

INSTRUCTIONS AND PARTS MANUAL

CWP-11 PROGRAMMABLE CIRCLE 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-CWP11-IPM-0509



CYPRESS WELDING EQUIPMENT INC. CE

A DIVISION OF WELD TOOLING CORPORATION

280 Technology Drive • Canonsburg, PA USA 15317

Telephone: 1-412-331-1776 • 1-800-245-3186 • Fax: 1-412-331-0383

<http://www.cypressweld.com>

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.



EQUIPMENT DAMAGE POSSIBLE.

- 1) Do not plug in the power cord with out 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 worksite and store in a safe location when not in use.



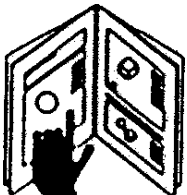
FALLING EQUIPMENT can cause serious personal injury and equipment damage.

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.



READ INSTRUCTIONS.

Read the instruction manual before installing and using the equipment.

HIGH FREQUENCY WARNINGS

SPECIAL PRECAUTIONS ARE REQUIRED WHEN USING PLASMA, TIG OR ANY WELDING PROCESS THAT USES HIGH FREQUENCY TO STRIKE AN ARC.

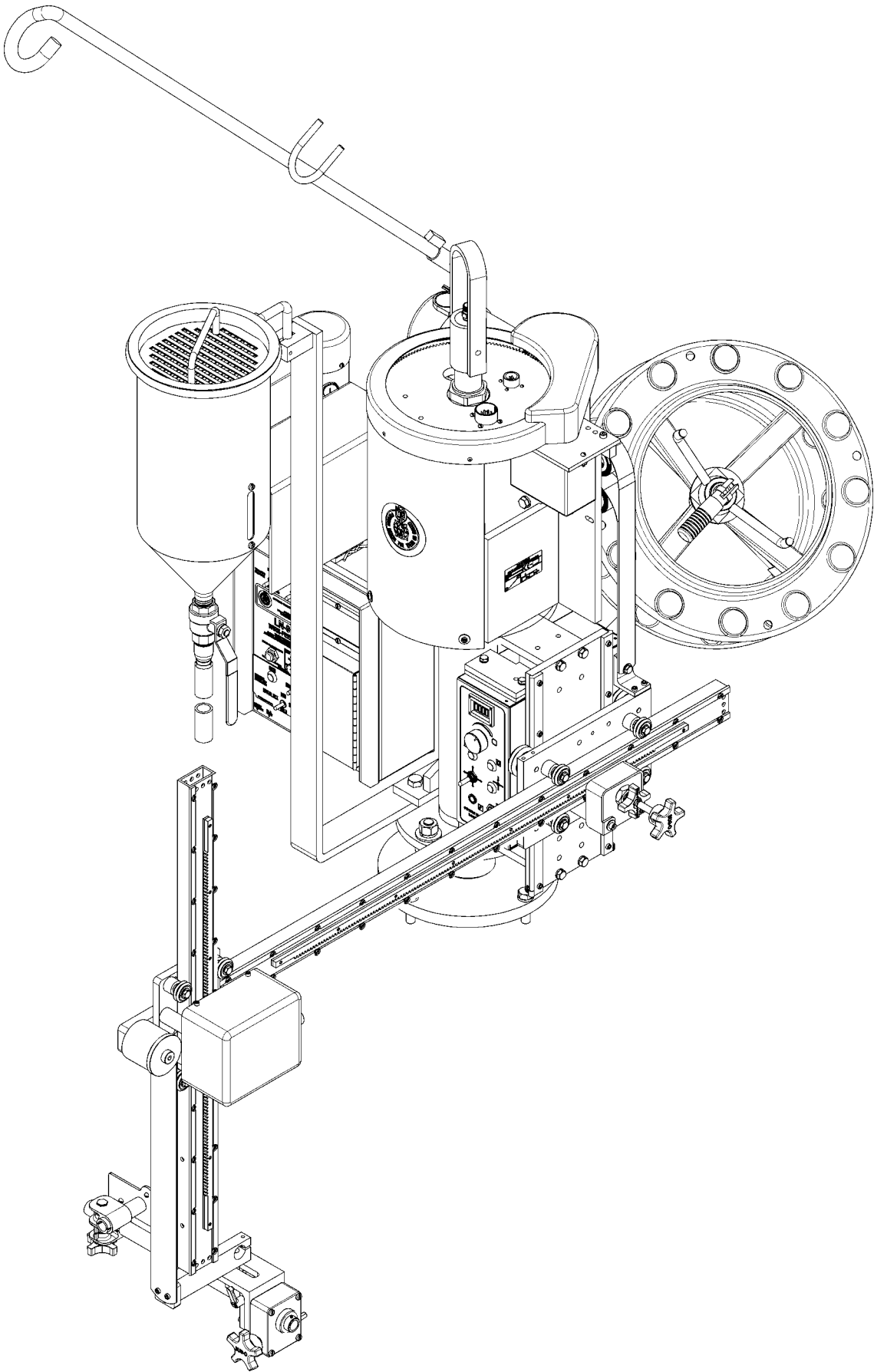


WARNING: HIGH FREQUENCY CAN EFFECT MACHINE OPERATION AND THEREFORE, WELD QUALITY.

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 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 alternate solution is to purchase a separate remote contactor isolation box.



CWP-11 PROGRAMMABLE CIRCLE WELDER INSTRUCTIONS AND PARTS MANUAL

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Patents Pending

INTRODUCTION

The CWP-11 (CWP-1100) Programmable Circle Welder is designed for welding of nozzles into vessels utilizing SUB-ARC, MIG or FLUX CORED PROCESS, with gas shielding. The CWP-11 mounts on a 3-Jaw Chuck for welding diameter 6" to 50" O.D.

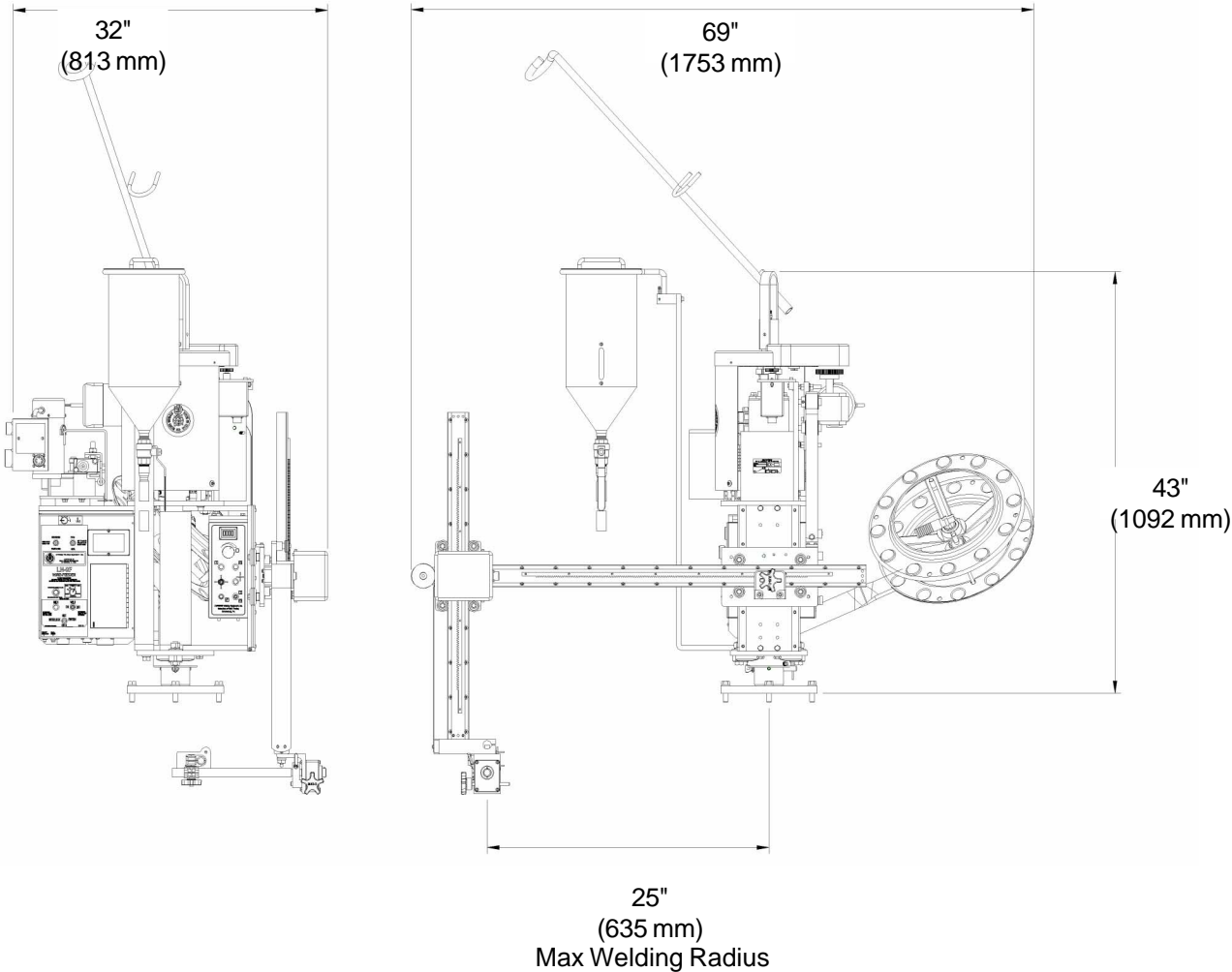
FEATURES

- Amperage & wire speed control.
- Wire feeder with one set of drive rolls.
- Wire sizes from 0.035 - 7/64 in (0.9 - 2.8 mm) for subarc welding.
- 1/12 HP P.M. motor and rotational speed control.
- 600 AMP gun & cable assembly.
- Gas shielding kit with 120 VAC solenoid valve.
- 5/8" (16 mm) gas cup.
- Burn back control.
- 50 ft. (15 m) power cable.
- 50 ft. (15 m) gas shielding hose.
- 50 ft. (15 m) weld cable.
- Quick disconnects for all cables.
- Weld contact switch.
- Cold wire inch switch.
- Wire direction switch.
- Pre and post flow controls.
- Wire reel adaptor for 60 lb. (27 kg) spools.
- Adjustable vertical and horizontal torch positioning system
- Microprocessor controlled rise and fall, up to 5" (125 mm).
- Brushes and collector rings for welding current, rated at 600 AMPS 100% duty cycle.
- Brushes and collector rings for all controls, eliminates cable and hose wrap.

TECHNICAL DATA

- Input Voltage:** 115 VAC
- Amperage:** 0-600 amps.
- Voltage:** 0-50
- Wire Sizes:** 0.035 - 7/64 (0.8-3.2 mm.)
- Rotation Speed:** 0.06-0.72 rpm
- Vertical Range:** 0"-5" (0-125 mm.)
- Welding Radius:** 0"-25" (0-0.625m.)
- Shielding Gas:** Solenoid Control
- Height:** 43" (1092 mm.)
- Net Weight:** 360 lbs. (163.6 kg.)
- Shipping Weight:** 490 lbs. (222.3 kg.)

DIMENSIONS



SET-UP AND OPERATION

POWER SOURCE

Use only constant voltage (CV) type power sources with this circle welder machine. If using a multiple process power source, be sure that it is set for constant voltage (CV) output as per the instructions in the manual for the power source. Set the power source polarity switch or properly connect the electrodes and work leads for the correct electrode polarity.

GUNS AND CABLES

All circle welders come equipped with a gun and cable assembly. It is our recommendation that at least once a week the liner be taken out of the cable and soaked overnight in a solvent solution. To keep the wire moving it is also recommended that a felt clip be saturated with a product like Ferro Slick and fed through the incoming tube of the wire feeder at least once a day.

ADDITIONAL CABLES

Each circle welder is supplied with the following cables:

1. CWO-3971 50' (15 m) power cable that connects the power source to the cable connector on the top gear of the machine.
2. CWO-3040 50' (15 m) weld cable that connects the lead coming out of the top of the machine to your power supply, using the quick connect connector .
3. CWO-9406 50' (15 m) gas shielding hose that connects the gas fitting on the top of the shaft to your shielding gas supply. (*MIG models only.*)

WHEEL ADJUSTMENT

The CWP-11 Motorized Racking System (CBP-1640) and the Large Horizontal Racker (CWO-1690) are equipped with adjustable wheels. Always check these components for proper wheel adjustment before using the machine. Adjust the wheels if you can cock or wiggle the components out of alignment. The wheels should be snug but not prohibit movement along the path of travel. The wheels with the hex stand-offs (shown in Figure 1) are adjustable. To adjust the wheels, loosen the hex bolt (A) until the eccentric bushing (B) can be rotated. Correct the wheel alignment by rotating the eccentric bushing (B). Once adjusted, hold the eccentric bushing (B) while tightening the hex bolt (A). Recheck alignment.

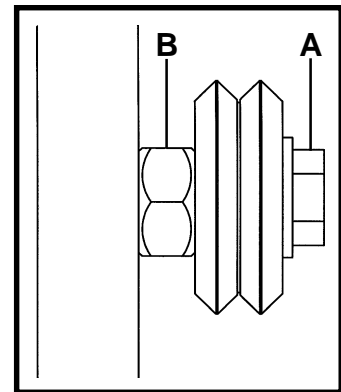


Figure 1: Adjustable Wheel

WIRE SPEED AND VOLTAGE ADJUSTMENT

The wire speed control on the front of the CWO-3535 Wire Feed Control box has a dial that is calibrated directly in inches per minute. Set the voltage using the control on the power source.

INSTALLATION

Use a 3-Jaw Chuck to mount and center the CWP-11 on nozzles with or without flanges, as seen in Figure 2. See page 41 for a list of available 3-Jaw Chucks.

MACHINE CONTROLS

Operational parameters can be set using the two control boxes. Please refer to the sections in this manual entitled "Rotation Controls" and "Pendant Control" for descriptions of the various speed and directional capabilities. For the LN-9 Wire Feed Control Box; refer to the supplied LN-9 Semiautomatic Wire Feeder Manual from Lincoln Electric.

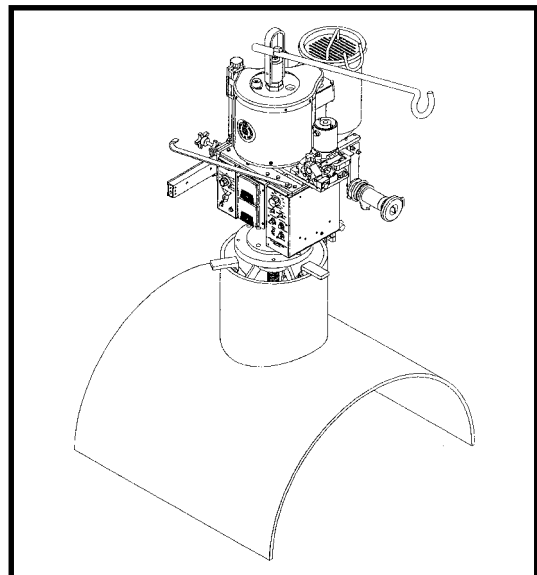


Figure 2: Installation with 3-Jaw Chuck

SET-UP AND OPERATION, CONTINUED

WELD STARTING POSITION

Proper positioning of the electrode is crucial to a successful weld. The CWP-11 rotates in a clockwise direction. The weld should start on the centerline of the nozzle parallel to the centerline of the vessel and begin welding downhill. For on-center nozzles, there are two valid start positions, shown as A1 and A2 in Figure 3. There is only one valid start position for a hillside nozzle, shown as B in Figure 4.

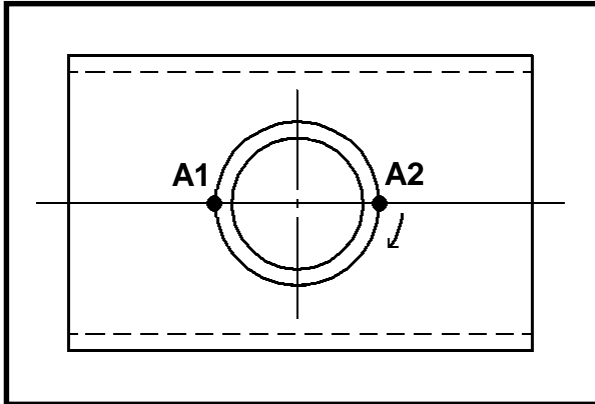


Figure 3: Weld Starting Position for On-center nozzles.

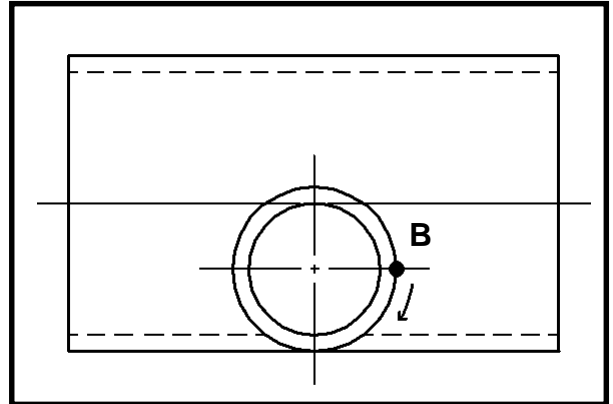


Figure 4: Weld Starting Position for Offset or Hillside nozzles.

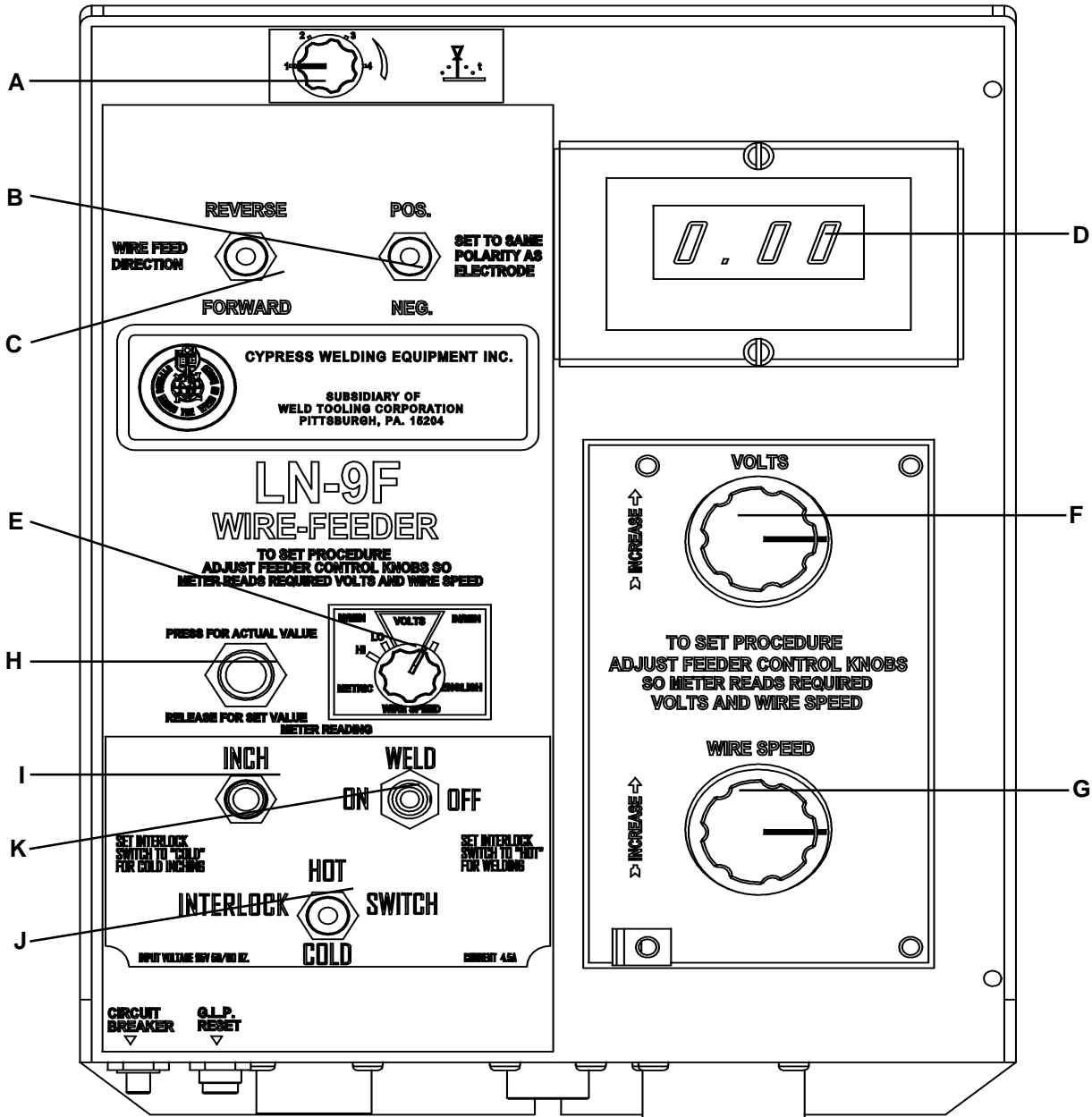
WARNING

When using an open arc process, it is necessary to use correct eye, head and body protection.

MAKING A WELD

1. Connect the ground cable to the workpiece. The ground cable must make good electrical contact with the work.
2. Set Auto/Manual switch on Wire Feeder Control Box to MANUAL.
3. Depress red STOP button on Rotation Control Box.
4. Position the welding gun at the start position using the Rotation Controls and the Racking System. Position the electrode in the joint. The end of the electrode may be lightly touching the work.
5. Depress black RESET button on Rotation Control Box to set new Home position.
6. Using the Pendant Control, call up the desired program number or input a new program. When finished press "D" to display the program data.
7. Set the Auto/Manual switch on the Wire Feeder Control Box to AUTO.
8. Depress the green START button on the Rotation Control Box to begin the weld program.
9. The machine will automatically stop at the end of the weld program.

CWO-3535 LN-9 WIRE FEEDER CONTROLS



- A. Wire Burn Back Control
- B. Wire Polarity Control
- C. Wire Direction Control
- D. Volt / Wire Speed Meter
- E. Meter Selector Switch
- F. Voltage Control
- G. Wire Speed (Current) Control
- H. Actual / Set Value Jog Button
- I. Cold Wire Inch
- J. Wire Hot / Cold Selector
- K. Weld On / Off

CWO-3535 LN-9 WIRE FEEDER CONTROLS

For further information refer to Lincoln Electric LN-9 Wire Feeder Operators Manual

A. WIRE BURN BACK CONTROL

This control provides a precise time delay that allows the wire to be burned off at the end of the weld. This is useful for those applications where higher speed, fine wire feeding is used and there is a tendency for the electrode to overrun at the end of the weld and cause “sticking” in the crater. The delay is adjustable for optimum burn back depending on wire size, process, procedure, Etc.

B. WIRE POLARITY CONTROL

Set the switch to the same polarity as the electrode lead connection to the power source. If the switch is not set for the correct polarity the wire feeder will stop welding shortly after the arc is struck.

C. WIRE DIRECTION CONTROL

Controls the direction the wire is being fed through the feeder. **UP** to return wire to the spool. **DOWN** to feed wire to the gun.

D. VOLT / WIRE SPEED METER

A three-digit meter is provided to set and monitor the welding procedure. The arc voltage is displayed in volts, and the wire feed speed is displayed in either inches/minute or meters/minute.

E. METER SELECTION SWITCH

When the **METER SELECTION SWITCH** is set to “VOLTS” position, the meter reads the arc voltage setting as adjusted by the **VOLTAGE CONTROL**. The three “WIRE SPEED” positions include an “ENGLISH” position, for the meter readings in inches/minute; and “LO” and “HIGH” range “METRIC” positions, for meter readings in meters/minute.

F. VOLTAGE CONTROL

Increases and decreases the voltage in conjunction with the **METER SELECTION SWITCH**. Adjustments can be made before and during the welding operation.

G. WIRE SPEED (CURRENT) CONTROL

Increases and decreases the wire speed in conjunction with the **METER SELECTION SWITCH**. Adjustments can be made before and during the welding operation.

H. ACTUAL / SET VALUE JOG BUTTON

After the weld has been started the “ACTUAL” voltage or wire speed can be read by pressing the “SET- ACTUAL” push button. The **METER SELECTION SWITCH** must be set in the desired position. When the push button is not being operated the meter continues to read the “SET” value.

I. COLD INCH SWITCH

The **COLD INCH SWITCH** when pressed energizes the wire feeder but not the gas solenoid or the welding power source.

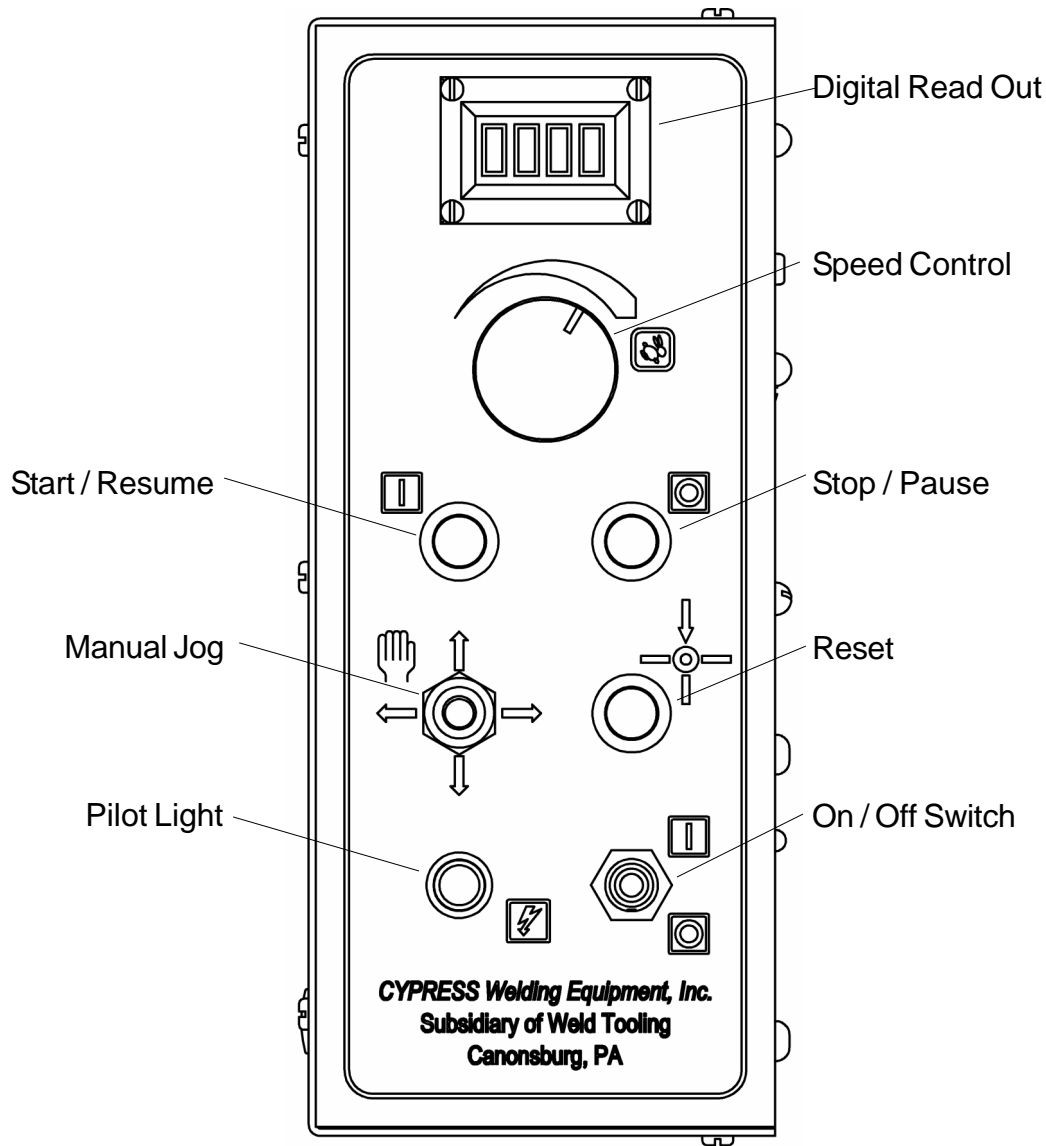
J. WIRE HOT / COLD SELECTOR

The two position switch performs a dual function. In the “down” position the wire may be fed electrically cold. In the “up” position the wire is electrically hot when feeding and the contact circuit is controlled only by the **WELD ON-OFF SWITCH**.

K. WELD ON / OFF

The “OFF” position allows the operator to rotate the machine without welding to check the wire placement. The “ON” position will start the entire weld operation based on the operators settings, including machine rotation.

ROTATION CONTROLS (CBP-1500)



DIGITAL READ OUT: Displays speed reference value.

SPEED CONTROL: Controls the speed at which the machine travels.

START/RESUME: Starts rotation.

STOP/PAUSE: Stops rotation.

RESET: Sets machine position as “home” position.

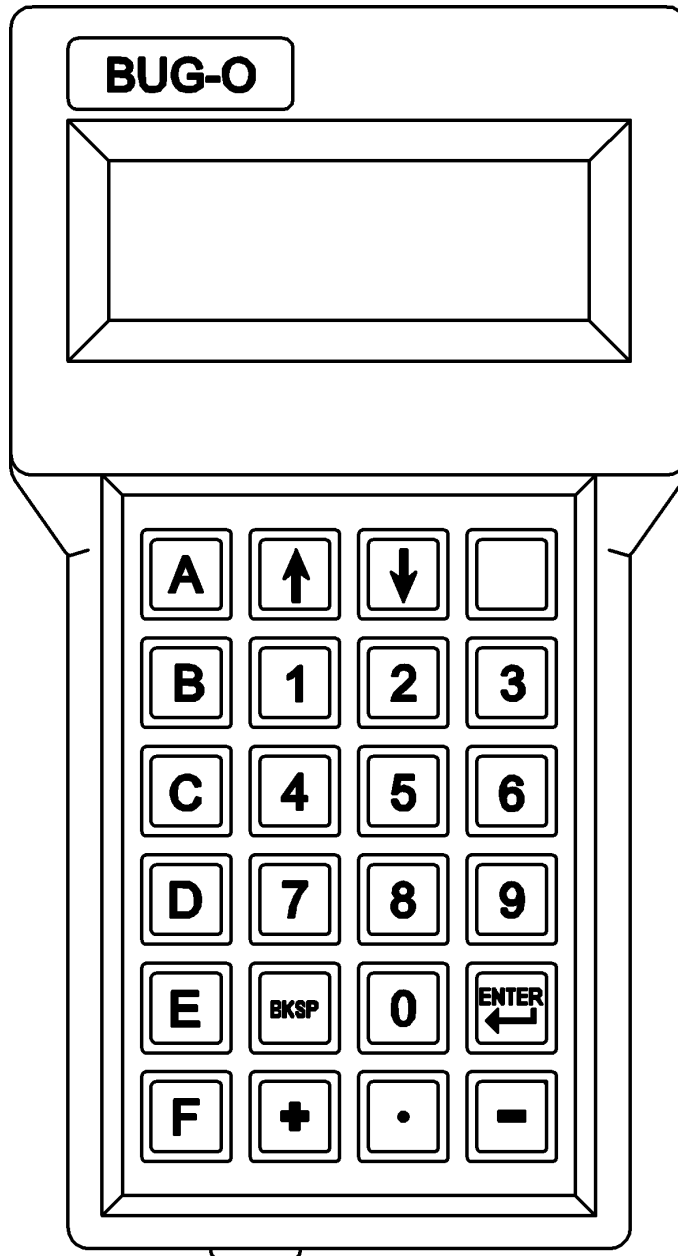
MANUAL JOG: Allows user to manually position the welding tip while the machine is stopped or paused.

ON/OFF SWITCH: Enables/disables power to the rotation control box.

PILOT LIGHT: Indicates when the machine is powered on.

PENDANT CONTROL (BUG-6050)

This is the pendant control with keypad and display. The pendant control is used for programming the sizes of the work pieces and their fit, as described on the next page. It plugs into the Pendant Control Connection on the CBP-1500 rotation control box.



ALPHA KEYS: Press Keys A, B, C, D, or E for the function desired, as described in the programming section of this manual.

DIGIT KEYS: Use the digit keys to enter pipe diameters or dimensions.

ENTER: Push the enter button to store the numeric value keyed.

BACKSPACE: The backspace key removes the last digit keyed in before pushing the enter button, if a correction is required.

SHIFT: The blank key in the top right corner of the key pad is the SHIFT key. Use this key to access additional programming options.

PROGRAMMING

FUNCTION KEYS

All programming is done using the **PENDANT CONTROL**. Use the following Alpha Keys for programming:

- A: To enter dimensions.
- B: To enter the time delay for puddle build-up.
- C: To change Program Number in memory (numbers 0 – 99).
- D: To display the dimensions of the weld.
- E: To enter the number of passes (1 – 99).

Three other useful key functions are:

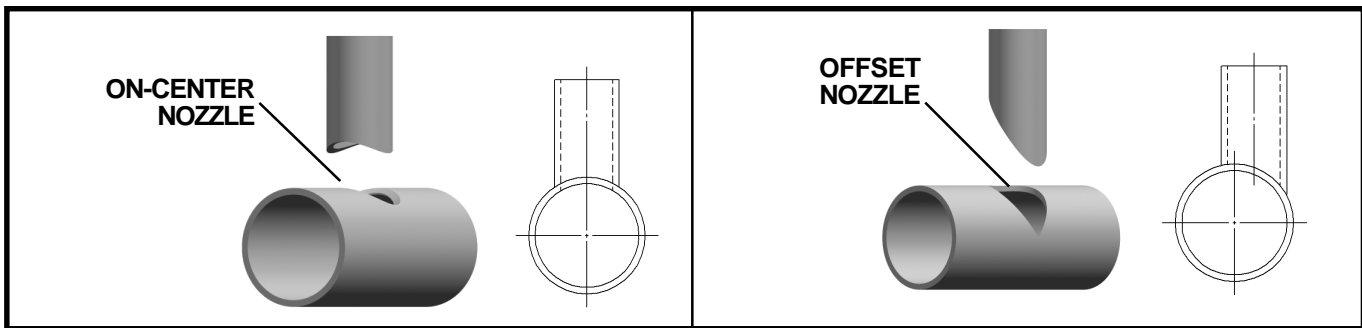
- Shift 9: Set units, english (inch) or metric (meters)
- Shift 8: Test drives & encoders
- Shift E: Version number (have this information ready when calling for service)

DATA REQUIRED

1. Small diameter (nozzle size)
2. Large diameter (pipe it fits on)
3. Offset distance between centerlines.

When entering data, use the diameter of the cylinder along whose intersection the cut has been made. Usually this will be the inside diameter of the nozzle or the outside diameter of the pipe it fits on. This will also allow for any bevel, if necessary. If no offset, enter “0” or just press “Enter”.

NOTE: If the STOP / RESUME button is pressed, the machine will be in pause mode, and cannot be programmed. Press the RESET button to get back to the ready mode for programming.



DATA ENTRY

When entering data with the pendant keypad, multiply inches, degrees, or seconds by 100 and enter the number without a decimal point. For metric dimensions, multiply mm X 10 or cm X 100.

Example: 350 for 3.5 inches,
 800 for 80 mm, on metric machines

Press “ENTER” on the keypad after the number is entered.

SAVING PROGRAMS

The machine has 100 storage areas or welds, numbered 0 to 99 in memory. Push the “C” button on the pendant keypad to change (or set) the program number and enter the desired number. Program data is retained until reprogrammed. At any time, one of these numbers is selected, it will stay selected even when power is shut off and turned back on, it will not change until the program number is changed by the operator. The time delay setting is not saved as part of a program.

EXAMPLE

The following is a step-by-step example for setting up and running the CWP-11.

BASIS:

Weld an 8" nozzle onto a 36" Diameter vessel, with an offset of 6". Weld two passes, and allow 0.3 seconds for puddle build-up at the start of the weld. Assign program number 01 to this weld.

Step 1. Select a suitable 3-Jaw Chuck.

Choose either a CWO-3660 or a CWO-3661 for the 8-in nozzle, from the list on page 41.

Step 2. Install the CWP-11.

Insert chuck into nozzle and secure CWP-11 to chuck.

Connect ground cable to work piece; ensure good contact.

On the wire feeder controls, set the Weld switch to OFF.

Power ON the rotation control box.

Set travel speed using the rotation control box.

Step 3. Position the welding gun.

Press the red [STOP] button on the rotation control box.

Using rotation controls and CWO-1640 racking system, place the electrode at the weld start.

The weld should start at the beginning of the larger downhill as shown in Figure 4 on page 9.

Press the black [RESET] button on the rotation control box.

Step 4. Program the weld.

Press [SHIFT], [9] to select units.

Press [C] to set the program number.

[0], [1], then [ENTER] or [1], then [ENTER]

Press [A] to set dimensions.

At the "Enter Small Diameter" prompt, enter the nozzle diameter.

[8], [0], [0], then [ENTER]

At the "Enter Large Diameter" prompt, enter the vessel diameter.

[3], [6], [0], [0], then [ENTER]

At the "Offset" prompt, enter the offset distance.

[6], [0], [0], then [ENTER]

Press [B] to enter time delay for puddle build-up.

Note: This value is universal and *not* associated with program number.

[3], [0], then [ENTER]

Press [D] to display or review the program dimensions

Press [E] to set number of passes.

[2], then [ENTER]

Step 5. Start the weld.

On the wire feeder controls, set the Weld switch to AUTO.

Depress green [START] button on rotation control box.

Step 6. End the weld.

The CWP-11 will automatically stop after completing the number of passes entered.

Depress the red [STOP] button on rotation control box after the weld has stopped and before repositioning the machine.

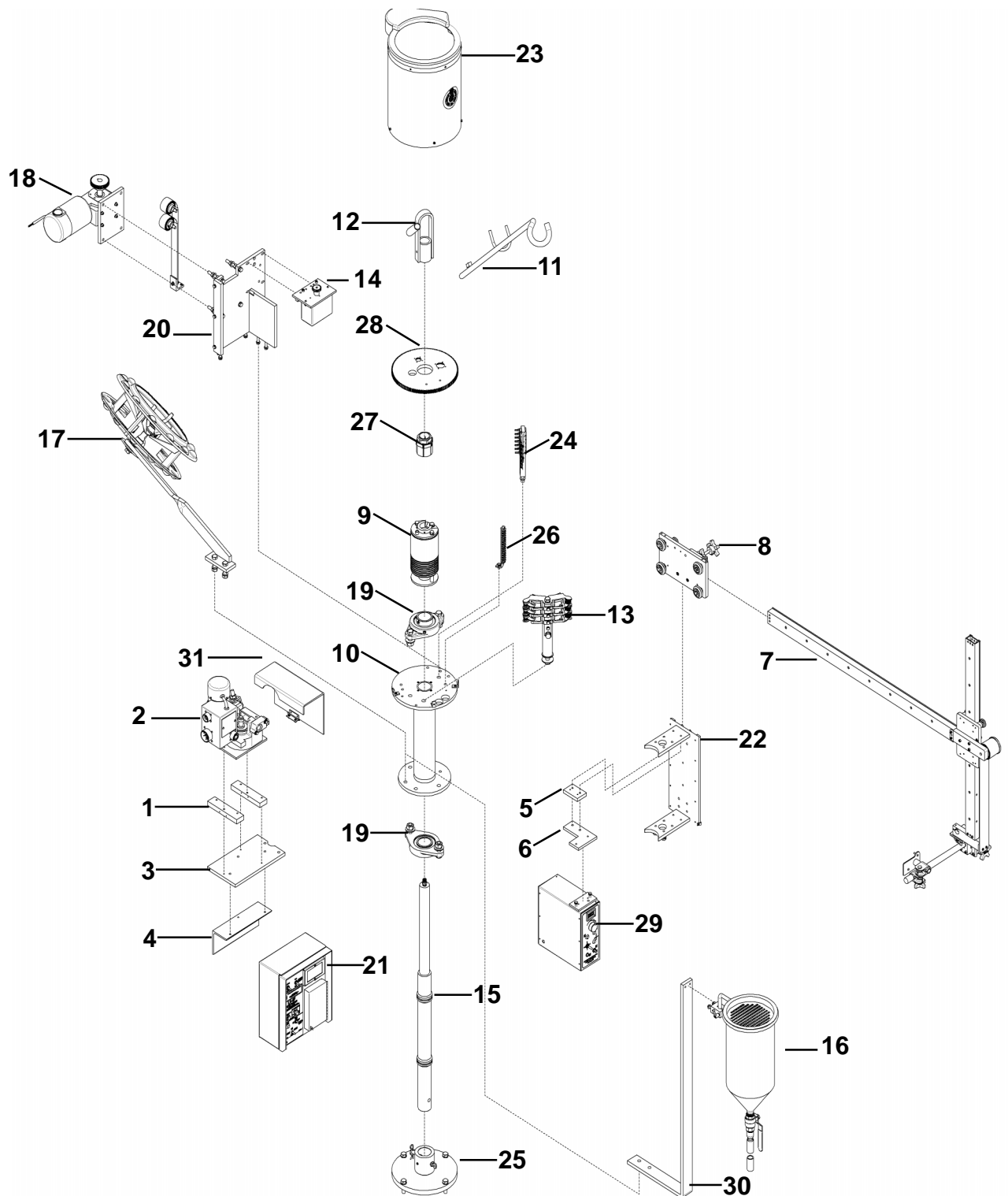
(CWP-1100) CWP-11 PROGRAMMABLE CIRCLE WELDER / PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	BUG-3278	SPACER
2	1	CWO-3530	LN-9F WIRE FEEDER *
3	1	CWO-1121	CWP-11 WIRE FEEDER MOUNT PLATE
4	1	CWO-1122	LN-9F CONTROL MT. PLATE
5	1	CWO-1123	CONTROL MT. SPACER BLOCK
6	1	CWO-1124	CWP-11 CONTROL MT. PLATE
7	1	CBP-1640	CWP-11 MOTORIZED RACKING SYSTEM
8	1	CWO-1690	LARGE HORIZONTAL RACK
9	1	CWO-3133	CWP-11 COLLECTOR WITH POWER RACKER
10	1	CWO-3165	CWP-11 HOUSING ASSEMBLY
11	1	CWO-3218	CABLE SUPPORT BAR
12	1	CWO-3312	LIFTING LUG WELDMENT
13	1	CWO-3315	BRUSH HOLDER & SUPPORT
14	1	CBP-1595	ENCODER ASSEMBLY
15	1	CWO-3432	CWP-11 SHAFT ASSEMBLY
16	1	CWO-3490	FLUX HOPPER ASSEMBLY**
17	1	CWO-3498-11	WIRE REEL ASSEMBLY CWP-11
18	1	CWO-3506	4066 MOTOR ASSEMBLY
19	2	CWO-3528	2" FLANGE BEARING W/ FASTENERS
20	1	CWO-3531	MOTOR & TRANSMISSION PLT. ASSEMBLY
21	1	CWO-3535	LN-9 WIRE FEEDER CONTROL
22	1	CWO-3534	SLIDE BAR MOUNTING ASSEMBLY
23	1	CWO-3537	GUARD ASSEMBLY CWP-11
24	1	CWO-3931	BRUSH RETAINER
25	1	CWO-3968	CWP-11 BASE PLATE
26	1	CWO-3969	TERMINAL BLOCK ASSEMBLY
27	1	CWO-5074	1-1/2" I.D. TRANTORQUE
28	1	CWO-5793	GEAR
29	1	CBP-1500	ROTATION CONTROL
30	1	CWO-4390	FLUX HOPPER SUPPORT BAR**
31	1	CWO-2005	WIRE FEEDER GUARD
32	1	BUG-6050	PENDANT KEYPAD (NOT SHOWN)
33	1	BUG-9448	1/2" WRENCH (NOT SHOWN)
34	1	BUG-9449	HEX KEY KIT (NOT SHOWN)
35	1	MUG-1621-1.5	CABLE, 18" (NOT SHOWN)
36	2	MUG-1634-4	SHIELDED CABLE 4'-6 (NOT SHOWN)

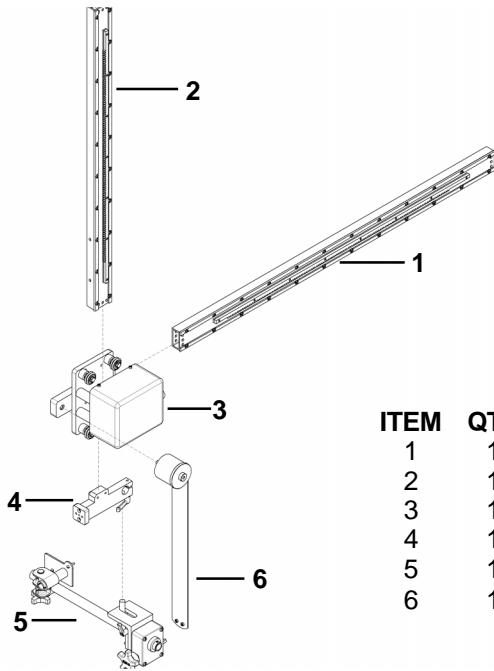
* See available drive roll options located on page 40.

** Subarc (SA) models only.

(CWP-1100) CWP-11 PROGRAMMABLE CIRCLE WELDER / EXPLODED VIEW

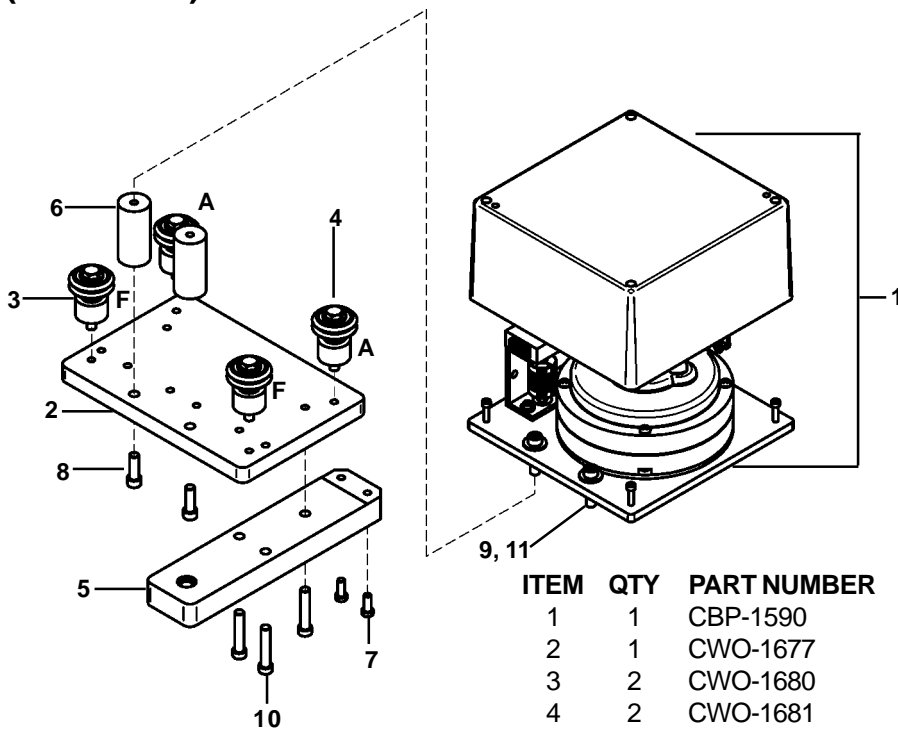


(CBP-1640) CWP-11 MOTORIZED RACKING SYSTEM / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	ABR-1050	V-GUIDE WAYS 40"
2	1	ABR-1060	V-GUIDE WAYS 33"
3	1	CBP-1675	MOTORIZED VERTICAL RACKER
4	1	CWO-1695	ATTACHMENT BLOCK
5	1	CWO-3023-1	TORCH ANGLE ADJUSTER 16"
6	1	CWO-3460	33# LOAD SPRING ASSY.

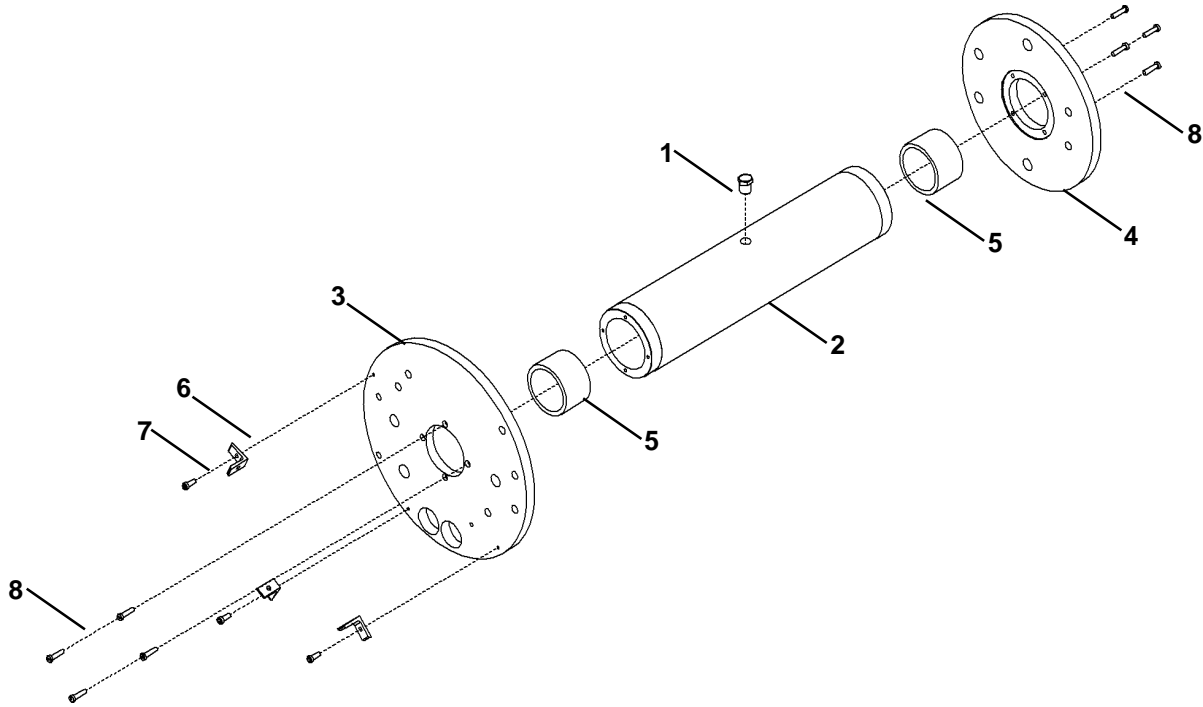
(CBP-1675) MOTORIZED RACKER / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CBP-1590	DRIVE BOX
2	1	CWO-1677	MOUNT PLATE
3	2	CWO-1680	W2 FIXED LEG & WHEEL ASSY
4	2	CWO-1681	W2 ADJ LEG & WHEEL ASSY
5	1	CWO-1682	RACKER MOUNT BAR
6	2	CWO-1694	STAND-OFF
7	2	FAS-0555	SCREW, SOC HD CAP 1/4-20 X 1/2
8	2	FAS-0557	SCREW, SOC HD CAP 1/4-20 X 3/4
*9	2	FAS-0559	SCREW, SOC HD CAP 1/4-20 X 1
10	3	FAS-2551	SCREW, SOC HD CAP 1/4-20 X 1 1/4
*11	2	WAS-0240	WASHER, SAE 1/4

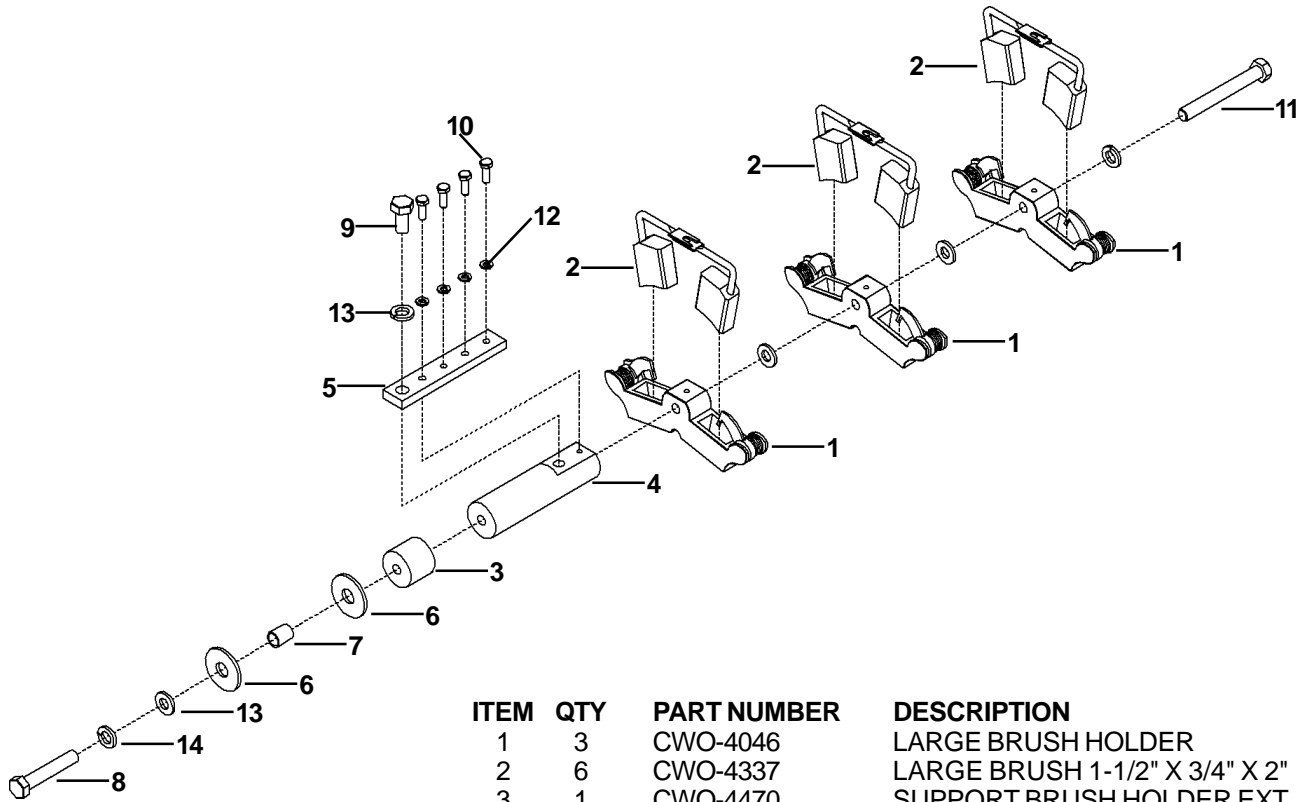
F = FIXED WHEEL PLACEMENT
A = ADJUSTABLE WHEEL PLACEMENT

(CWO-3165) CWP-11 HOUSING ASSEMBLY / EXPLODED VIEW / PARTS LIST



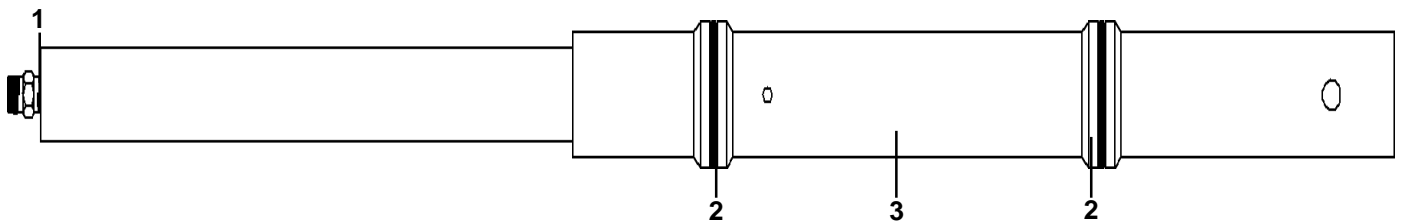
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-4133	1/4-18 NPSM HEX PLUG, BRASS
2	1	CWO-5842	CENTER TUBE HOUSING, CWP-11
3	1	CWO-5845	TOP HOUSING PLATE, CWP-11
4	1	CWO-5853	LOWER HOUSING PLATE, CWP-11
5	2	CWO-5980	PLASTIC BUSHING
6	3	CWO-9339	ANGLE FOR GUARD
7	3	FAS-0535	SOC HD CAP SCR 10-24 X 1/2"
8	8	FAS-0548	SOC HD CAP SCR 10-32 X 3/4" LOW HEAD

(CWO-3315) BRUSH HOLDER & SUPPORT ASSEMBLY / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	CWO-4046	LARGE BRUSH HOLDER
2	6	CWO-4337	LARGE BRUSH 1-1/2" X 3/4" X 2"
3	1	CWO-4470	SUPPORT BRUSH HOLDER EXT.
4	1	CWO-4472	BRUSH HOLDER SUPPORT, CWP-11
5	1	CWO-4473	ATTACHMENT BAR CW-11
6	2	CWO-5548	MICARTA SPACER
7	1	CWO-5549	MICARTA BUSHING
8	1	FAS-3308	HEX HD CAP SCR 1/2-13 X 3"
9	1	FAS-0309	HEX HD CAP SCR 1/2-13 X 1"
10	4	FAS-0357	HEX HD CAP SCR 1/4-20 X 3/4"
11	1	FAS-3304	HEX HD CAP SCR 1/2-13 X 4"
12	4	WAS-0243	1/4" SPLIT LOCKWASHER
13	3	WAS-0280	1/2" SAE WASHER
14	3	WAS-0281	1/2" SPLIT LOCKWASHER

(CWO-3432) CWP-11 SHAFT ASSEMBLY / EXPLODED VIEW / PARTS LIST

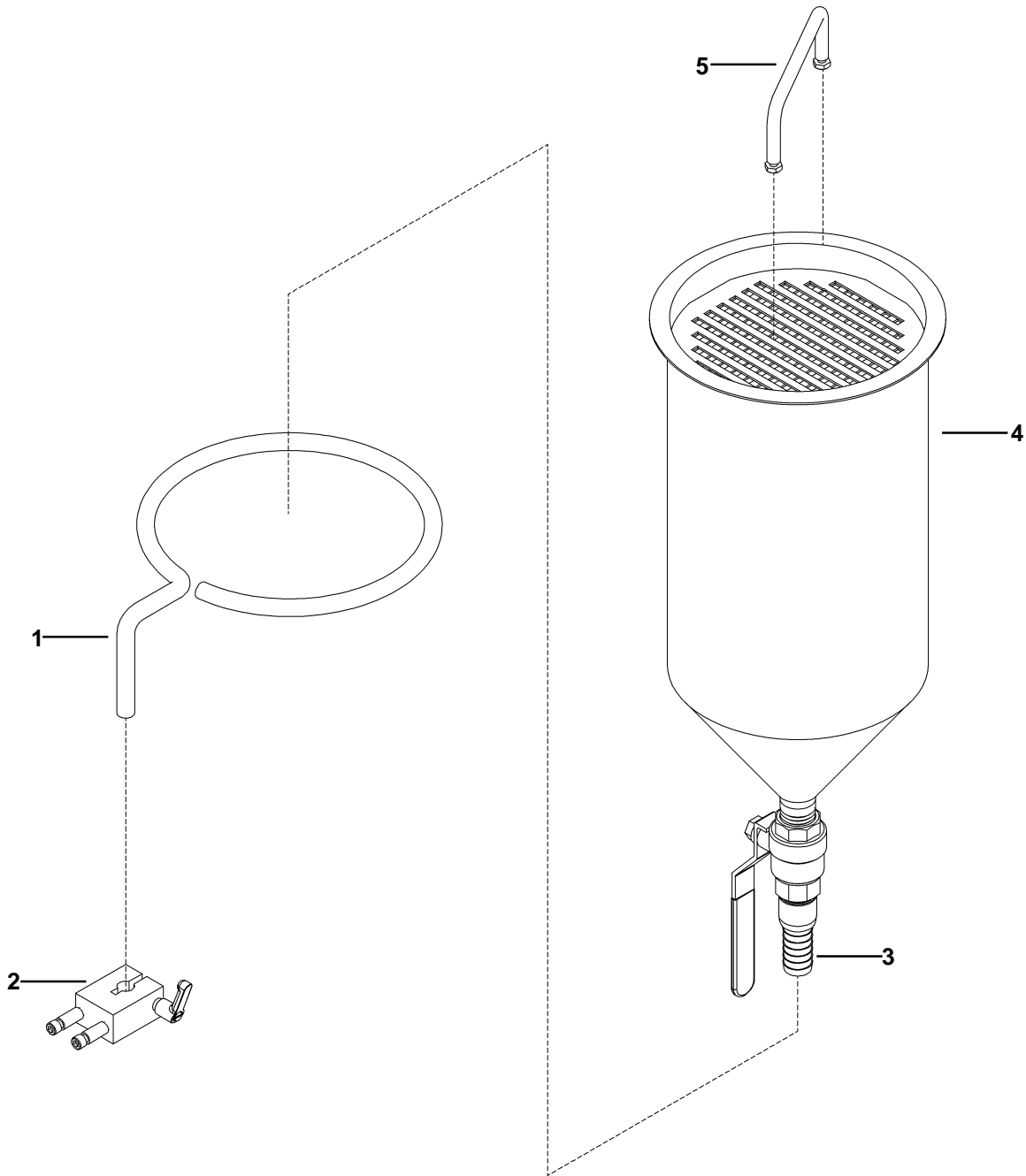


ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BUG-9096	OUTLET BUSHING, OXYGEN
2	2	CWO-4507	O-RING, OXYGEN, GAS
3	1	CWO-5779	SHAFT CWP-11

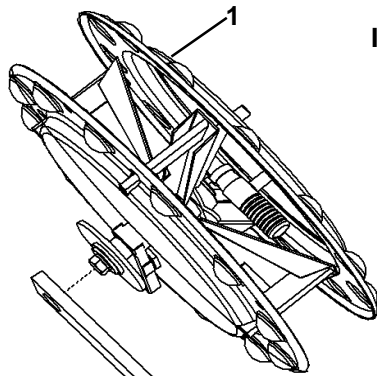
(CWO-3490) FLUX HOPPER ASSEMBLY / EXPLODED VIEW / PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-3757	HOPPER SUPPORT ROD
2	1	CWO-3760	CLAMP BLOCK 1/2"
3	1	CWO-3478	1-3/4" HOSE BARB
4	1	CWO-3769	FLUX HOPPER STEEL 12"
5	1	GOF-3019	HANDLE W/ BOLTS
6	1	CWO-3491-48	FLUX HOSE 3/4" ID X 1" OD X 48" LG (NOT SHOWN)

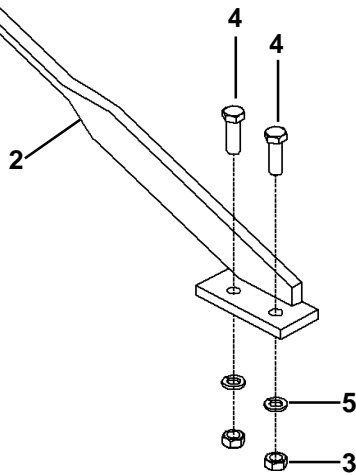
NOTE: Sub-Arc models only.



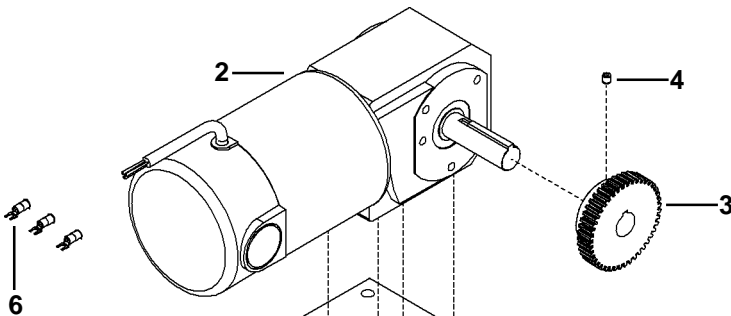
(CWO-3498-11) WIRE REEL ASSEMBLY / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BUG-3293	REEL, 60 LBS.
2	1	CWO-3217-11	WIRE REEL SUPPORT ASSEMBLY CWP-11
3	2	FAS-1301	HEX NUT 1/2-13
4	2	FAS-2305	HEX HD CAP SCR 1/2-13 X 1-3/4"
5	2	WAS-0281	1/2" LOCK WASHER

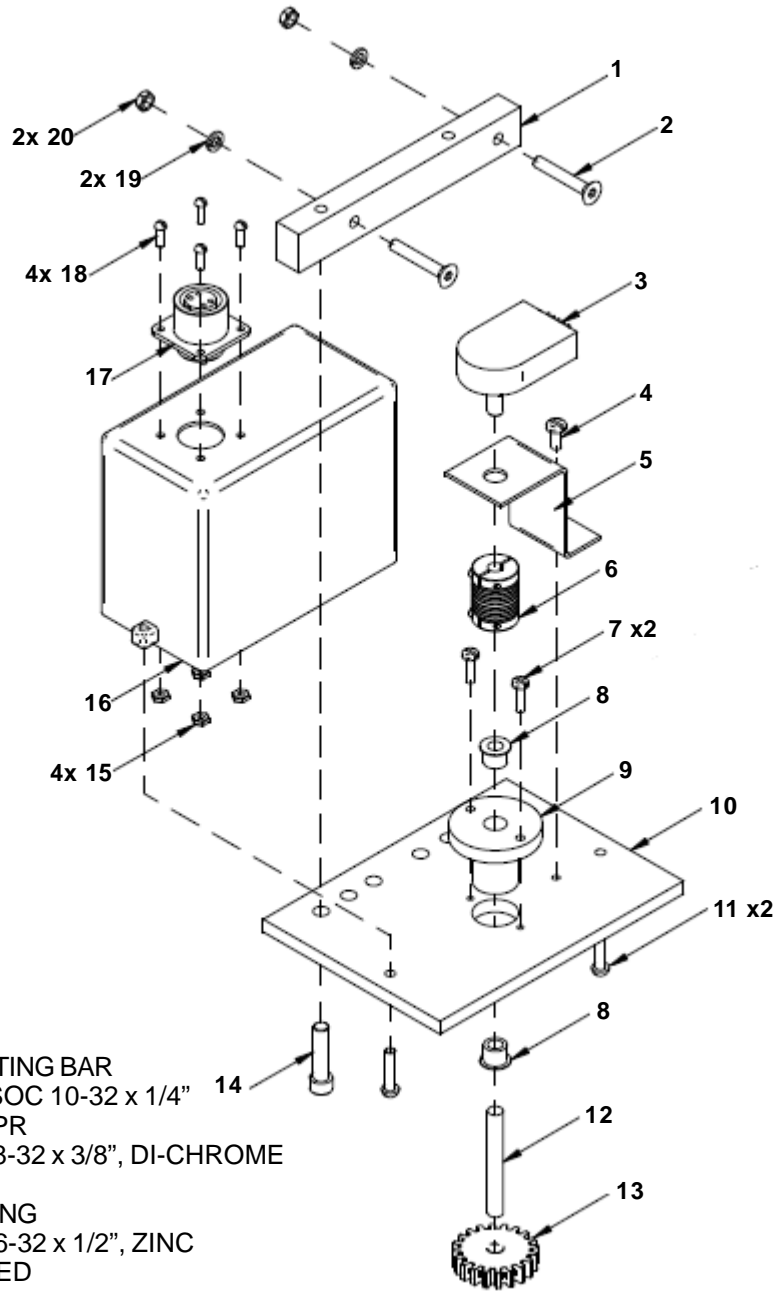


(CWO-3506) 4066 MOTOR ASSEMBLY / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-3620	MOTOR MOUNT BRACKET
2	1	CWO-4846	RIGHT ANGLE DC MOTOR 4066
3	1	CWO-5769	GEAR, PM MOTOR 4066
4	1	FAS-0453	SET SCR 1/4-20 X 1/4"
5	4	FAS-0559	SOC HD CAP SCR 1/4-20 X 1"
6	3	TERM WTE 1508	#8 FORK, BLUE
7	4	WAS-0243	1/4" SPLIT LOCK WASHER

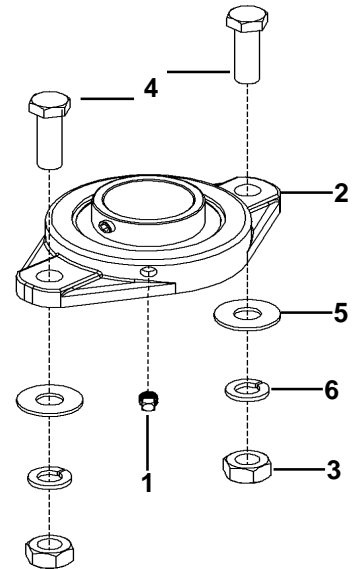
(CBP-1595) ENCODER ASSEMBLY / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CBP-1594	ENCODER MOUNTING BAR
2	2	FAS-2941	SCREW, FLT HD SOC 10-32 x 1/4"
3	1	CBP-1599	ENCODER, 512 CPR
4	1	FAS-0124	SCREW, PAN HD 8-32 x 3/8", DI-CHROME
5	1	MUG-1592	BRACKET
6	1	BUG-6044	FLEXIBLE COUPLING
7	2	FAS-0115	SCREW, PAN HD 6-32 x 1/2", ZINC
8	2	SFX-1218	BEARING, FLANGED
9	1	MUG-1593	POD
10	1	MUG-1594	PLATE
11	2	FAS-0227	SCREW, RND HD 8-32 x 3/4"
12	1	BUG-6048	SHAFT 1/4" x 2"
13	1	CBP-1596	BRASS GEAR, 16P, 20T, 1/4" BORE
14	2	FAS-0559	SCREW, SOC HD CAP 1/4-20 X 1"
15	4	FAS-1305	HEX NUT, 4-40
16	1	MUG-1596	ENCLOSURE
17	1	MUG-1156	PANEL CONNECTOR 4-T, F
18	4	FAS-0204	SCREW, RND HD SLT 4-40 x 3/8", ZINC
19	1	WAS-0232	#10 SPLIT LOCK WASHER
20	2	FAS-1340	HEX NUT 10-32
21	1	CAP-1105M	CAPACITOR, 1UF 50V 10% (NOT SHOWN)
22	1	CBP-1598	CONNECTOR CABLE (NOT SHOWN)

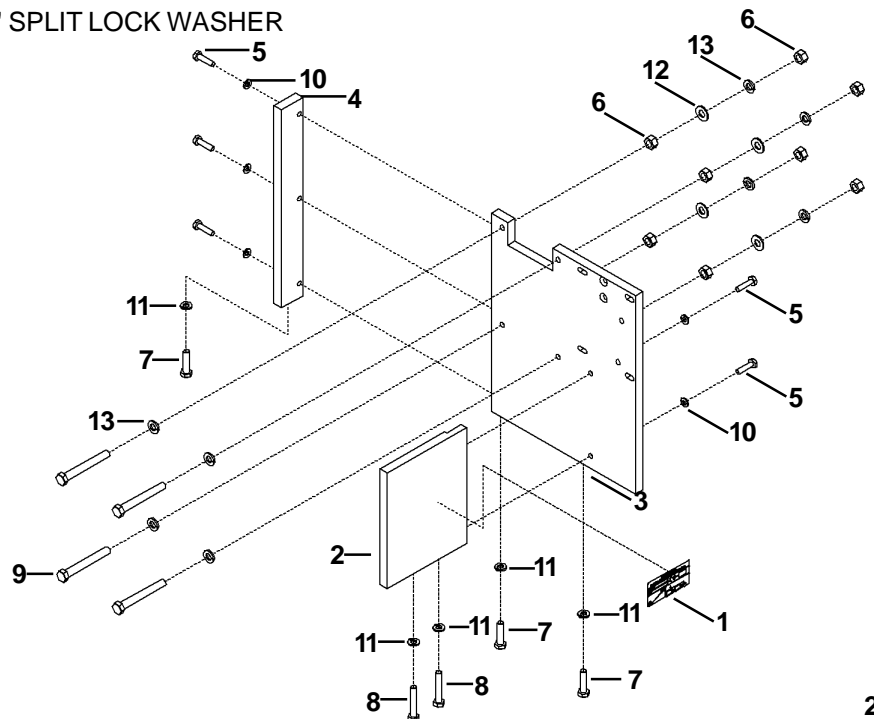
(CWO-3528) 2" FLANGE BEARING w/FASTENERS / EXPLODED VIEW / PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-1511	1/8" PIPE PLUG BLACK IRON
2	1	CWO-4482	FLANGE BEARING 2" BORE
3	2	FAS-1398	9/16-12 HEX NUT
4	2	FAS-3305	HEX HD CAP SCR 9/16-12 X 2"
5	2	WAS-0290	9/16" SAE WASHER
6	2	WAS-0291	9/16" SPLIT LOCK WASHER

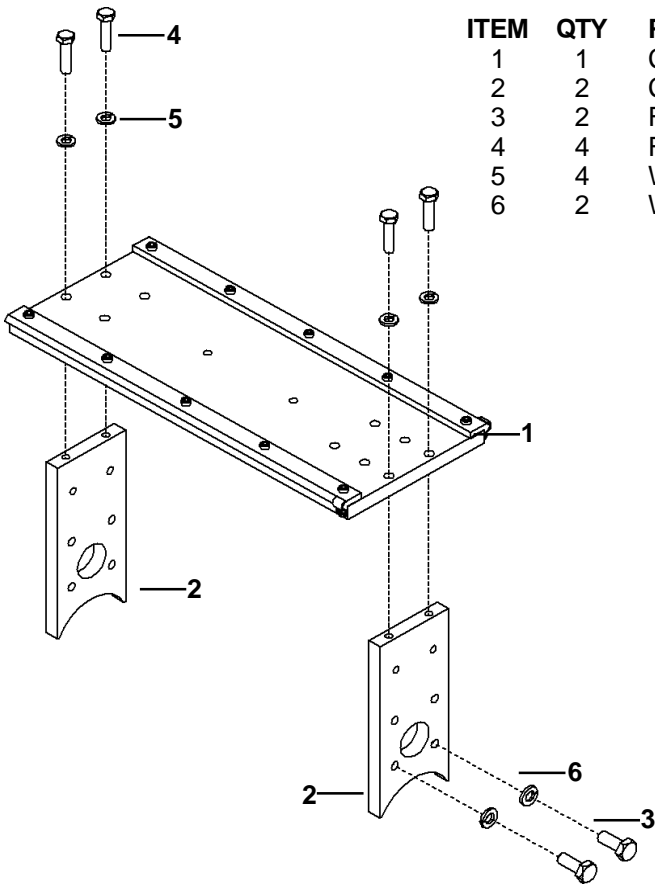


(CWO-3531) MOTOR & TRANSMISSION PLATE ASSEMBLY / EXPLODED VIEW / PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BUG-1338	I.D. PLATE
2	1	CWO-5788	COVER PLATE
3	1	CWO-5887	MOTOR & TRANSMISSION PLATE
4	1	CWO-5888	END PLATE
5	5	FAS-0359	HEX HD CAP SCR 1/4-20 X 1"
6	8	FAS-1390	HEX NUT 3/8-16
7	3	FAS-2372	HEX HD CAP SCR 5/16-18 X 1-1/4"
8	2	FAS-2374	HEX HD CAP SCR 5/16-18 X 1-3/4"
9	4	FAS-2398	HEX HD CAP SCR 3/8-16 X 3"
10	5	WAS-0243	1/4" SPLIT LOCK WASHER
11	5	WAS-0251	5/16" SPLIT LOCK WASHER
12	4	WAS-0260	3/8" WASHER
13	8	WAS-0262	3/8" SPLIT LOCK WASHER

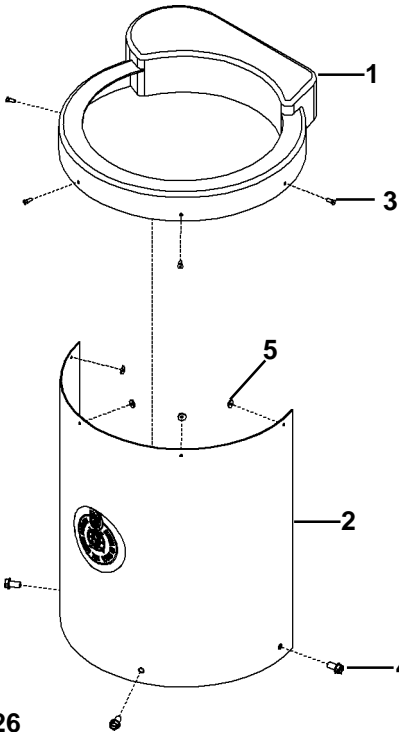


(CWO-3534) SLIDE BAR ASSEMBLY / EXPLODED VIEW / PARTS LIST



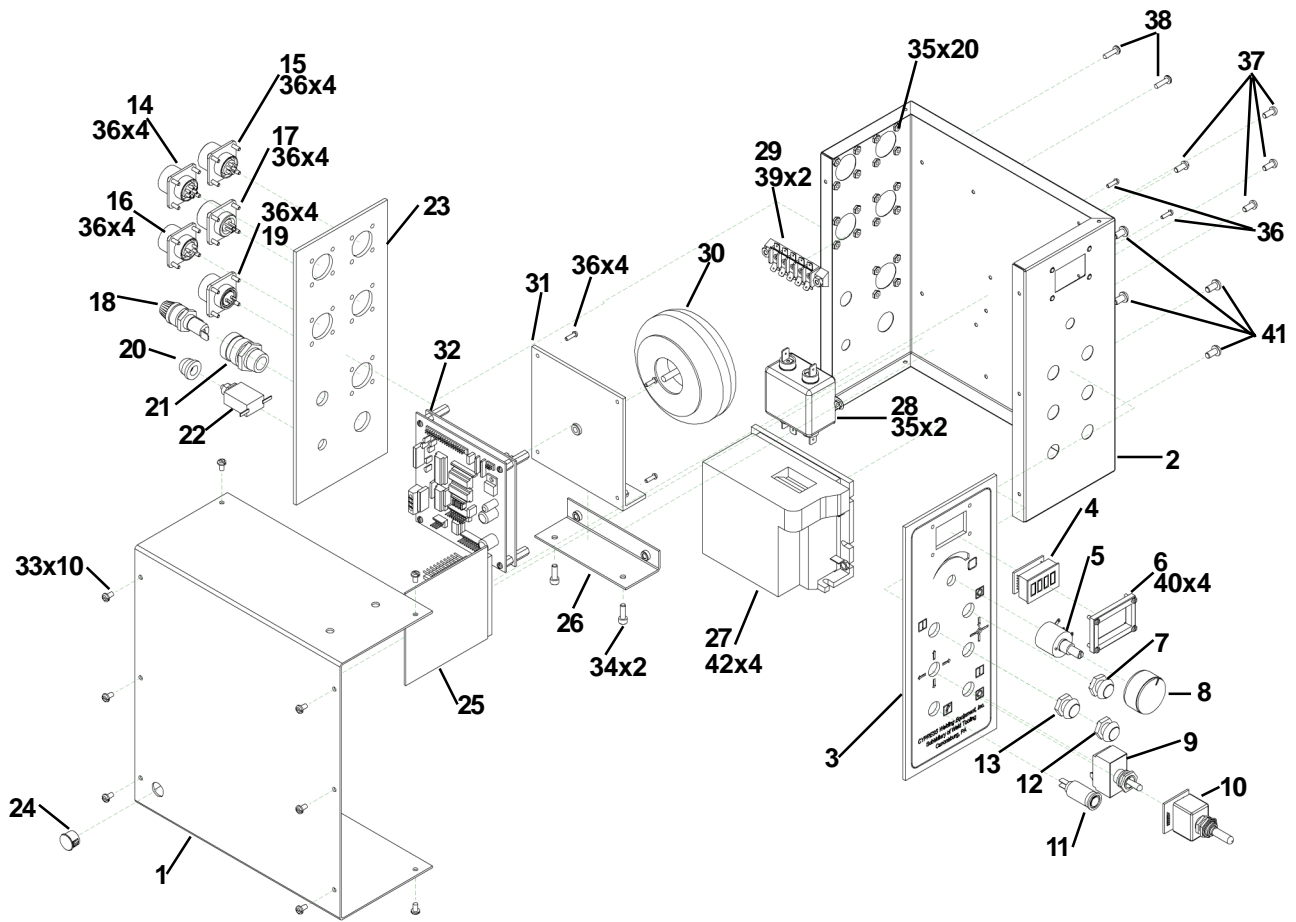
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-3912	SLIDE BAR ASSEMBLY
2	2	CWO-9033	TOP / BOTTOM VERTICAL SLIDE PLATE
3	2	FAS-0399	HEX HD CAP SCR 3/8-16 X 1"
4	4	FAS-2372	HEX HD CAP SCR 5/16-18 X 1-1/4"
5	4	WAS-0251	5/16" SPLIT LOCKWASHER
6	2	WAS-0262	3/8" SPLIT LOCKWASHER

(CWO-3537) GUARD ASSEMBLY CWP-11 / EXPLODED VIEW / PARTS LIST



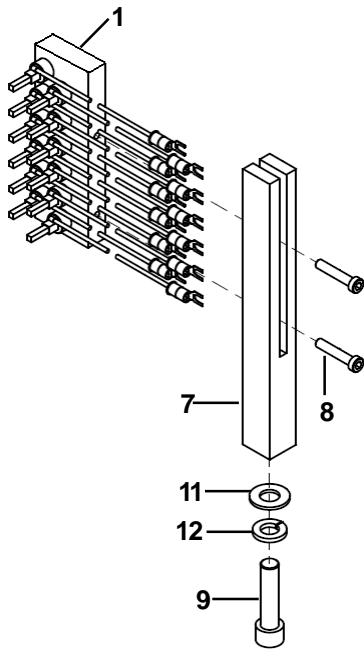
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-5094	UPPER GUARD, CWP-11
2	1	CWO-9142	LOWER GUARD, CWP-11
3	4	FAS-1376	RIVET 1/8" DIA X 3/8"
4	3	FAS-1455	T.C. SLT HEX 1/4-20 X 1/4" W/WASHER
5	4	FAS-0261	3/8" WASHER / .056 THK

(CBP-1500) ROTATION CONTROL / EXPLODED VIEW / PARTS LIST



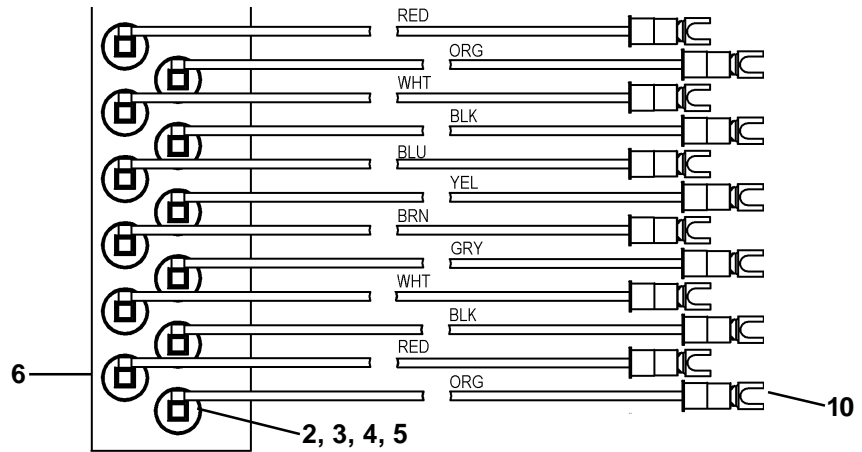
ITEM	QTY	PART No.	DESCRIPTION	ITEM	QTY	PART No.	DESCRIPTION
1	1	CWO-5462	Wire Feed Control Cover	22	1	BUG-2923	Circuit Breaker, 0.7 Amp
2	1	CBP-1521	Control Case	23	1	CBP-1518	Legend Plate, Rear
3	1	CBP-1523	Legend plate, Front	24	1	MUG-1589	Hole Plug, 0.500"
4	1	BUG-1764	Meter Display Board Ass'y	25	1	BUG-1770	Motor Control Board
5	1	BUG-1562	Multi-turn Potentiometer	26	1	CBP-1511	Transformer Bracket
6	1	MDS-1011	Display Bezel	27	1	CWO-6520	4-Quadrant Speed Control
7	1	SWT-1112	Push Button Switch, Red	28	1	BUG-6031	Filter
8	1	BUG-5757	Knob, Black	29	1	BUG-6028	Terminal Block, Kulka
9	1	ARM-2279	Toggle Switch	30	1	BUG-5218	Transformer, 117V 50/60 HZ
10	1	PRS-1065	Joystick	31	1	BUG-6029	Bracket
11	1	BUG-1415	Pilot Light	32	1	CBP-6030	Control Module
12	1	SWT-1111	Push Button Switch, Black	33	10	SCW WTE 0264	Screw, #6 x 1/4" Pan Hd
13	1	SWT-1113	Push Button Switch, Green	34	2	FAS-0525	Screw, Soc Hd Cap, 8-32 x 1/2
14	1	BUG-9902	Panel Connector, 6-T, F	35	22	FAS-1305	Hex Nut, 4-40
15	1	BUG-9909	Panel Connector, 6-T, M	36	26	FAS-0204	Screw, Rnd Hd Slit, 4-40 x 3/8
16	1	MUG-1156	Panel Connector, 4-T, F	37	4	FAS-0224	Screw, Rnd Hd, 8-32 x 3/8
17	1	BUG-1034	Panel Connector, 4-T, M	38	2	FAS-0115	Screw, Pan Hd, 6-32 x 1/2
18	1	FHO-0188	Fuse Holder, Panel Mount	39	2	FAS-1310	Hex Nut, 6-32
19	1	BUG-9856	Panel Connector, 2-T, F	40	4	FAS-0104	Screw, Pan Hd, 4-40, Black
20	1	BUG-2924	Reset Seal, Transparent	41	4	FAS-0244	Screw, Rnd Hd, 10-32 x 3/8
21	1	BUG-9446	Cord Grip	42	4	FAS-1340	Hex Nut, 10-32

(CWO-3931) BRUSH RETAINER / EXPLODED VIEW / PARTS LIST

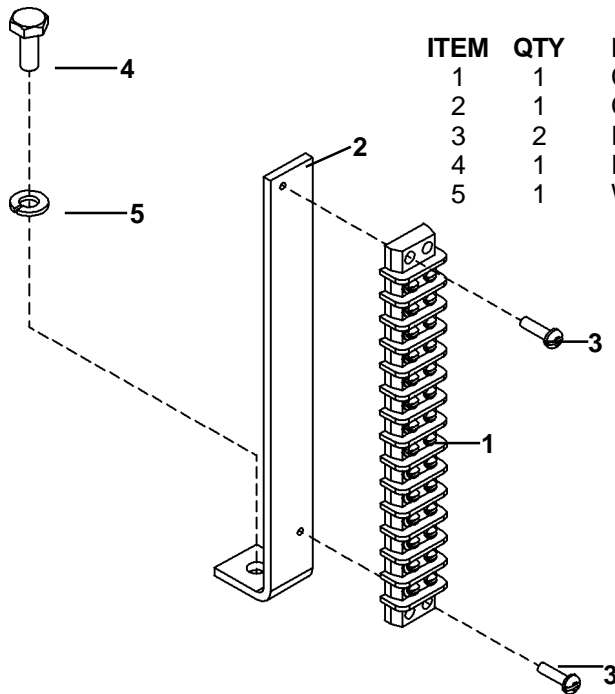


ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-3947	SMALL RETAINER ASSEMBLY, 12 POS
2	12	CWO-5831	1/8" x 1/8" x 1/8" BRUSH
3	12	CWO-5874	1/8" BRUSH HOLDER
4	12	CWO-5875	CAP
5	12	CWO-5876	CLIP
6	1	CWO-9067-12	SMALL BRUSH RETAINER BLOCK, CWP-11
7	1	CWO-9082	RETAINER SUPPORT
8	2	FAS-0359	SOC HD CAP SCR 10-24 X 1"
9	1	FAS-0593	SOC HD CAP SCR 3/8-16 X 1-1/2"
10	12	TERM-WTE-1508	#8 FORK, BLUE
11	1	WAS-0260	3/8" SAE WASHER
12	1	WAS-0262	3/8" SPLIT LOCKWASHER

(CWO-3947) 12 POSITION SMALL BRUSH ASSEMBLY / DETAIL VIEW

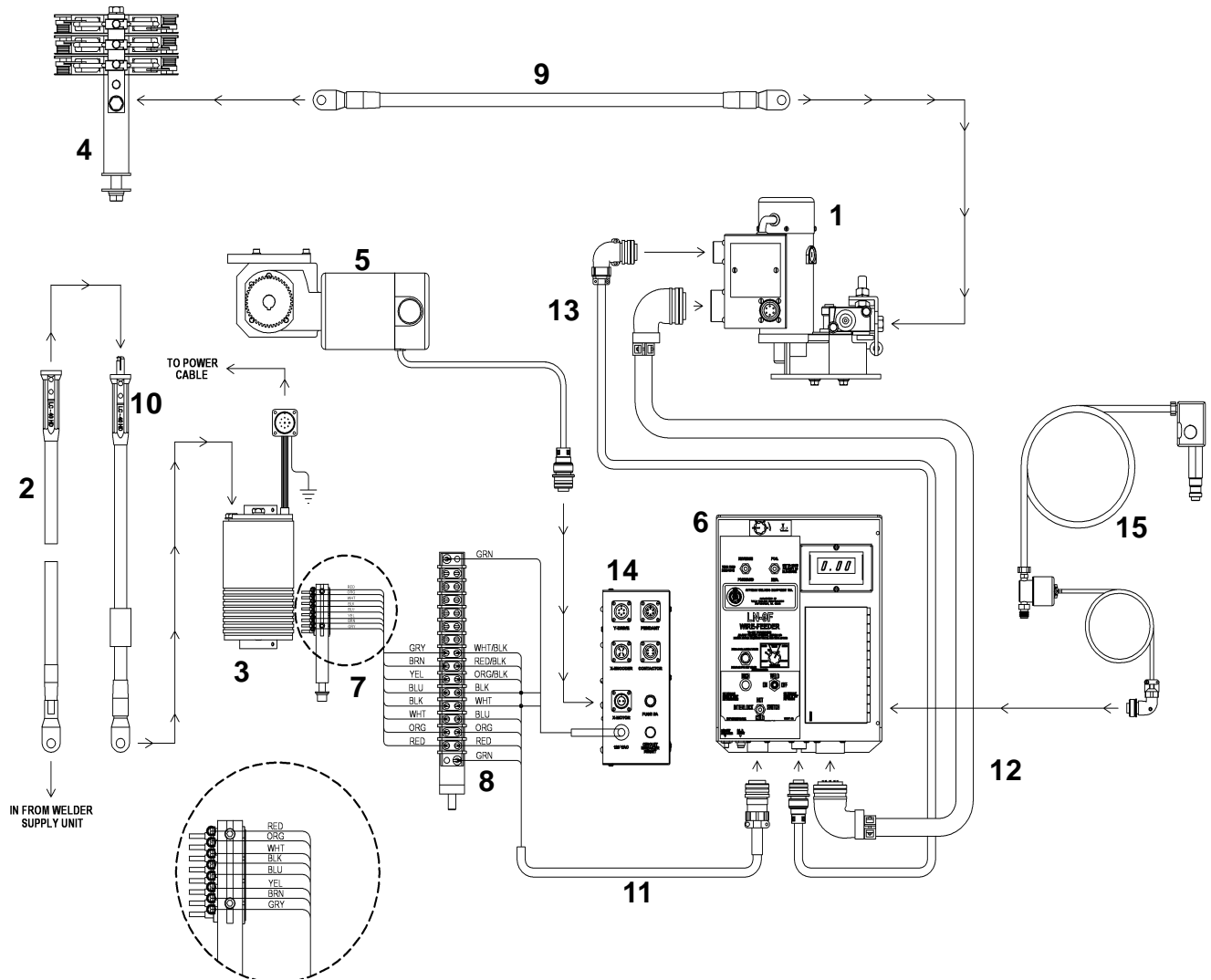


(CWO-3969) TERMINAL BLOCK ASSEMBLY / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-6726	TERMINAL BLOCK 14-PIN
2	1	CWO-9071	TERMINAL BLOCK SUPPORT CWP-11
3	2	FAS-0215	RND HD SCR 6-32 X 1/2"
4	1	FAS-0356	HEX HD CAP SCR 1/4-20 X 5/8"
5	1	WAS-0243	1/4" SPLIT LOCK WASHER

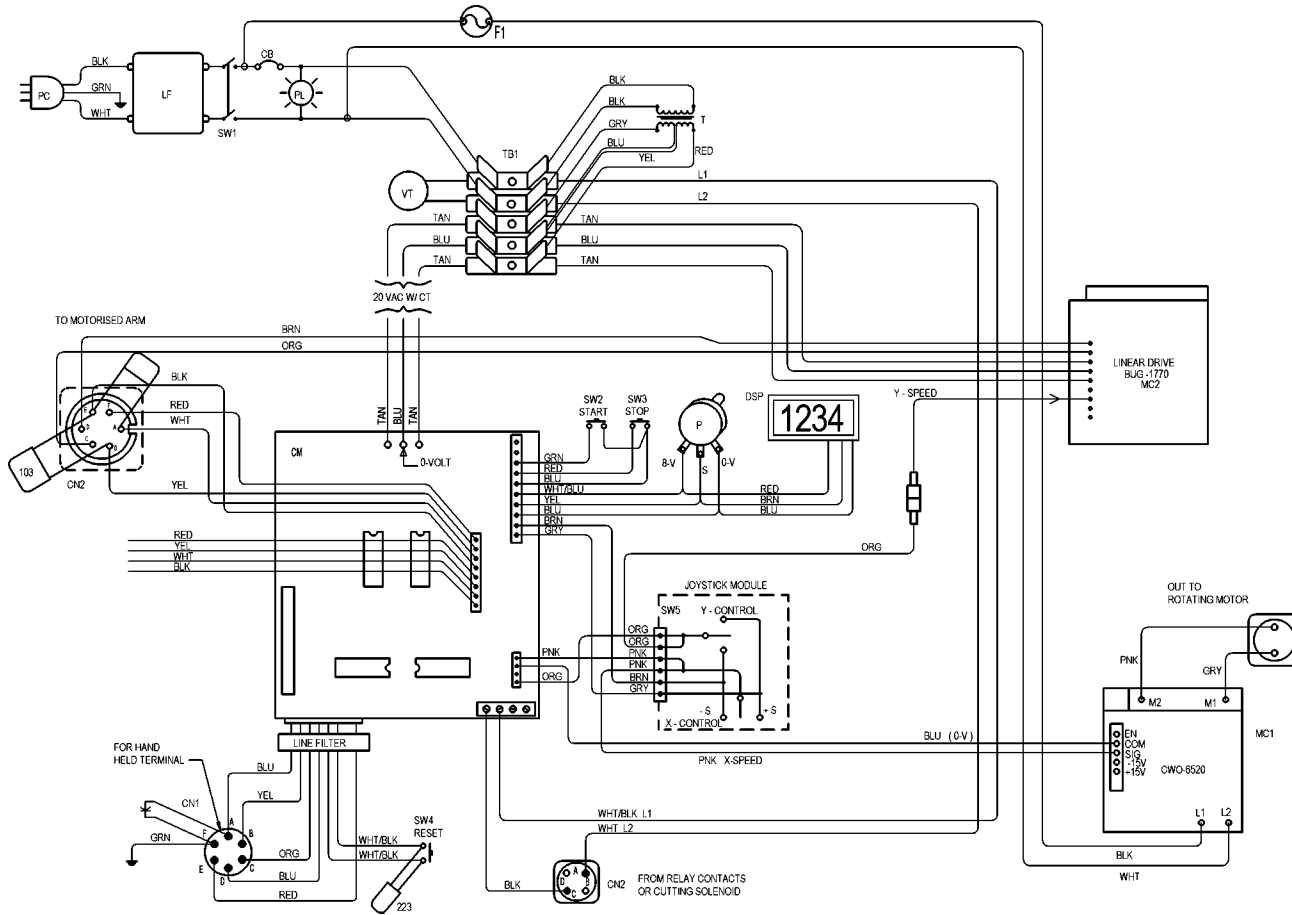
(CWP-1100) CWP-11 PROGRAMMABLE CIRCLE WELDER / WIRING DIAGRAM / ELECTRICAL COMPONENT CHART



ELECTRICAL COMPONENT CHART

ITEM	DESCRIPTION	PART NUMBER
1	LN-9 Wire Feeder	CWO-3530
2	Weld Cable 4/0 50'	CWO-3040
3	CWP-11 Collector Ring	CWO-3133
4	Brush Holder Support	CWO-3315
5	4006 Motor Assy.	CWO-3506
6	LN-9 Wire Feeder Control	CWO-3535
7	Small Brush Retainer	CWO-3931
8	Terminal Block Assy.	CWO-3969
9	Weld Cable 4/0	CWO-3970
10	Weld Cable Inlet	CWO-3972
11	LN-9 Control Cable	CWO-3973
12	Control Cable 32" LG.	CWO-3974
13	Tach Cable 36" LG.	CWO-3975
14	Rotation Control	CBP-1500
15	Solenoid Adaptor	CWO-8057

(CBP-1500) ROTATION CONTROL / WIRING DIAGRAM / ELECTRICAL COMPONENT CHART

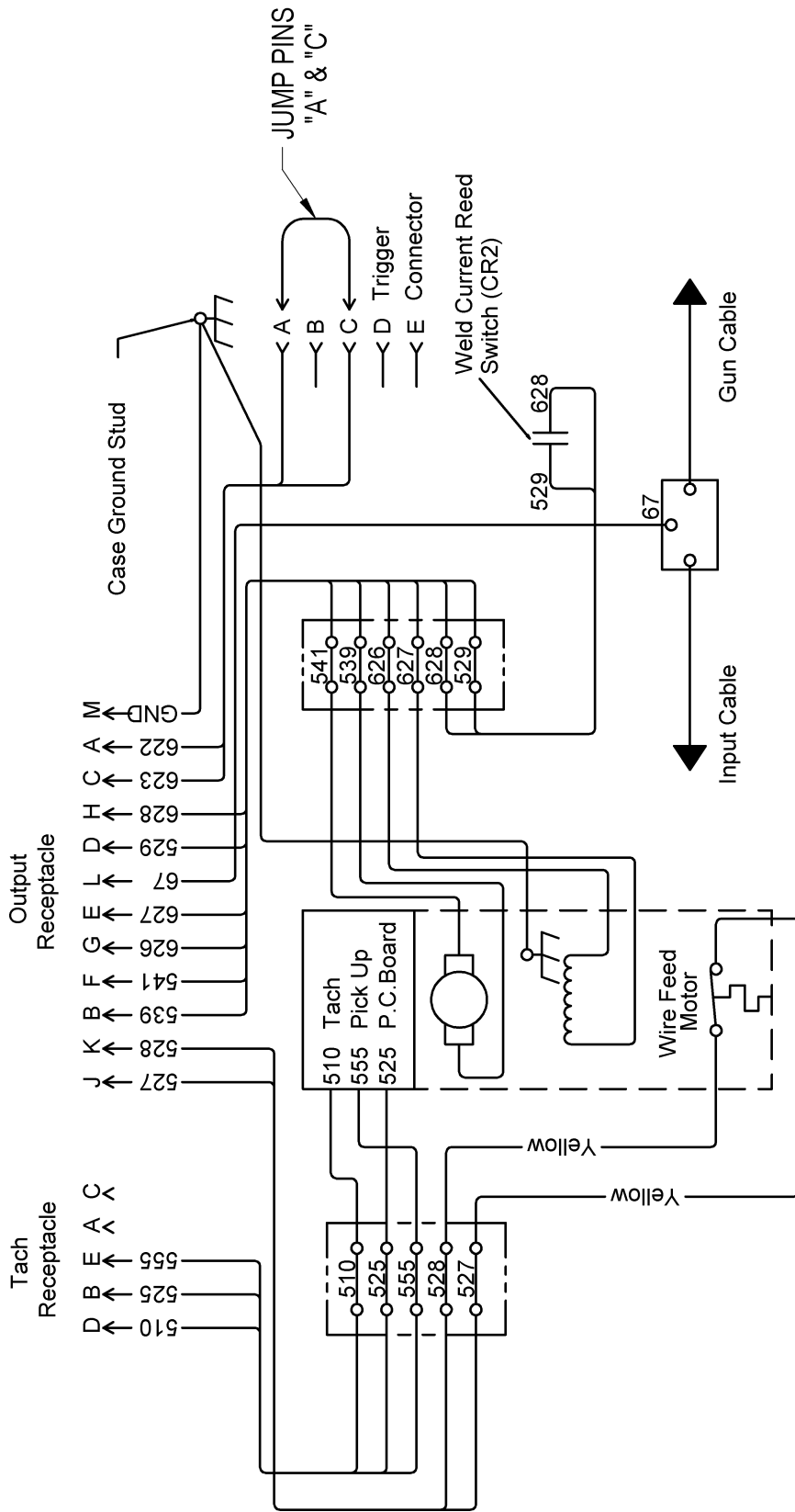


--- = INDICATES ITEMS THAT ARE SUPPLIED TOGETHER.

ELECTRICAL COMPONENT CHART

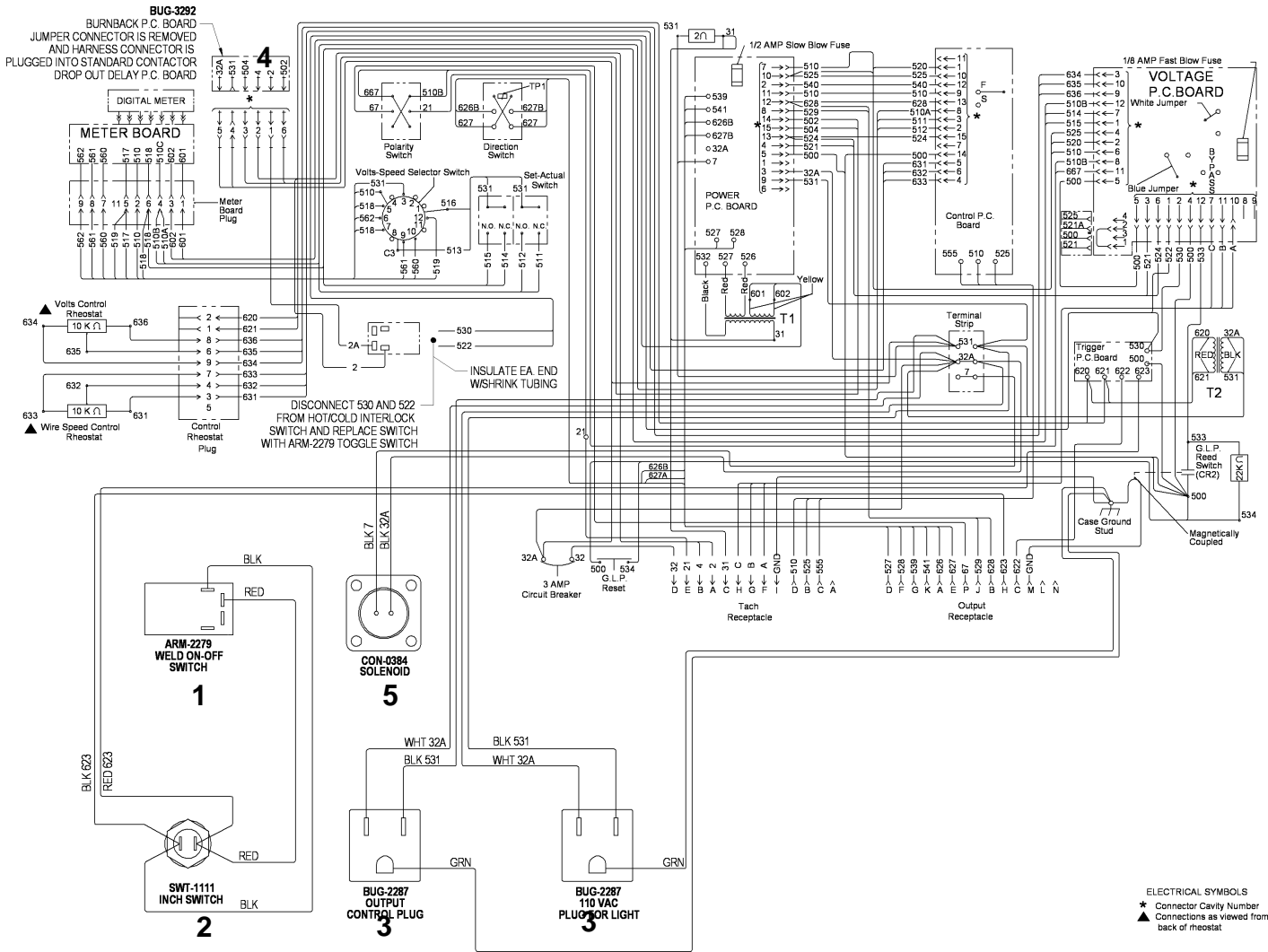
ITEM	DESCRIPTION	CBP-1500 120 VAC	CBP-1502 240 VAC
CB	Circuit Breaker	BUG-2923	BUG-2923
PC	Power Cord	BUG-9445	GOF-3115
PL	Pilot Light	BUG-1415	BUG-1428
T	Transformer	BUG-5218	BUG-5231
VT	Volt Trap	BUG-1393	BUG-1563
MC1	4-Quadrant Speed Control	CWO-6520	CWO-6522

(CWO-3530) LN-9 WIRE FEEDER / WIRING DIAGRAM



- ELECTRICAL SYMBOLS**
- * Connector Cavity Number
 - ▲ Connections as viewed from back of rheostat

(CWO-3535) LN-9 WIRE FEEDER / WIRING DIAGRAM / ELECTRICAL COMPONENT CHART

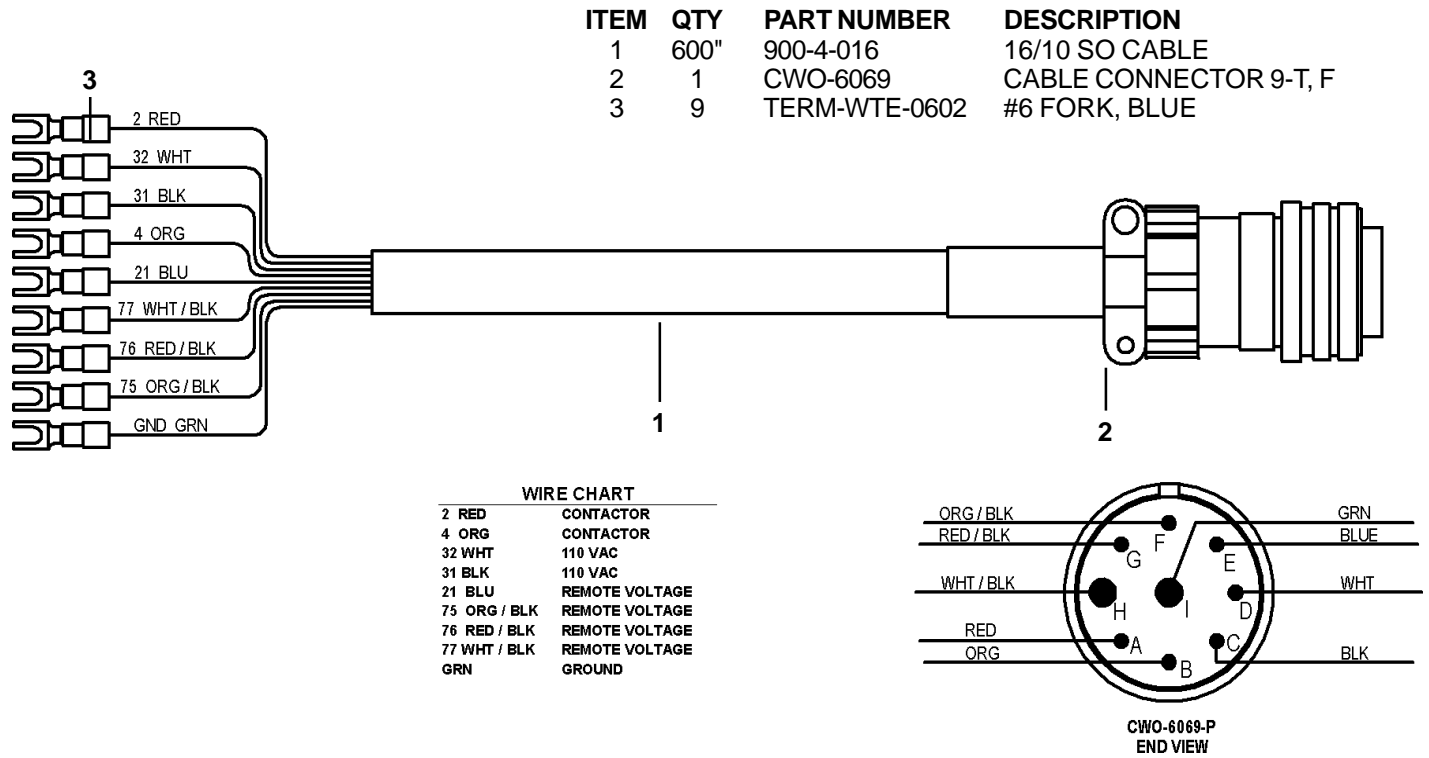


ELECTRICAL COMPONENT CHART

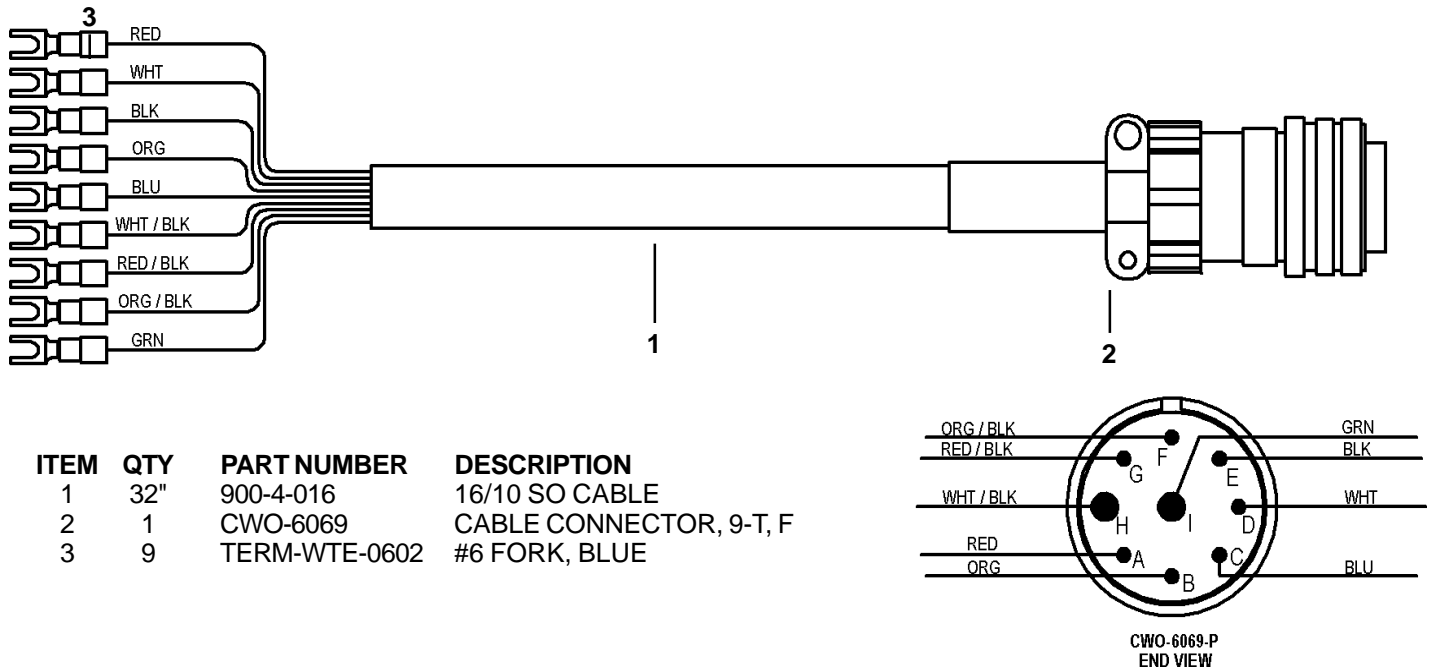
ITEM	DESCRIPTION	PART NUMBER
1	Toggle Switch On-Off	ARM-2279
2	PB Switch, Black	SWT-1111
3	Power Receptacle	BUG-2287
4	Burnback Kit	BUG-3292
5	Panel Connector, 2-T, Female	CON-0384

NOTE: All parts not called out are components of a Lincoln Electric LN-9 wire feeder. Component information can be found in the LN-9 wire feeder operators manual.

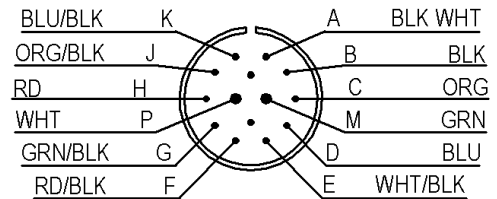
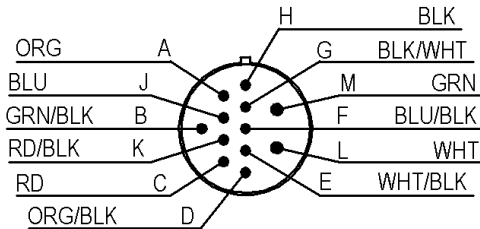
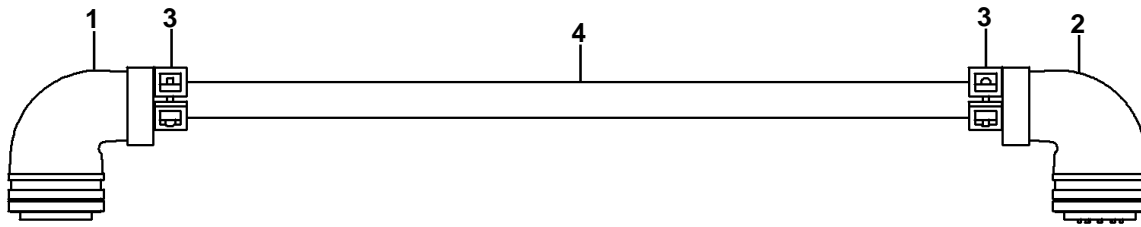
(CWO-3971) CONTROL CABLE / DETAIL VIEW / PARTS LIST



(CWO-3973) LN-9 CONTROL CABLE / DETAIL VIEW / PARTS LIST

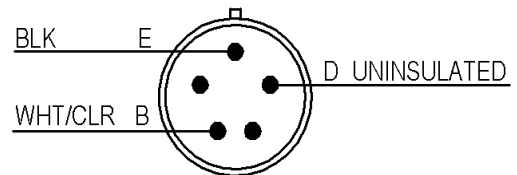
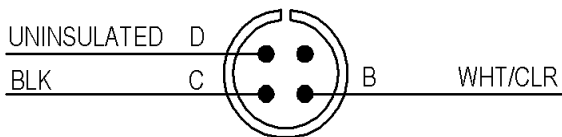
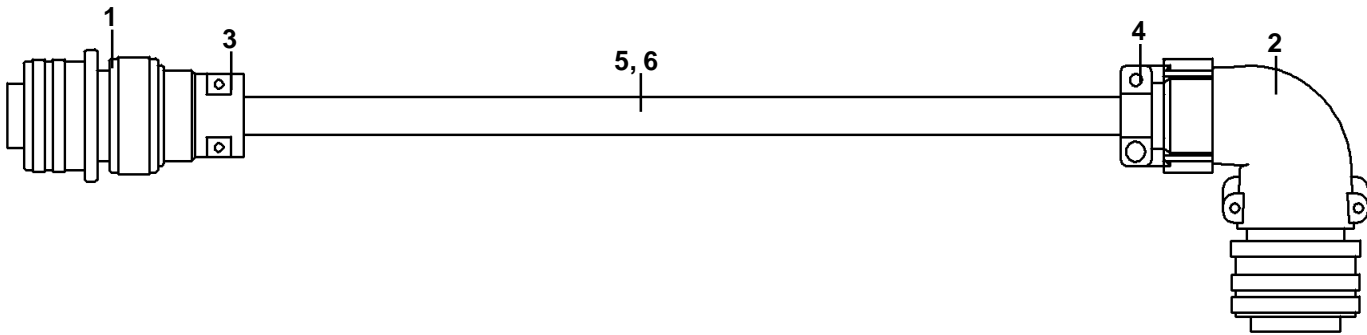


(CWO-3974) CONTROL CABLE / DETAIL VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CON-3912S	CABLE CONNECTOR, 12T, F, ELBOW
2	1	CON-3914P	CABLE CONNECTOR, 14T, M, ELBOW
3	2	CSR-3057-16A	STRAIN RELIEF 28 SHELL SIZE
4	39"	900-4-017	16/12 SO, 600V

(CWO-3975) TACH CABLE 36" / DETAIL VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MUG-1616-P	CABLE CONNECTOR 4T, M
2	1	CON-3505S	CABLE CONNECTOR 5T, F, ELBOW
3	1	CSR-3057-6A	CORD STRAIN RELIEF SIZE 14
4	1	CSR-3057-10A	CORD STRAIN RELIEF SIZE 18
5	26"	MUG-1581	#2 BLACK FIBERGLASS SLEEVING
6	28"	900-3-014	20/2 WITH DRAIN, CHROME

CWP-11 GUN ASSEMBLIES (MIG/FLUX-CORE)

CWO-1560-A	#5 .035 GUN ASSEMBLY MIG/FLUX	.035 WIRE SIZE	
	CWO-8027	15H-35 CONTACT TIP	10
	CWO-8034	25CT-75 NOZZLE	1
	CWO-8035	35CT NOZZLE INSULATOR	1
	CWO-8036	55 SW GAS DIFFUSER	1
	CWO-8039	45-3545-15 CABLE LINER	1
	CWO-8524	50394 500 AMP CABLE	1
CWO-1560-B	#5 .045 GUN ASSEMBLY MIG/FLUX	.045 WIRE SIZE	
	CWO-8028	15H-45 CONTACT TIP	10
	CWO-8034	25CT-75 NOZZLE	1
	CWO-8035	35CT NOZZLE INSULATOR	1
	CWO-8036	55 SW GAS DIFFUSER	1
	CWO-8039	45-3545-15 CABLE LINER	1
	CWO-8524	50394 500 AMP CABLE	1
CWO-1560-C	#5 1/16 GUN ASSEMBLY MIG/FLUX	1/16 WIRE SIZE	
	CWO-8029	15H-116 CONTACT TIP	10
	CWO-8034	25CT-75 NOZZLE	1
	CWO-8035	35CT NOZZLE INSULATOR	1
	CWO-8037	55 GAS DIFFUSER	1
	CWO-8041	45-116-15 CABLE LINER	1
	CWO-8524	50394 500 AMP CABLE	1
CWO-1560-D	#5 5/64 GUN ASSEMBLY MIG/FLUX	5/64 WIRE SIZE	
	CWO-8031	15H-564 CONTACT TIP	10
	CWO-8034	25CT-75 NOZZLE	1
	CWO-8035	35CT NOZZLE INSULATOR	1
	CWO-8038	55 GAS DIFFUSER	1
	CWO-8085	45-564-15 CABLE LINER	1
	CWO-8524	50394 500 AMP CABLE	1
CWO-1560-E	#5 3/32 GUN ASSEMBLY MIG/FLUX	3/32 WIRE SIZE	
	CWO-8032	15H-332 CONTACT TIP	10
	CWO-8034	25CT-75-NOZZLE	1
	CWO-8035	35CT NOZZLE INSULATOR	1
	CWO-8042	45H-332-15 CABLE LINER	1
	CWO-8038	55H-GAS DIFFUSER	1
	CWO-8524	50394 500 AMP CABLE	1

CWP-11 GUN ASSEMBLIES (MIG/FLUX-CORE)

CWO-1560-G	#5 .052 GUN ASSEMBLY MIG/FLUX	.052 WIRE SIZE	
	CWO-8024	15H-52 CONTACT TIP	10
	CWO-8034	25CT-75 NOZZLE	1
	CWO-8035	35CT NOZZLE INSULATOR	1
	CWO-8036	55 SW GAS DIFFUSER	1
	CWO-8041	45-116-15 CABLE LINER	1
	CWO-8524	50394 500 AMP CABLE	1
CWO-1560-H	#5 7/64 GUN ASSEMBLY MIG-FLX	7/64 WIRE SIZE	
	CWO-8022	15H-764 CONTACT TIP	10
	CWO-8034	25CT-75 NOZZLE	1
	CWO-8035	35CT NOZZLE INSULATOR	1
	CWO-8038	55 H GAS DIFFUSER	1
	CWO-8044	45H-764-15 CABLE LINER	1
	CWO-8524	50394 500 AMP CABLE	1

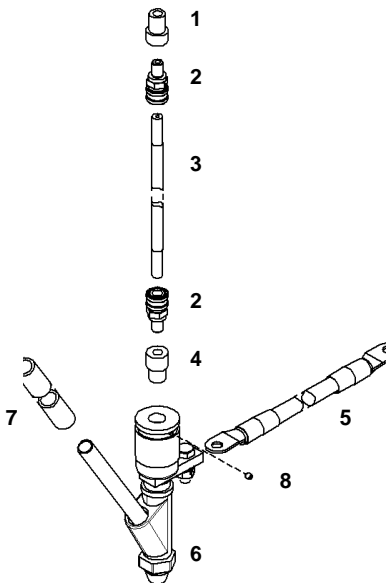
CWP-11 GUN ASSEMBLIES (SUB ARC)

CWO-1700-A	#5 .035 GUN ASSEMBLY SUB ARC	.035 WIRE SIZE	
	CWO-8027	15H-35 CONTACT TIP	10
	CWO-8036	55 SW GAS DIFFUSER	1
	CWO-8039	45-3545-15 CABLE LINER	1
	CWO-8054	25-SA NOZZLE FLUX CONE	1
	CWO-8524	50394 500 AMP CABLE	1
CWO-1700-B	#5 .045 GUN ASSEMBLY SUB ARC	.045 WIRE SIZE	
	CWO-8028	15H-45 CONTACT TIP	10
	CWO-8036	55 SW GAS DIFFUSER	1
	CWO-8039	45-3545-15 CABLE LINER	1
	CWO-8054	25-SA NOZZLE FLUX CONE	1
	CWO-8524	50394 500 AMP CABLE	1
CWO-1700-G	#5 .052 GUN ASSEMBLY SUB ARC	.052 WIRE SIZE	
	CWO-8024	15H-52 CONTACT TIP	10
	CWO-8036	55 SW GAS DIFFUSER	1
	CWO-8041	45-116-15 CABLE LINER	1
	CWO-8054	25-SA NOZZLE FLUX CONE	1
	CWO-8524	50394 500 AMP CABLE	1
CWO-3700-1/16	1/16 H.D. GUN ASSEMBLY SUB ARC	1/16 WIRE SIZE	
	CWO-1817	BULK HEAD CONNECTOR	2
	CWO-3491-48	FLUX HOSE, 48"	1
	CWO-3690-1/16	1/16 SUB ARC NOZZLE	1
	CWO-3695-1/2	ADAPTOR	1
	CWO-3697	QCC LINER, 72"	1
	CWO-3698	ADAPTOR LN-7/LN-9 to QCC LINER	1
	CWO-3970-72	WELD CABLE 4/0 ASS'Y	1
		CONTACT TIP	10
CWO-3700-5/64	5/64 H.D. GUN ASSEMBLY SUB ARC	5/64 WIRE SIZE	
	CWO-1817	BULK HEAD CONNECTOR	2
	CWO-3491-48	FLUX HOSE, 48"	1
	CWO-3690-5/64	5/64 SUB ARC NOZZLE	1
	CWO-3695-1/2	ADAPTOR	1
	CWO-3697	QCC LINER, 72"	1
	CWO-3698	ADAPTOR LN-7/LN-9 to QCC LINER	1
	CWO-3970-72	WELD CABLE 4/0 ASS'Y	1
	CWO-8048	5/64 CONTACT TIP	10

CWP-11 GUN ASSEMBLIES (SUB ARC)

CWO-3700-3/32 3/32 H.D. GUN ASSEMBLY SUB ARC 3/32 WIRE SIZE

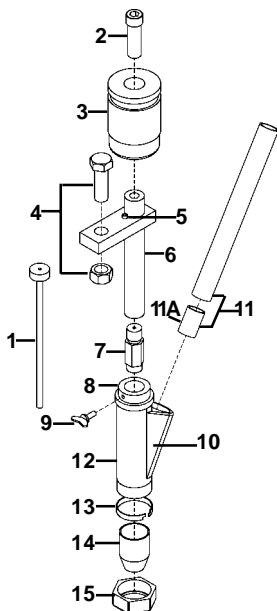
CWO-1817	BULK HEAD CONNECTOR	2
CWO-3491-48	FLUX HOSE, 48"	1
CWO-3690-3/32	3/32 SUB ARC NOZZLE	1
CWO-3695-1/2	ADAPTOR	1
CWO-3697	QCC LINER, 72"	1
CWO-3698	ADAPTOR LN-7/LN-9 to QCC LINER	1
CWO-3970-72	WELD CABLE 4/0 ASS'Y	1
CWO-8049	3/32 CONTACT TIP	10



CWO-3700- HD Submerged Arc Gun

ITEM	QTY	PART #	DESCRIPTION
1	1	CWO-3698	WIRE FEED ADAPTOR
2	2	CWO-1817	BULK HEAD CONNECTOR QCB
3	1	CWO-3697	QCC 72" (1829 mm) LINER
4	1	CWO-3695-1/2	ADAPTOR K231 1/2"
5	1	CWO-3970-72	WELD CABLE 4/0 ASSY 72" (1829 mm) LG
6	1	CWO-3690-1/16	SUB-ARC NOZZLE 1/16"
	1	CWO-3690-5/64	SUB-ARC NOZZLE 5/64"
	1	CWO-3690-3/32	SUB-ARC NOZZLE 3/32"
7	1	CWO-3491-48	FLUX HOSE 3/4" ID x 1" OD
8	1	FAS-0452	SET SCR 1/4-20 X 1/4
9*	1	BUG-2708	CLAMP

*Item not shown in drawing.

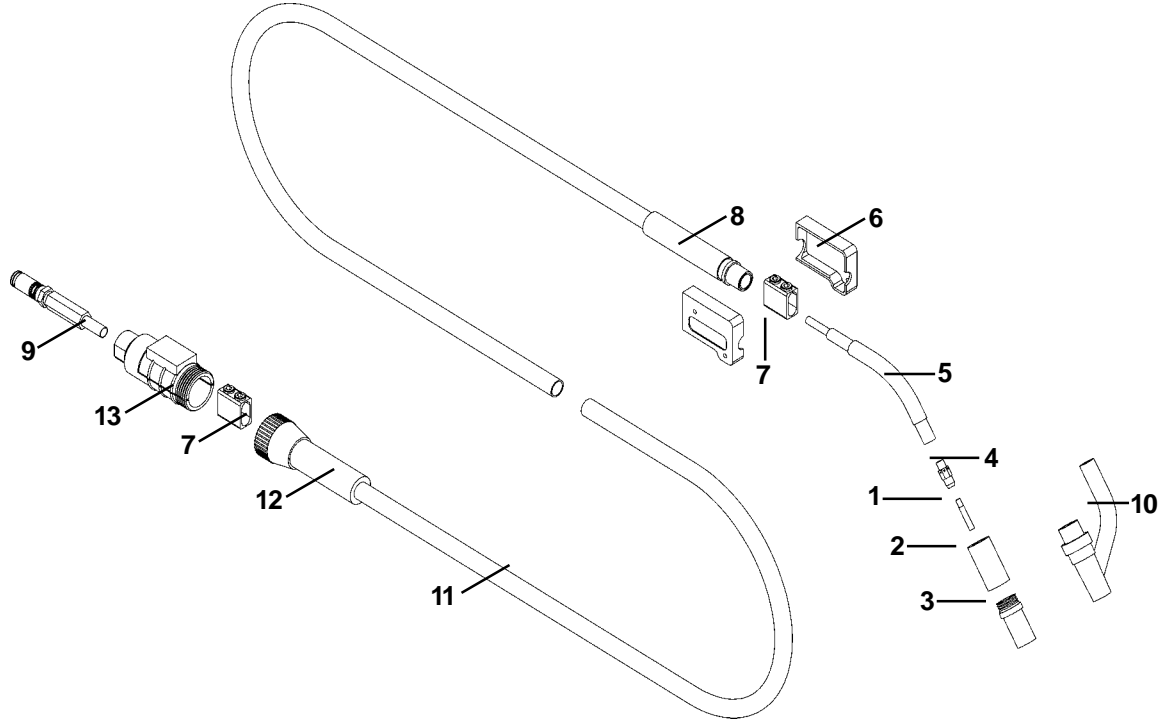


CWO-3690- K231 Sub Arc Nozzle

Available for 1/16", 5/64", and 3/32" wire sizes

ITEM	QTY	PART #	DESCRIPTION
1	1	PXS-15106-3/32	NOZZLE INSERT
2	1	PXT-10570	SOCKET HEAD SCREW
3	1	PXS-10493-1	NOZZLE INSULATOR
4	1	PXS-121312	SCREW, HEX HD 1 1/2" & NUT 1/2"-13
5	1	PXT-9967-10	NOZZLE BODY ROLL PIN
6	1	CWO-8052	NOZZLE BODY
7	1	AFW-2291	CONTACT TIP, 1/16" (1.6 mm)
		CWO-8048	CONTACT TIP, 5/64" (2.0 mm)
		CWO-8049	CONTACT TIP, 3/32" (2.4 mm)
8	1	PXS-10138	FLUX CONE PLUG (INSULATOR)
9	1	PXT-9078-1	THUMB SCREW
10	1	PXT-9967-30	FLUX CONE ROLL PIN
11	1	PXT-13835	3/4"x7" FLUX HOSE w/ FBR INS
11A	1	PXT-3835-IN	FIBER INSULATOR
12	1	BUG-3161-P	CONE BODY ASS'Y
13	1	BUG-3163	LOCKING FERRULE
14	1	BUG-3164	FLUX CONE (KP2085-1)
15	1	BUG-3165	RETAINING NUT

#5 GUN & CABLE ASSEMBLY / EXPLODED VIEW / PARTS LIST



PARTS LIST				WIRE SIZE						
ITEM	QTY	PART #	DESCRIPTION	.035	.045	.052	1/16	5/64	3/32	7/64*
1	1	CWO-8022	15H-764 Contact Tip							X
1	1	CWO-8024	15H-52 Contact tip			X				
1	1	CWO-8027	15H-Contact Tip	X						
1	1	CWO-8028	15H-45 Contact Tip		X					
1	1	CWO-8029	15H-116 Contact Tip				X			
1	1	CWO-8031	15H-564 Contact Tip					X		
1	1	CWO-8032	15H-332 Contact Tip						X	
2	1	CWO-8034	25CT-75 Nozzle Insulator	X	X	X	X	X	X	X
3	1	CWO-8035	35CT Nozzle Insulator	X	X	X	X	X	X	X
4	1	CWO-8036	55SW Gas Diffuser	X	X	X				
4	1	CWO-8037	55 Gas Diffuser				X			
4	1	CWO-8038	55H Gas Diffuser					X	X	X
5	1	CSM-1053	60-3R Conductor Tube	X	X	X	X	X	X	X
5**	1	CWO-8045	65-60 Conductor Tube	X	X	X	X	X	X	X
5**	1	CWO-8046	65-45 Conductor Tube	X	X	X	X	X	X	X
5**	1	CWO-8046-3R	65-45-3R Conductor Tube	X	X	X	X	X	X	X
5**	1	CWO-8047	65-180 Conductor Tube	X	X	X	X	X	X	X
6	1	CWO-8017	185 Case w/Binder Screws	X	X	X	X	X	X	X
7	2	CWO-8018	104 Cable Connector Block	X	X	X	X	X	X	X
8	1	CSM-1056	Cable Hose Support	X	X	X	X	X	X	X
9	1	CSM-1054	Connector Plug Assy. (H.D.)	X	X	X	X	X	X	X
10	1	CWO-8054	25-SA Nozzle Flux Cone	X	X	X				
11	1	CSM-1058	500 AMP Cable Hose Assy.	X	X	X	X	X	X	X
12	1	CSM-1055	Rear Case / Strain Relief Cap	X	X	X	X	X	X	X
13	1	CSM-1060	Rear Case Assy.	X	X	X	X	X	X	X
***	1	CWO-8039	45-4535-15 Cable Liner	X	X					
***	1	CWO-8041	45-116-15 Cable Liner			X	X			
***	1	CWO-8042	45-332-15 Cable Liner						X	
***	1	CWO-8044	45H-764-15 Cable Liner							X
***	1	CWO-8085	45-564-15 Cable Liner					X		
***	2	CSM-1051	Clamp 136	X	X	X	X	X	X	X
***	2	CSM-1061	O-Ring Conduit Stop	X	X	X	X	X	X	X
***	2	CSM-1063	O-Ring Connector Plug	X	X	X	X	X	X	X

* FLUX-CORE MIG ONLY

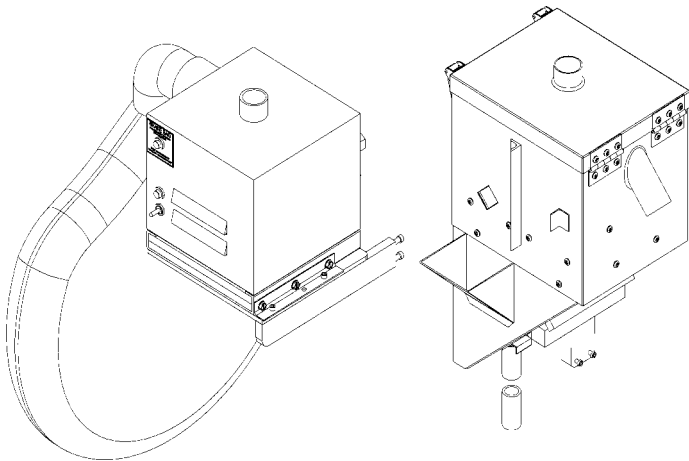
** OPTIONAL ITEMS

*** ITEM NOT SHOWN

CWP-11 DRIVE ROLL KITS

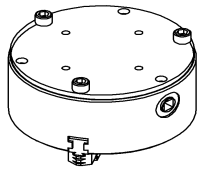
PART NUMBER	DESCRIPTION
BUG-3150-035	DRIVE ROLL KIT .035 (0.9mm) SOLID WIRE
BUG-3150-035C	DRIVE ROLL KIT .035 (0.9mm) CORED WIRE
BUG-3150-052	DRIVE ROLL KIT .045-.052 (1.0-1.3mm) SOLID WIRE
BUG-3150-052C	DRIVE ROLL KIT .045-.052 (1.0-1.3mm) CORED WIRE
BUG-3150-1/16 BUG-3150-1/16C	DRIVE ROLL KIT 1/16 (1.6mm) SOLID/CORED WIRE
BUG-3150-3/32	DRIVE ROLL KIT .068-3/32 (1.7-2.4mm) SOLID/CORED WIRE
BUG-3150-1/8	DRIVE ROLL KIT 7/64-1/8 (2.8-3.0mm) SOLID/CORED WIRE (REQUIRES MODIFICATIONS FOR 1/8" WIRE) ** FLUX CORE MIG ONLY **

ACCESSORIES

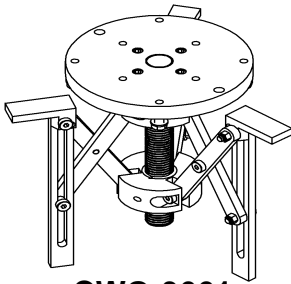


CWO-2020 Submerged Arc Flux Recovery System
Continuously removes and recycles all unused flux.

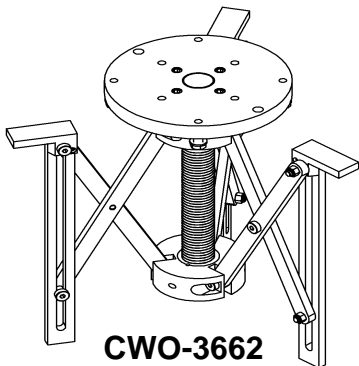
3-JAW EXPANDABLE CHUCKS



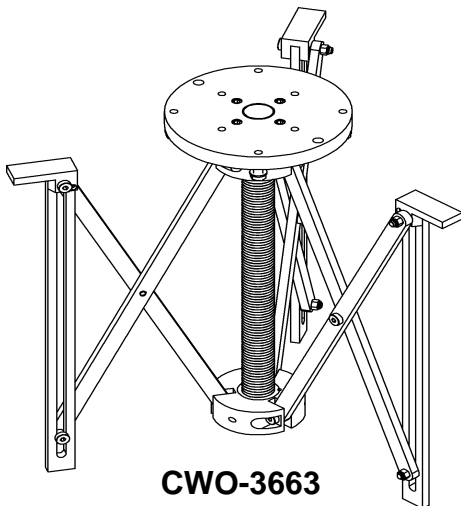
CWO-3660



CWO-3661



CWO-3662

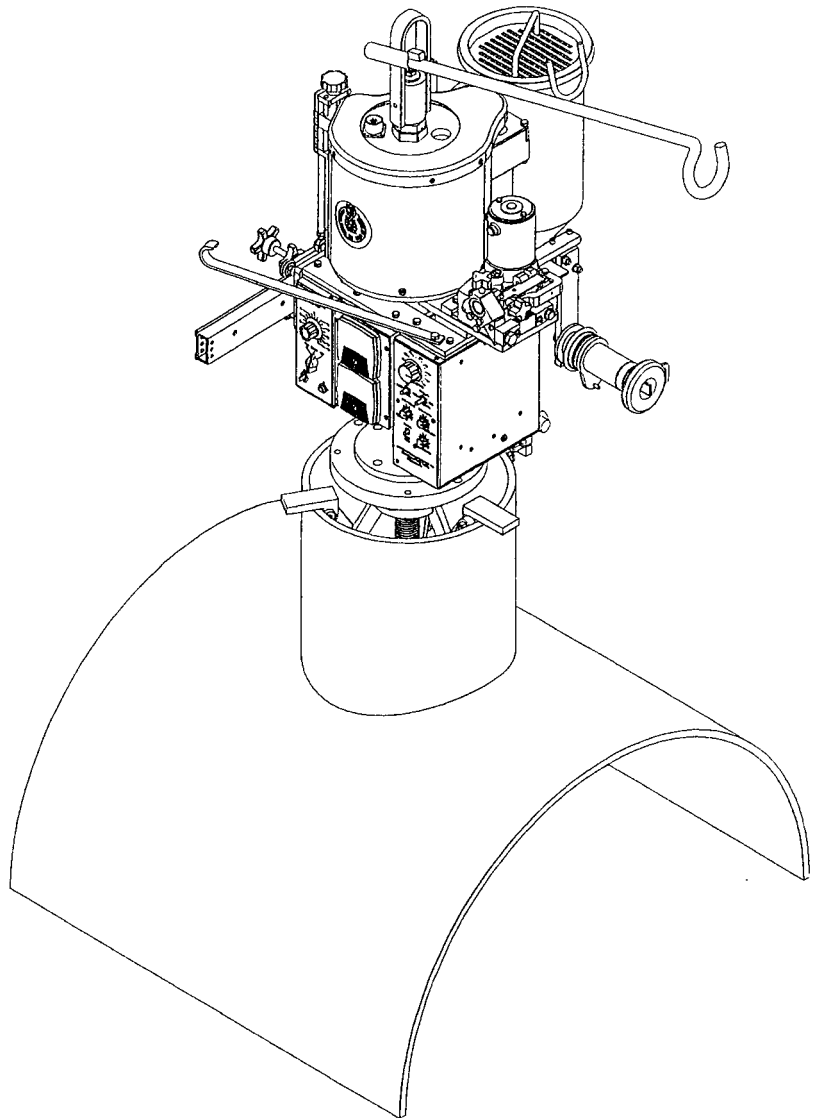


CWO-3663

3-Jaw Expandable Chucks

Mounts and automatically centers the Circle Welder on nozzles with or without flanges. As shown below.

PART NUMBER	FOR NOZZLE I.D.'S	WEIGHT
CWO-3660	2"-8" (51mm-204mm)	68 lbs. (31 kg)
CWO-3661	8"-16" (204-405 mm)	36 lbs. (16 kg)
CWO-3362	10"-24" (255-610 mm)	51 lbs. (23 kg)
CWO-3663	24"-42" (610-1065 mm)	64 lbs. (29 kg)



PREVENTIVE MAINTENANCE - DAILY

IMPORTANT:

Make sure the input power at the power source is turned **off** and the 50' weld cable is **disconnected** from the circle welder **prior** to working inside the circle welder!

Refer to CWP-11 Exploded View. (Pg. 17)

Racking System Item #7:

Inspect gear rack, hardened ways and wheels, remove all dirt, grease, weld spatter and rust. Check hardened ways for nicks and replace if necessary. Lubricate with a dry teflon or graphite spray lubricant. Adjust wheels for snug fit and smooth operation. Lubricate racker pinion with a dry teflon or graphite spray lubricant.

Large Horizontal Racker Item #8:

Inspect wheels and remove all dirt, grease, weld spatter and rust. Adjust wheels for snug fit and smooth operation. Lubricate racker pinion and wheels with a dry teflon or graphite spray lubricant.

Slide Bar Mounting Assembly Item #22:

Inspect hardened ways remove all dirt, grease and weld spatter. Check hardened ways for nicks and replace if necessary. Lubricate with a dry teflon or graphite spray lubricant.

Refer to CWP-11 Electrical Component Chart. (Pg. 29)

LN-9 Control Cables #11, 12, 13:

Inspect cable connector to make sure threads are not stripped and that the connector is not cracked. Check the cable for cuts, missing insulation and burn spots, replace if necessary.

CWP-11 Collector Ring Item #3:

Inspect cable connector to make sure threads are not stripped and that the connector is not cracked. Ensure that the connector is fastened properly to the large aluminum gear (item #29 on the CWP-11 Exploded View, pg 17).

PREVENTIVE MAINTENANCE - EVERY SIX MONTHS

Refer to CWP-11 Exploded View. (Pg. 17)

Aluminum Gear Item #29:

Do not grease this gear. Inspect gear teeth remove all dirt, grease and weld spatter. Lubricate with a dry teflon or graphite spray lubricant. Replace gear if excessively worn.

P.M. Motor Assembly Item #18:

Do not grease this pinion. Inspect the drive pinion. Remove all dirt, grease and weld spatter. Lubricate with a dry teflon or graphite spray lubricant. Replace pinion if excessively worn. Check set screw and tighten if necessary. Adjust motor assembly using the four adjustable mounting fasteners so that proper gear mesh is achieved between the aluminum gear (item #29) and the motor drive pinion.

Wire Reel Assembly Item #17:

Periodically coat the wire wheel shaft with a thin layer of grease as needed. Inspect the shoe assembly and replace if excessively worn.

Refer to CWP-11 Electrical Component Chart. (Pg. 29)

LN-9 Wire Feed Control Item #6:

Open control box, use an air hose to blow out dust and dirt. Check all wires for breaks and replace if necessary. Check all electrical connectors and plugs. If an electrical component fails refer to CWO-3535 Wire Feeder Control electrical component chart (pg. 32) for replacement parts or return for service.

Rotation Control Item #14:

Open control box use an air hose to blow out dust and dirt. Check all wires for breaks and replace if necessary. Check all electrical connectors and plugs. If an electrical component fails refer to CBP-1500 Rotation Control electrical component chart (pg. 30) for replacement parts or return for service.

LN-9 Wire Feeder Assembly Item #1:

Check brushes for wear. Brushes should be replaced when their length is less than 1/4 inch. Replace strain relief on wire if pulled out of motor housing.

Brush Holder & Support Item #4:

Inspect brush holder. Make sure constant tension is being applied on the brushes. Brushes should move freely within the brush holder. Check brushes for arc build-up. Replace pitted brushes. Remove the brushes and sand them to ensure a smooth contact surface. Make sure all fasteners are tight.

Small Brush Retainer Assembly Item #7:

Inspect black brush holders for cracks and replace if needed. Check and make sure all wires are soldered properly to the holders. Replace the brushes when their length is less than 1/2 inch long. Remove the brushes and sand them to ensure a smooth contact surface. Make sure all fasteners are tight.

Terminal Block Item #8:

Inspect the plastic terminal strip and make sure it is not cracked, replace if necessary. Make sure all terminal connections are tight. Make sure all ground wires are connected to the mounting screws of the terminal strip.

IMPORTANT:

Make sure the input power at the power source is turned **off** and the 50' weld cable is **disconnected** from the circle welder **prior** to working inside the circle welder!

PREVENTIVE MAINTENANCE - EVERY TWELVE MONTHS

IMPORTANT:

Make sure the input power at the power source is turned **off** and the 50' weld cable is **disconnected** from the circle welder **prior** to working inside the circle welder!

Refer to CWP-11 Exploded View. (Pg. 17)

1-1/2" Bearing With Fasteners Item #19:

Do not grease the bearing, it is greased for life by the manufacturer. If the grease fitting has not been removed and plugged we suggest that you do so now. Earlier models may not have been plugged at time of assembly.

P.M. Motor Assembly Item #18:

Bodine gear motor lubrication. Fill gear motor to oil level indicator with worm gear oil conforming to AGMA#5EP compounded oil (SAE#90) or Bodine lubricant (#L-23). Do not overfill.

LN-9 Wire Feeder Assembly Item #2:

Apply graphite grease to the gear teeth. Inspect the drive roll portion of the assembly, clean as necessary. Do not use solvents on the idle roll because it may wash the lubricant out of the bearings. Do not apply grease to the drive rolls.

Encoder Assembly Item #14:

Inspect for excessive wear. Keep the transmission assembly clean and lubricate with Lubriplate #630-AA.

Refer to CWP-11 Electrical Component Chart. (Pg. 29)

CWP-11 Collector Item #3:

The collector ring should be sanded once a year. If the collector ring is pitted badly it should be replaced. Inspect all wires coming out of the collector ring for cut or missing insulation. All wires should be fastened to the center shaft with a nylon cable tie. Tighten four set screws if needed.

Weld Cable Inlet 3/0 Item #10:

Ensure that the cable is fastened tightly to the collector ring. Inspect the cable for cut or missing insulation. Make sure the micarta insulation tube on the cable is in good condition. Replace the cable if necessary.

Solenoid Adaptor Kit Item #15:

Inspect for damage. Replace if necessary.

LN-9 Control Cables #11, 12, 13:

Inspect the cable for cuts or missing insulation. Ensure that the elbow connector is not damaged. Ensure that all terminal ends are snug. Replace cable if necessary.

WARRANTY

Limited Warranty

Model _____
Serial No. _____
Date Purchased: _____

For a period of twelve (12) months from delivery, Cypress Welding 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.

Cypress Welding 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 Cypress 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.