INSTRUCTIONS AND PARTS MANUAL

MINI CIRCLE WELDER

100-1480-120 (120VAC)
100-1480-240 (240VAC)

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-MCW-IPM-250626

Bug-O Systems is committed to empowering our customers by providing operator-controlled mechanized solutions for their welding, cutting and custom applications.

BUG-O SYSTEMS CE
A DIVISION OF WELD TOOLING CORPORATION
280 TECHNOLOGY DRIVE CANONSBURG, PENNSYLVANIA 15317-9564 USA
PHONE: 412-331-1776 http://www.bugo.com FAX: 412-331-0383

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.

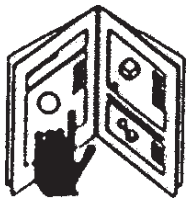
1) The equipment is not waterproof. Using the unit in a wet environment may result in serious injury. Do not touch equipment when wet or standing in a wet location.

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 to 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.

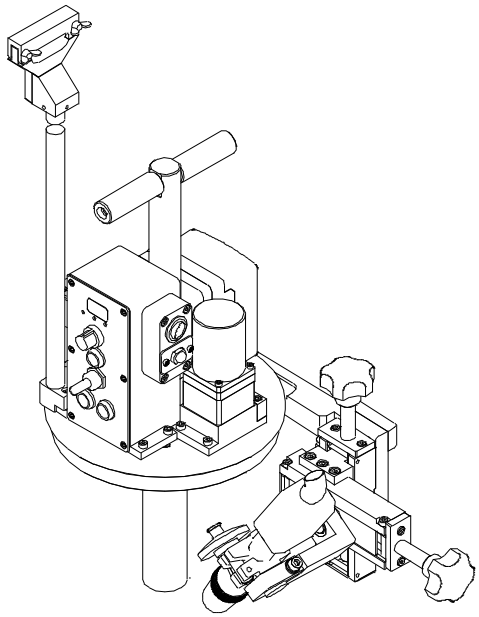
6) High frequency noise may enter the machine through the plasma or welding supply remote contactor leads. Some plasma and welding sources can produce noise spikes of up to several thousand volts. These sources are not compatible with automated cutting and welding equipment. It is recommended that the remote contactor leads on these plasma or welding sources not be connected to the machine. An alternative solution is to purchase a separate remote contactor isolation box.

INTRODUCTION

The Mini Circle Welder is designed for applications such as wind tower brackets inside of wind power towers and small tubes of boiler tube sheet.

FEATURES

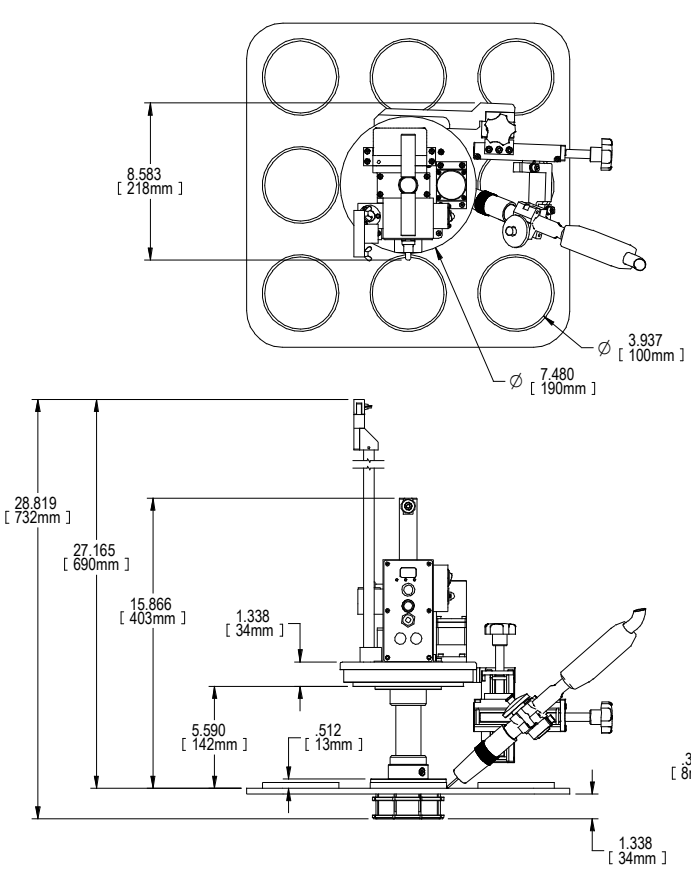
- The LED screen displays travel speed.
- Welds 1.18”-3.94” (30-100mm) diameter.
- Adjustable crater fill feature.
- Microcomputer-controlled travel speed for precise rotation and consistent weld length.
- Built-in automatic crater fill function enhances weld quality upon stopping.
- Simple working position setup with torch adjustment device.
- Machine welds one turn and then automatically stops after welding starts.
- Machine welds in the opposite direction after one cycle to prevent cable twisting.
- When using a collet type centering device, the operator turns the carrying handle to secure the machine to the weldment.
- The statement above does not apply if using the optional 3-jaw chuck.
- Powered by an 18 volt, 4.0Ah rechargeable battery.

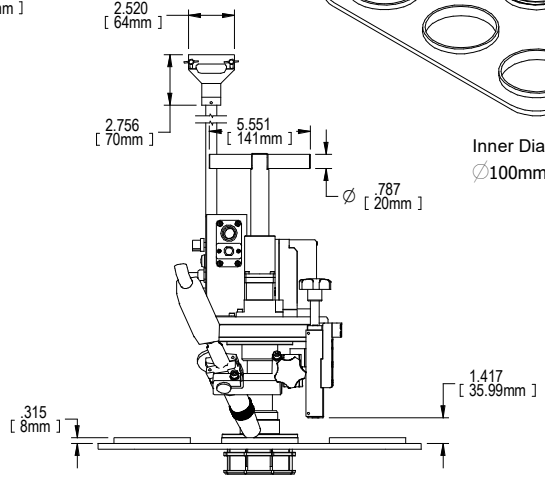


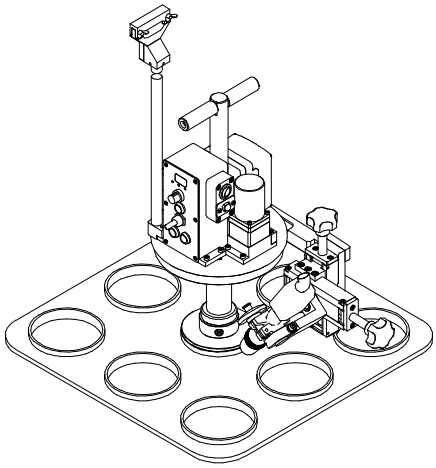
TECHNICAL DATA

DIVISION	CONFIGURATION	UNIT	SPECIFICATION
GENERAL	Model	Set	Mini Circle Welder
	Size (W x L x H)	mm	331 (W) * 221 (L) * 438 (H)
		in	13.03in (W) * 8.7in (L) * 17.24in (H)
	Weight	Kg (lbs.)	8.6 kg (19 lbs.)
BODY	Driving Method	-	Spur Gear Driver Motor
	Driving Motor	-	DC24V, 12W, 5000 RPM
	Motor Gearbox Ratio	-	100:1
	Driving Speed	cm/min	0 ~ 471 cm/min
		in/min	0 ~ 185 in/min
	Input Power	Battery	DC 18V 4.0Ah Battery
SLIDE	Angle	deg.	45° +/- 10°
	Y-Slide	mm	0 ~ 85mm
		in	0 ~ 3.35in
	Z-Slide	mm	0 ~ 85mm
		in	0 ~ 3.35in
Weld Drive Rotation Angle		deg.	0 ~ 999°
BODY CONTROL		-	Start. Stop. Adjustable speed. Adjustable rotation angle. Automatic direction change after the end of cycle. Welding / non-welding.
ETC	Items Supplied with machine.	-	1. MINI CIRCLE WELDER
			2. BATTERY
			3. CHARGER
			4. FUSE 2A
			5. 15-FT (4.5 METERS) WELD CONTACT CABLE
			6. USER MANUAL

DIMENSIONS

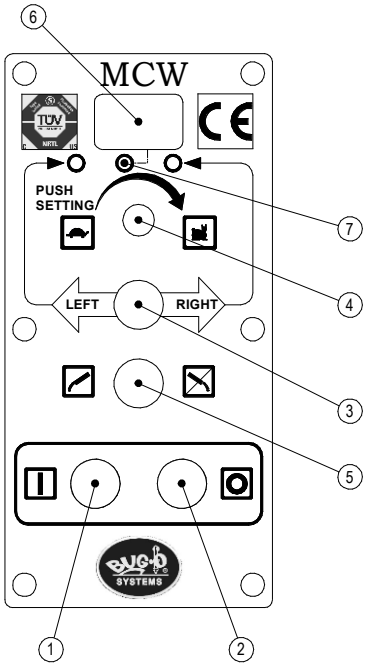






Inner Diameter
∅100mm (3.937")

USER INTERFACE



1. **Cycle Start Button** – Push button to start the weld cycle. The weld contact will close according to time settings if the Weld Switch is set to Auto. The carriage will rotate in the direction selected by the Travel Direction Switch.

2. **Cycle Stop Button** – Push button to end the welding cycle.

3. **Travel Direction Switch** – Set switch to control the direction of carriage movement. When activated, the top left or right red LED's will light up.

4. **Speed/Angle Adjustment Dial** – Rotate knob to change the carriage travel speed. Turning clockwise will increase speed. If the knob is pushed, the rotation angle information will be shown on the display. Turning clockwise will increase the rotational angle; while turning counterclockwise will decrease it (the angle is in degrees and 360º represents a complete rotation.). CAUTION: The current speed and angle parameters are only stored at the end of a CYCLE. As such, if the parameters are changed and the machine is to be powered off, the settings will not save unless the Cycle Start Button and then optionally the Cycle Stop Button are pressed to save these parameters. One must allow the machine to go through the entire stop cycle before powering off the machine in order to retain the settings..

5. **Weld Auto / OFF Contactor** – When switched to AUTO, weld contact will close with cycle start. When switched to the right (in the off position), the weld contact will stay open at the cycle start.

6. **Display** – Shows travel speed and weld angle information (in degrees).

7. **Indicator LED's** – Indicate active parameters during continuous welding:

    A. Red: Distance/Direction indicator

    B. Green: Travel Speed indicator. Pressing the travel speed knob will light up the GREEN Indicator light and the rotation angle will be shown on the screen.

    C. Red: Distance/Direction indicator

MINI CIRCLE

This manual may only be used by authorized workers

The machine may malfunction if not operated properly

1. Crater Time Parameter Setting

a. While holding down the START button, flip the power switch to ON.

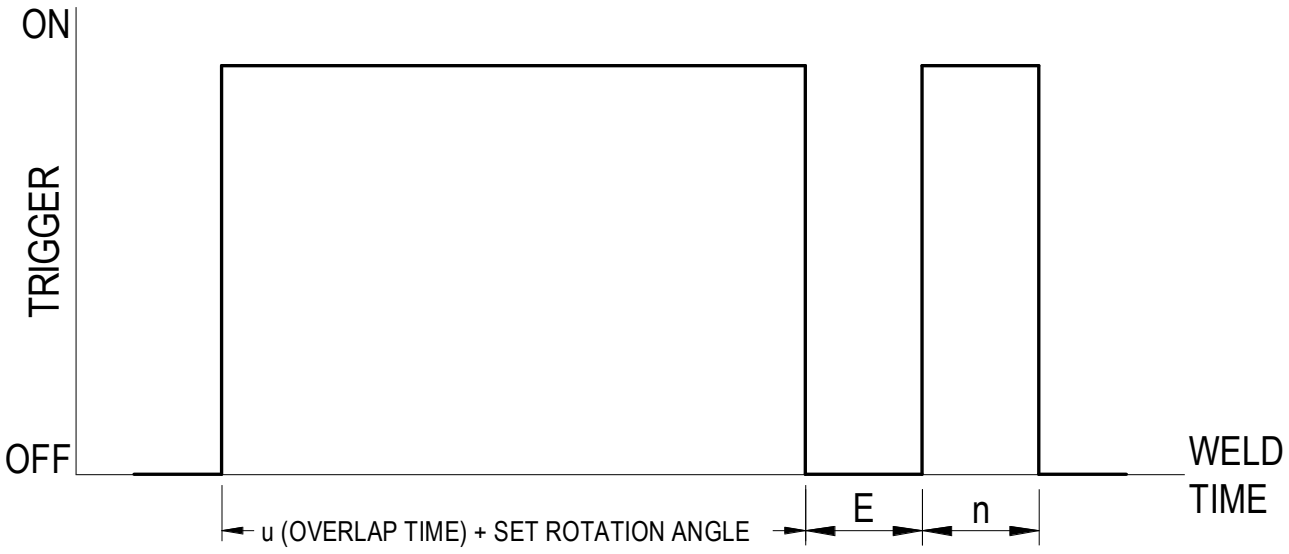
b. The active parameter will show on the display.

c. Press and release the Cycle Start Button to scroll through the parameters (“u”, “n”, “e”, shown in the chart, below)

d. To adjust the active parameter, turn the Speed Adjustment Dial. Turning to the right (clockwise) will increase the value. Turning to the left (counterclockwise) will decrease the value.

e. Once all values have been set, press the **Cycle Stop Button** and turn off the power switch. The new settings will be saved.

Parameter	Description	Set Range	Default Value	Unit
u	Overlap time	0.0 ~ 9.9	0	sec
n	Crater Fill Time	0.0 ~ 9.9	0.3	sec
E	Crater Fill Delay	0.0 ~ 9.9	0.1	sec

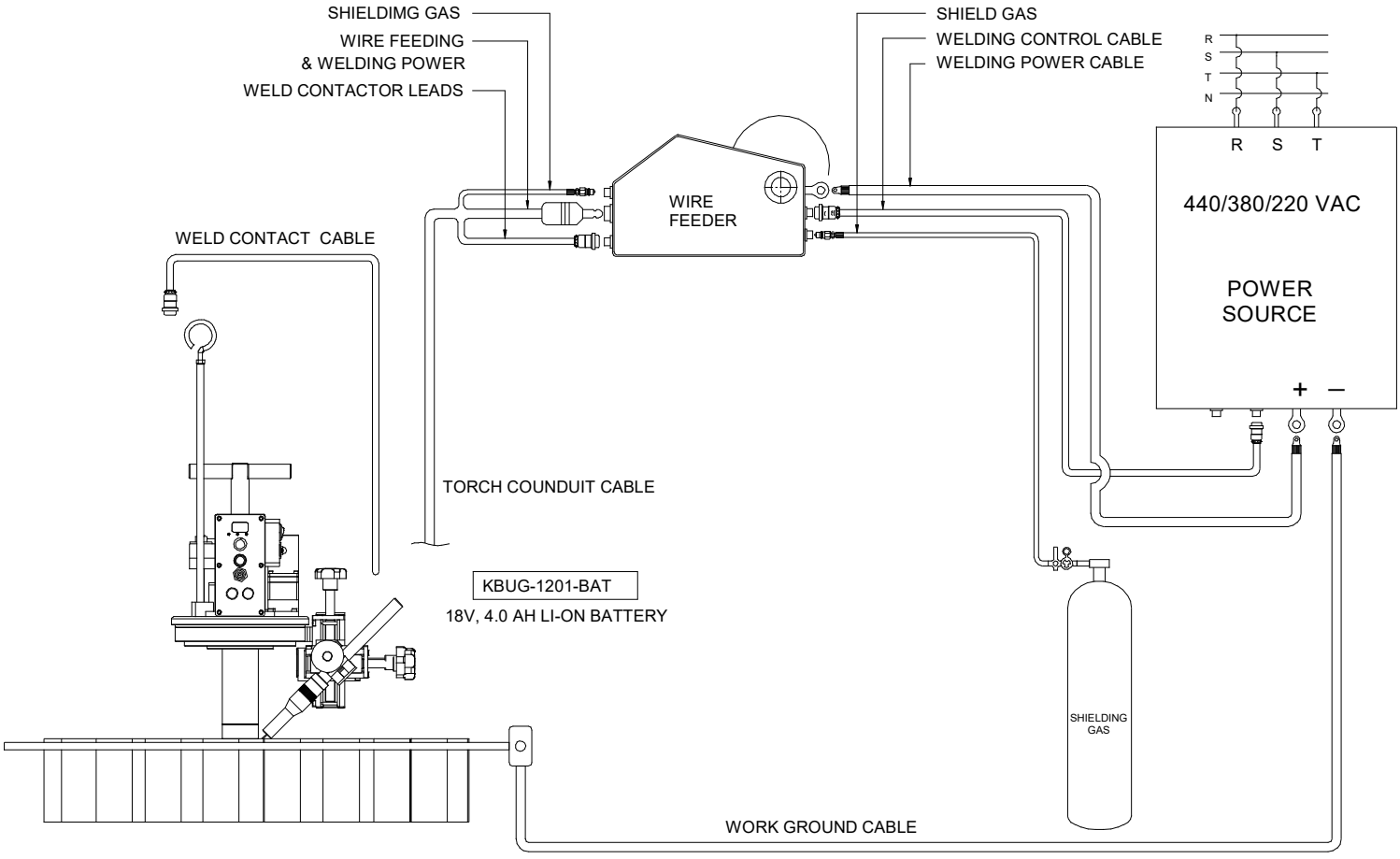


INSTALLATION AND OPERATION

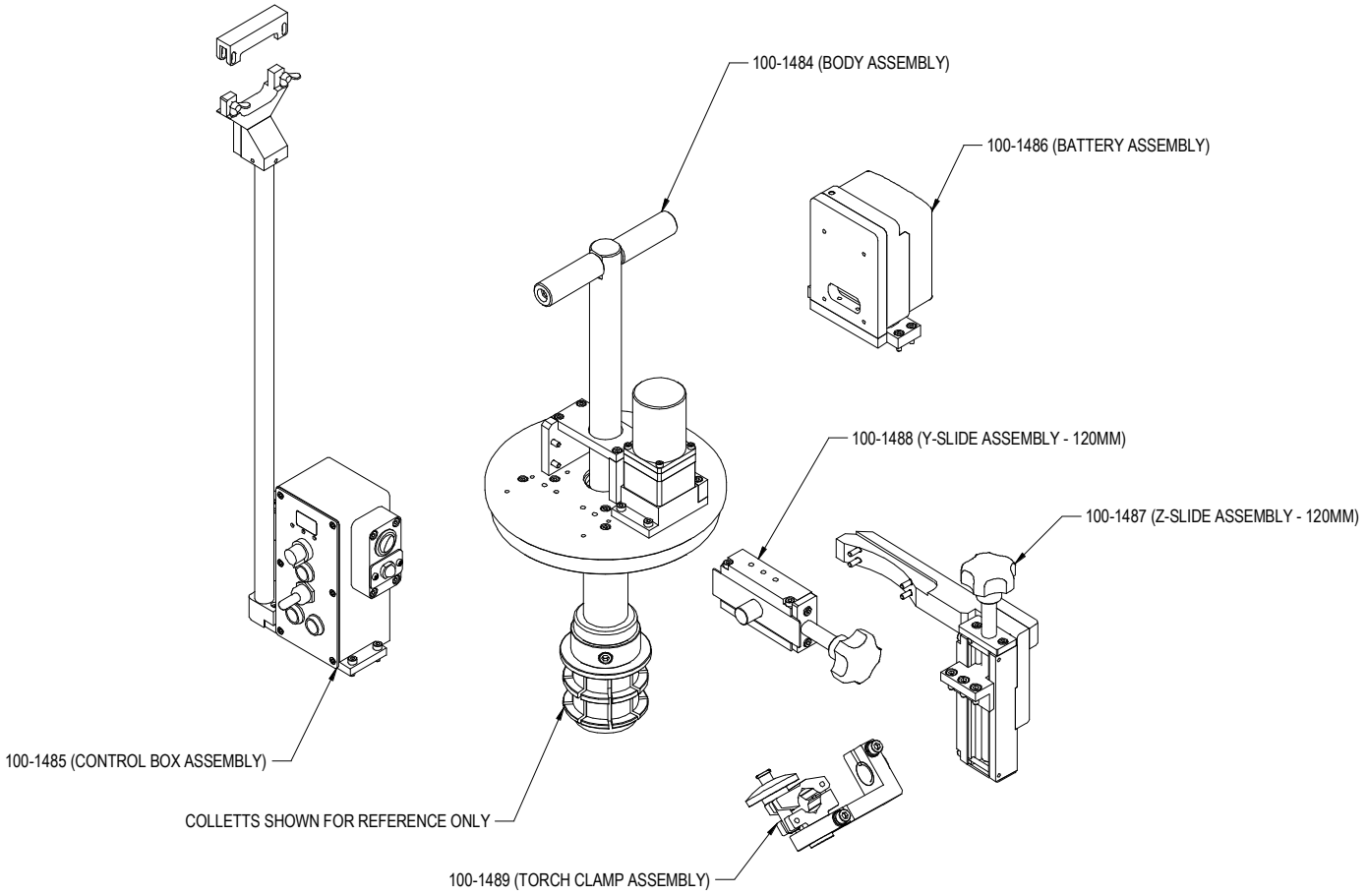
1. Necessary welding supplies:
   - Welding Power Source
   - Wire Feeder
   - Shielding gas tank, with pressure and flow regulators and appropriate fittings
   - Automated Welding Torch with shielding gas connections
   - Basic Weld Prep Tools
2. Connect the following cables:
   - Torch conduit cable to wire feeder
   - Weld Contact cable to Main Cable Connector on machine body
   - Control Cable to the Control Box Connector on the machine body
   - Welding Control Cable to the Welding Power Source

   CAUTION: Carefully route cables as they may become entangled during operation, resulting in damage to people or equipment.
3. Welding Process
   - Make sure the Welding Power Source and Wire Feeder are ON and ready to weld.
   - Set the Carriage so the torch is at the weld starting point
   - Adjust the target angle and position of the Torch using the Torch Adjustment Slider
   - Set the current voltage to the wire feeder for the operation
   - Verify adequate Shielding Gas Supply
   - Start Welding - Switch Welding Switch to AUTO, verify desired travel direction is set and travel speed is > 0 and press Cycle Start button
   - Let the machine finish its cycle or press the Cycle Stop button when welding is complete. Turn Welding Switch to OFF

MINI CIRCLE WELDER (100-1480-CID) - CABLE INTERCONNECT DIAGRAM



MINI CIRCLE WELDER, IN/MIN (100-1483-IN) / MINI CIRCLE WELDER, CM/MIN (100-1483-CM)

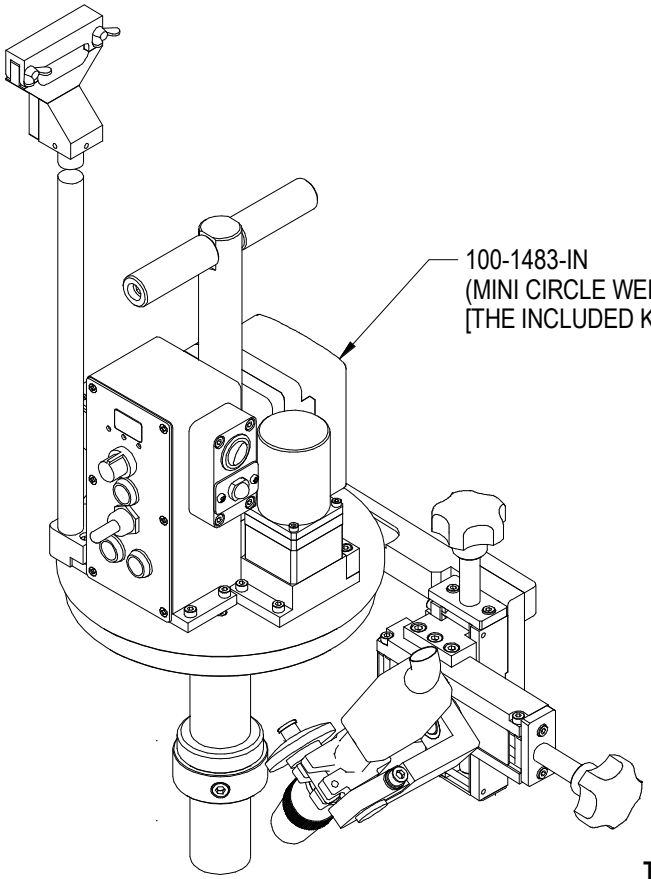


NOTE: KBUG-2273-15 (WELD CONTACT CABLE, 15FT) NOT SHOWN

MINI CIRCLE WELDER 120V - (100-1480-120)

The machine is factory set to in/min and the included battery charger is 120VAC, 60 Hz.
The assembly also includes an 18V, 4.0 AH battery and a 15 FT weld contact cable.

Note: This machine requires a collet or chuck which is sold separately. See the accessories section.



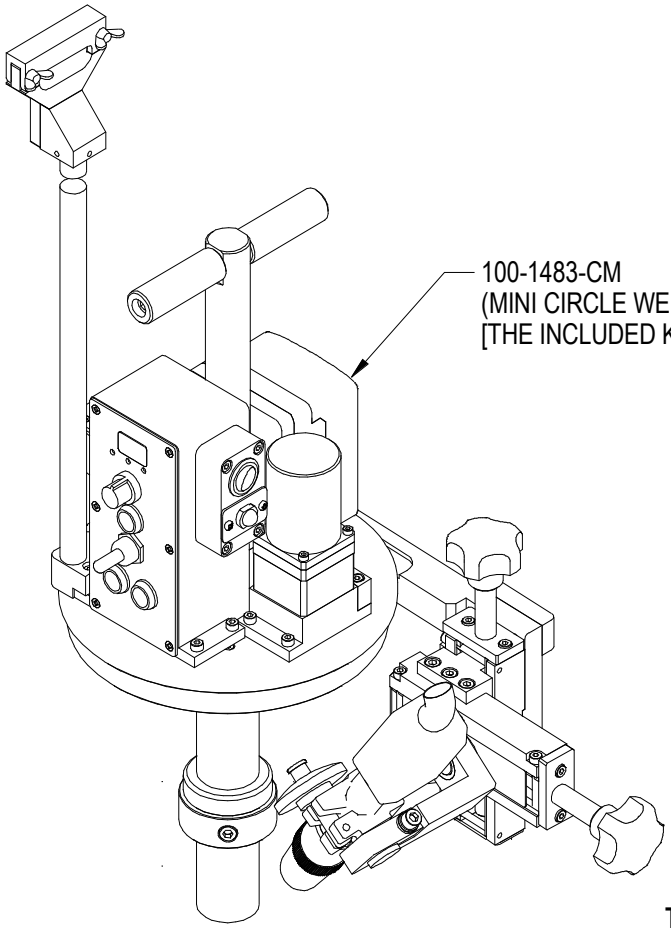
100-1483-IN
(MINI CIRCLE WELDER, IN/MIN)
[THE INCLUDED KBUG-2273-15 (WELD CONTACT CABLE, 15FT) NOT SHOWN]

THE ASSEMBLY INCLUDES:
- **KBUG-1201-BAT (18V, 4.0 AH LI-ON BATTERY);**
- **KBUG-1205-BAT (14.4 - 18V LI-ON BATT CHARGER, 120V).**

MINI CIRCLE WELDER 240V - (100-1480-240)

The machine is factory set to cm/min and the included battery charger is 240VAC, 50 Hz.
The assembly also includes an 18V, 4.0 AH battery and a 4.5-meter weld contact cable.

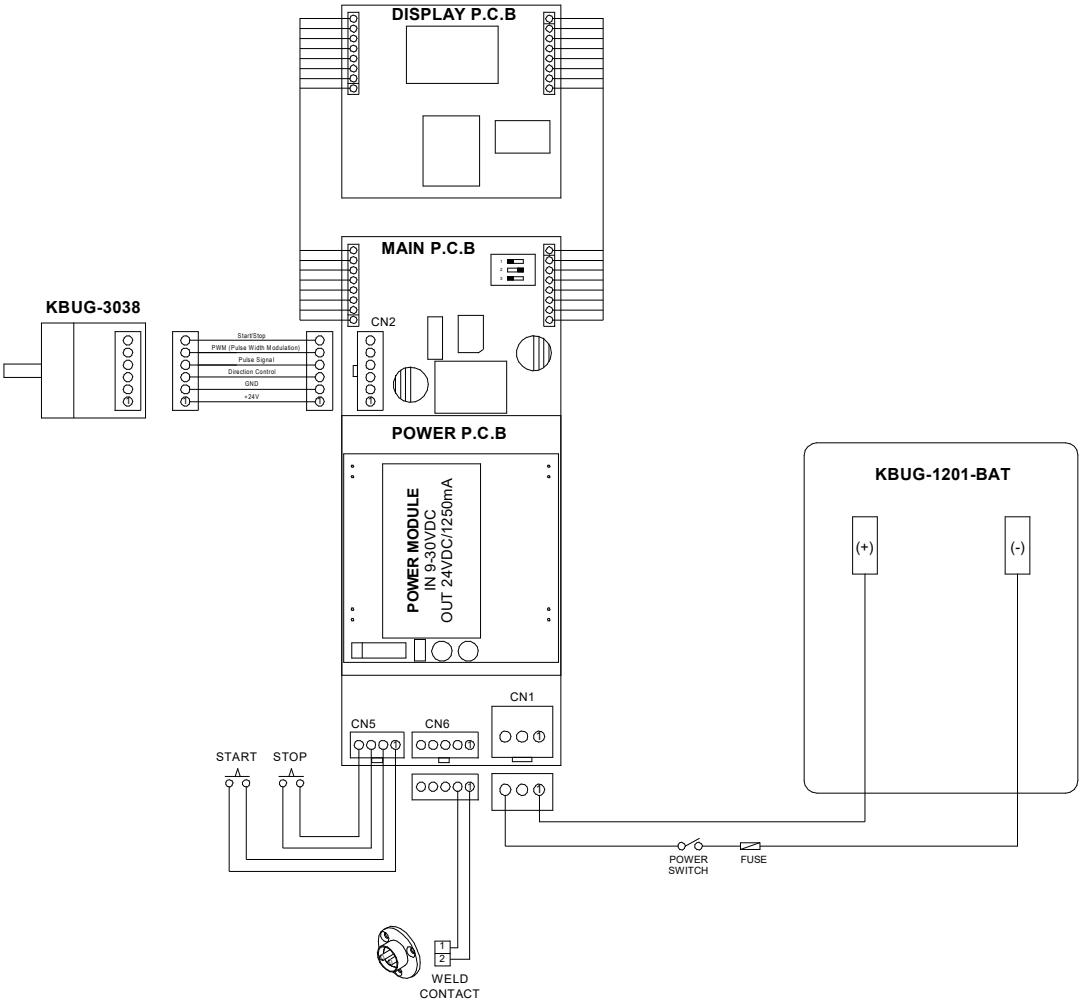
Note: This machine requires a collet or chuck which is sold separately. See the accessories section.



100-1483-CM
(MINI CIRCLE WELDER, CM/MIN)
[THE INCLUDED KBUG-2273-15 (WELD CONTACT CABLE, 15FT) NOT SHOWN]

THE ASSEMBLY INCLUDES:
- **KBUG-1201-BAT (18V, 4.0 AH LI-ON BATTERY);**
- **KBUG-1206-BAT (LI-ON BATTERY CHARGER 220V).**

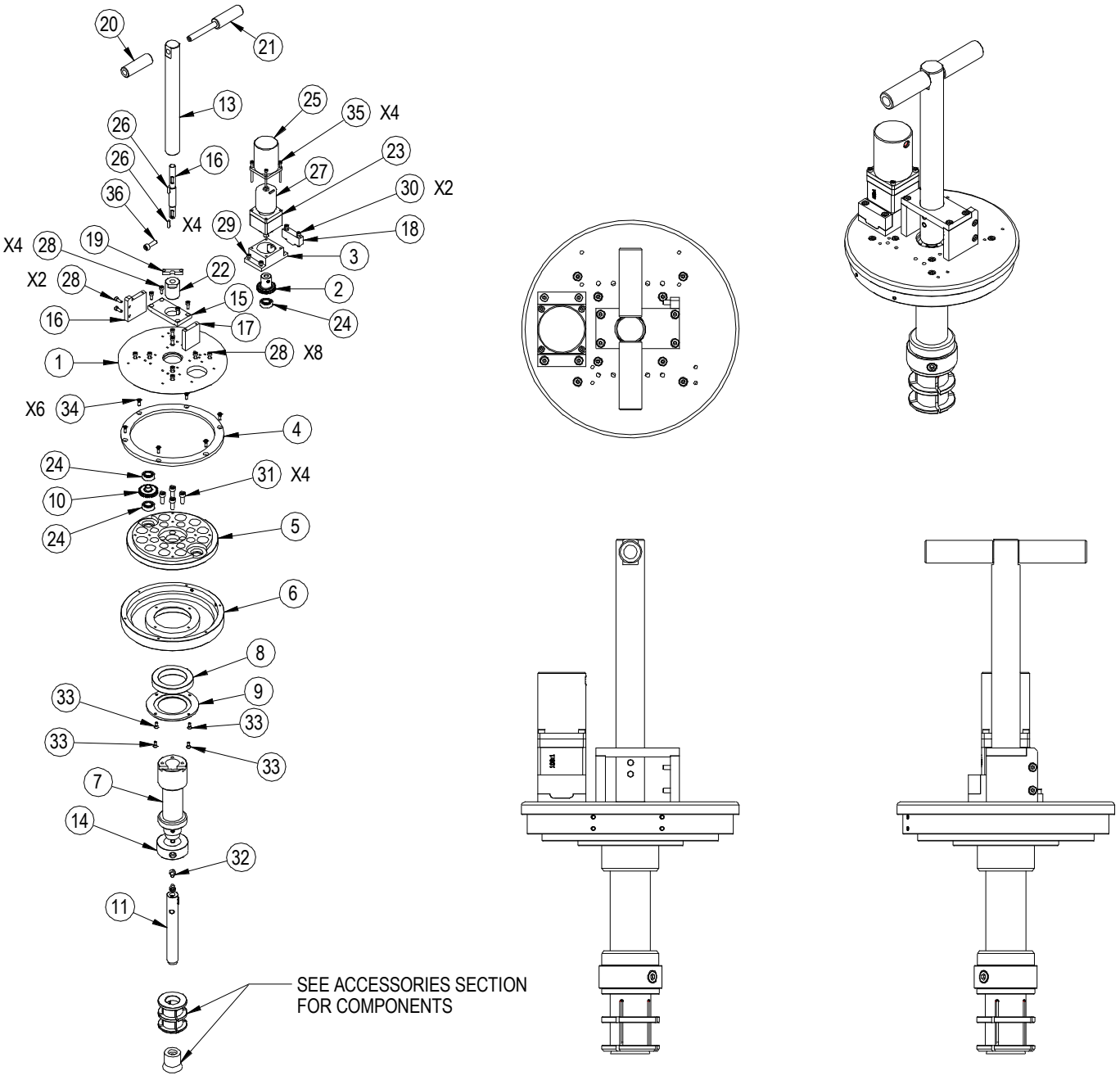
MINI CIRCLE WELDER (100-1483-XX) – WIRING DIAGRAM



100-1483-XX* TECHNICAL SPECIFICATIONS	
MOTOR	DC BRUSHLESS
GEAR RATIO	100:1
POWER SUPPLY	18V 4AH BATTERY
DISTANCE SETTING	CONFIGURABLE BY ANGLE
OPERATION: AUTOMATICALLY STOPS AND REVERSES DIRECTION.	

* "XX" DENOTES CENTIMETER OR INCHES.

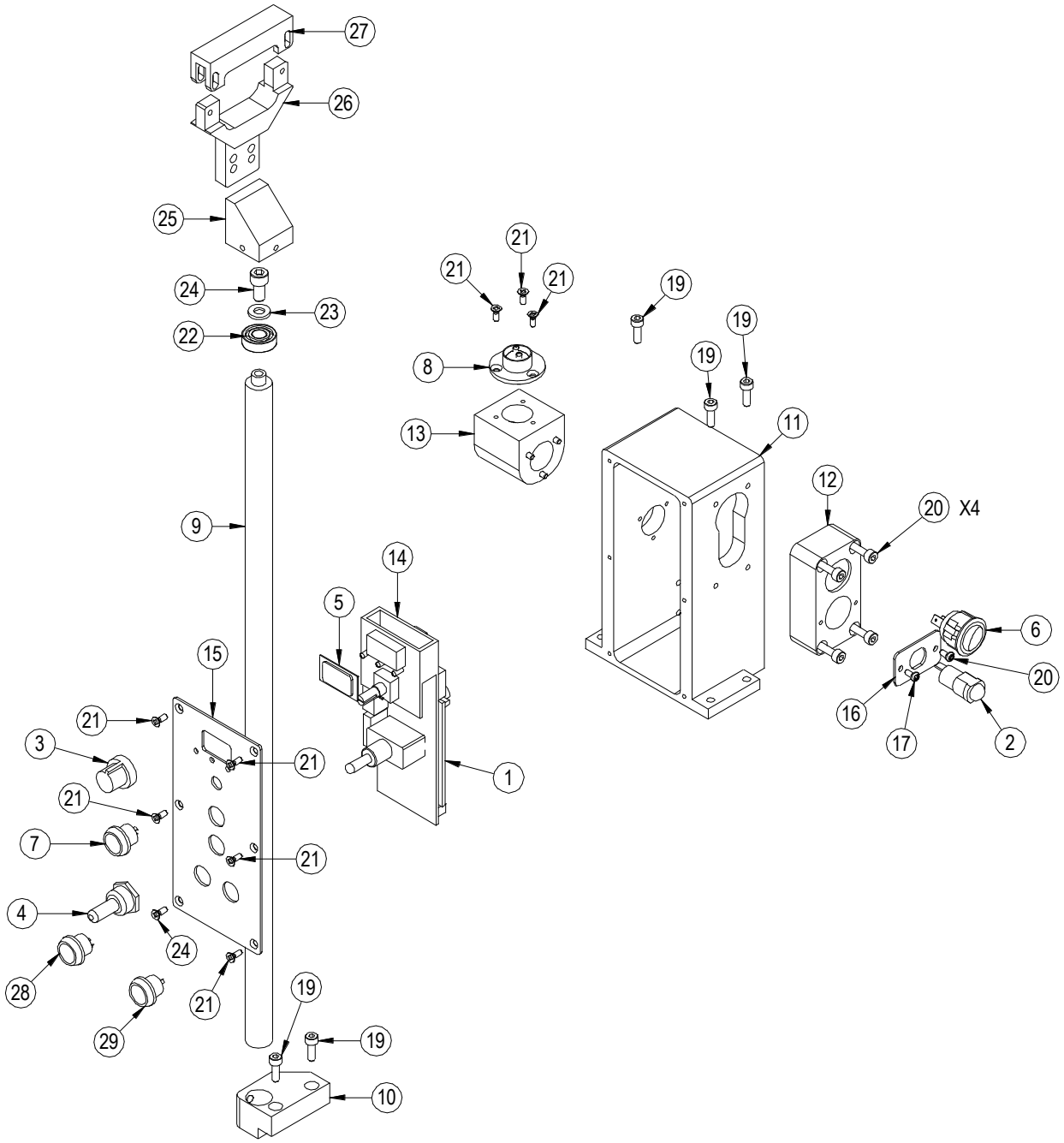
BODY ASSEMBLY (100-1484) – EXPLODED VIEW / PARTS LIST



BODY ASSEMBLY (100-1484) – EXPLODED VIEW / PARTS LIST – CONT'D

PARTS LIST			
ITEM	PART#	DESCRIPTION	QTY
1	100-1494	BODY - UPPER	1
2	100-1495	CENTER SPUR GEAR	1
3	100-1496	MOTOR BRACKET	1
4	100-1497	SPUR GEAR - OUTER RING	1
5	100-1498	BODY - BOTTOM	1
6	100-1499	BODY - BOTTOM COVER PLATE	1
7	100-1500	CENTER SHAFT	1
8	100-1501	BEARING - 6910ZZ	1
9	100-1502	BEARING COVER	1
10	100-1503	SIDE SPUR GEAR	1
11	100-1505	CENTER COVER SHAFT	1
12	100-1506	JOINT SHAFT	1
13	100-1507	HANDLE HOLD SHAFT	1
14	100-1508	BODY SHAFT COVER	1
15	100-1509	CABLE COVER PLATE - TOP	1
16	100-1510	CABLE COVER PLATE - SIDE	1
17	100-1511	CABLE COVER PLATE - MOTOR SIDE	1
18	100-1512	MOTOR BRACKET COVER	1
19	100-1513	HOLD KEY	1
20	100-1514	HANDLE	1
21	100-1515	HANDLE - 1	1
22	100-1516	HOLD SHAFT	1
23	100-1519	GEAR MOTOR	1
24	100-1520	BEARING - 6900ZZ	3
25	100-1521	MOTOR COVER	1
26	100-1577	KEY 4 4 15	2
27	KBUG-3038	DC BRUSHLESS MOTOR	1
28	MET-0553-SS	SOC HD CAP SCR M4 X 10	14
29	N18230-204-12-00	SOC HD CAP CSR M4 X 12	2
30	MET-2552-SS	M4 X 25 SOC HD CAP SCR	2
31	100-1591	SOC HD CAP SCR M6 X 16	4
32	100-1592	SOC HD CAP SCR M6 X 8	2
33	MET-0953-SS	FLT HD SOC SCR M4 X 10	4
34	100-0479	FLT HD SOC SCR M4-0.7 X 12MM	6
35	100-1593	SOC HD CAP SCR M3 X 40	4
36	MET-0579-SS	SOC HD CAP SCR M6 X 20	1

CONTROL PANEL ASSEMBLY (100-1485) – EXPLODED VIEW / PARTS LIST

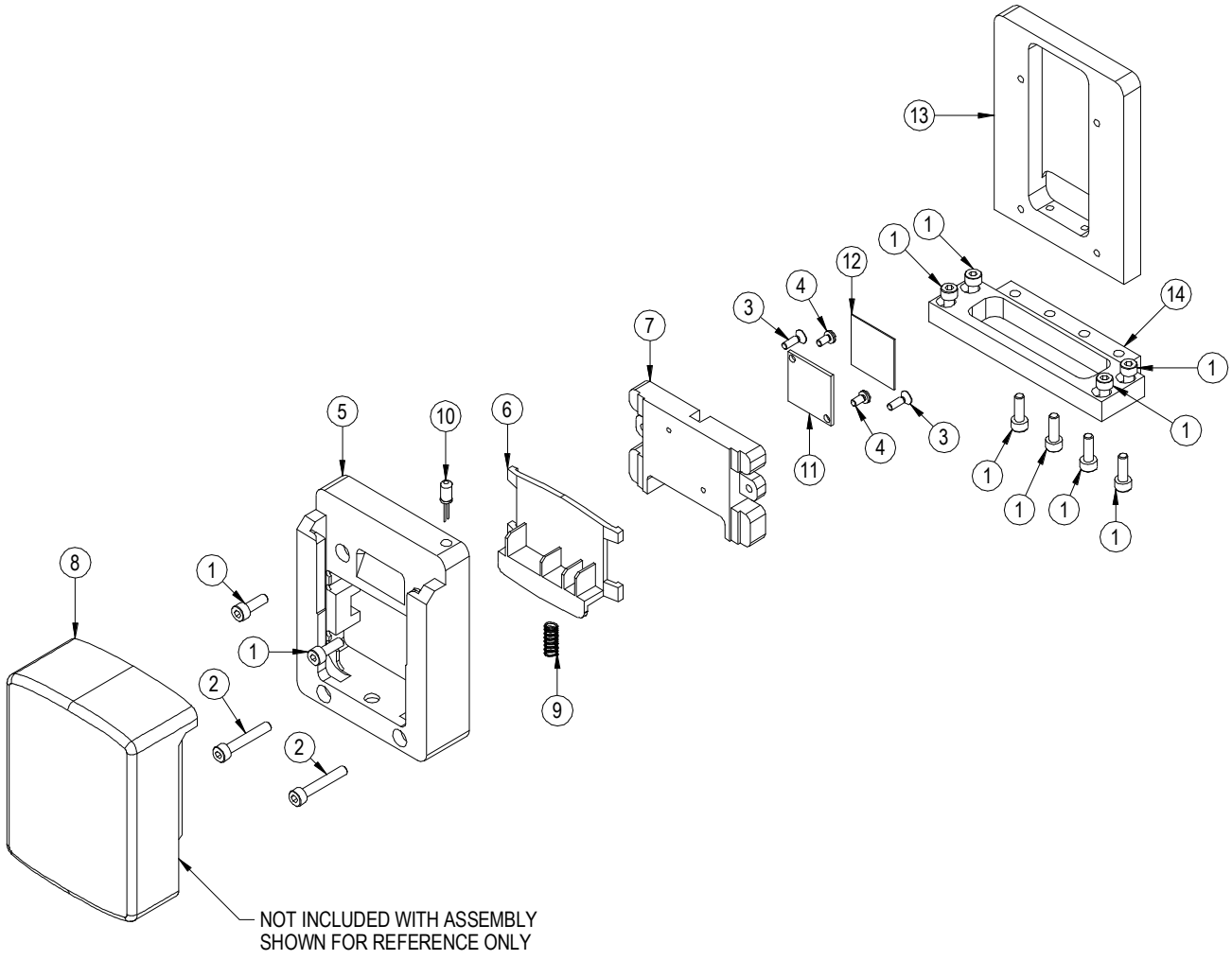


CONTROL PANEL ASSEMBLY (100-1485) –EXPLODED VIEW / PARTS LIST – CONT'D

PARTS LIST			
ITEM	PART#	DESCRIPTION	QTY
1	100-1543	BATTERY PCB (NO WEAVING TYPE)	1
2	100-1544	FUSE (F8303)	1
3	KBUG-1129	VOLUME KNOB-BLACK	1
4	KBUG-1122	TOGGLE SWITCH COVER	1
5	100-1546	DISPLAY LENS (RED)	1
6	KBUG-1294	ON - OFF SWITCH	1
7	100-1547	PUSH SWITCH	1
8	KBUG-1133	2 PIN TORCH CONNECT	1
9	100-1548	CABLE HOLD SHAFT	1
10	100-1549	CABLE BRACKET - 1	1
11	100-1550	PANEL CASE	1
12	100-1551	ON / OFF SWITCH BRACKET	1
13	100-1552	TORCH CONNECTOR COVER	1
14	100-1553	MAIN PCB	1
15	100-1554	LEGEND PLATE	1
16	100-1555	FUSE PLATE	1
17	MET-1041-SS	FLT HD SLOT SCR M3 X 6	2
*18	100-1595	SOC HD CAP SCR M3 X 35	3
19	N18230-204-12-00	SOC HD CAP SCR M4 X 12	5
20	MET-0559-SS	SOC HD CA SCREW M4 X 20	4
21	100-1596	FLT HD SLOT SCR M3 X 8	9
22	100-1557	BEARING - 698ZZ	1
23	WAS-5570-SS	FLAT WASHER, M6 X 12MM OD	1
24	MET-0574-SS	SOC HD CAP SCR M6 X 12	1
25	100-1558	CABLE HOLDER BRACKET	1
26	100-1559	MG FIXED PLATE	1
27	100-1560	CABLE HOLDER BRACKET - 1	1
28	100-1611	PUSH BUTTON SWITCH - GREEN	1
29	100-1612	PUSH BUTTON SWITCH - RED	1

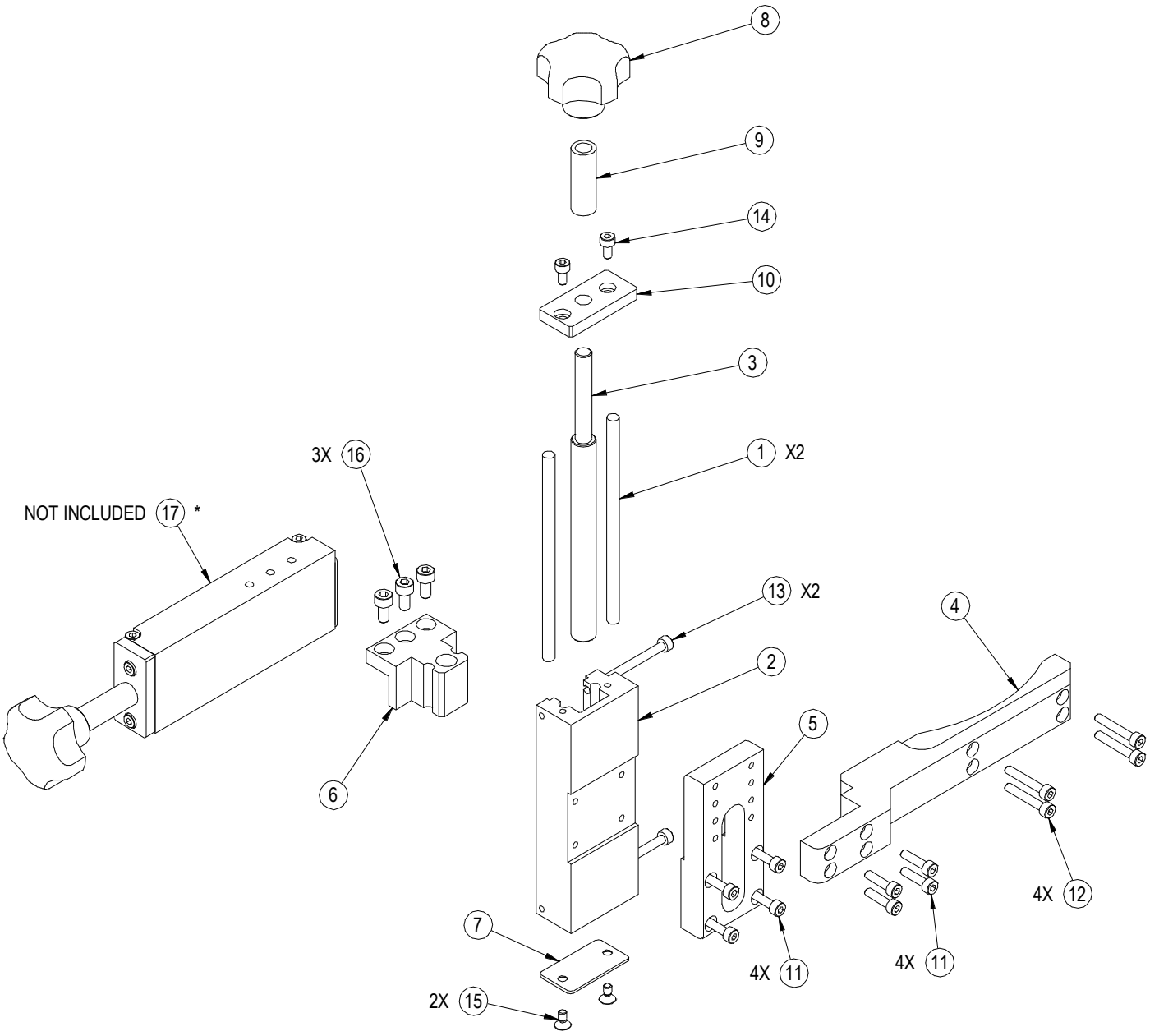
NOTE: * = NOT SHOWN

BATTERY ASSEMBLY (100-1486) – EXPLODED VIEW / PARTS LIST



PARTS LIST			
ITEM	PART#	DESCRIPTION	QTY
1	N18230-204-12-00	SOC HD CAP SCR M4 X 12	10
2	MET-2552-SS	M4 X 25 SOC HD CAP SCR	2
3	MET-0943	FLT HD SOC M3 X 10	2
4	MET-1041-SS	FLT HD SLOT SCR M3 X 6	2
5	KBUG-3123	BATTERY BRACKET HOUSING	1
6	100-1563	BATTERY BRACKET	1
7	100-1564	BATTERY BRACKET COVER	1
8	KBUG-1201-BAT	18V, 4.0 AH LI-ON BATTERY	1
9	100-1566	SPRING	1
10	100-1567	LED	1
11	100-1568	BATTERY PCB	1
12	100-1569	INSULATION PAPER	1
13	100-1561	BATTERY GUIDE BRACKET	1
14	100-1562	BATTERY HOLD BRACKET	1

Z-SLIDE ASSEMBLY (100-1487) – EXPLODED VIEW / PARTS LIST

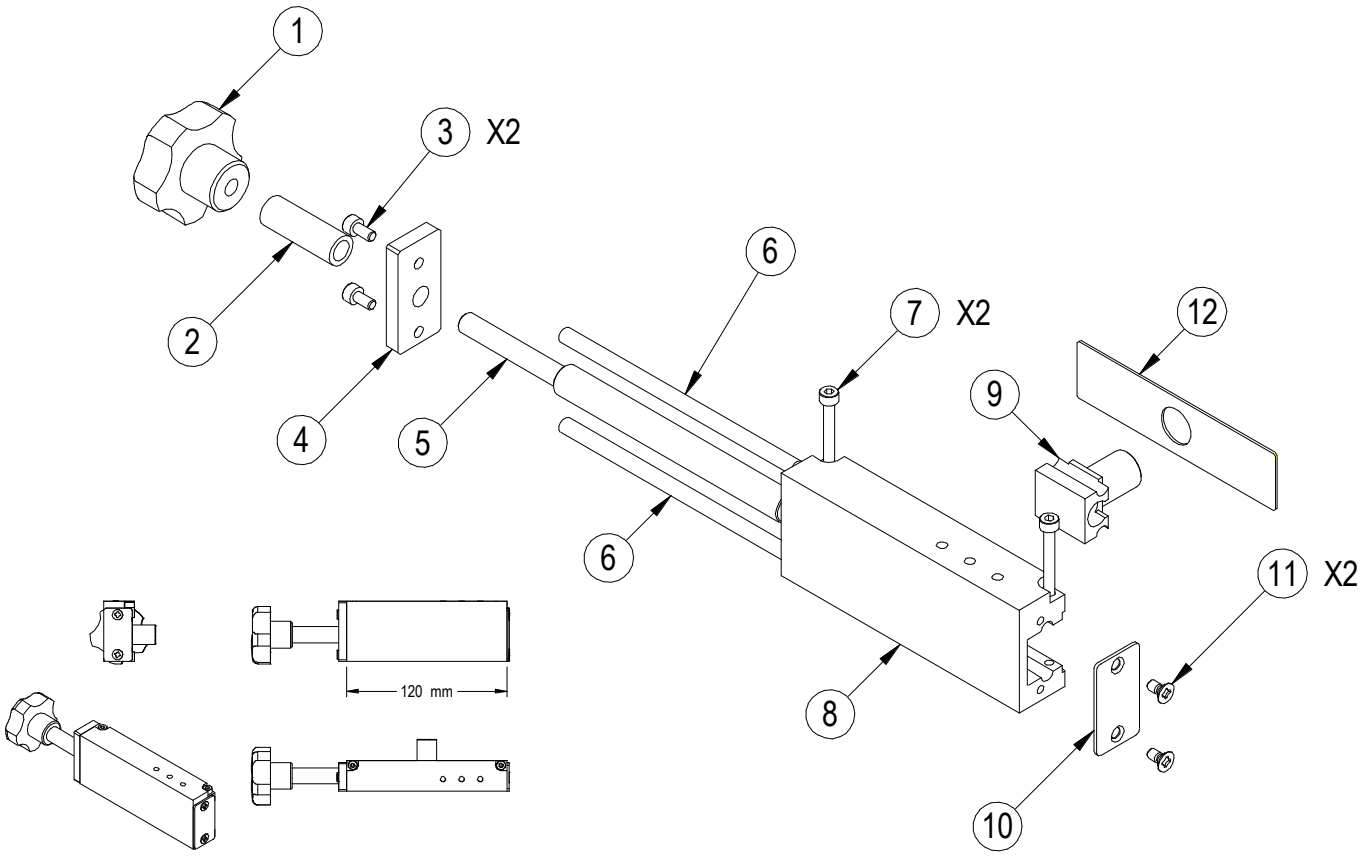


Z-SLIDE ASSEMBLY (100-1487) – EXPLODED VIEW / PARTS LIST – CONT'D

PARTS LIST			
ITEM	PART#	DESCRIPTION	QTY
1	100-1517	SLIDE BAR - 117	2
2	100-1533	Z-SLIDE FLANGE - 120	1
3	100-1518	Z-SLIDE BOLT - LOWER	1
4	100-1531	HOLD BRACKET	1
5	100-1532	HOLD BRACKET - 1	1
6	100-1534	Z-SLIDE SUPPORT	1
7	100-1524	Y-SLIDE BRACKET	1
8	100-1526	KNOB	1
9	100-1528	Z-SLIDE BOLT COVER	1
10	100-1530	Y-SLIDE BRACKET (REV)	1
11	MET-0577-SS	SOC HD CAP SCR M4 X 16	8
12	MET-2552-SS	M4 X 25 SOC HD CAP SCR	4
13	MET-2555-SS	SOC HD CAP M4 x 40 PARTIAL THR	2
14	MET-0552-SS	SOC HD CAP SCR M4 x 8	2
15	MET-0958-SS	FLT HD SOC SCR M4 X 18	2
16	N18230-205-10-00	SOC HD CAP SCR M5 x 10	3
17*	100-1488	Y-SLIDE ASSEMBLY - 120MM	1

* ITEM SHOWN FOR REFERENCE ONLY AND IS NOT INCLUDED WITH THE ASSEMBLY.

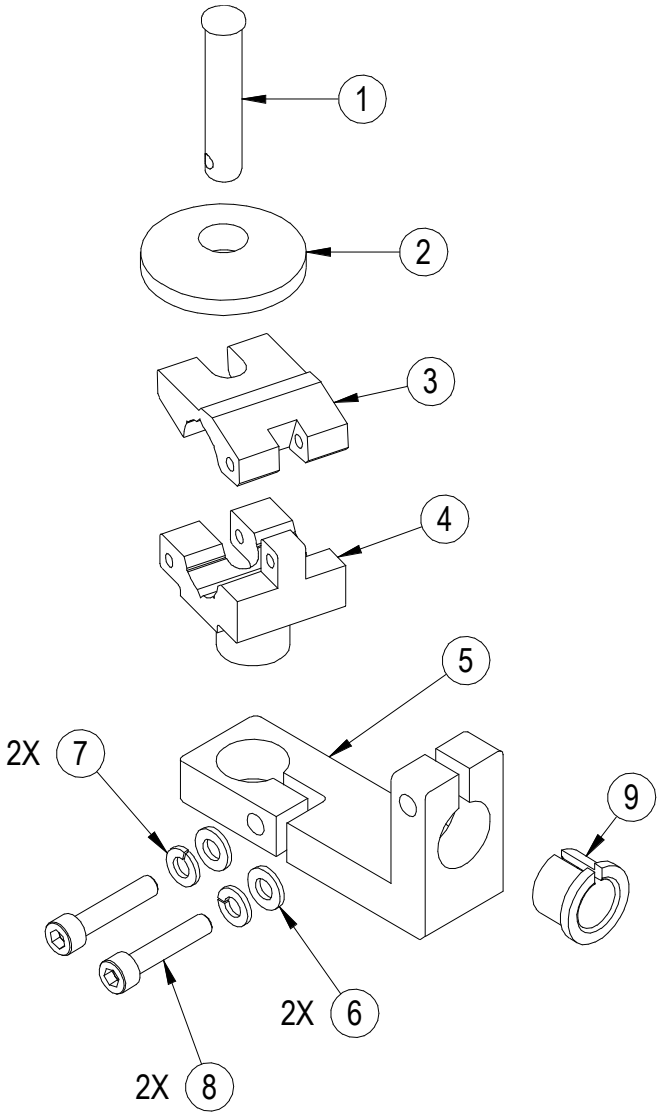
Y-SLIDE ASSEMBLY (100-1488) – EXPLODED VIEW / PARTS LIST



ASSEMBLED VIEWS

PARTS LIST			
ITEM	**PART#**	**DESCRIPTION**	**QTY**
1	100-1526	KNOB	1
2	100-1528	Z-SLIDE BOLT COVER	1
3	MET-0552-SS	SOC HD CAP SCR M4 x 8	2
4	100-1530	Y-SLIDE BRACKET (REV)	1
5	100-1527	Y-SLIDE BOLT - LOWER - 163	1
6	100-1529	SLIDE BAR - 117	2
7	MET-2555-SS	SOC HD CAP M4 x 40 PARTIAL THR	2
8	100-1522	Y-SLIDE FLANGE - 120	1
9	100-1523	Y-SLIDE SUPPORT	1
10	100-1524	Y-SLIDE BRACKET	1
11	MET-0958-SS	FLT HD SOC SCR M4 X 18	2
12	100-1609	SLIDE COVER - 100	1

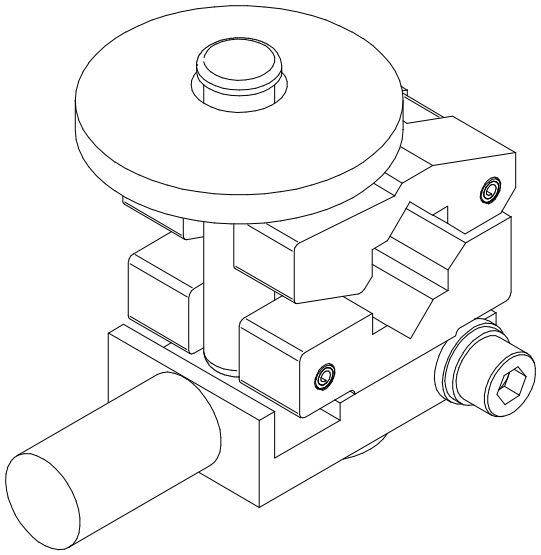
TORCH CLAMP ASSEMBLY (100-1489) – EXPLODED VIEW / PARTS LIST



PARTS LIST			
ITEM	**PART#**	**DESCRIPTION**	**QTY**
1	KBUG-1112	CLAMP FIXED BOLT	1
2	KBUG-1113	CLAMP FIXED KNOB	1
3	KBUG-1111	TORCH CLAMP (U)	1
4	100-1538	TORCH CLAMP - LOWER	1
5	100-1542	CLAMP BASE	1
6	WAS-5570-SS	FLAT WASHER, M6 X 12MM OD	2
7	WAS-5571-SS	M6 LOCKWASHER	2
8	MET-2573-SS	SOC HD CAP SCR M6 X 30	2
9	100-1610	BUSHING	1

OPTIONAL GUN CLAMPS

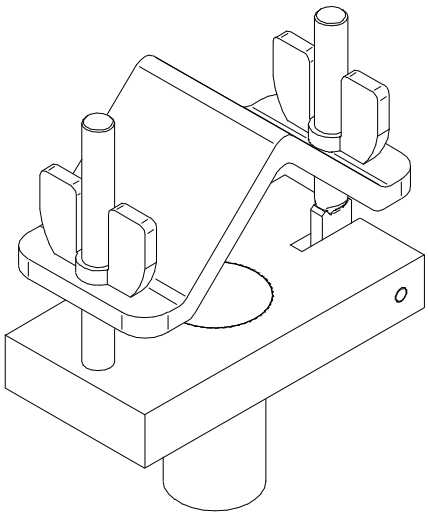
TORCH CLAMP ASSEMBLY (KBUG-1100)



1” TORCH HOLDER (KBUG-1100-1)

(Similar to KBUG-1100, but with a 1” bore)

1.5” TORCH CLAMP ASSEMBLY (SP-250523-DAK-A)

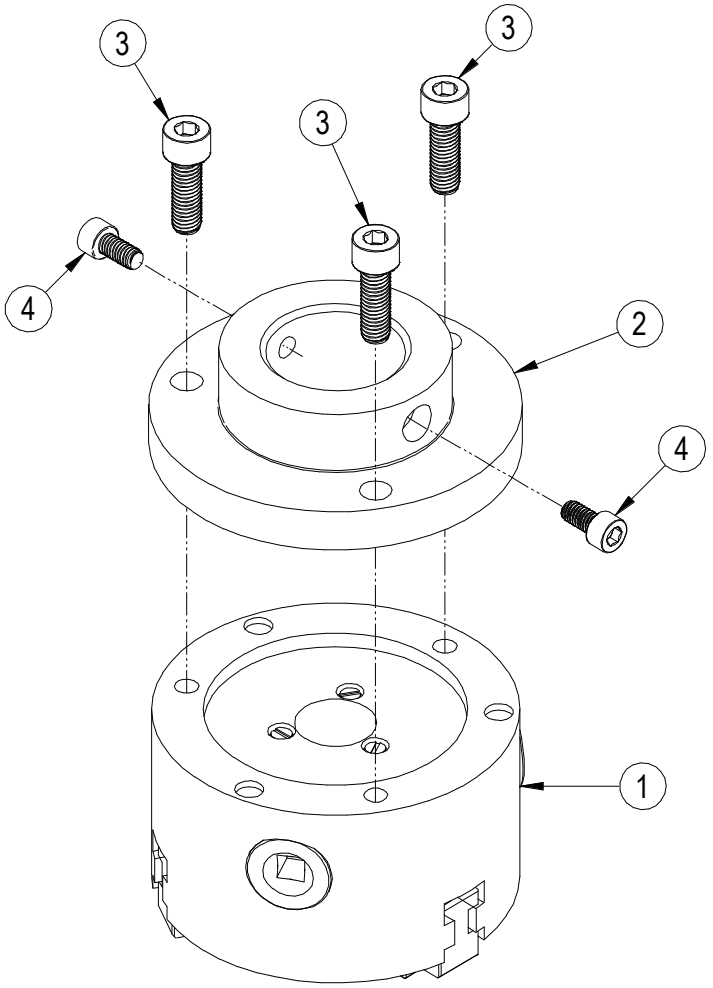


ACCESSORIES

CHUCK ASSEMBLY (100-1482-001)

This is a 4” self-centering chuck with an overall clamping range of 2mm (0.078 in) to 90mm (3.54 in). The range for clamping inside a pipe is 30mm (1.18 in) to 90mm (3.54 in). The range for clamping to the outside of a pipe is 2mm (0.078 in) to 80mm (3.15 in).

Note: The carrying handle does not tighten the chuck as it does the collets. A key must be used on the chuck to tighten it to a pipe.



PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-1598	3-JAW CHUCK ASSEMBLY, 4", SELF CENTERING	1
2	100-1427	SMALL CHUCK ADAPTER	1
3	MET-2582-SS	SOC HD CAP SCR M8 x 25	3
4	MET-0574-SS	SOC HD CAP SCR M6 x 12	2

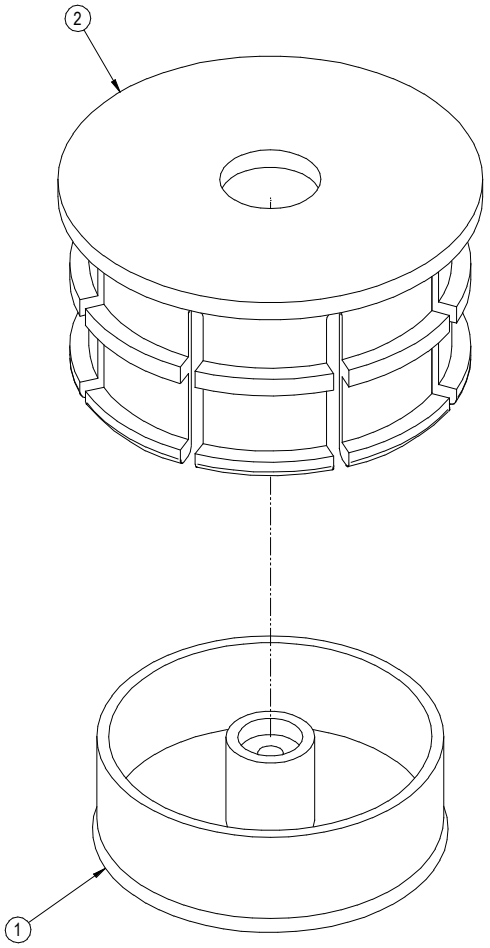
COLLETT ASSEMBLY (100-1481-XX)
(XX = The inner diameter of the work piece in millimeters)

The collets are designed to work with the carrying handle to make quick work of securing the machine to a pipe. Turning the carrying handle expands or contracts the collet. The collets are available for pipes with I.D.s of 30mm (1.18 in) to 100mm (3.93 in).

CAUTION: Do not expand the collet when it is not in a pipe. The collet can over-expand and cause permanent deformation of the collet.

Please contact the factory to determine the correct collet part number for your application.

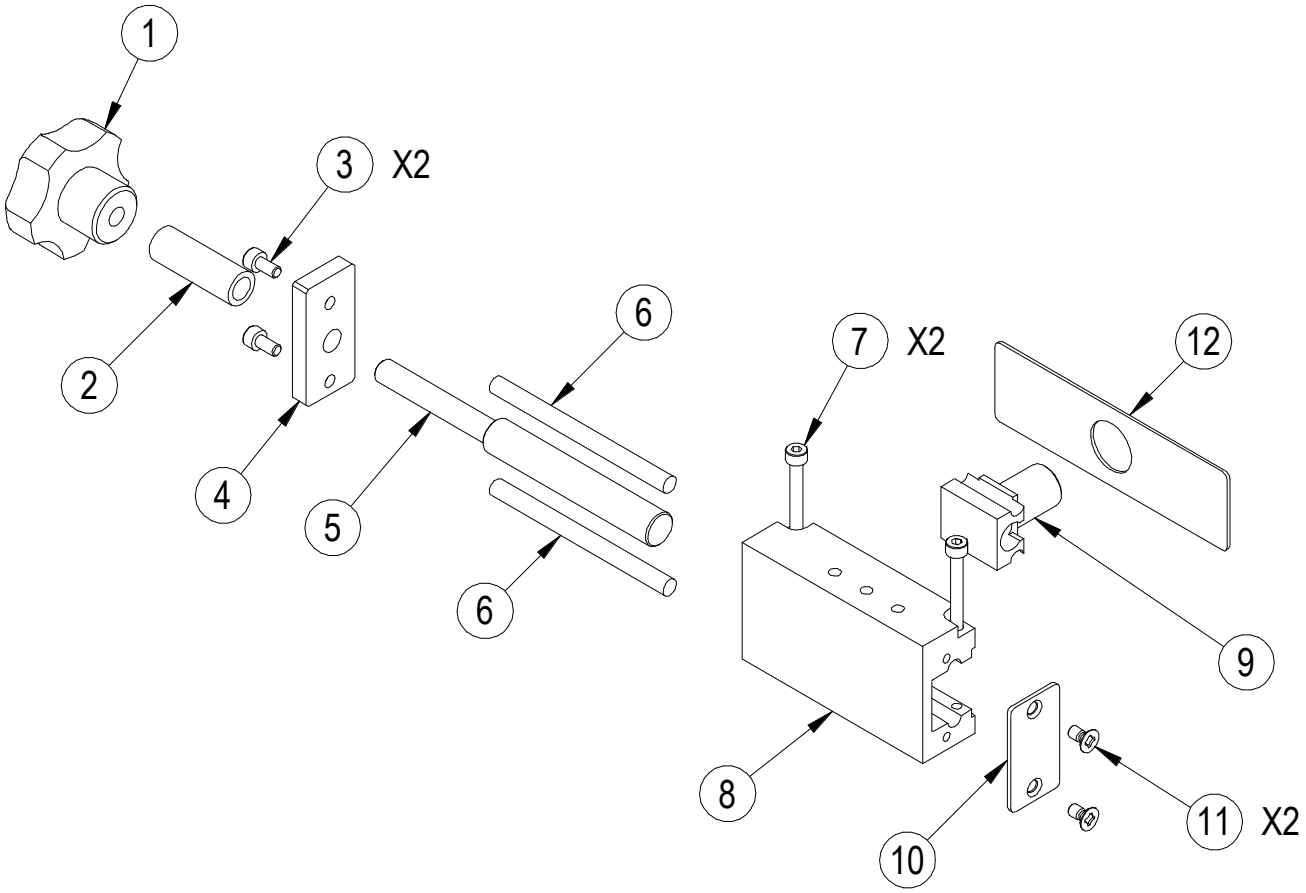
As collets vary depending upon size, the figures below are shown for illustrative purposes only. The actual product may vary in appearance.



PARTS LIST			
ITEM	PART #	DESCRIPTION	QTY
1	100-1481-XX-A	COLLETT PART 1	1
2	100-1481-XX-B	COLLETT PART 2	1

Y-SLIDE ASSEMBLY- 80MM (100-1585) – EXPLODED VIEW / PARTS LIST

This is an optional shorter Y-Slide that is available for cases where space is a premium. It is 30mm shorter than the standard Y-slide and it is rated 0-55mm stroke length.



PARTS LIST			
ITEM	**PART#**	**DESCRIPTION**	**QTY**
1	100-1526	KNOB	1
2	100-1528	Z-SLIDE BOLT COVER	1
3	MET-0552-SS	SOC HD CAP SCR M4 x 8	2
4	100-1530	Y-SLIDE BRACKET (REV)	1
5	100-1581	Y-SLIDE BOLT - LOWER - 80	1
6	100-1582	SLIDE BAR - 77	2
7	MET-2555-SS	SOC HD CAP M4 x 40 PARTIAL THR	2
8	100-1579	Y-SLIDE FLANGE - 80	1
9	100-1523	Y-SLIDE SUPPORT	1
10	100-1524	Y-SLIDE BRACKET	1
11	MET-0958-SS	FLT HD SOC SCR M4 X 18	2
12	100-1609	SLIDE COVER - 100	1

MAINTENANCE

The Mini Circle Welder should be periodically checked and cleaned to maximize service life.

Before use:

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

During use:

Monitor motor and welding torch for abnormal noise or overheating.

After each use:

1. Clean the control panel to remove dust and other debris.
2. Inspect the carriage base, guide rollers, slide adjustment, magnets and torch for weld spatter or other debris. Clean as needed.
3. Inspect the weld contact and torch cables for cracked, cut or damaged insulation. Replace as needed.
4. Inspect connectors for damaged pins or loose connections. Replace as needed.

TROUBLESHOOTING

If any problems occur with the Mini Circle Welder, please check the chart below:

SYMPTOM	CAUSE	REPAIR
The Display is not lit when the machine is turned on	Improperly connected battery	Verify battery is properly connected
	Faulty battery	Ensure battery is fully charged. If the battery is still not working, replace battery
	Control Box Fuse Tripped or Disconnected	Replace fuse. If the problem persists, contact your service rep.
No Arc when **Welding Auto/Off Switch** turned to **AUTO**	Weld Auto/Off Switch set to OFF	Turn **Weld Auto/Off Switch** to **AUTO**
	Poor welding leads contact	Check ground connections. Verify good contact on clean, unpainted surface.
	Faulty Welding Auto/Off Switch	Check wiring for loose connections. Replace the switch, if needed.
	Stop sensor engaged	Dis-engage the stop sensor, if applicable
The machine doesn't rotate when the Cycle Start Button is pushed	Failed drive component	Check the motor and gearbox. Replace as needed.
	Faulty Cycle Start Button	Check Wiring. Replace the button, if needed.
	Faulty MAIN PCB	Replace MAIN PCB.
	The limit switch is set incorrectly	If no stop sensor is installed, ensure the machine is set for NO (normally open) limit switches. Please refer to **Parameter Setting** in the manual.
Torch targets wrong position	Loose fastener on torch clamp or torch adjustment slider(s)	Check and tighten screws, replace if needed.
Slide is hard to adjust	Dust or other debris on slide parts	Clean the slide parts. Lubricate with light oil.
Carriage stops during automatic welding	Obstacle in carriage path	Remove obstacles
	Limit switch engaged	Disengage the limit switch.
	Torch travel exceeds the total length of the part to be welded	Please refer to **Parameter Setting** in the manual, for instructions.
Arc continues after Welding Auto/Off Switch is set to OFF	The Welding Auto/Off Switch is still set to Auto	Turn **Weld Auto/Off Switch** to **OFF**.
	Faulty Welding Auto/Off Switch	Check wiring and/or replace the switch.

SETTING IPM OR CPM AND OTHER ADVANCED CONFIGURATION ITEMS

These setting should not need to be adjusted in the field.

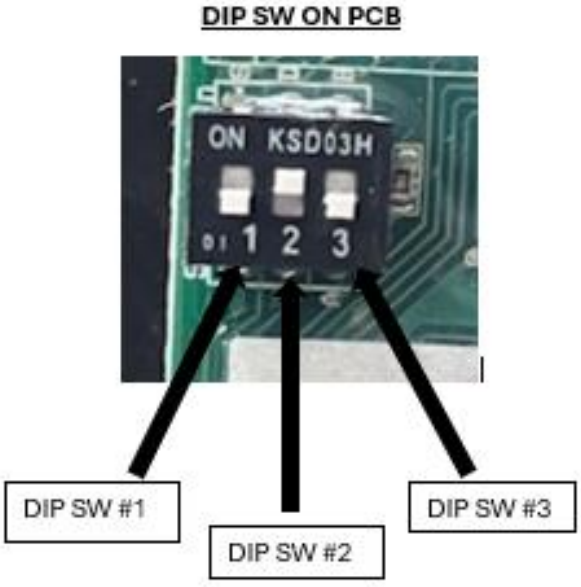
This information is here in case the units need changed.

All other settings should never be changed.

They are here for reference only and in case they are changed inadvertently.

The machine may malfunction if not configured properly

To access the configuration parameters for the machine, the DIP switch needs accessed. To access the DIP switches, the removal of the front panel is necessary. These switches are situated on the front side of the main PCB and are illustrated in the accompanying image below.



Procedure for accessing and modifying the configuration parameters.

a. With the battery disconnected, open the main panel and set **DIP SW #1** to **ON**.

b. While the **power switch** is in the **OFF** position, insert the battery.

c. Turn the **power switch** to **ON**.

d. **n.0** parameter will be shown on the display.

e. Press and release the **Cycle Start Button** to scroll through the parameters ("**n.1**", "**n.2**", etc., shown in the chart, below).

f. To adjust the active parameter, turn the **Speed Adjustment Dial**. Turning to the right (clockwise) will increase the value. Turning to the left (counterclockwise) will decrease the value.

g. Once all values have been set, cycle through all the parameters, at least once and turn off the power switch. The new settings will be saved.

Converting in/min to cm/min, cm/min to in/min

a. With the battery disconnected, open the main panel and set **DIP SW #1** to **ON**.

b. While the power switch is in the **OFF** position, insert the battery.

c. Turn the power switch to **ON**.

d. The **n.0** parameter will be shown on the display.

e. Press and release the **Cycle Start Button** to scroll through the parameters until **n.6** is shown on the display.

f. Set the value of **n.6** to **U-1 for cm/min or U-2 for in/min** by turning the **Speed Adjustment Dial**.

g. After setting n.6, set n.0 to 0.5. Note: Above 100 IPM, it will take two clicks of the setting dial to move the in/min display as it is incrementing it at 0.5 in/min.

h. Once all values have been set, cycle through all the parameters, at least once and turn off the power switch. The new settings will be saved.

Remove the battery and set DIP SW #1 back to OFF position.

Move the battery and set **DIP SW #1** back to **OFF** position.

No.	Description	Set Range	Default Value	Unit
n.0	Drive Speed Resolution	0.1, 0.2, 0.5, 1.0, 2.0, 2.5, 5.0, 10.0	0.5	cm/min, in/min
n.1	Motor Overload Stop Time	0.0 ~ 9.9	2	sec
n.2	Travel Motor Reducer Ratio	10 ~ 300	10	(Default) X 10:1
n.3	Pinion Diameter	2 ~ 99.9	30	mm
n.4	Ring Gear Diameter	2~999	150	mm
n.5	Not Used	N/A	bt5	-
n.6	Operating Units	U-1(cm/min), U-2(in/min)	U-2	cm/min, in/min
n.7	Demonstration Mode	OFF	OFF	-

List of configuration parameters.

Caution: Other than n.6 and n.0, these settings should not be changed from their default value. Changing them can cause odd behavior and machine failures.

List of DIP switch uses and default settings.

DIP Switch #1 Machine configuration parameters:

When set to ON, this switch allows setting of the machine's configuration parameters. It should only be set to on when setting the configuration parameters. Under normal use, this should be set to OFF.

DIP Switch #2 Travel motor mirror direction setting:

The travel motor vel motor direction is changed when DIP SW #2 is set to OFF in the main PCB. Caution: The default is ON. Do not change this.

DIP Switch #3 Stop Sensor:

This switch changes the STOP SENSOR type from normally open (NO) to normally closed(NC). Caution: This is OFF by default. Do not change it without installing the proper STOP sensor or the machine will not function. OFF=NO, ON=NC.

BUG-O SYSTEMS INTERNATIONAL

EU DECLARATION OF CONFORMITY

Manufacturer and technical Documentation Holder:	Bug-O Systems International a Division of Weld Tooling Corporation 280 Technology Drive Canonsburg, PA 15317-9564
Hereby declare that machinery:	MCW(Mini Circle Welder), including options and accessories
Sales codes:	100-1480-120, 100-1480-240 (sales code may also contain prefixes and suffixes)

Is in conformity with Council Directives and amendments:

- 2006/42/EC – Machinery Directive.

Standards:

- EN 12100:2010 – Safety of Machinery – General principles for design – Risk assessment and risk reduction.
- EN 60204-1:2018 Safety of machinery – Electrical equipment of machines Part 1: General Requirements.

The machinery, product, assembly or sub-assembly covered by this Declaration of Conformity must not be put into service until the machinery into which it is to be incorporated (if applicable) is declared in conformity with provisions of the applicable directives(s).

Authorized representative for the compilation of the relevant technical documentation and issuer of EC Declaration of Conformity:

Date of Issue: May 15, 2025
Place of issue: 280 Technology Drive, Canonsburg, PA 15317, USA
Typed Name of Authorized Person: MATTHEW W. CABLE - PRESIDENT

Signature of Authorized Person: Matthew a Cable

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 NEGLECT, 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.