

INSTRUCTIONS AND PARTS MANUAL

CW-18 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-CW-18-IPM-0808



CYPRESS WELDING EQUIPMENT INC.

CE

A DIVISION OF WELD TOOLING CORPORATION

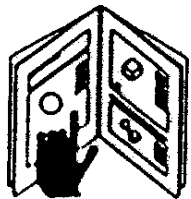
280 Technology Drive • Canonsburg, PA USA 15317-9564
Telephone: 1-412-331-1776 • 1-800-245-3186 • Fax: 1-412-331-0383
<http://www.cypressweld.com>

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.



READ INSTRUCTIONS.

Read the instruction manual before installing and using the equipment.



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.

HIGH FREQUENCY WARNINGS

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

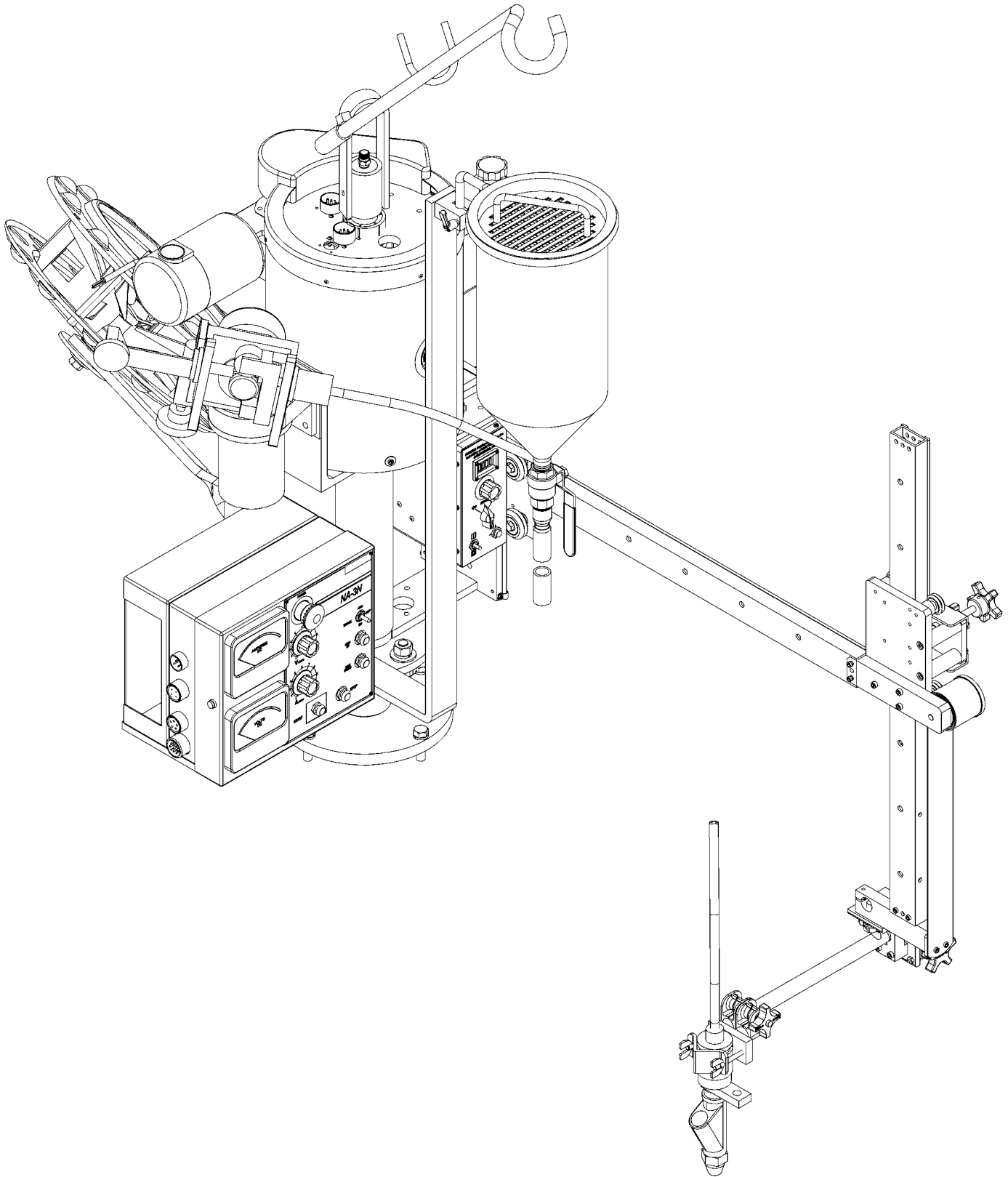


WARNING: HIGH FREQUENCY CAN EFFECT MACHINE OPERATION AND THEREFORE, WELD QUALITY.

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.



CW-18 CIRCLE WELDER

INSTRUCTIONS AND PARTS MANUAL

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22.....	CWO-3534 Slide Bar Assembly / Exploded View / Parts List
22.....	CWO-3537 Guard Assembly CW-18 / Exploded View / Parts List
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25.....	CWO-2978 Feeder Control Box Cable / Detail View / Parts List
26.....	CWO-3974 33# Load Spring Assembly / Exploded View / Parts List
27.....	CWO-6210-CW18 Rotation Control / Exploded View / Parts List
28.....	CWO-6210-CW18 Rotation Control / Wiring Diagram / Electrical Component Chart
29.....	CWO-3690- _ K231 Sub Arc Gun
30.....	CWO-3710- _ Sub Arc Gun Assembly
31.....	3-Jaw Expandable Chucks
32.....	Preventative Maintenance/CW-18 Circle Welder
35.....	Warranty

INTRODUCTION

The CW-18 (CWO-1800) Circle Welder is designed for welding of nozzles into vessels or domed heads utilizing SUB-ARC, MIG or FLUX CORED PROCESS, with gas shielding. The CW-18 mounts on a 3-Jaw Chuck welding diameter 6" to 50" O.D.

Features:

- Wire feeder with one set of drive rolls.
- 1/12 HP P.M. motor and rotational speed control.
- 600 AMP gun & cable assembly.
- Internal to NA3
- 50 ft. (15 m) power cable.
- 50 ft. (15 m) gas shielding hose.
- 50 ft. (15 m) weld cable.
- Quick disconnects for all cables.
- Pre and post flow controls.
- Wire reel adaptor for 60 lb. (27 kg) spools.
- Adjustable vertical and horizontal torch positioning system.
- Rise and fall cam assembly with 5" (125 mm) of travel.
- 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.

NA 3 Control Provides:

- Wire Spool (amperage) control
- Voltage Control
- Wire burn back
- Weld contact
- Cold wire switch
- Weld start parameter adjustment
- Weld Crater parameter adjustment

SET-UP AND OPERATION:

POWER SOURCE:

Please refer to the included Lincoln NA3 user's manual for welding power source requirements and system set-up.

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 feed through the incoming tube of the wire feeder at least once a day.

ADDITIONAL CABLES:

The circle welders are 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 using the quick connect connector to your power supply.
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.

SET-UP AND OPERATION CONTINUED:

WIRE SPEED AND VOLTAGE ADJUSTMENT:

The wire speed control on the front of the LDC-NA3S 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.

RISE AND FALL OF THE CAM:

All circle welders are equipped with a rise and fall cam assembly. The cam assembly must be aligned before any other settings can be made. To align the cam rotate the machine so the horizontal rack is parallel to the pipe, then adjust the gun holder so it is perpendicular to the horizontal rack. Position torch tip to top dead center of joint. Loosen the set screws in the brass block on the cam, and rotate the cam to the vertical position as shown. Refasten set screws.

CAM SETTING:

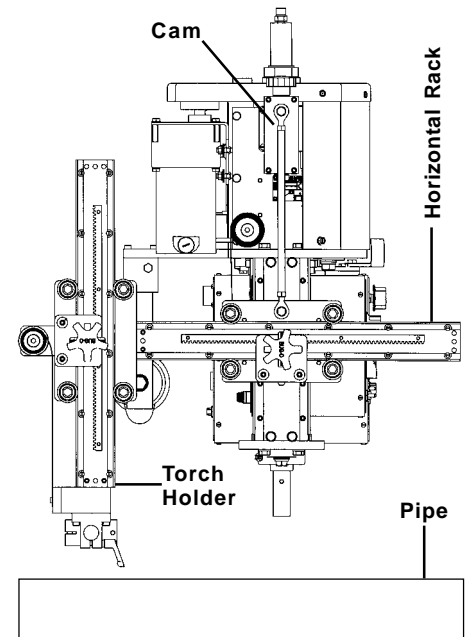
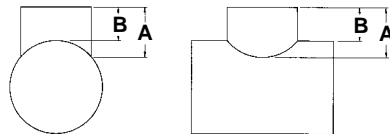
The cam setting is equal to distance "B" subtracted from distance "A".

Example:

Let A=3 and B=2

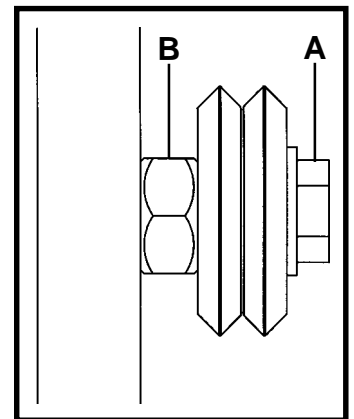
$3-2=1$

The cam setting is 1.



WHEEL ADJUSTMENT:

The CW-18 Racking System CWO-1840 and the Small Vertical Racker CWO-1690 are equipped with adjustable wheels. Always check these components for proper wheel adjustment before using the machine. The wheels need adjustment 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 are adjustable. To adjust the wheels, loosen the hex bolt (A) until the adjustable bushing (B) can be rotated. Correct the wheel alignment by rotating the adjustable bushing (B). Once adjusted, hold the adjustable bushing (B) while tightening the hex bolt (A). Recheck alignment.



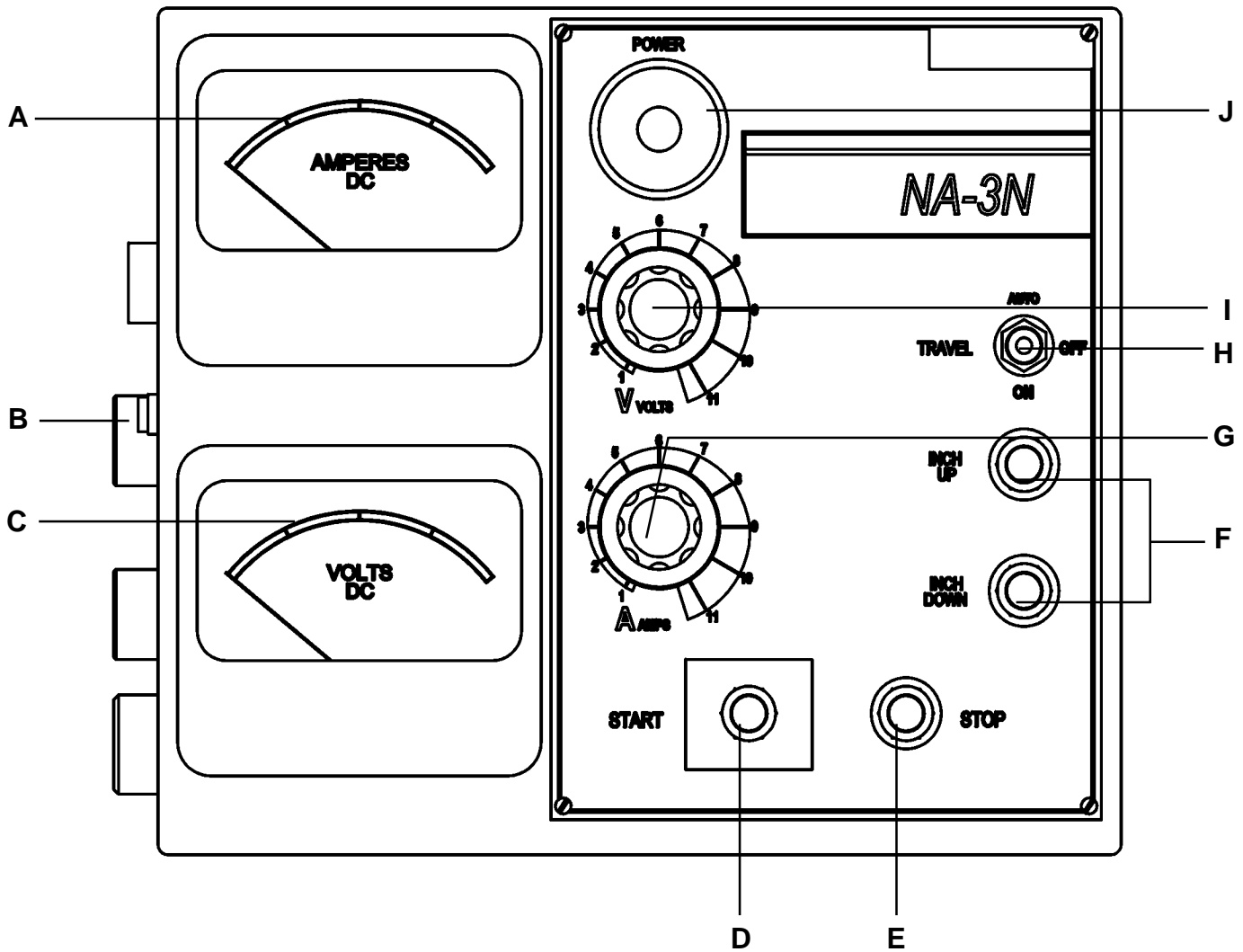
MACHINE CONTROLS:

Operational parameters can be set using the two control boxes. Please refer to the section in this manual entitled CWO-6210-CW18-Rotational Control for descriptions of the various speed and directional capabilities. For the LD-NA3S NA-3 Wire Feeder Control; refer to the supplied NA-3 Semiautomatic Wire Feeder Manual from Lincoln Electric.

MAKING A WELD:

1. Position the gun to start position using the CWO-1840 Racking System.
2. Connect the ground cable to the workpiece. The ground cable must make good electrical contact with the work.
3. Position the electrode in the joint. The end of the electrode may be lightly touching the work.
4. With manual/auto switch in the "OFF" position, set rotation direction and speed.
5. Weld process and rotation are both started by throwing the manual/auto switch to auto.
6. Weld process and rotation are stopped by throwing the manual/auto switch to "OFF".

LDC-NA3S NA-3 WIRE FEEDER CONTROLS



- A. Ammeter
- B. Circuit breaker
- C. Voltmeter
- D. Start
- E. Stop
- F. Inch up and inch down
- G. Current control
- H. Travel
- I. Voltage control
- J. Control power

LDC-NA3S NA-3 WIRE FEEDER CONTROLS, CONT'D.

NOTE: For further information refer to Lincoln Electric NA-3 Operator's Manual.

A. AMMETER

Indicates current only while welding.

B. CIRCUIT BREAKER

Protects the circuit from sever wire feed motor overload and short circuits. Press to reset. Locate and correct the cause for overload.

C. VOLTMETER (Standard)

Indicated welding voltage only while welding. Also indicates OCV below 60 volts.

D. START

Push-button beings the welding cycle

E. STOP

Push-button initiated the stopping cycle at the end of the weld.

F. INCH UP & INCH DOWN

Press to inch electrode at the speed set by "Inch Speed" control on inner panel.

G. CURRENT CONTROL

Adjusts wire feed speed to control welding current.

H. TRAVEL

Turn to "Off" for no travel; "Hand Travel" for travel without welding; "Automatic Travel" for welding operations. Speed and direction of travel are controlled by the travel mechanisms control.

I. VOLTAGE CONTROL

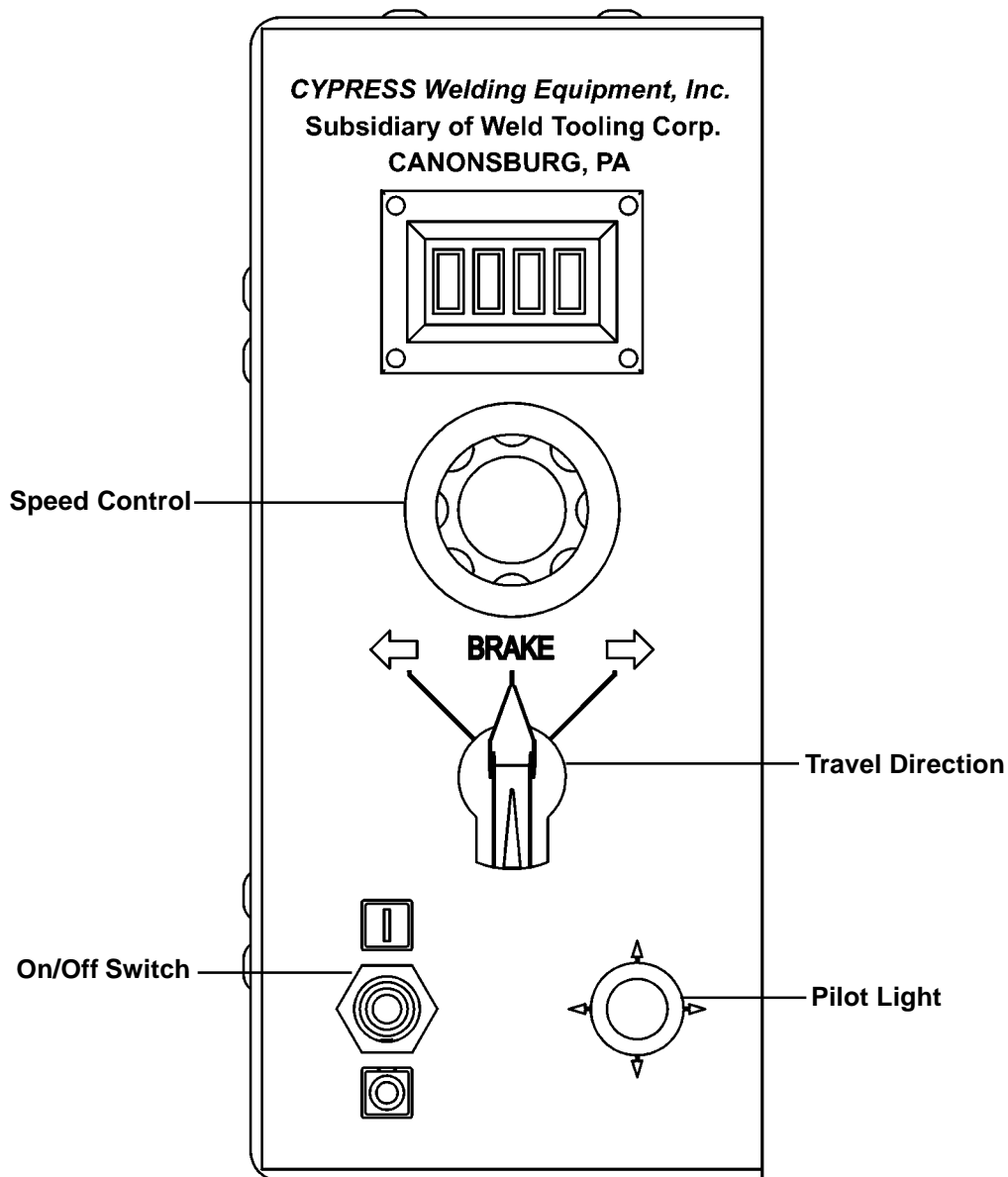
Adjust arc volts by controlling power source output voltage.

J. CONTROL POWER

Turns input control power "On" and "Off". Also used as an emergency "Off" in case of malfunction.

***For further information on NA-3 Wire Feeder and controls, refer to Lincoln Electric NA-3 Wire Feeder Operators Manual.**

CWO-6210-CW18 ROTATION CONTROLS



SPEED CONTROL:

Controls the speed in which the machine travels. The depicted lines 0 to 100 should not be construed as inches per minute of travel. They should be considered as reference points only.

TRAVEL DIRECTION:

Controls the direction in which the machine will travel. Select forward for clockwise rotation, brake for stop, and reverse for counterclockwise rotation.

ON/OFF SWITCH:

The on/off switch enables/disables power to the rotation control box.

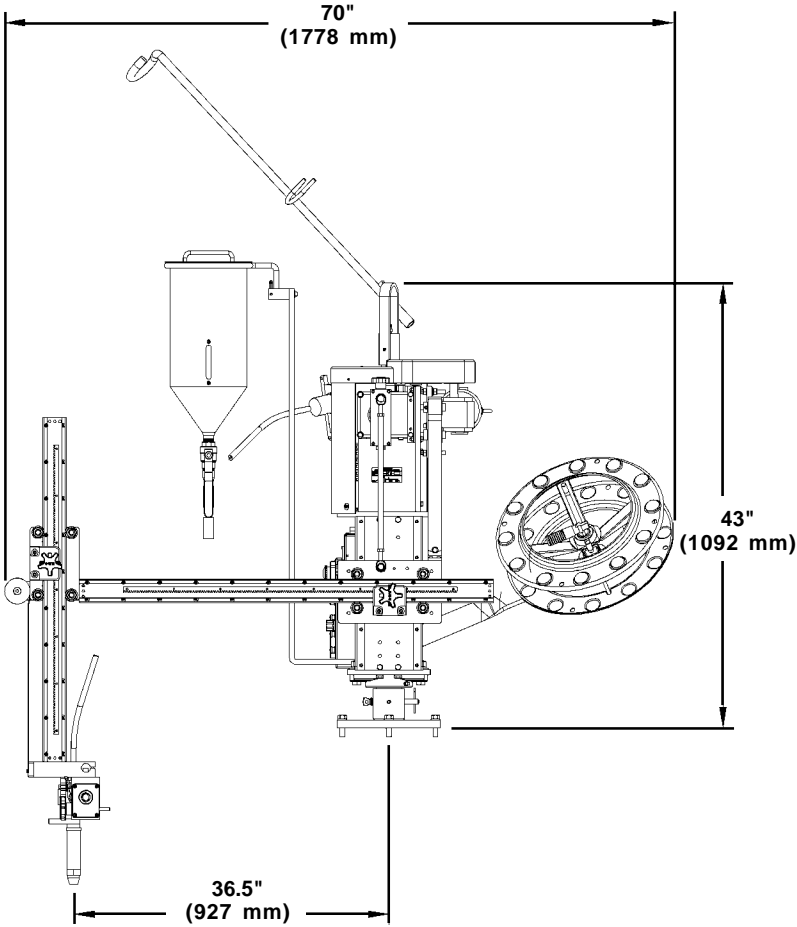
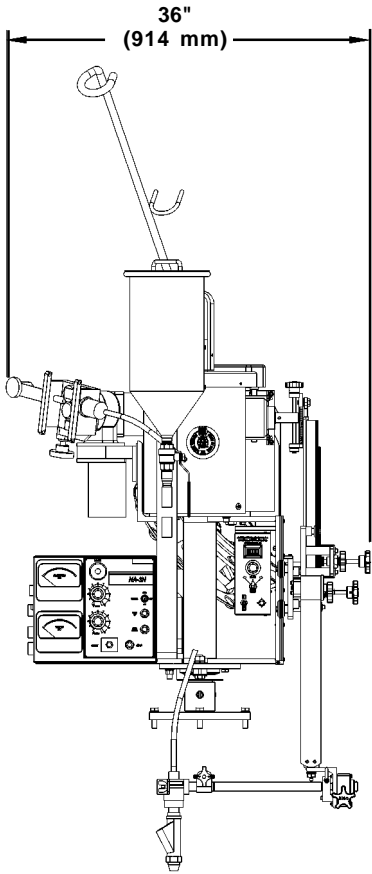
PILOT LIGHT:

The pilot light indicates whether the machine is on/off as dictated by the on/off switch.

TECHNICAL DATA

- Input Voltage:** 0-600 amps
- Amperage:** 115 VAC
- Voltage:** 0-50
- Wire Sizes:** 1/16"-7/32" (1.6-5.6 mm)
- Rotation Speed:** .06-.72 rpm
- Cam Range:** 0"-7" (0-175 mm)
- Welding Radius:** 0"-25" (0-635 mm)
- Shielding Gas:** Solenoid Control
- Height:** 43" (1092 mm)
- Net Weight:** 360 lbs. (163.6 kg)
- Shipping Weight:** 490 lbs. (222.3 kg)

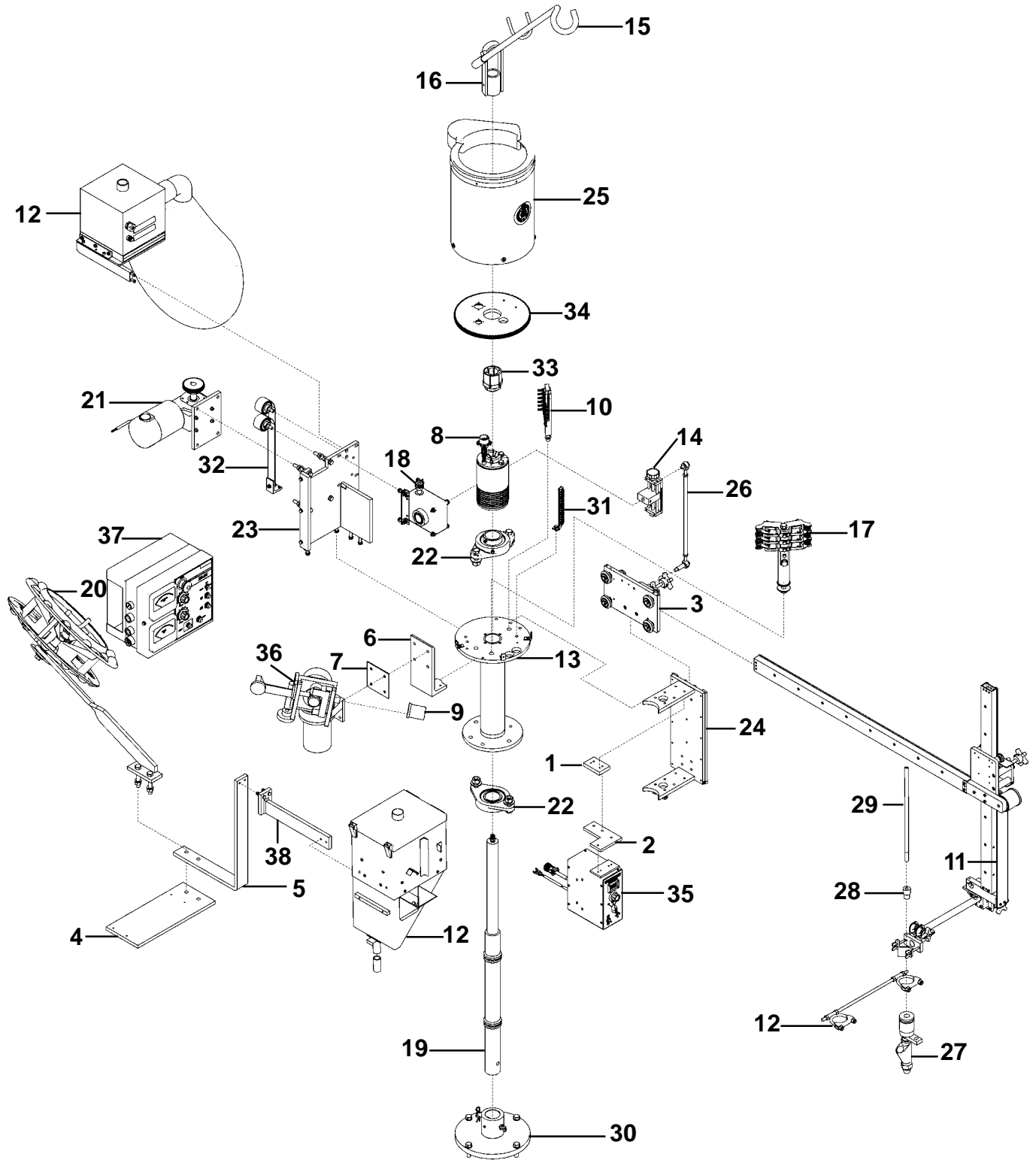
DIMENSIONS:



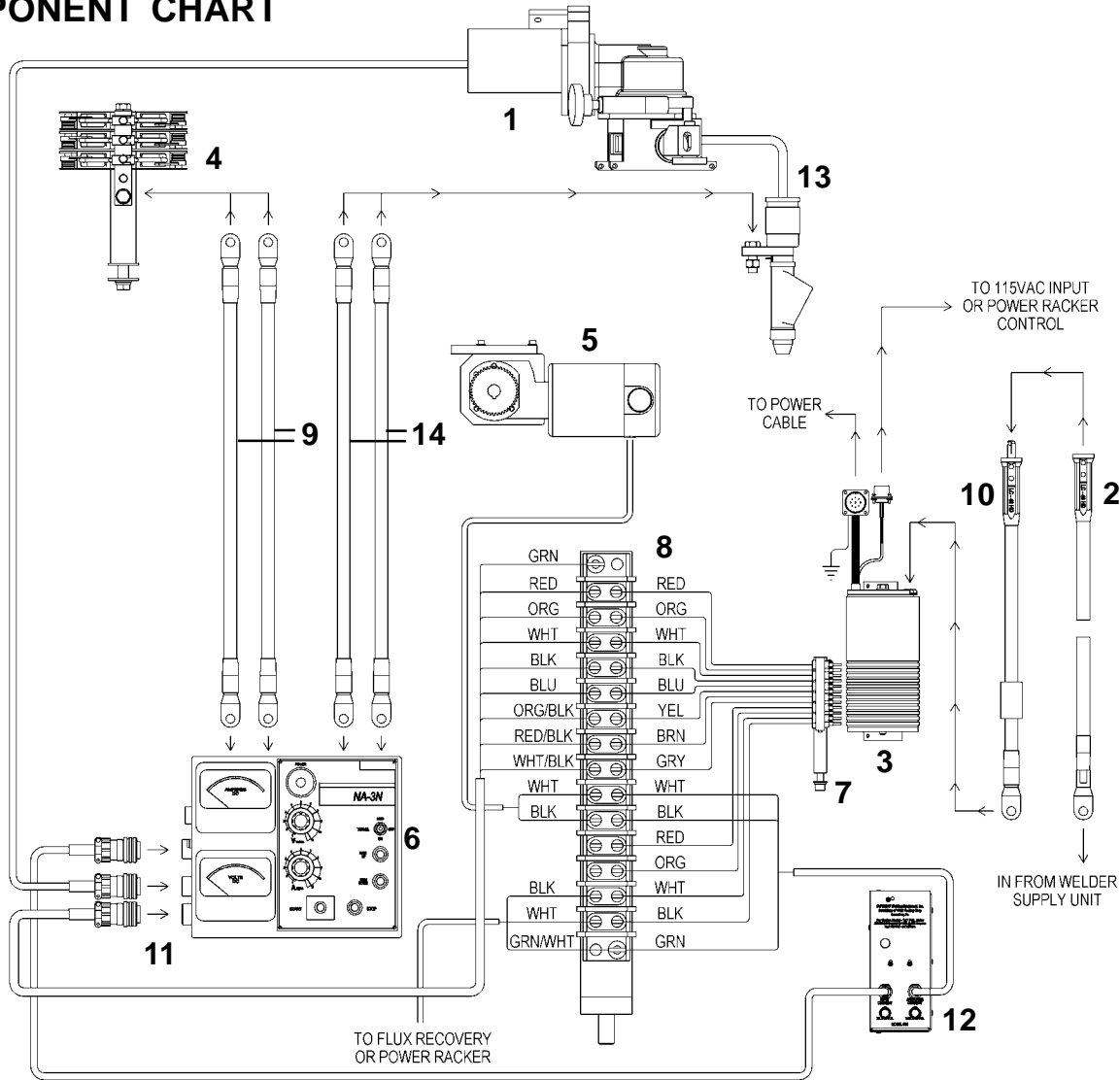
CWO-1800 CW-18 CIRCLE WELDER / PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-1123	CONTROL MT. SPACER BLOCK
2	1	CWO-1124	CW-18 CONTROL MT. PLATE
3	1	CWO-1690	LARGE HORIZONTAL RACK
4	1	CWO-1811	NA-3S MOUNT PLATE
5	1	CWO-1812	FLUX HOPPER SUPPORT
6	1	CWO-1813	WIRE FEEDER BRACKET
7	1	CWO-1814	INSULATOR PLATE
8	1	CWO-3133	COLLECTOR
9	1	CWO-1816	WIRE FEEDER ADAPTOR
10	1	CWO-3931	BRUSH RETAINER ASSEMBLY
11	1	CWO-1840	CW-18 RACKING SYSTEM
12	1	CWO-2020	FLUX RECOVERY SYSTEM (OPTIONAL)
13	1	CWO-3165	CW-18 HOUSING ASSEMBLY
14	1	CWO-3205-11	7" CAM ASSEMBLY CW-18
15	1	CWO-3218	CABLE SUPPORT BAR
16	1	CWO-3312	LIFTING LUG WELDMENT
17	1	CWO-3313	BRUSH HOLDER & SUPPORT
18	1	CWO-3359	TRANSMISSION SW-5:1 ASSEMBLY
19	1	CWO-3432	CW-18 SHAFT ASSEMBLY
20	1	CWO-3498-11	WIRE REEL ASSEMBLY CW-18
21	1	CWO-3506	4066 MOTOR ASSEMBLY
22	2	CWO-3528	2" FLANGE BEARING W/ FASTENERS
23	1	CWO-3531	MOTOR & TRANSMISSION PLT. ASSEMBLY
24	1	CWO-3534	SLIDE BAR MOUNTING ASSEMBLY
25	1	CWO-3537	GUARD ASSEMBLY CW-18
26	1	CWO-3538	CW-18 CAMSHIFT & SPACER ASSEMBLY
27	1	CWO-3690-5/32	SUB-ARC NOZZLE
28	1	CWO-3695-1/2	ADAPTOR K231 1/2"
29	1	CWO-3697	QCC 72" LINER
30	1	CWO-3968	CW-18 BASE PLATE
31	1	CWO-3969	TERMINAL BLOCK ASSEMBLY
32	1	CWO-4900	33# LOAD SPRING
33	1	CWO-5074	1-1/2" ID TRANTORQUE"
34	1	CWO-5793	GEAR ALUMINUM
35	1	CWO-6210-CW18	M-14 ROTATION CONTROL
36	1	LDC-0010	AUTOMATIC HEAD
37	1	LDC-NA3S	NA-3S
38	1	CWO-1820	FLUX HOPPER SUPPORT ASSEMBLY

CWO-1800 CW-18 CIRCLE WELDER / EXPLODED VIEW



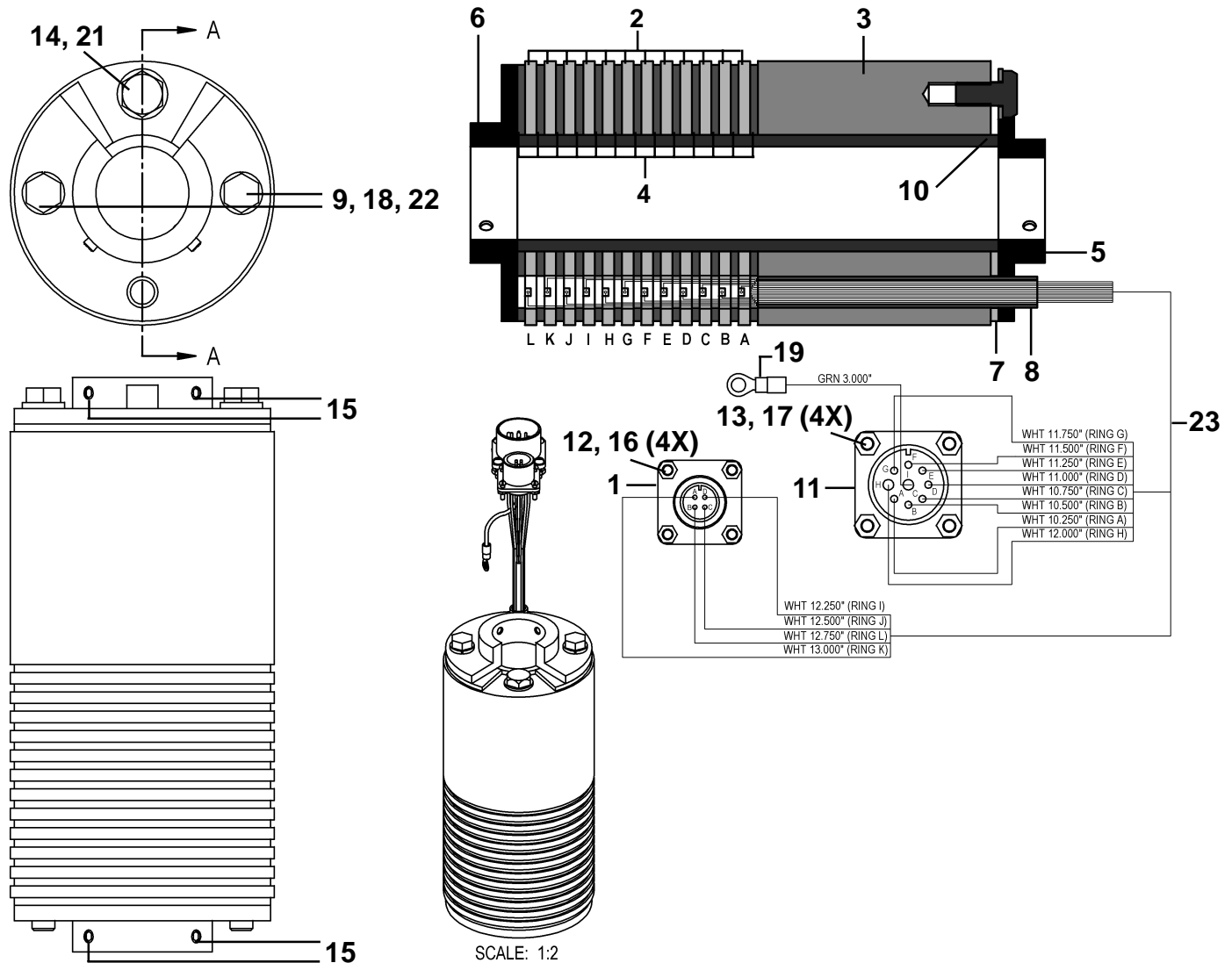
CWO-1800 CW-18 CIRCLE WELDER / WIRING DIAGRAM / ELECTRICAL COMPONENT CHART



ELECTRICAL COMPONENT CHART

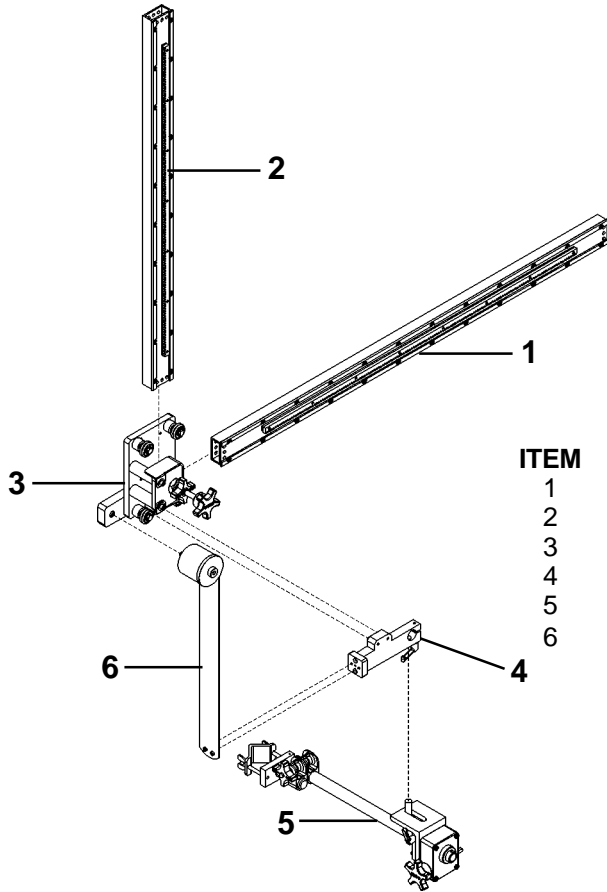
ITEM	DESCRIPTION	PART NUMBER
1	NA-3 Wire Feeder	LDC-0010
2	Weld Cable 4/0 50'	CWO-3040
3	CW-18 Collector Ring	CWO-3133
4	Brush Holder Support	CWO-3313
5	4006 Motor Assy.	CWO-3506
6	NA-3 Wire Feeder Control	LDC-NA3S
7	Small Retainer Brush	CWO-3931
8	Terminal Block Assy.	CWO-3969
9	Weld Cable 4/0	CWO-3970
10	Weld Cable Inlet	CWO-3972
11	Feeder Control Box Cable	CWO-2978
12	M-14 Rotational Control	CWO-6210-CW18
13	K231 Sub Arc Gun	CWO-3710-__
14	Weld Cable 4/0 6'	CWO-3970-72

CWO-3133 CW-11 COLLECTOR WITH POWER RACKER



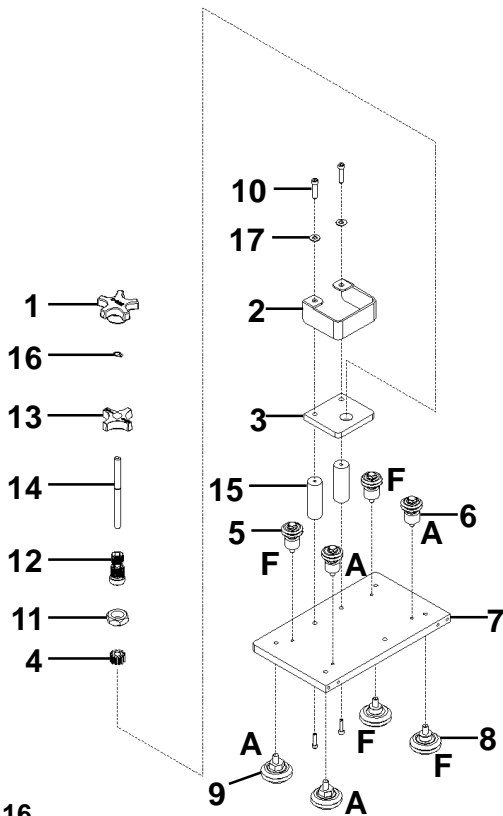
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BUG-1034	PANEL CONNECTOR 4-T, M
2	12	CWO-3127	BRASS RING 4.250" DIA X .188" THK
3	1	CWO-5739	BRASS RING 4.250" DIA X 3.750 THK
4	13	CWO-5744	MICARTA SPACER
5	1	CWO-5745	TOP COLLECTOR PLATE CW-7, CW-11
6	1	CWO-5746	CB-2 BOTTOM COLLECTOR PLATE
7	1	CWO-5747	MICARTA SPACER W/NOTCH
8	1	CWO-5758	MICARTA SLEEVE .495" O.D. X .391" I.D. X 4.500" LG
9	2	CWO-5760	MICARTA SLEEVE .495" O.D. X .391" I.D. X 8.000" LG
10	1	CWO-5770	MICARTA SLEEVE 1.875" O.D. X 1.5000" I.D. X 7.750" LG
11	1	CWO-6068	PANEL CONNECTOR 9-T, M
12	4	FAS-0205	RND HD SCR 4-40 X 1/2"
13	4	FAS-0215	RND HD SCR 6-32 X 1/2"
14	1	FAS-0397	HEX HD CAP SCR 3/8-16 X 3/4"
15	4	FAS-0455	SET SCR 1/4-20 X 1/2" CUP POINT
16	4	FAS-1305	HEX NUT 4-40
17	4	FAS-1310	HEX NUT 6-32
18	2	FAS-3397	HEX HD CAP SCR 3/8-16 X 8-1/2"
19	1	TERM-5494	#8 RING, RED
20	1	W05-2025	GREEN WIRE 20 GA 2-1/2"
21	1	WAS-0260	3/8" WASHER
22	2	WAS-0262	3/8" SPLIT LOCKWASHER
23	140"	WRE-1601	16 AWG. WHITE TEFLON

CWO-1840 CW-18 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	CWO-1675	VERTICAL RACKER
4	1	CWO-1695	ATTACHMENT BLOCK
5	1	CWO-3023-S	TORCH ANGLE ADJUSTER
6	1	CWO-3460	33# LOAD SPRING ASSY.

CWO-1690 HORIZONTAL RACKER / EXPLODED VIEW / PARTS LIST

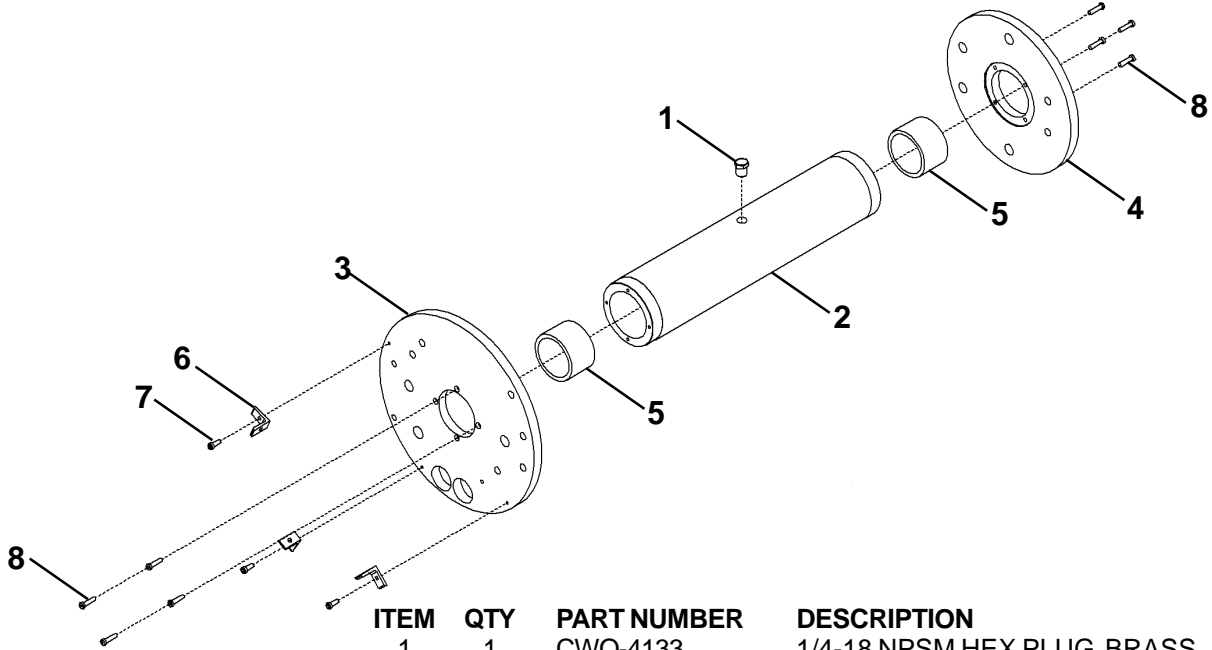


ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BUG-2032	KNOB, BLACK
2	1	CWO-1671	RACKER SHIELD
3	1	CWO-1678	RACKER PLATE
4	1	CWO-1679	PINION 11T
5	2	CWO-1680	W2 FIXED LEG & WHEEL ASSY.
6	2	CWO-1681	W2 ADJ. LEG & WHEEL ASSY.
7	1	CWO-1687	MOUNT PLATE (LARGE RACKER)
8	2	CWO-4326	FIXED LEG & WHEEL ASSY.
9	2	CWO-4327	ADJ. LEG & WHEEL ASSY.
10	2	FAS-0559	SOC HD CAP SCR 1/4-20 X 1"
11	1	FAS-1307	HEX JAM NUT 3/4-16
12	1	MUG-1141	BEARING COLLET
13	1	MUG-1142	KNOB, LOCKING
14	1	MUG-1144	SHAFT
15	2	MUG-1453	STAND-OFF
16	1	MUG-1579	RETAINING RING
17	3	WAS-0240	1/4" SAE WASHER

F= FIXED WHEEL PLACEMENT

A= ADJUSTABLE WHEEL PLACEMENT

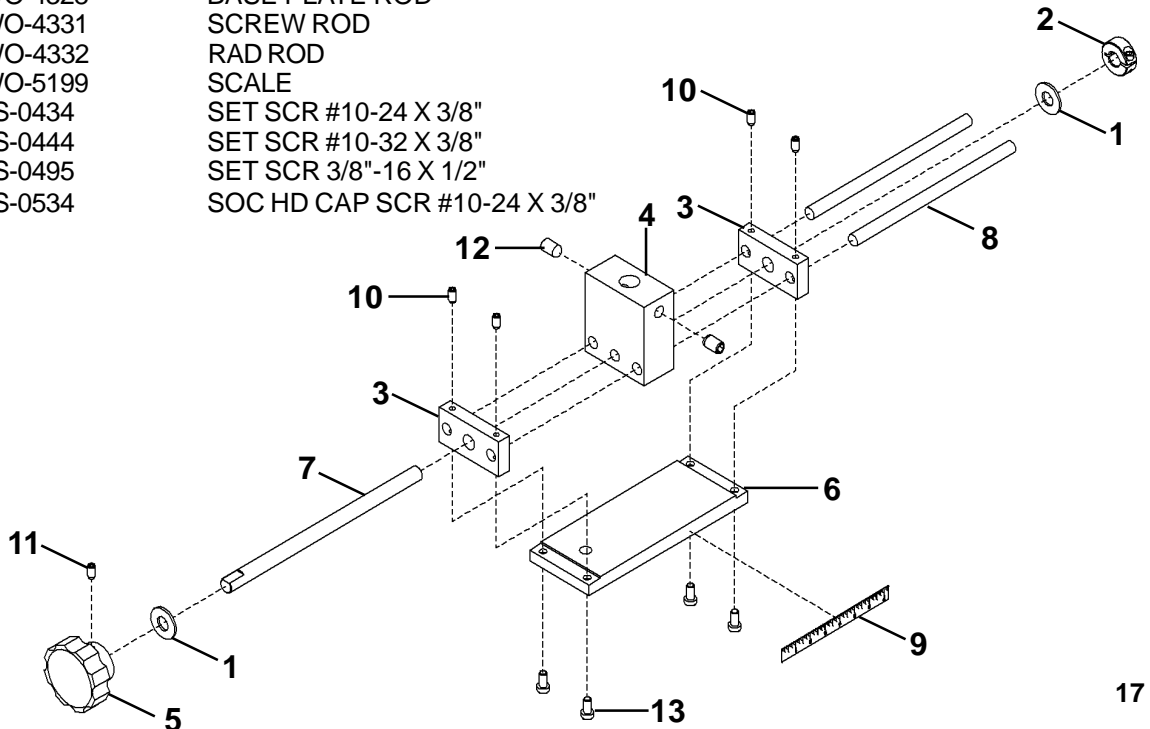
CWO-3165 CW-18 HOUSING ASSEMBLY / EXPLODED VIEW / PARTS LIST



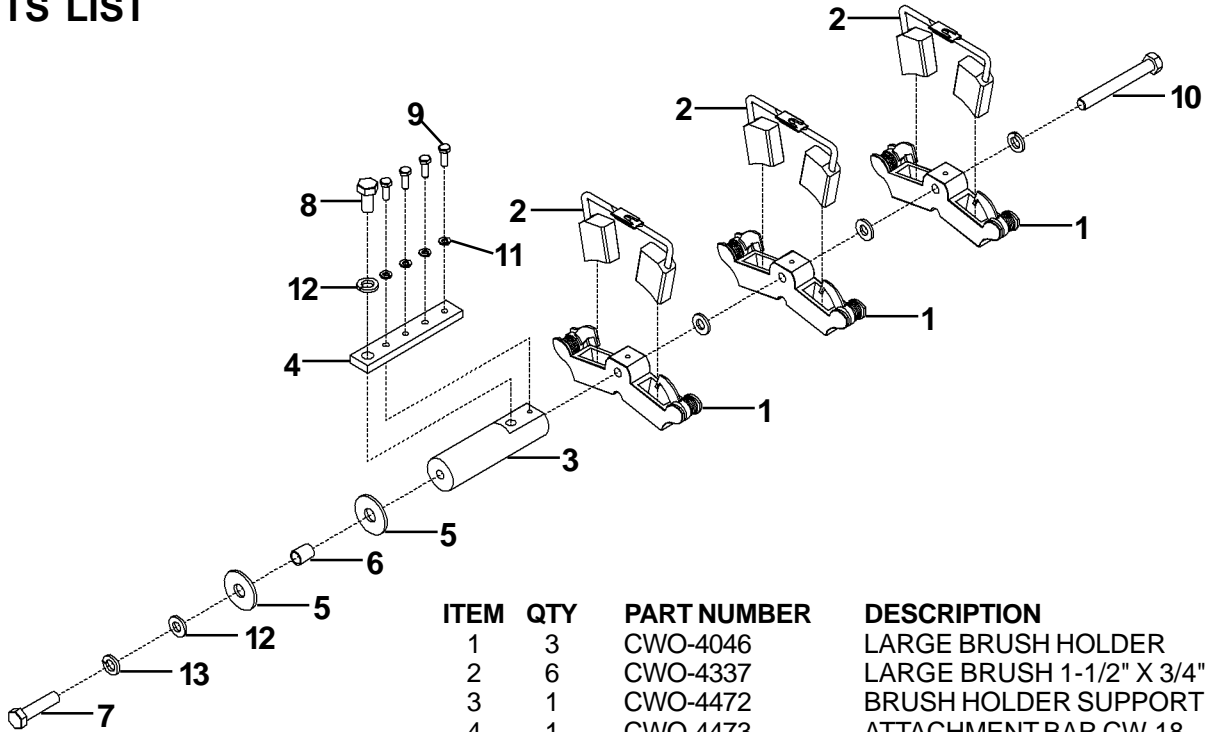
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-4133	1/4-18 NPSM HEX PLUG, BRASS
2	1	CWO-5842	CENTER TUBE HOUSING, CW-18
3	1	CWO-5845	TOP HOUSING PLATE, CW-18
4	1	CWO-5853	LOWER HOUSING PLATE, CW-18
5	2	CWO-5980	PLASTIC BUSHING
6	3	CWO-9339	ANGLE FOR GUARD
7	3	FAS-0535	SOC HD CAP SCR 10-24 X 1/2"
8	8	FAS-0548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

CWO-3205-11 7" CAM ASSEMBLY / EXPLODED VIEW / PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	BUG-2098	DELRIN WASHER 3/8"
2	1	BUG-9012	LOCKING COLLAR
3	2	CWO-4027	END PLATE 4" CAM
4	1	CWO-4330	CENTER BLOCK .625" BORE
5	1	CWO-4032	KNOB
6	1	CWO-4328	BASE PLATE ROD
7	1	CWO-4331	SCREW ROD
8	2	CWO-4332	RAD ROD
9	1	CWO-5199	SCALE
10	4	FAS-0434	SET SCR #10-24 X 3/8"
11	1	FAS-0444	SET SCR #10-32 X 3/8"
12	2	FAS-0495	SET SCR 3/8"-16 X 1/2"
13	4	FAS-0534	SOC HD CAP SCR #10-24 X 3/8"



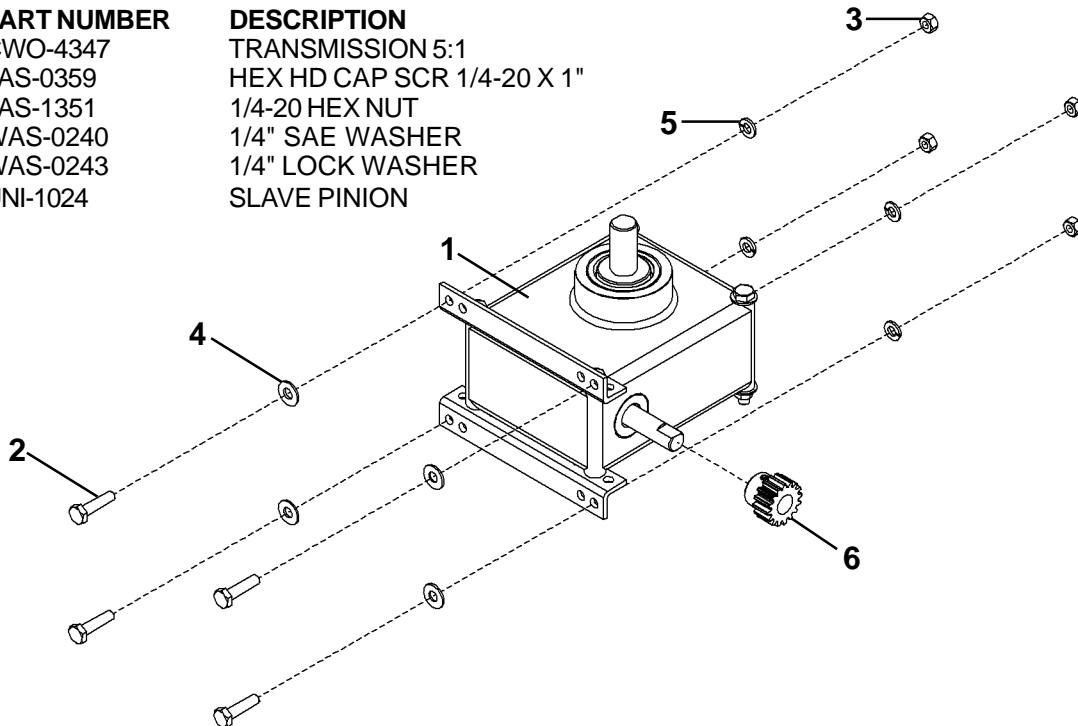
CWO-3313 BRUSH HOLDER & SUPPORT ASSEMBLY / EXPLODED VIEW / PARTS LIST



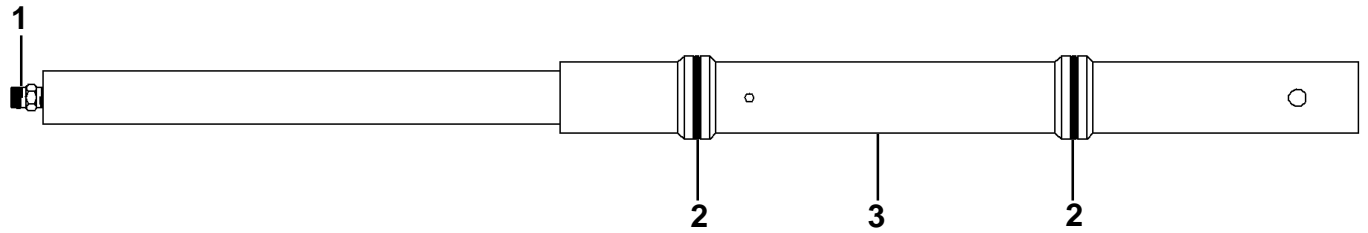
ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	CWO-4046	LARGE BRUSH HOLDER
2	6	CWO-4337	LARGE BRUSH 1-1/2" X 3/4" X 2"
3	1	CWO-4472	BRUSH HOLDER SUPPORT CW-18
4	1	CWO-4473	ATTACHMENT BAR CW-18
5	2	CWO-5548	MICARTA SPACER
6	1	CWO-5549	MICARTA BUSHING
7	1	FAS-0305	HEX HD CAP SCR 1/2-13 X 2"
8	1	FAS-0309	HEX HD CAP SCR 1/2-13 X 1"
9	4	FAS-0357	HEX HD CAP SCR 1/4-20 X 3/4"
10	1	FAS-3304	HEX HD CAP SCR 1/2-13 X 4"
11	4	WAS-0243	1/4" SPLIT LOCKWASHER
12	3	WAS-0280	1/2" SAE WASHER
13	3	WAS-0281	1/2" SPLIT LOCKWASHER

CWO-3359 TRANSMISSION 5:1 / EXPLODED VIEW / PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-4347	TRANSMISSION 5:1
2	4	FAS-0359	HEX HD CAP SCR 1/4-20 X 1"
3	4	FAS-1351	1/4-20 HEX NUT
4	4	WAS-0240	1/4" SAE WASHER
5	4	WAS-0243	1/4" LOCK WASHER
6	1	UNI-1024	SLAVE PINION



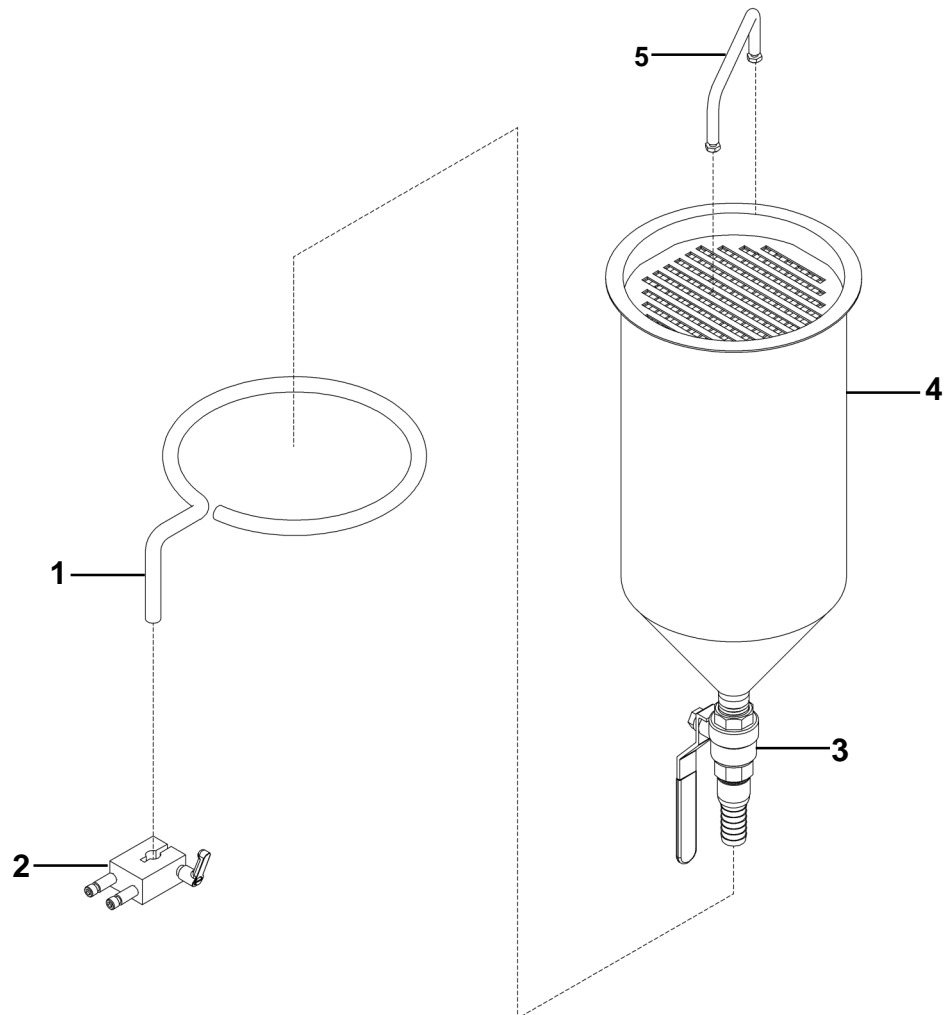
CWO-3432 CW-18 SHAFT ASSEMBLY / EXPLODED VIEW / PARTS LIST



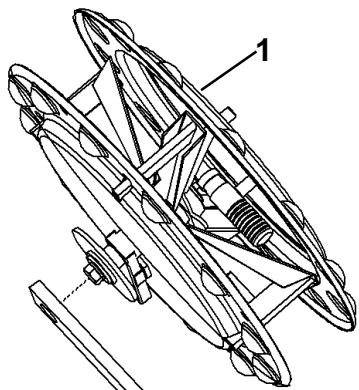
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BUG-9096	OUTLET BUSHING, OXYGEN
2	2	CWO-4507	O-RING, OXYGEN, GAS
3	1	CWO-5779	SHAFT CW-18

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

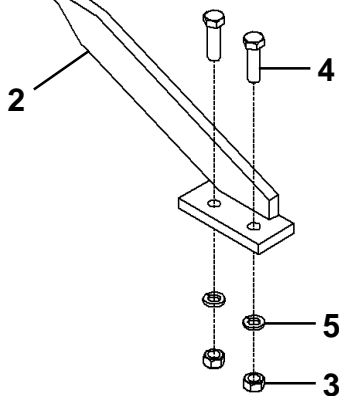
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-3757	HOPPER SUPPORT ROD
2	1	CWO-3760	CLAMP BLOCK 1/2"
3	1	CWO-3478	1-3/4" HOSE BARB
4	1	CWO-3769	FLUX HOPPER STEEL 12"
5	1	GOF-3019	HANDLE W/ BOLTS
N/S	1	CWO-3491-48	FLUX HOSE 3/4" ID X 1" OD X 48" LG



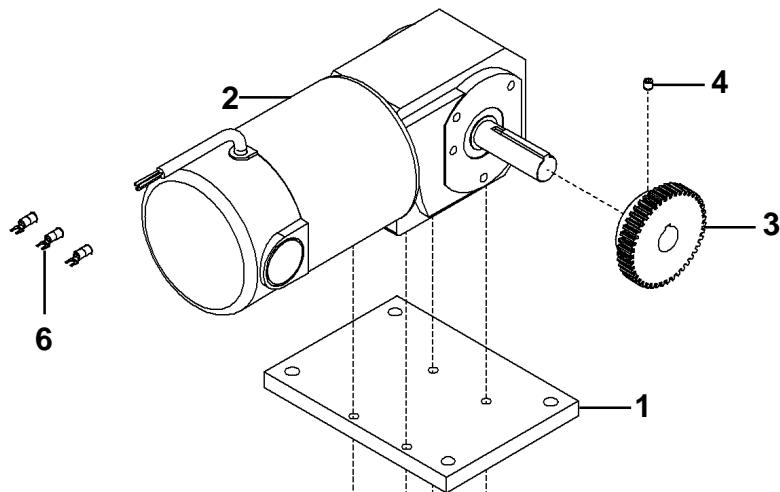
CWO-3498-11 WIRE REEL ASSEMBLY / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	BUG-3293	REEL, 60 LBS.
2	1	CWO-3217-11	WIRE REEL SUPPORT ASSEMBLY CW-18
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

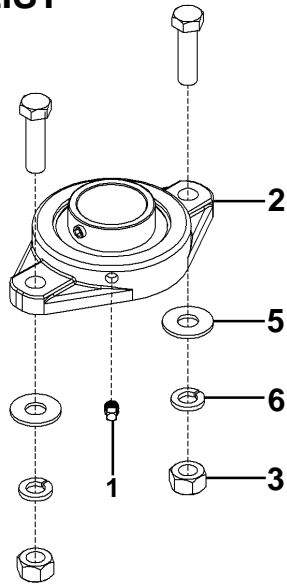


CWO-3506 4066 MOTOR ASSEMBLY / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-3620	MOTOR MOUNT BRACKET
2	1	CWO-4846	RIGHT ANGLE DC MOTOR 4066
3	1	CWO-5767	GEAR PM MOTOR 147
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

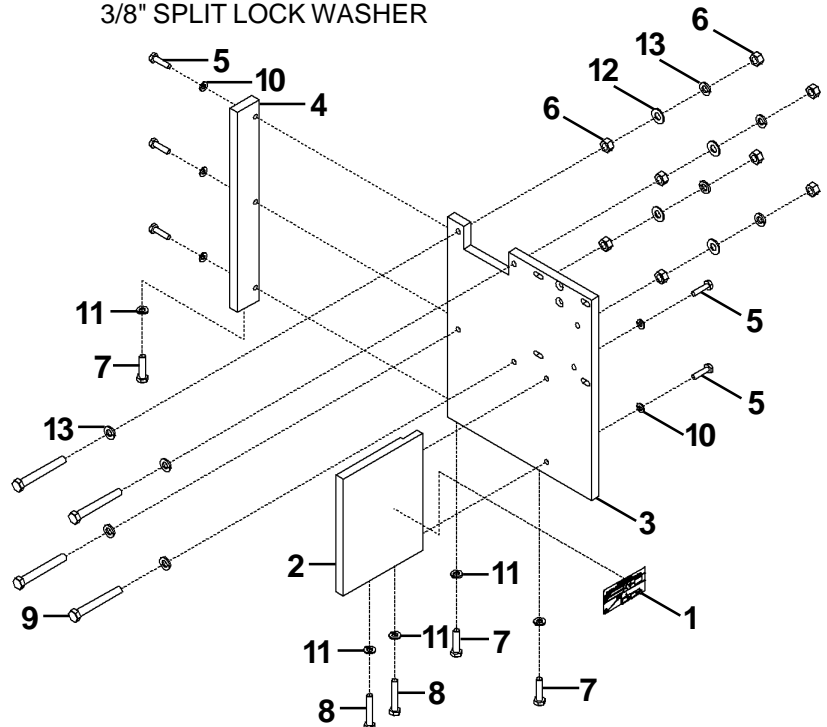
CWO-3528 2" FLANGE BEARING w/FASTENERS / EXPLODED VIEW / PARTS LIST



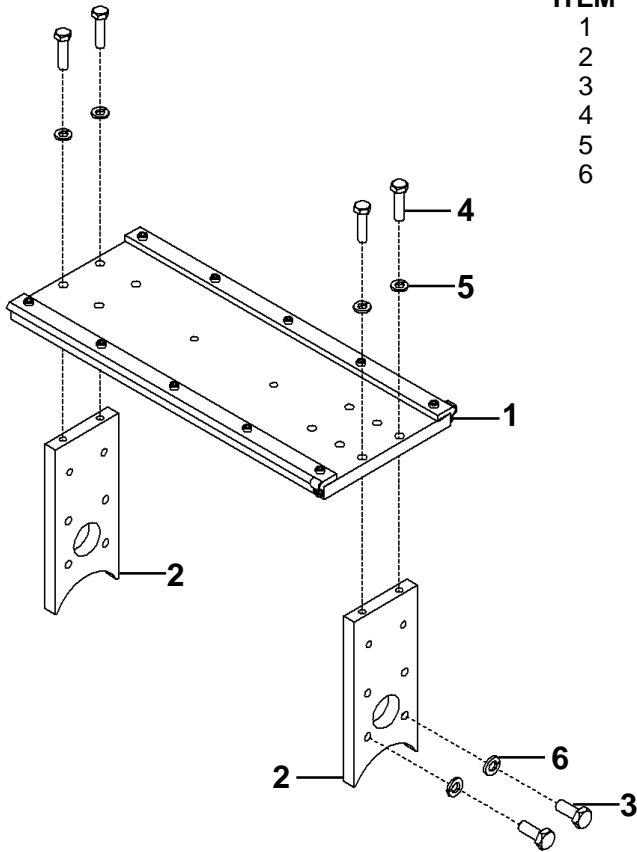
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-1511	1/8" PIPE PLUG BLACK IRON
2	1	CWO-4482	FLANGE BEARING 2" BORE
3	2	FAS-1398	9/16-12 HEX NUT
4	2	FAS-3305	HEX HD CAP SCR 9/16-12 X 2"
5	2	WAS-0290	9/16" SAE WASHER
6	2	WAS-0291	9/16" SLPIT LOCK WASHER

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" SLPIT LOCK WASHER
12	4	WAS-0260	3/8" WASHER
13	8	WAS-0262	3/8" SPLIT LOCK WASHER

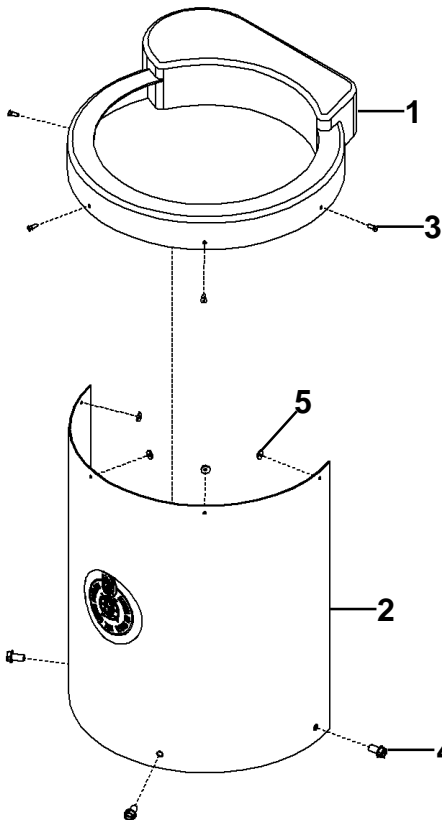


CWO-3534 SLIDE BAR ASSEMBLY / EXPLODED VIEW / PARTS LIST



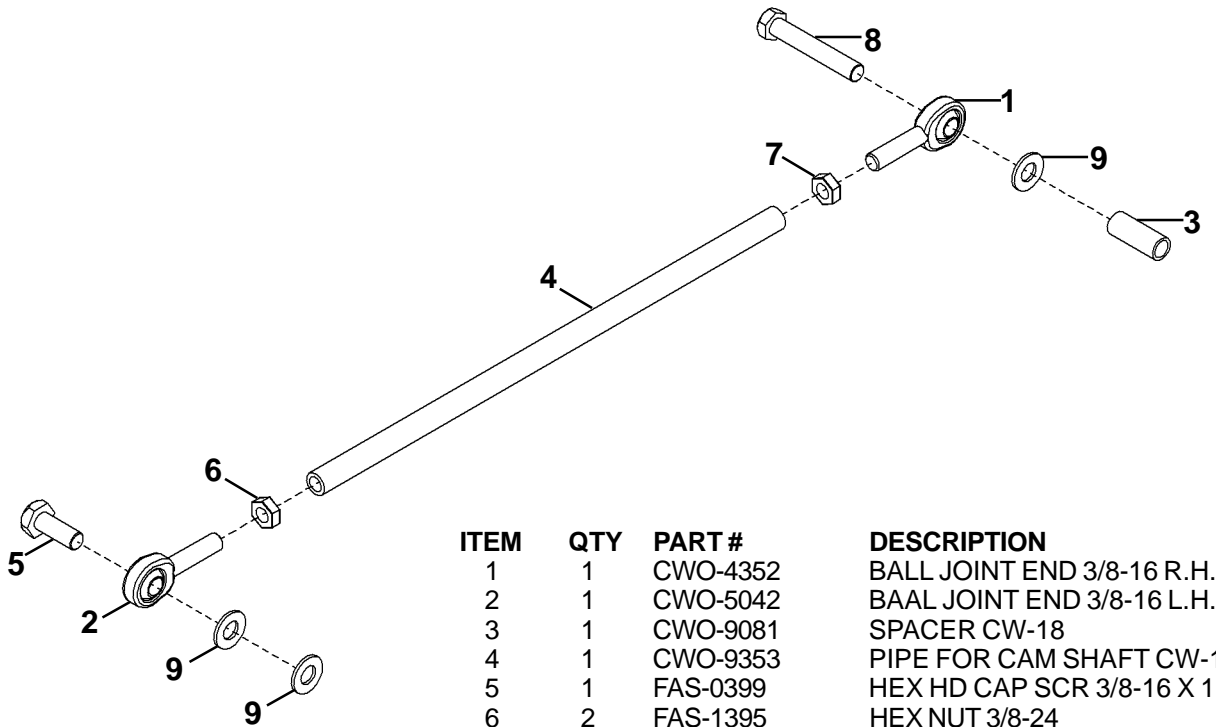
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-3912	SLIDE BAR ASSEMBLY
2	2	CWO-9033	TOP/BOTTOM VERTICAL SLIDE PLATE
3	2	FAS-0399	HEX HD CAP SCR 3/8-16 X 1"
4	4	FAS-2372	HEX HD CAP SCR 5/16-18 X 1-1/4"
5	4	WAS-0251	5/16" SPLIT LOCKWASHER
6	2	WAS-0262	3/8" SPLIT LOCKWASHER

CWO-3537 GUARD ASSEMBLY CW-18 / EXPLODED VIEW / PARTS LIST



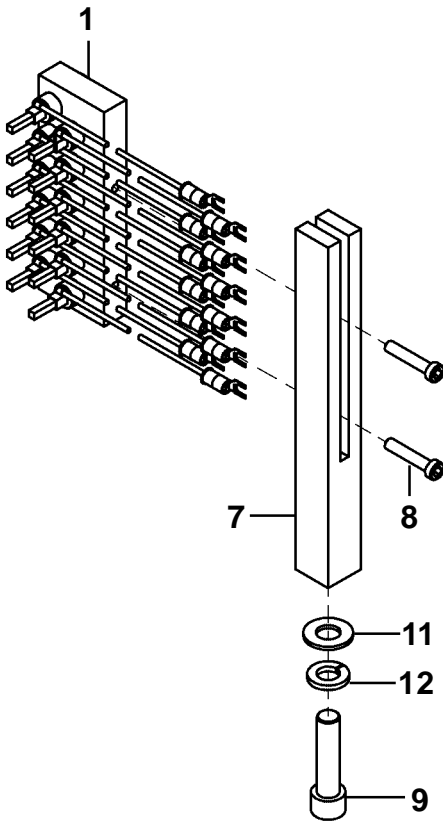
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-5094	UPPER GUARD CB-2, CB-3, CW-7, CW-18
2	1	CWO-9142	LOWER GUARD CW-18
3	4	FAS-1376	RIVET 1/8" DIA X 3/8"
4	3	FAS-1455	T.C. SLT HEX 1/4-20 X 1/4" W/WASHER
5	4	FAS-0261	3/8" WASHER / .056 THK

CWO-3538 CW-18 CAMSHAFT & SPACER ASSEMBLY / EXPLODED VIEW / PARTS LIST



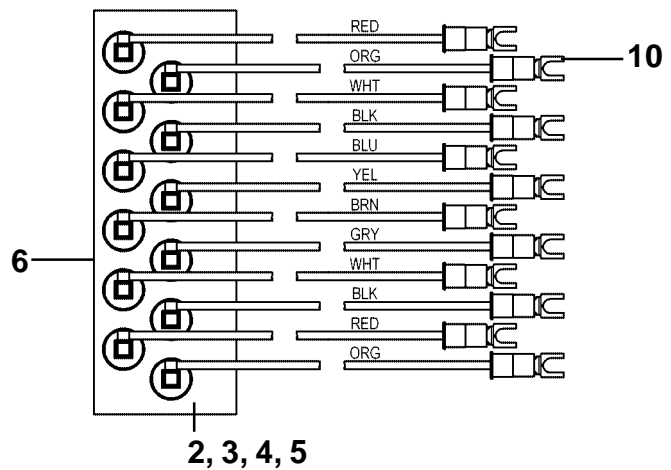
ITEM	QTY	PART #	DESCRIPTION
1	1	CWO-4352	BALL JOINT END 3/8-16 R.H.
2	1	CWO-5042	BAAL JOINT END 3/8-16 L.H.
3	1	CWO-9081	SPACER CW-18
4	1	CWO-9353	PIPE FOR CAM SHAFT CW-18
5	1	FAS-0399	HEX HD CAP SCR 3/8-16 X 1"
6	2	FAS-1395	HEX NUT 3/8-24
7	1	FAS-1396	HEX NUT 3/8-24 LH
8	1	FAS-2396	HEX HD CAP SCR 3/8-16 X 2-1/4"
9	3	WAS-0260	3/8" SAE WASHER

CWO-3931 SMALL BRUSH ASSEMBLY / EXPLODED VIEW / PARTS LIST

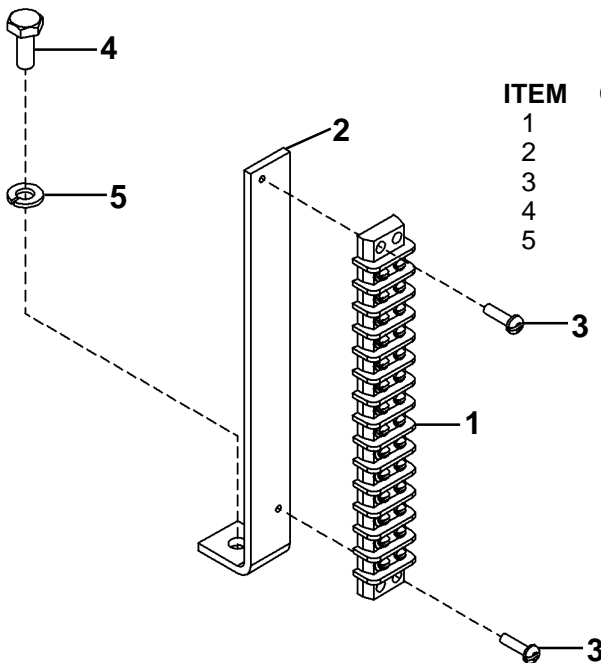


ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-3947	12 POSITION SMALL BRUSH ASSY
2	12	CWO-5831	1/8" X 1/8" Z 1/8" BRUSH
3	12	CWO-5874	1/8" BRUSH HOLDER
4	12	CWO-5875	CAP
5	12	CWO-5876	CLIP
6	1	CWO-9067	SMALL BRUSH RETAINER BLOCK, CW-18
7	1	CWO-9082	RETAINER SUPPORT
8	2	FAS-0359	SOC HD CAP SCR 10-24 X 1"
9	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-3931 SMALL RETAINER BLOCK ASSEMBLY / DETAIL VIEW



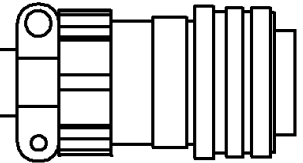
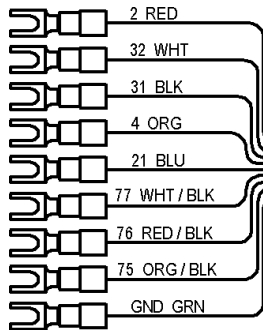
CWO-3969 TERMINAL BLOCK ASSEMBLY / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	CWO-6726	TERMINAL BLOCK 14-PIN
2	1	CWO-9071	TERMINAL BLOCK SUPPORT CW-18
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

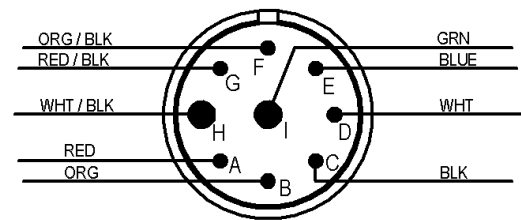
CWO-3971 CONTROL CABLE / DETAIL VIEW / PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	600"	900-4-016	16/10 SO CABLE
2	1	BUG-5552-B	CABLE CLAMP
3	1	BUG-6069-P	CABLE CONNECTOR 9-T, F
4	9	TERM-WTE-0602	#6 FORK, BLUE



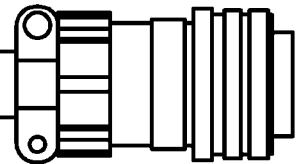
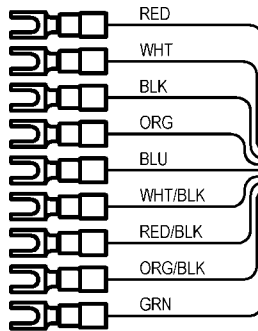
WIRE CHART

WIRE COLOR	DESCRIPTION
2 RED	CONTACTOR
4 ORG	CONTACTOR
32 WHT	110 VAC
31 BLK	110 VAC
21 BLU	REMOTE VOLTAGE
75 ORG / BLK	REMOTE VOLTAGE
76 RED / BLK	REMOTE VOLTAGE
77 WHT / BLK	REMOTE VOLTAGE
GRN	GROUND

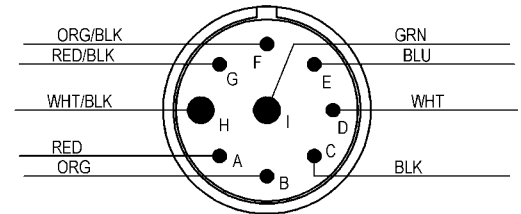


CWO-6069-P
END VIEW

CWO-2978 FEEDER CONTROL BOX CABLE / DETAIL VIEW / PARTS LIST

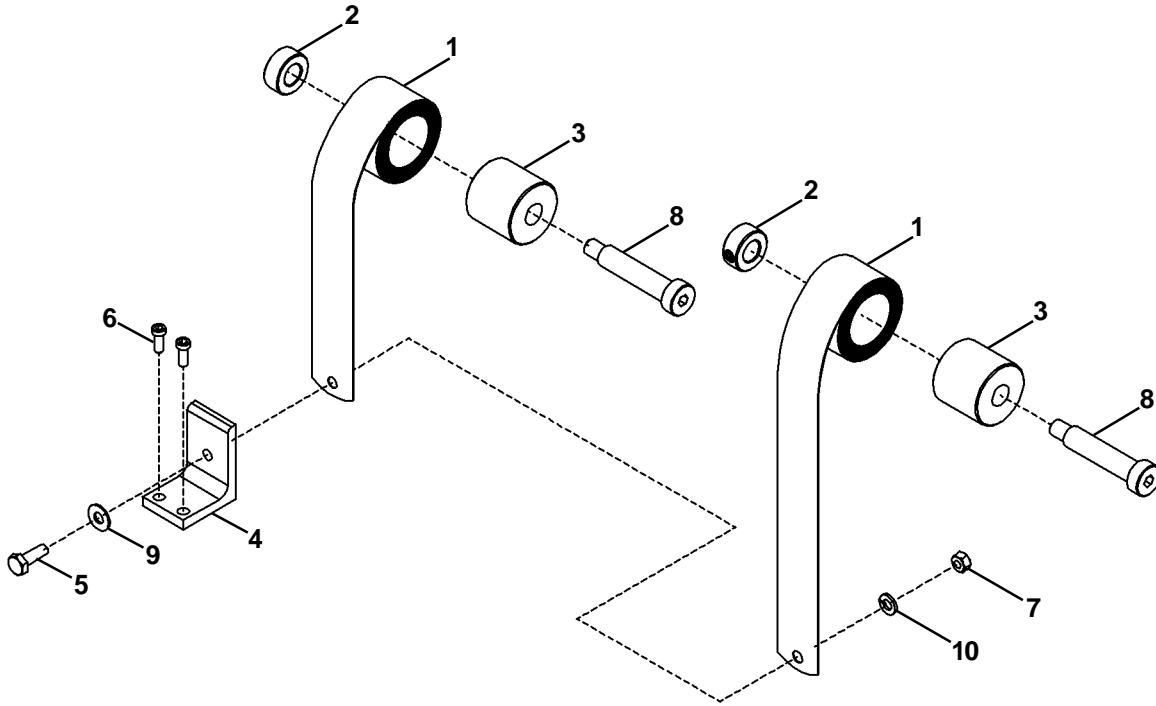


ITEM	QTY	PART NUMBER	DESCRIPTION
1	32"	900-4-016	16/10 SO CABLE
2	1	BUG-5552-B	CABLE CLAMP
3	1	BUG-6069-P	CABLE CONNECTOR 9-T, F
4	9	TERM-WTE-0602	#6 FORK, BLUE



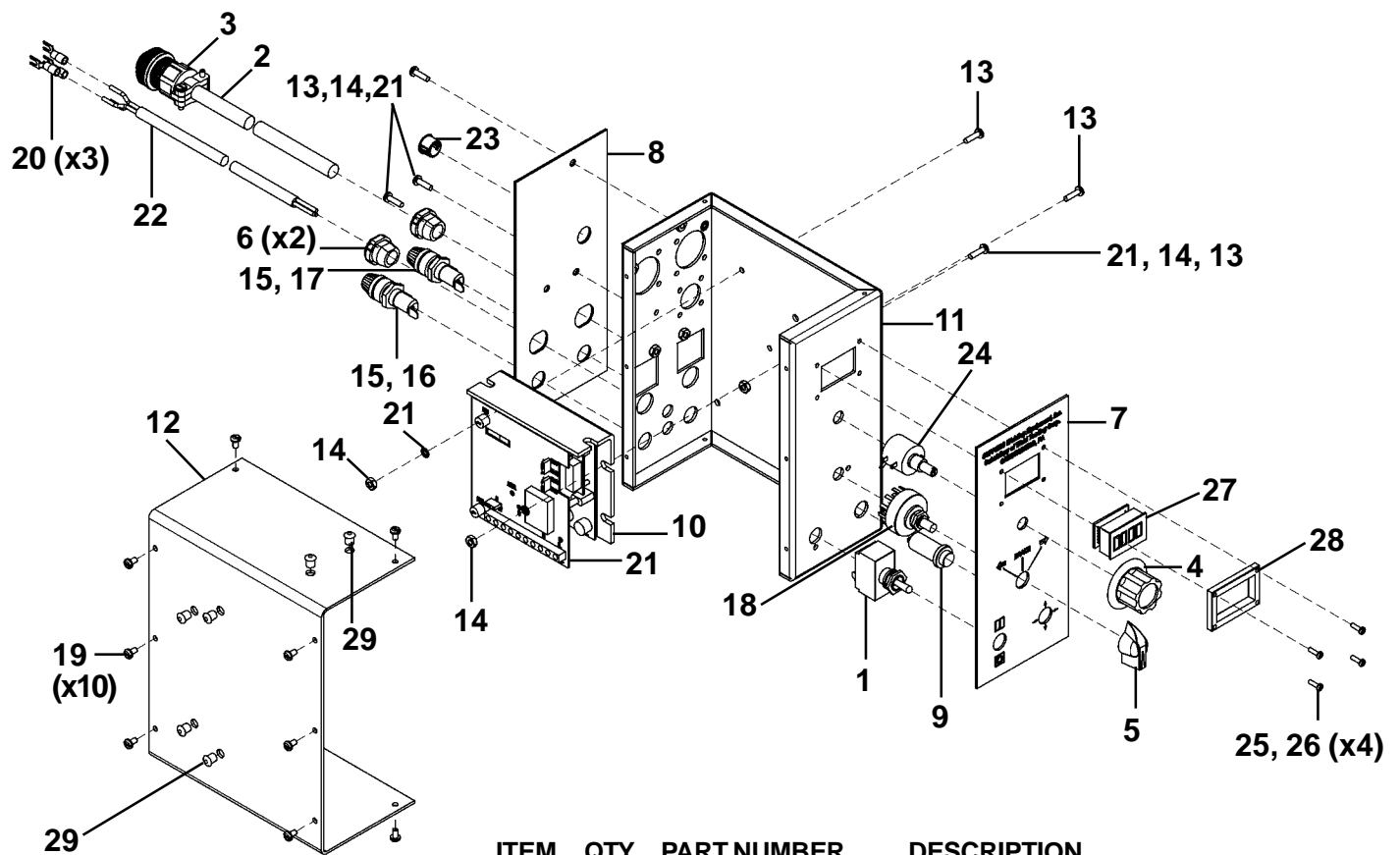
CWO-6069-P
END VIEW

CWO-3974 33# LOAD SPRING ASSEMBLY / EXPLODED VIEW / PARTS



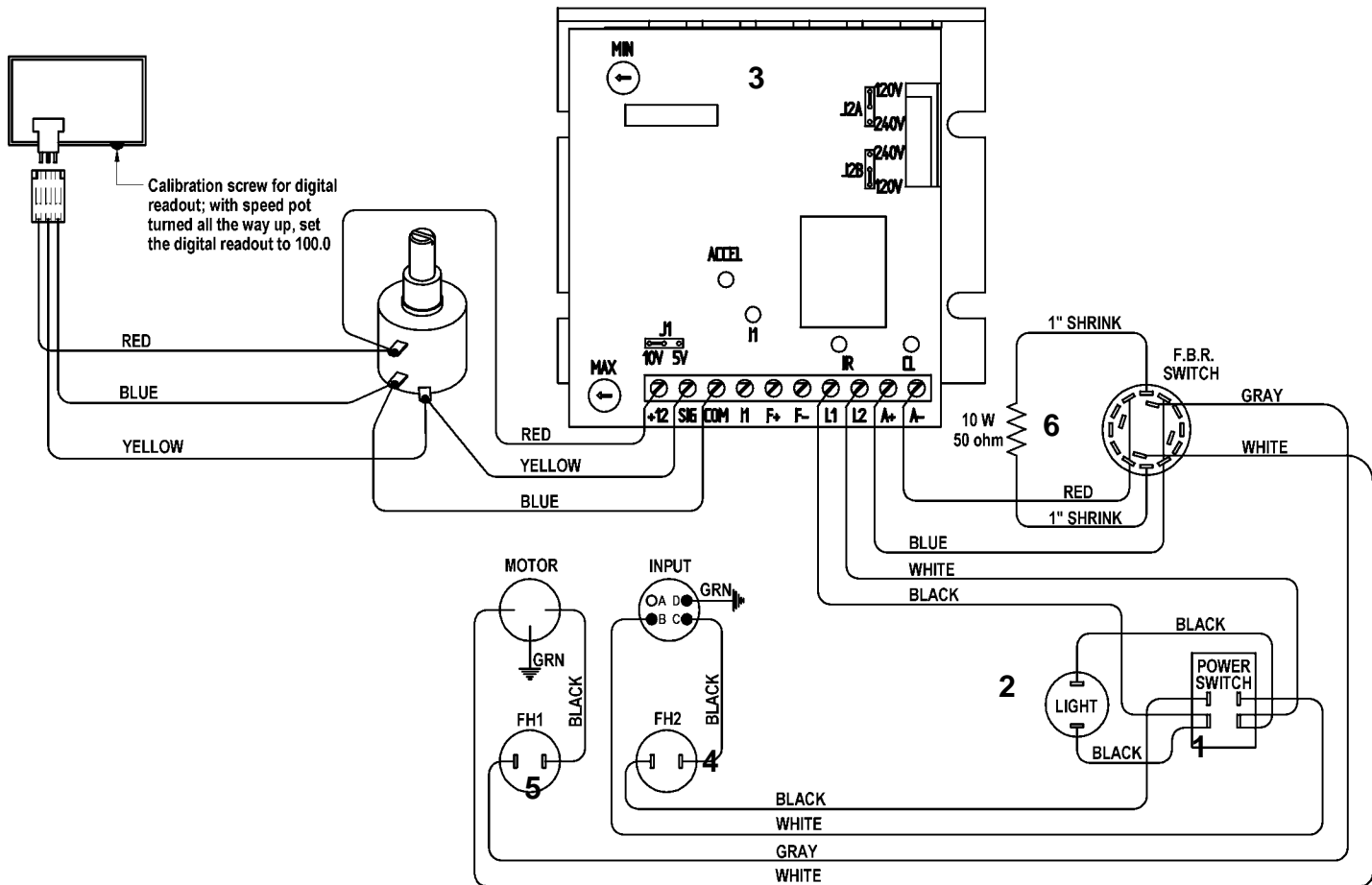
ITEM	QTY	PART #	DESCRIPTION
1	2	CWO-4074	SPRING 16.5#
2	2	CWO-5707	COLLAR W/ SET SCREW
3	2	CWO-5773	INSERT 1-1/2" OD
4	1	CWO-9230	SPRING RETAINER ANGLE
5	1	FAS-0357	HEX HD CAP SCR 1/4-20 X 3/4"
6	2	FAS-0555	SOC HD CAP SCR 1/4-20 X 1/2"
7	1	FAS-1351	HEX NUT 1/4-20
8	2	FAS-2697	SOC HD SHR 1/2 X 2 X 3/8-16
9	1	WAS-0240	1/2 SAE WASHER
10	1	WAS-0243	1/4" SPLIT LOCK WASHER

CWO-6210-CW18 ROTATION CONTROL / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	ARM-2279	Toggle Switch
2	1	BUG-9445	Power Cord
3	1	CON-PS04M	Plug, Straight 4-Pin Male
4	1	BUG-9687	Knob Fluted
5	1	BUG-9694	Knob
6	2	CSR-WTE-1597	Cord Strain Relief
7	1	CWO-6216	Rotation Box Front Panel
8	1	CWO-5547B	Rotation Box Rear Panel
9	1	CWO-6206	Indicator Light
10	1	CWO-6527	0-90V Spd Ctrl W.Isolator
11	1	CWO-6839	Rotation Control Case
12	1	CWO-6802	Rotation Box Cover
13	6	FAS-0115	#6-32 x 1/2" Pan Head Zinc
14	6	FAS-1310	Hex Nut 6-32
15	2	FHO-0188	Fuse Holder
16	1	FUS-0190	Fuse 1.5 Amp
17	1	FUS-0257	Fuse 3 Amp
18	1	MUG-1258-1	Rotary Switch Assembly
19	10	SCW-WTE-0264	#6-32 x 1/4" Sht Mt Scr
20	3	TERM-WTE-0197	#6 Red Fork
21	6	WAS-0211	#6 Internal Star Washer
22	42"	WRE-WTE-0501	18/3 SJO 300V Cord
23	1	MUG-1589	Hole Plug .500"
24	1	BUG-1562	Multi-turn Potentiometer
25	4	FAS-0401	#4-40 X 3/8" Pan Hd
26	4	SCF-1001	#4-40 Self Clinching Nut
27	1	BUG-1764	Meter Display Board
28	1	MDS-1011	Display Bezel
29	6	BUG-3331	Hole Plug 1/4"

CWO-6210-CW18 ROTATION CONTROL / WIRING DIAGRAM / ELECTRICAL COMPONENT CHART

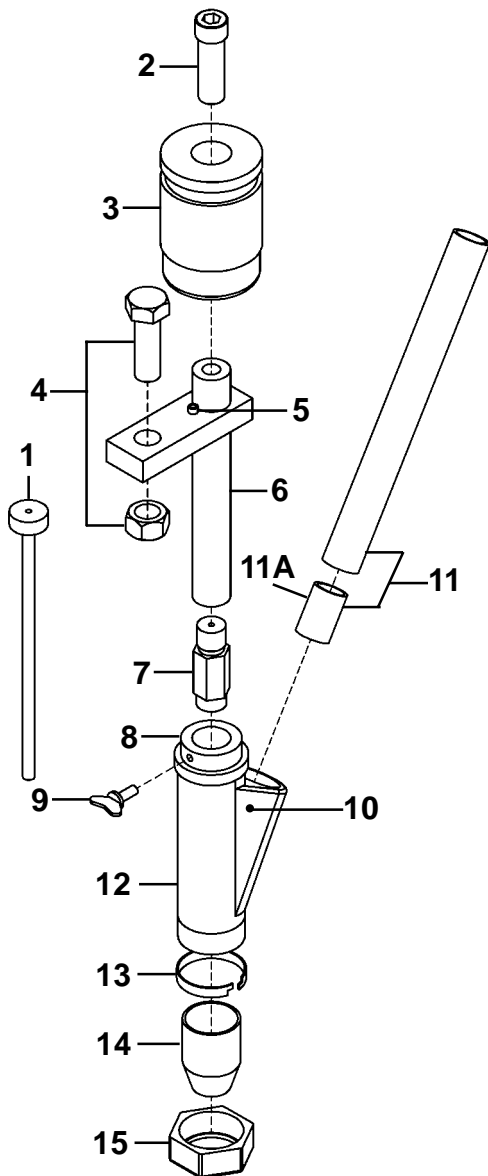


--- = INDICATES ITEMS THAT ARE SUPPLIED TOGETHER.

ELECTRICAL COMPONENT CHART

ITEM	DESCRIPTION	PART NUMBER
1	Toggle Switch	ARM-2279
2	Red Neon Lamp	CWO-6206
3	Speed Control Board w/Resistor	CWO-6525
4	Fuse 1.5 amp	FUS-0190
5	Fuse 3 amp	FUS-0257
6	Rotary Switch	MUG-1258-1

CWO-3690-_ K231 SUB ARC GUN



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	HEX HD SCR 1 1/2" & NUT 1/2"-13
5	1	PXT-9967-10	NOZZLE BODY ROLL PIN
6	1	CWO-8052	NOZZLE BODY
7	1	PXS-10125_	CONTACT TIP (SPECIFY WIRE SIZE)
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 ASSEMBLY
13	1	BUG-3163	LOCKING FERRULE
14	1	BUG-3164	FLUX CONE (KP2085-1)
15	1	BUG-3165	RETAINING NUT

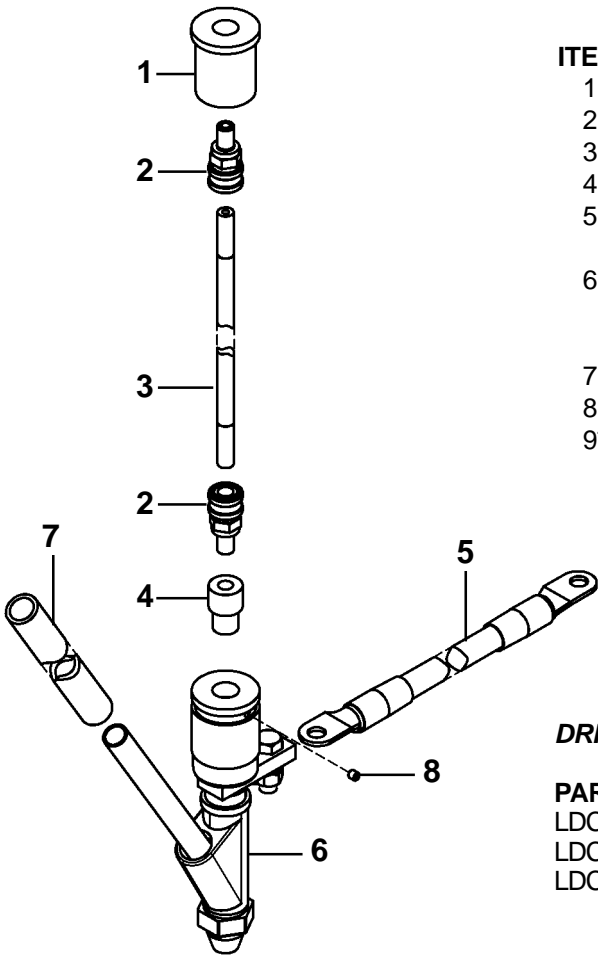
*WIRE SIZES AVAILABLE:

PART #	WIRE SIZE
CWO-3690-1/16	1/16" (1.6 mm)
CWO-3690-5/64	5/64" (2.0 mm)
CWO-3690-3/32	3/32" (2.4 mm)
CWO-3690-1/8	1/8" (3.2 mm)
CWO-3690-5/32	5/32" (4.0 mm)
CWO-3690-3/16	3/16" (4.8 mm)
CWO-3690-7/32	7/32" (5.6 mm)

*REPLACEMENT CONTACT TIPS AVAILABLE:

PART #	WIRE SIZE
CWO-8048	5/64" (2.0 mm)
CWO-8049	3/32" (2.4 mm)
CWO-8050	5/32" (4.0 mm)
CWO-8051	1/8" (3.2 mm)
PXS-10125XL-7/64	7/64" (2.8 mm)
PXS-10125XL-1/16	1/16" (1.6 mm)
PXS-10125XL-3/16	3/16" (4.8 mm)
PXS-10125XL-7/32	7/32" (5.6 mm)

CWO-3710- SUB ARC GUN ASSEMBLY



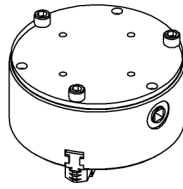
ITEM	QTY	PART #	DESCRIPTION
1	1	CWO-1816	WIRE FEED ADAPTOR
2	2	CWO-1817	BULK HEAD CONNECTOR QCB
3	1	CWO-3697	QCC 72" (1829 mm) LINER
4	1	CWO-3695-1/2	ADAPTOR K231 1/2"
5	1	CWO-3970-72	WELD CABLE 4/0 ASSY 72" (1829 mm) LG
6	1	CWO-3690-1/8	SUB-ARC NOZZLE 1/8"
	1	CWO-3690-3/16	SUB-ARC NOZZLE 3/16"
	1	CWO-3690-5/32	SUB-ARC NOZZLE 5/32"
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.

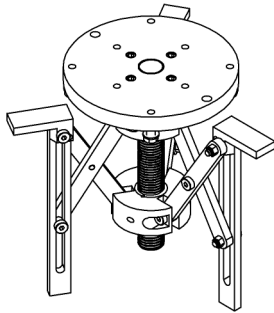
DRIVE ROLLS

PART #	DESCRIPTION	QTY
LDC-0013	3/32"-7/32" (2.4-5.6 mm) WIRE SIZES	2
LDC-0014	1/16"-3/32 (1.6-2.4 mm) WIRE SIZES	2
LDC-0015	.035"-.052" (.9-1.3 mm) SOLID WIRE	1

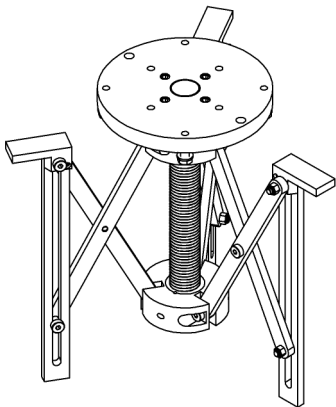
3-JAW EXPANDABLE CHUCKS



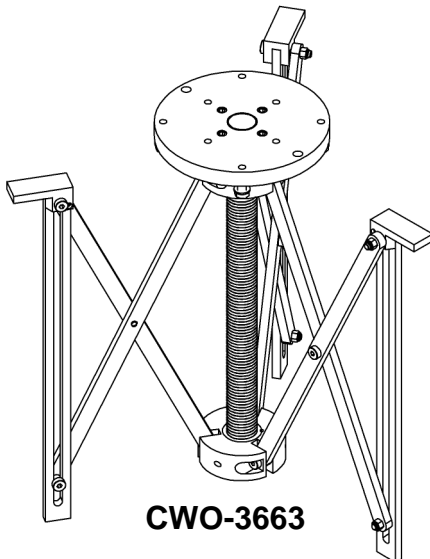
CWO-3660



CWO-3661



CWO-3662

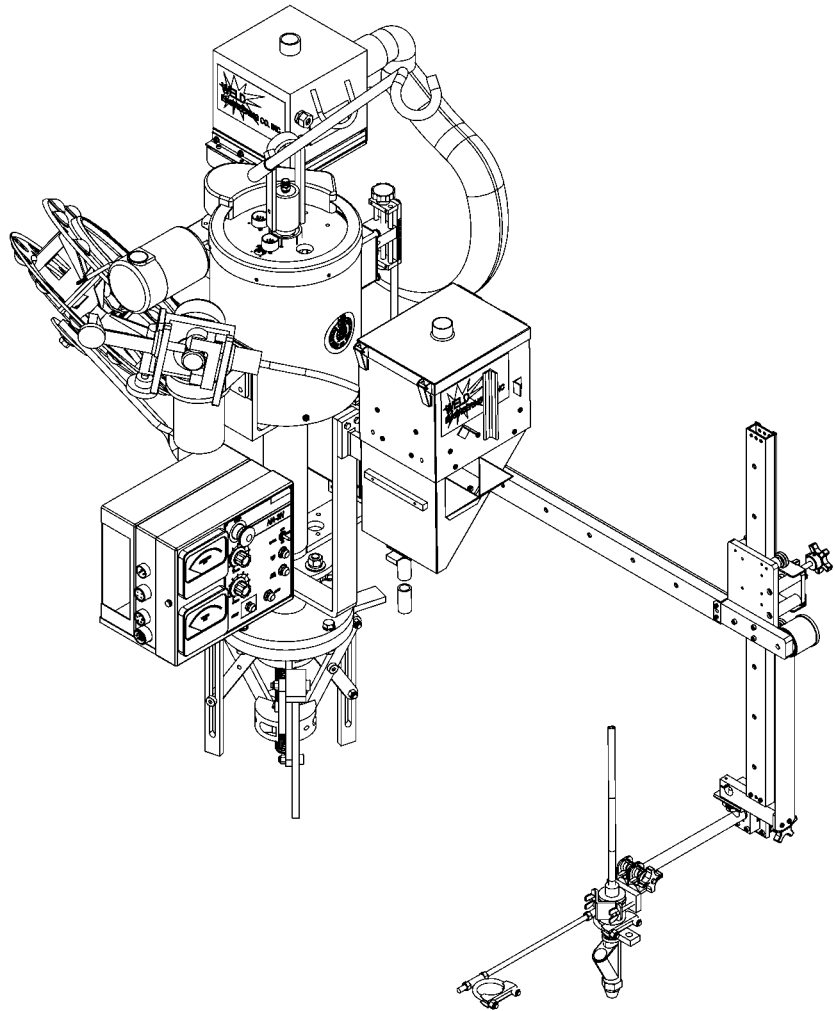


CWO-3663

3-Jaw Expandable Chucks

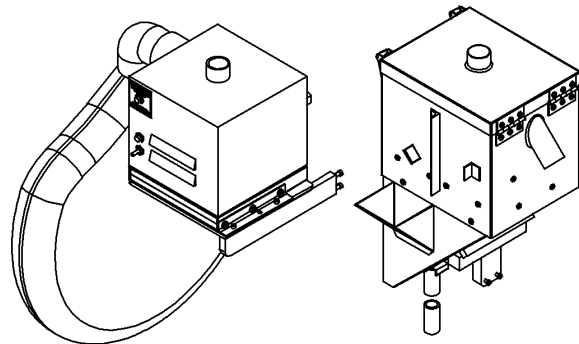
Mounts and automatically centers the Circle Welder on nozzles with or without flanges. As shown below.

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)



Options:

CWO-2020 Flux Recovery System



PREVENTIVE MAINTENANCE / CW-18 CIRCLE WELDER

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.

AFTER DAILY USE:

Refer to CW-18 Exploded View Parts List. (Pg. 12)

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 #23:

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 CW-18 Electrical Component Chart. (Pg. 14)

NA-3 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.

CW-18 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 #31 on the CW-18 Exploded View Parts List.

EVERY SIX MONTHS:

Refer to CW-18 Exploded View Parts List. (Pg. 12)

Aluminum Gear Item #31:

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 #19:

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 #31 and the motor drive pinion.

7" Cam Assembly Item #11:

Inspect the slide rails and the cam pinion. Remove all dirt, grease and weld spatter. Do not grease slide rails or cam pinion. Lubricate with a dry teflon or graphite spray lubricant. Replace cam pinion if excessively worn. Tighten all fasteners as needed.

Wire Reel Assembly Item #18:

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

PREVENTIVE MAINTENANCE / CW-18 CIRCLE WELDER, CONT'D.

Refer to CW-18 Electrical Component Chart. (Pg. 14)

NA-3 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 NA-3 Wire Feeder Control electrical component chart for replacement parts or return for service.

M-14 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 CWO-6210-CW18 Rotation Control electrical component chart for replacement parts or return or service.

NA-3 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. If brushes are pitted they will need replaced. 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.

EVERY TWELVE MONTHS:

Refer to CW-18 Exploded View Parts List. (Pg. 12)

1-1/2" Bearing With Fasteners Item #20:

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 #19:

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

NA-3 Wire Feeder Assembly Item #22:

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.

Transmission 5:1 Assembly Item #15:

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

PREVENTIVE MAINTENANCE / CW-18 CIRCLE WELDER, CONT'D.

Refer to CW-18 Electrical Component Chart. (Pg. 14)

CW-18 Collector Item #3:

The collector ring should be sanded once a year. If the collector ring is pitted too 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.

NA-3 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, 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 Systems 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.

NOTES: