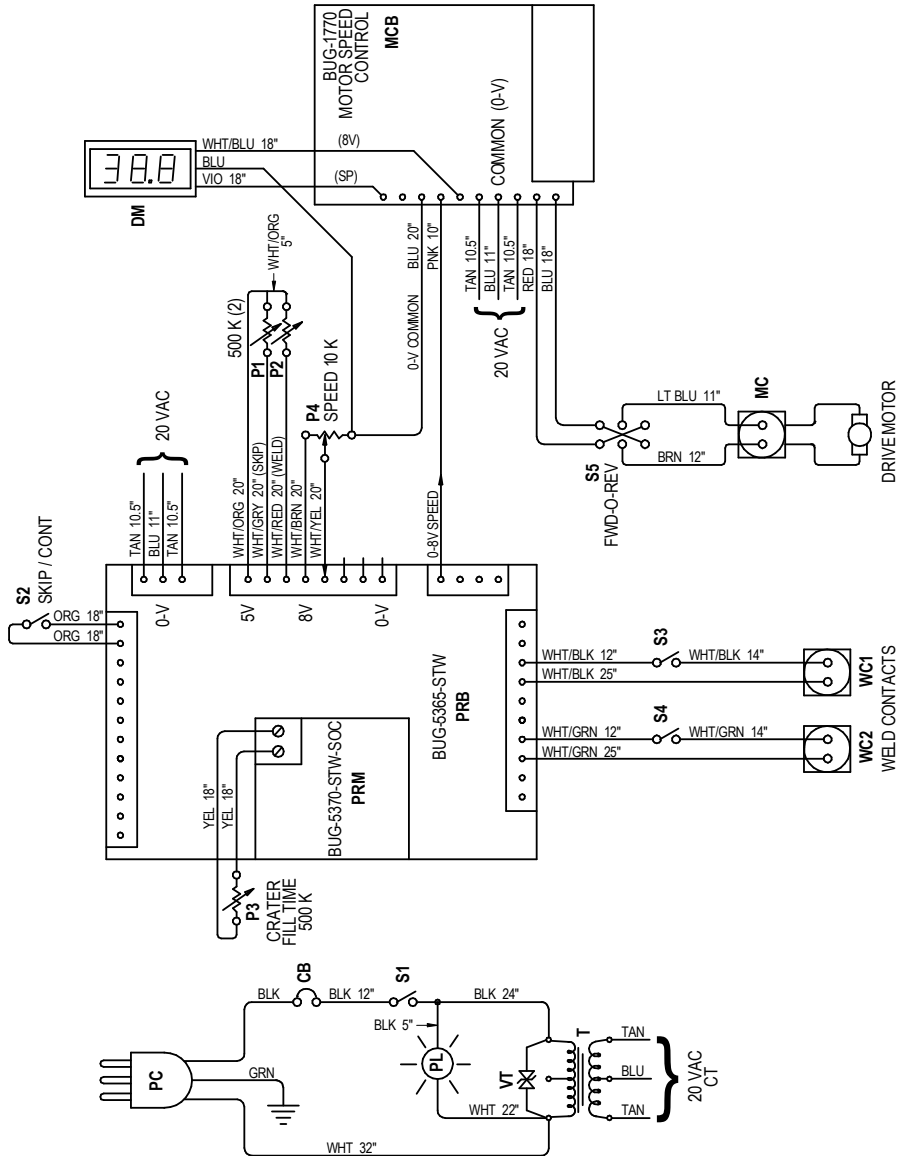
<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	BUG-3293	Reel, 60 lbs.
2	BUG-3291	LN-9F Wire Feeder
3	BUG-3205	Wire Feeder Cover Assembly - Right
4	BUG-3207	Wire Feeder Cover Assembly - Left
5	BUG-1357	Cable Assembly

GUN CABLE ASSEMBLY / PARTS LIST FOR BUG-3200- STIFFENER WELDER (FLUX CORE WIRE)



<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	BUG-1357	Cable Assembly
2	BUG-3151-	Nozzle
3	BUG-3158-	Contact Tip
4	BUG-3153	Nozzle Extension

CONTROL BOX WIRING DIAGRAM (FOR OPTIONAL STOP-ON-CRATER-FILL FUNCTION)



This alternate control box option will stop motion during crater fill time, as opposed to the standard control, which travels in reverse during crater fill time.

BUG-3280-SOC CONTROL BOX 120 VAC/50-60/1
BUG-3282-SOC CONTROL BOX 240 VAC/50-60/1
BUG-3284-SOC CONTROL BOX 42 VAC/50-60/1

ELECTRICAL COMPONENT CHART

ITEM	DESCRIPTION	BUG-3280 120 VAC	BUG-3282 240 VAC	BUG-3284 42 VAC
CB	Circuit Breaker	BUG-2923	BUG-2952	BUG-2923
MCB	Motor Control Board	BUG-1770-44	BUG-1770-110	BUG-1770-110
PC	Power Cord	BUG-9445	GOF-3115	BUG-9545
PL	Pilot Light	BUG-1415	BUG-1426	BUG-1427
T	Transformer	BUG-5001	BUG-5002	BUG-5003
VT	Volt Trap	BUG-1393	BUG-1563	BUG-1393
DM	Digital Speed Readout	BUG-1761		
MC	Motor Connector	BUG-9856		
P1	Potentiometer, Skip Time	BUG-5054		
P2	Potentiometer, Weld Time	BUG-5054		
P3	Potentiometer, Fill Time	BUG-5054		
P4	Potentiometer, Speed Control	BUG-9686		
PRB	Interface Control Board	BUG-5365-STW		
PRM	Program Module	BUG-5370-STW-SOC		
S1	Power Toggle Switch	ABP-1069		
S2	Skip/Continuous Switch	ABP-1069		
S3	Weld Contact Switch #1	ABP-1069		
S4	Weld Contact Switch #2	ABP-1069		
S5	Foreward/Off/Reverse Switch	BUG-2255		
WC1	Weld Contact Connector	BUG-9486		
WC2	Weld Contact Connector	BUG-9486		

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)
	Burned Out Transformer.	Replace Transformer.
Does Not Run, Indicator Light On.	Bad Connection.	Check Wiring Connections, 20 VAC Should Appear Across Secondary Of Transformer.
	Faulty Speed Control Board.	If DC Volts = 0 Across Leads To Motor, Replace Control Board.
Unit Runs, But No Control Over Speed.	Faulty Speed Control Board.	Replace Control Board. (Check Connection First).
NOTE: Make Sure Unit Is Plugged Into Correct Voltage, (120 VAC, 240 VAC, 42 VAC) Corresponding To Model Number Rating. 20 VAC Should Appear Across Secondary Of Transformer In All Cases.		

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 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.

*Bug-O System's warranty applies to Bug-O components only. Where other brands of power sources, wire feeders or sub components are a part of Bug-O Equipment, please refer to that specific Manufacturer's manual for warranty specifications on their components.