

INSTRUCTIONS AND PARTS MANUAL

STW-2000 PROGRAMMABLE STIFFENER WELDER

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Model Number _____

Serial Number _____

Date of Purchase _____

Whenever you request replacement parts or information on this equipment, always supply the information you have recorded above.

LIT-STW-2000-IPM-1216

Bug-O Systems is guided by honesty, integrity and ethics in service to our customers and in all we do.



B U G - O S Y S T E M S

A DIVISION OF WELD TOOLING CORPORATION



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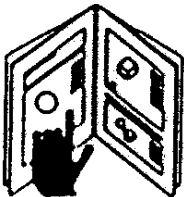
SAFETY

PROTECT YOURSELF AND OTHERS FROM SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.



ELECTRIC SHOCK can kill.

- 1) The equipment is not waterproof. Using the unit in a wet environment may result in serious injury. Do not touch equipment when wet or standing in a wet location.
- 2) The unused connectors have power on them. Always keep the unused connectors covered with the supplied protective panels. Operation of the machine without the protective panels may result in injury.
- 3) Never open the equipment without first unplugging the power cord or serious injury may result.
- 4) Verify the customer-supplied power connections are made in accordance with all applicable local and national electrical safety codes. If none exist, use International Electric Code (IEC) 950.
- 5) Never remove or bypass the equipment power cord ground. Verify the equipment is grounded in accordance with all applicable local and national electrical safety codes. If none exist, use International Electric Code (IEC) 950.



READ INSTRUCTIONS.

Read the instruction manual before installing and using the equipment.



EQUIPMENT DAMAGE POSSIBLE.

- 1) Do not plug in the power cord without first verifying the equipment is OFF and the cord input voltage is the same as required by the machine or serious damage may result.
- 2) Always verify both the pinion and wheels are fully engaged before applying power or equipment damage may occur.
- 3) Do not leave the equipment unattended.
- 4) Remove from the 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.

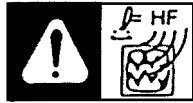


MOVING PARTS can cause serious injury.

- 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.

STW-2000

PROGRAMMABLE STIFFENER WELDER

INSTRUCTIONS AND PARTS MANUAL

TABLE OF CONTENTS

- 5**... Introduction / Setup & Operation
- 6**... Controls (Main)
- 7**... Controls (Programming Center)
- 9**... Technical Data / Dimensions
- 10**.. STW-2000 Stiffener Welder / Major Components / Exploded View
- 11**... STW-2000 Stiffener Welder / Parts List
- 12**... Wiring Detail / Left Wire Feeder Control
- 13**... Wiring Detail / Right Wire Feeder Control
- 14**... Wiring Detail / Motion and Solenoid Control
- 15**... Wiring Detail A-A / Electrical Component Chart
- 16**... STW-2080 Wire Feeder / Exploded View / Parts List
- 17**... STW-2140-L Corner Follower Left / Exploded View / Parts List
- 18**... STW-2140-R Corner Follower Right/ Exploded View / Parts List
- 19**... STW-2150-L Gun Hinge Left / Exploded View / Parts List
- 20**... STW-2150-R Gun Hinge Right / Exploded View / Parts List
- 21**... STW-2170-A Capture Wheel Assembly "A" / Exploded View / Parts List
- 22**... STW-2170-B Capture Wheel Assembly "B" / Exploded View / Parts List
- 23**... STW-2115 Drive Latch / Exploded View / Parts List
- 24**... STW-2060 Flow-Meter & Valve Assembly / Exploded View / Parts List
- 26**... STW-2120 Drive Unit Assembly / Exploded View
- 27**... STW-2120 Drive Unit Assembly / Parts List
- 28**... STW-2195 Spool Support Bracket / Exploded View / Parts List
- 29**... CSM-1100 500 AMP Air-Cooled Gun / Exploded View / Parts List
- 30**... CSM-3240-XX Gun & Cable Assembly / Parts List
- 31**... Accessories (Spools)
- 32**... Warranty

INTRODUCTION

The Programmable Stiffener Welder mechanizes two wire feeders to weld various types of stiffeners on one or both sides simultaneously. The unit features independent wire feeder controls for voltage, wire feed speed, cold wire jog and gas purge. When intermittent stitch welding is required the unit features programmable control of weld length and travel speed, skip length, reverse drive crater fill, pre-weld and post-weld gas purge times. Please see the Technical Data information in this manual for unit capacities.

SETUP & OPERATION

(Refer to the Controls Sections pg. 6, 7 and Major Components section pg. 10, 11 in this manual.)

1. Center the unit over the work piece. Connect welding cables and wire feeder control cables for each feeder to the welding power sources. Connect the welding gas hoses to each **Flow Meter/Valve Assembly**. Plug the unit into an available 110 VAC 50/60 Hz power source.
2. Turn power “**ON**” to both welding power sources. Turn power “**ON**” to the control panel by toggling the “**ON/OFF**” switch on the upper rear left hand side of the control box to the “**ON**” position. Turn “**ON**” power to both feeders by toggling the feeder “**ON/OFF**” switches located on the front lower left and right of the control box to the “**ON**” position.

NOTE: Ensure that the **Emergency Stop Switch** located on the top of the control box is in the released position or no power will be supplied to the unit.

3. Adjust the **Capture Wheel Assemblies** so that they contact the side of the work. Swing the **Drive Unit** into position against the work piece and engage the **Drive Latch** and tighten to ensure constant pressure on the work piece between the Drive Assembly, Work Piece and Capture Wheel Assemblies.

NOTE: Move the unit forward and reverse using the **Travel Manual Jog Switch** located on the front bottom center of the control box to ensure proper tension has been applied by the **Drive Latch** to move the unit smoothly along the work piece.

4. Align the left and right **Corner Followers** and welding guns for the desired weld placement. The **Corner Followers** can be adjusted up, down, in and out to achieve the placement you desire. The **Corner Followers** are also equipped with a gun angle adjustment knob to achieve the desired torch angle. Purge the shield gas to each welding gun by pressing the **Shield Gas Purge** button located on the left and right sides of the control panel for each **Flow Meter/Valve Assembly**.
5. Set all welding parameters. Each wire feeder’s wire speed and voltage are set independently from each other utilizing the controls to the left and right of the soft touch **Programming Center** located on the control panel. All other welding parameters are set using the soft touch **Programming Center**. Please refer to the controls section of the manual.
6. When you are ready to begin your weld cycle press the **Weld Cycle Start** button located on the control panel below the soft touch **Programming Center**. To stop the weld cycle press the **Weld Cycle Stop** button.

NOTE: In case of an emergency press the **Emergency Stop** switch located on the top of the control box to kill all power to the unit including the weld cycle. Once the **Emergency Stop** switch is returned to the released position you will need to press the **Cycle Start** button to resume your cycle.

CONTROLS (MAIN)

VOLTAGE CONTROL: Regulates welding voltage for the assigned feeder

WIRE SPEED CONTROL: Regulates the wire feed speed for the assigned feeder

WIRE JOG: Allows wire to be fed without closing the weld current contact

WIRE FEEDER POWER INDICATOR LIGHT: Illuminate when power is being supplied to the assigned wire feeder

WIRE FEEDER ON/OFF SWITCH: Allows operator to turn power on or off to the assigned wire feeder.

SHIELD GAS PURGE: Allows operator to activate shield gas solenoid to purge welding gun and check the gas rate on the units regulators

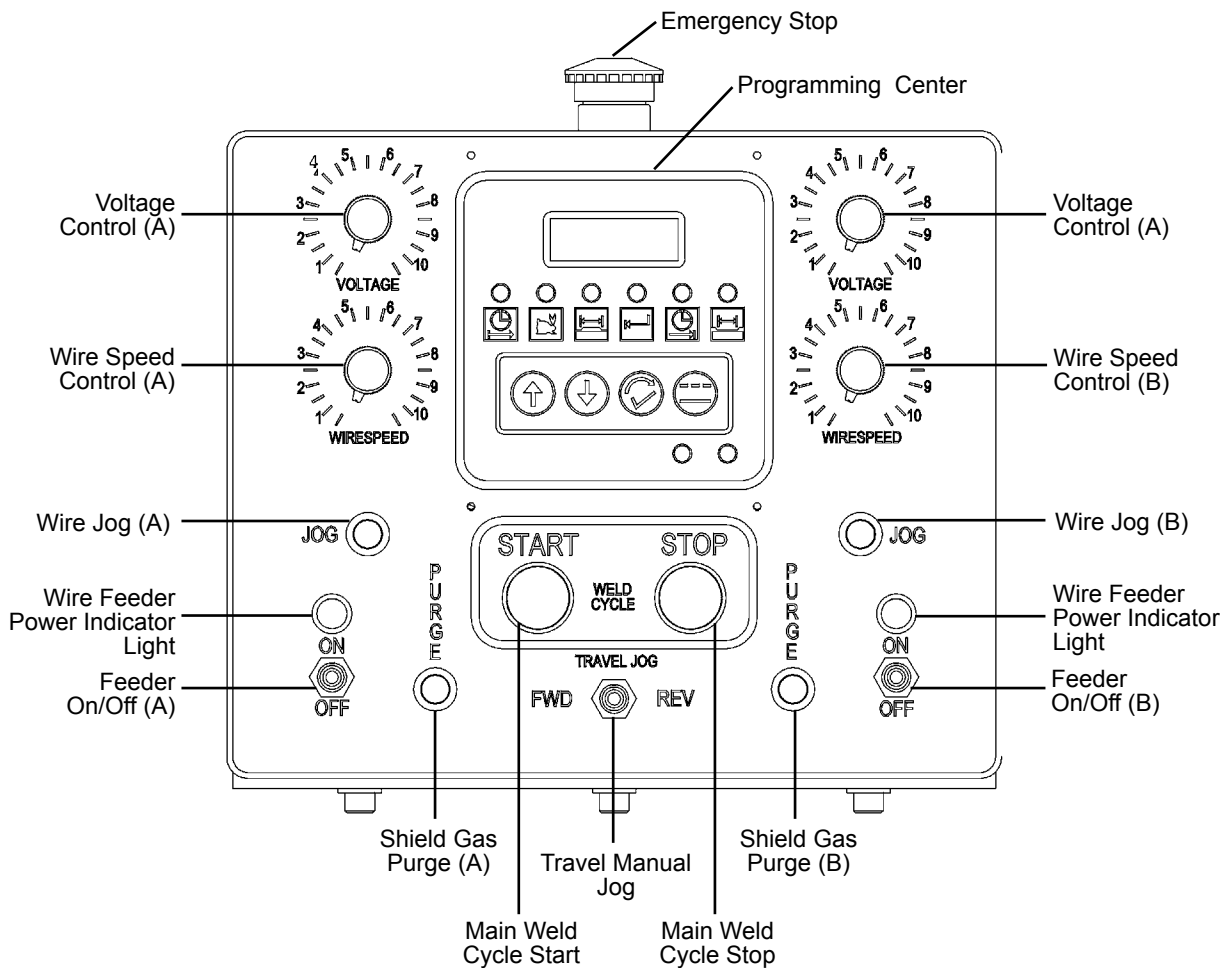
MAIN WELD CYCLE START: Initiates automated weld cycle

MAIN WELD CYCLE STOP: Halts automated weld cycle

TRAVEL MANUAL JOG: Allows operator to move the unit forward or backward without welding

EMERGENCY STOP: When pressed causes all functions to stop

PROGRAMMING CENTER: See controls for programming center pg. 7



CONTROLS (PROGRAMMING CENTER)

DIGITAL DISPLAY: Visual display to supply welding motion information to operator

GAS PREFLOW DELAY: Programmable time for gas to purge lines before weld start

TRAVEL SPEED: Speed at which the unit moves during welding

WELD LENGTH: Distance the unit travels forward while welding

BACKUP DISTANCE: Distance the unit travels in reverse after completed weld length

GAS POSTFLOW DELAY: Programmable time for gas to shield weld at arc stop

SKIP LENGTH: Distance between welds (Must include backup distance)

INCREASE VALUE: Pressing this button increases the value shown in the digital display

DECREASE VALUE: Pressing this button decreases the value shown in the digital display

FUNCTION SELECT: Allows the user to cycle through the welding programming functions

SKIP/CONTINUOUS MODE SELECT: Allows the user to select skip mode or continuous mode for the welding operation

SKIP INDICATOR LIGHT: When illuminated the machine will weld in skip mode

STRAIGHT LINE INDICATOR LIGHT: When illuminated the machine will weld in continuous mode

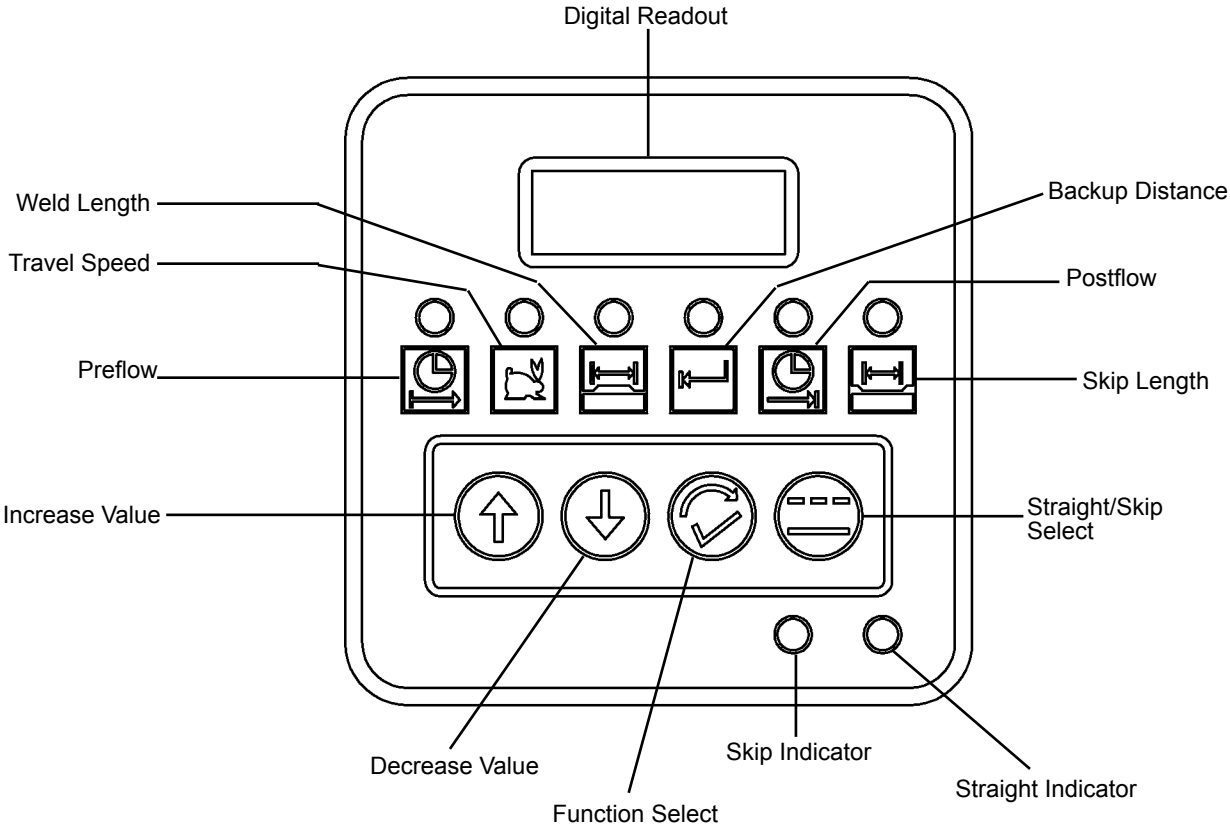
PUDDLE DELAY:

There are two internal settings in the Control Module that do not appear in the normal setting selection on the control panel keypad/display. These are time delays at weld start and stop, when the wire feed is on but travel is stopped, in order to allow for puddle buildup.

To set the time delays:

1. Power off, (power switch on back of control box)
2. Hold Cycle Stop button in, and turn power on.
3. Release Stop button. (LED No.1 and 3 should light; and the display shows the start puddle build time.)
4. Adjust delay time as required using UP and DOWN arrow buttons.
5. Briefly push Function Select (cycle settings) button. LED No. 3 and 5 should light, and display shows the end crater fill time.
6. Adjust delay time as required.
7. Push Function Select button again, then power off.
8. Power on to operate machine as usual, now with new settings in place.

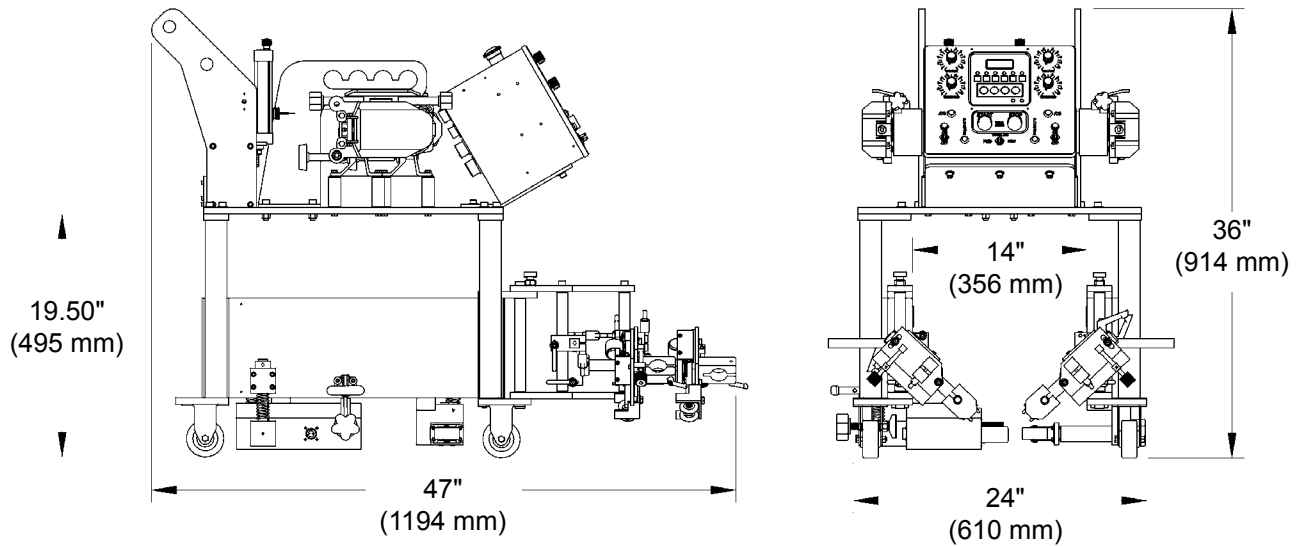
CONTROLS (PROGRAMMING CENTER CONT'D.)



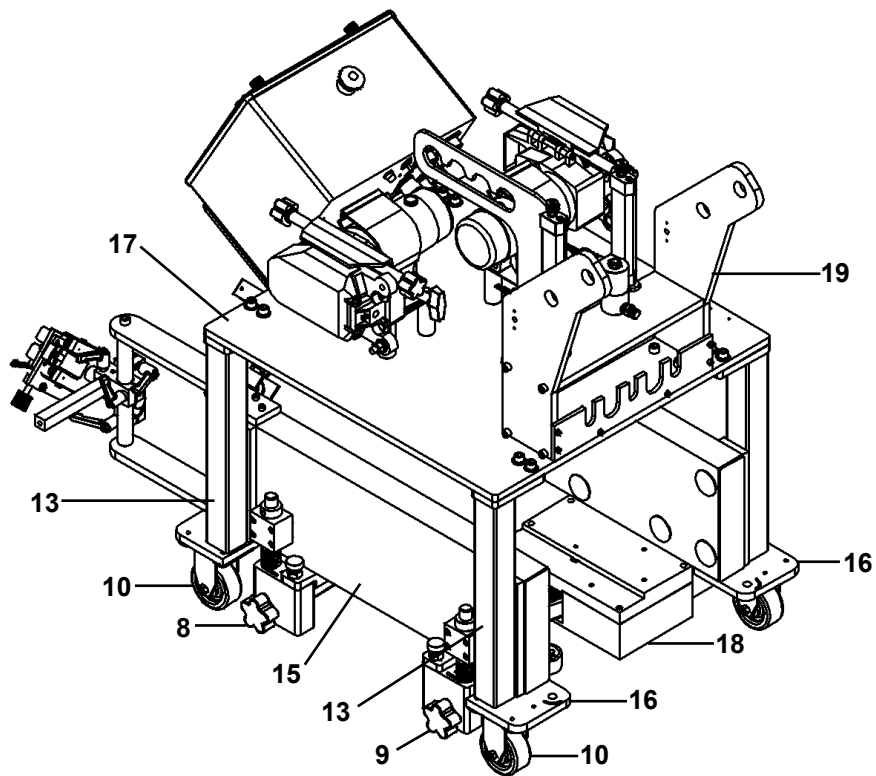
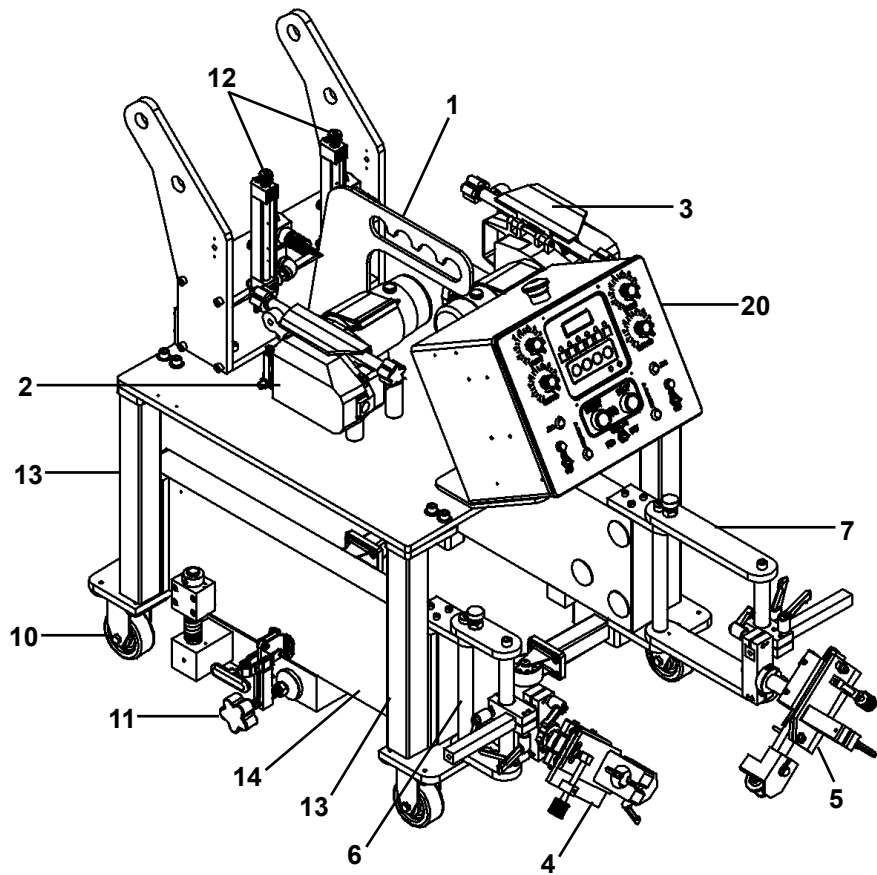
TECHNICAL DATA

Programmable Weld/Skip Travel Speed:	0"-36" ipm (0-914 mm/min)
Programmable Reverse Drive Crater Fill:	0"-1" (0-25 mm)
Programmable Pre-Weld/Post Weld Gas Purge:	0-10 seconds
Net Weight:	250 lbs. (113 kg)
Stiffener Size Range:	Height 4"-18" (102-457 mm) Width 4"-12" (102-305 mm)
Wire Spool Capacity:	10, 20, 60 lbs. each side

DIMENSIONS



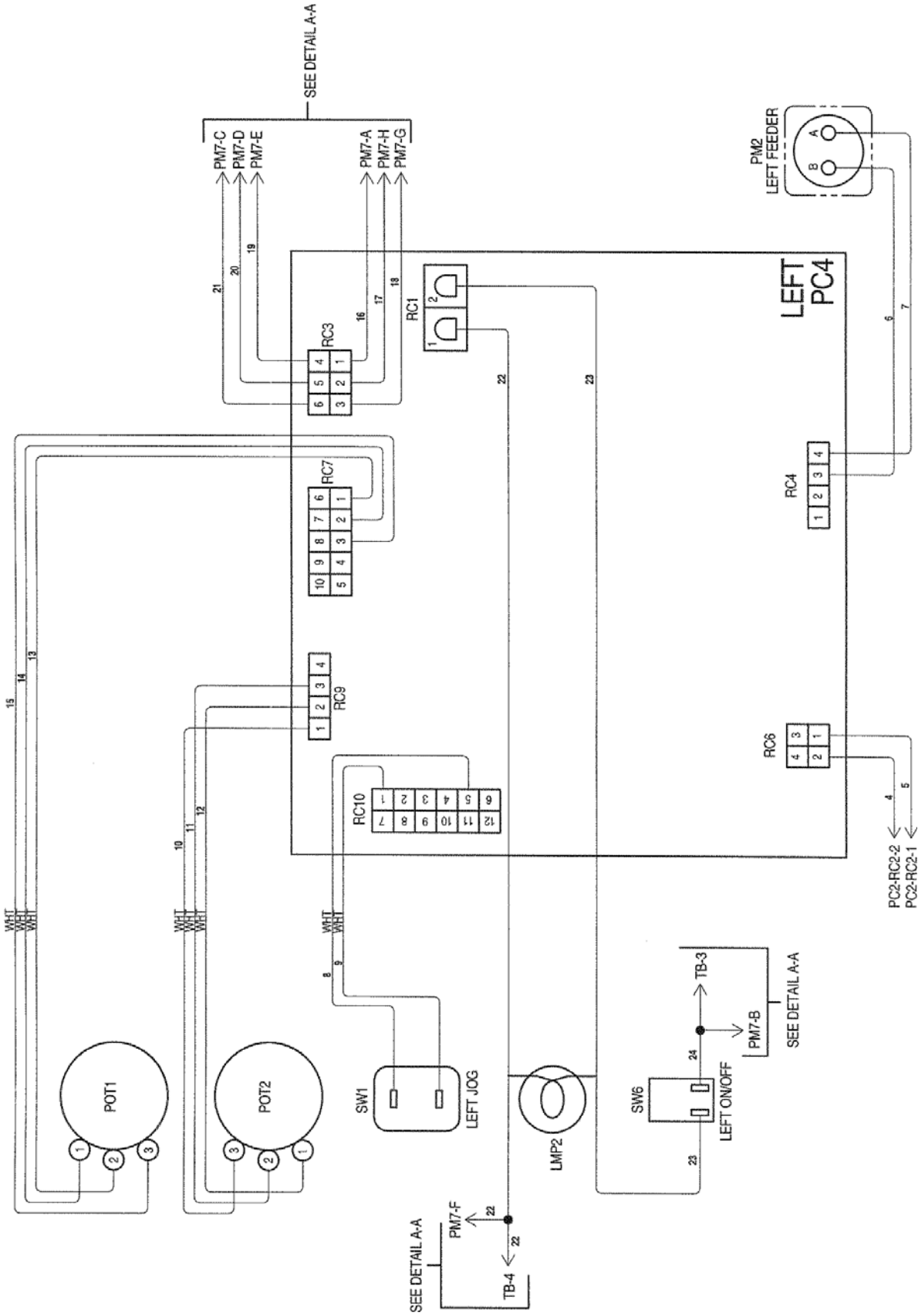
STW-2000 STIFFENER WELDER / MAJOR COMPONENTS



STW-2000 STIFFENER WELDER / PARTS LIST

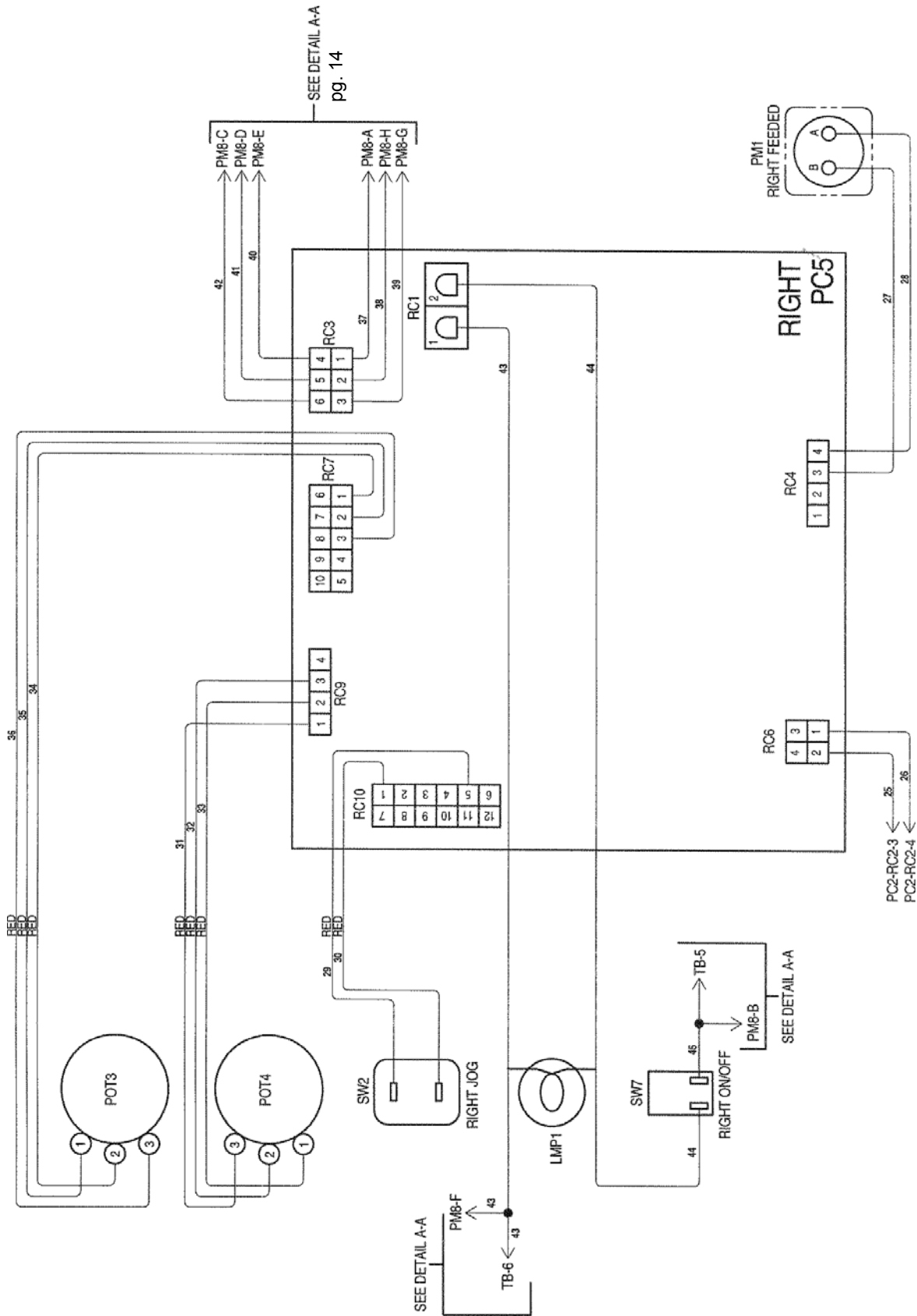
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	STW-2050	Lifting Lug
2	1	STW-2080-L	Wire Feeder (Miller) Left
3	1	STW-2080-R	Wire Feeder (Miller) Right
4	1	STW-2140-L	Corner Follower Left
5	1	STW-2140-R	Corner Follower Right
6	1	STW-2150-L	Gun Hinge Left
7	1	STW-2150-R	Gun Hinge Right
8	1	STW-2170-A	Capture Wheel Assembly "A"
9	1	STW-2170-B	Capture Wheel Assembly "B"
10	4	STW-2142	3" Phenolic Caster
11	1	STW-2115	Drive Latch
12	2	STW-2060	Flow Meter / Valve Assembly
13	4	STW-2190-18	Leg 18"
14	1	STW-2066	Left Leg Support
15	1	STW-2067	Right Leg Support
16	2	STW-2151	Wheel Mt. Plate
17	1	STW-2054	Deck Plate
18	1	STW-2120	Drive Unit
19	1	STW-2195	Spool Support Bracket
20	1	STW-2230	STW Control Box

WIRING DETAIL / LEFT WIRE FEEDER CONTROL



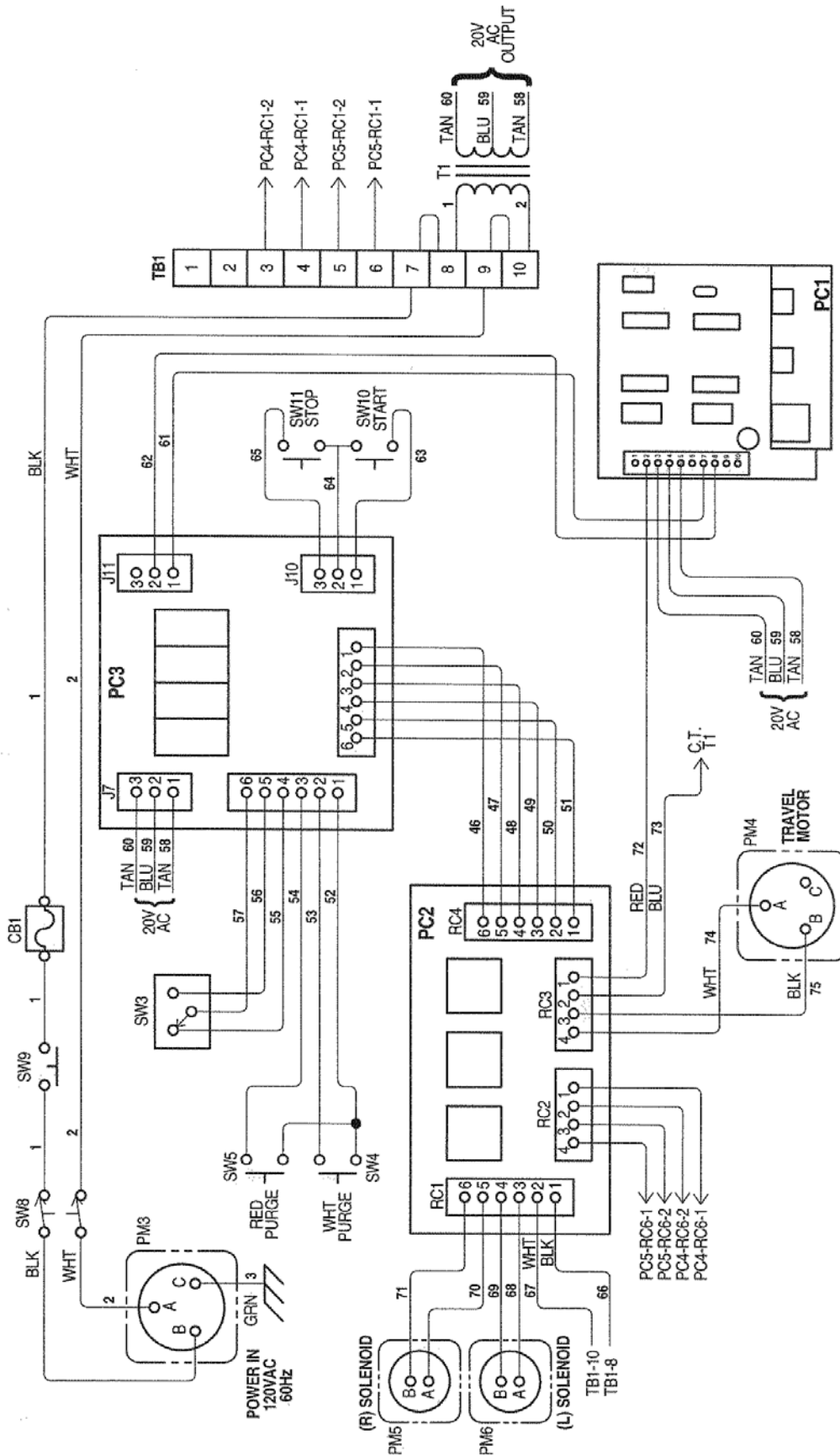
See Electrical Component Chart pg. 15

WIRING DETAIL / RIGHT WIRE FEEDER CONTROL



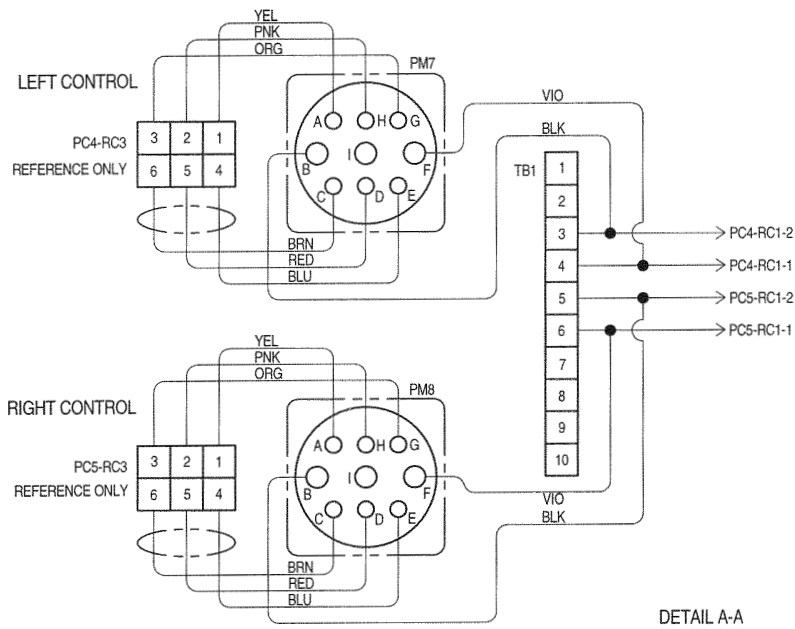
See Electrical Component Chart pg. 15

WIRING DETAIL / MOTION AND SOLENOID CONTROL



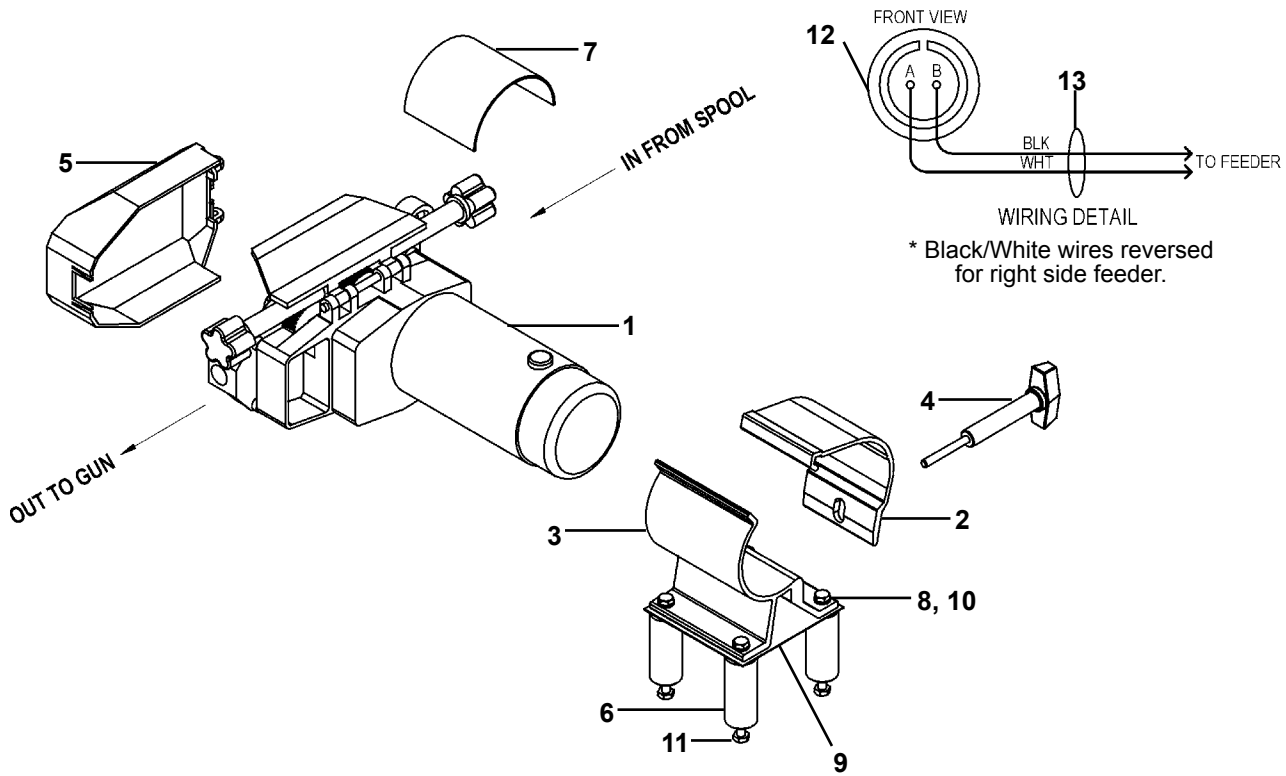
See Electrical Component Chart pg. 15

WIRING DETAIL A-A / ELECTRICAL COMPONENT CHART



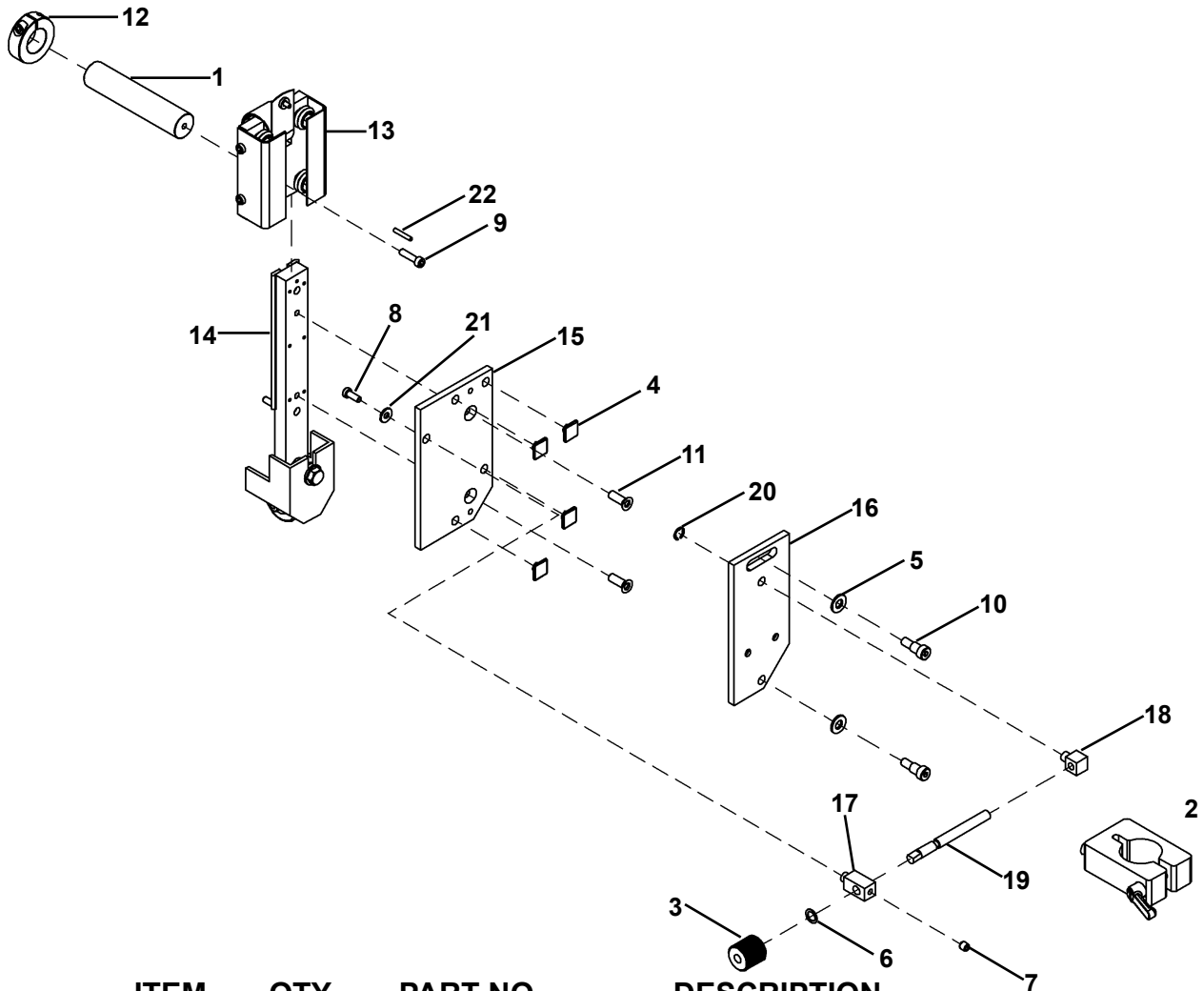
ELECTRICAL COMPONENT CHART		
ITEM	PART #	DESCRIPTION
CB1	BUG-2923	.7 AMP CIRCUIT BREAKER
LMP1	LAMP-1090	28 VAC, GREEN LIGHT
LMP2	LAMP-1090	28 VAC, GREEN LIGHT
PC1	BUG-1770	MOTOR CONTROL BOARD
PC2	PCB-2231	RELAY BOARD
PC3	STW-2235	CONTROL MODULE
PC4	PCB-204519	MOTOR CONTROL PCB W/PROGRAM
PC5	PCB-204519	MOTOR CONTROL PCB W/PROGRAM
PM1	BUG-9856	PANEL CONNECTOR, 2-T,F
PM2	BUG-9856	PANEL CONNECTOR, 2-T,F
PM3	CON-04RP03M	SHELL 16S, RECEPTACLE, PANEL
PM4	CON-04RP03M	SHELL 16S, RECEPTACLE, PANEL
PM5	CON-06RP04F	SHELL 18, RECEPTACLE, PANEL
PM6	CON-06RP04F	SHELL 18, RECEPTACLE, PANEL
PM7	CON-07RP09M	SHELL 20, RECEPTACLE, PANEL
PM8	CON-07RP09M	SHELL 20, RECEPTACLE, PANEL
SW1	ARM-2279	TOGGLE SWITCH, DPST, ON NONE ON
SW2	BUG-2255	TOGGLE SWITCH, DPDT, ON OFF ON
SW3	SWT-1111	NOR, OPEN PUSH BUTTON, BLACK
SW4	SWT-1111	NOR, OPEN PUSH BUTTON, BLACK
SW5	SWT-1111	NOR, OPEN PUSH BUTTON, BLACK
SW6	SWT-1111	NOR, OPEN PUSH BUTTON, BLACK
SW7	SWT-5225	TOGGLE SWITCH
SW8	SWT-5225	TOGGLE SWITCH
SW9	SWT-EPFH	ROUND MUSHROOM, LATCHINH, RED SWITCH
SW10	SWT-FPF3	ROUND, FLUSH, GREEN SWITCH
SW11	SWT-FPF4	ROUND, FLUSH, RED SWITCH
T1	BUG-9680	120 VAC DELAY TIMER RELAY
TB1	TMB-0261	10 POS, TERM. BLOCK 28-14 AWG

STW-2080 WIRE FEEDER / EXPLODED VIEW / PARTS LIST



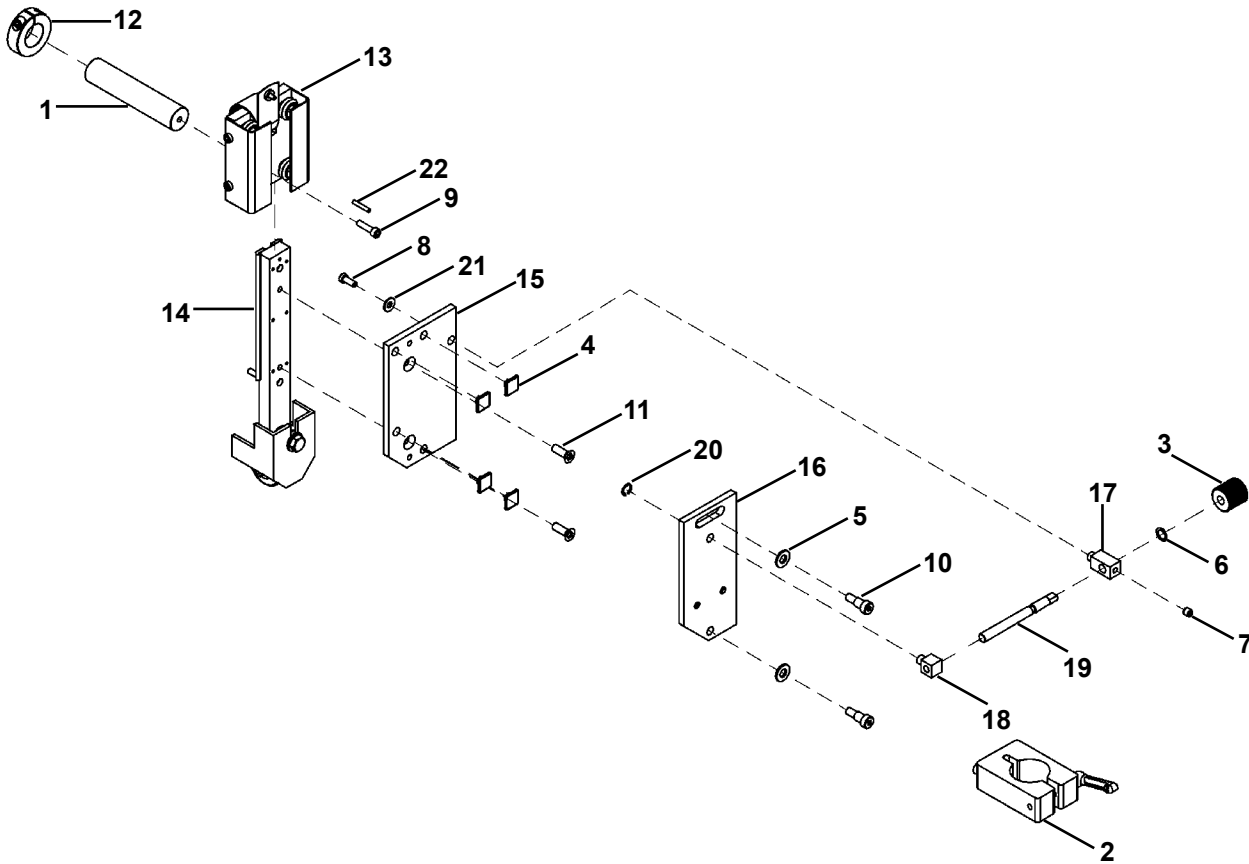
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	STW-2081	Drive Assembly
2	1	STW-2082	Clamp Motor Top
3	1	STW-2083	Clamp Motor Base
4	1	STW-2084	Knob w/ Extension
5	1	STW-2085	Cover, Drive Roll
6	4	STW-2086	Feeder Standoff
7	2	STW-2087	Strip, BUNA-N
8	4	STW-2088	Insulator, Screw
9	4	STW-2089	Insulator, Machine Clamp
10	4	FAS-0357	Hex Hd Cap Scr 1/4-20 x 3/4"
11	4	FAS-0359	Hex Hd Cap Scr 1/4-20 x 1"
12	1	BUG-9857	Plug, Straight, 2 PIN, Male
13	15"	900-4-001	18/2 SJO 300V Cable

STW-2140-L CORNER FOLLOWER LEFT / EXPLODED VIEW / PARTS LIST



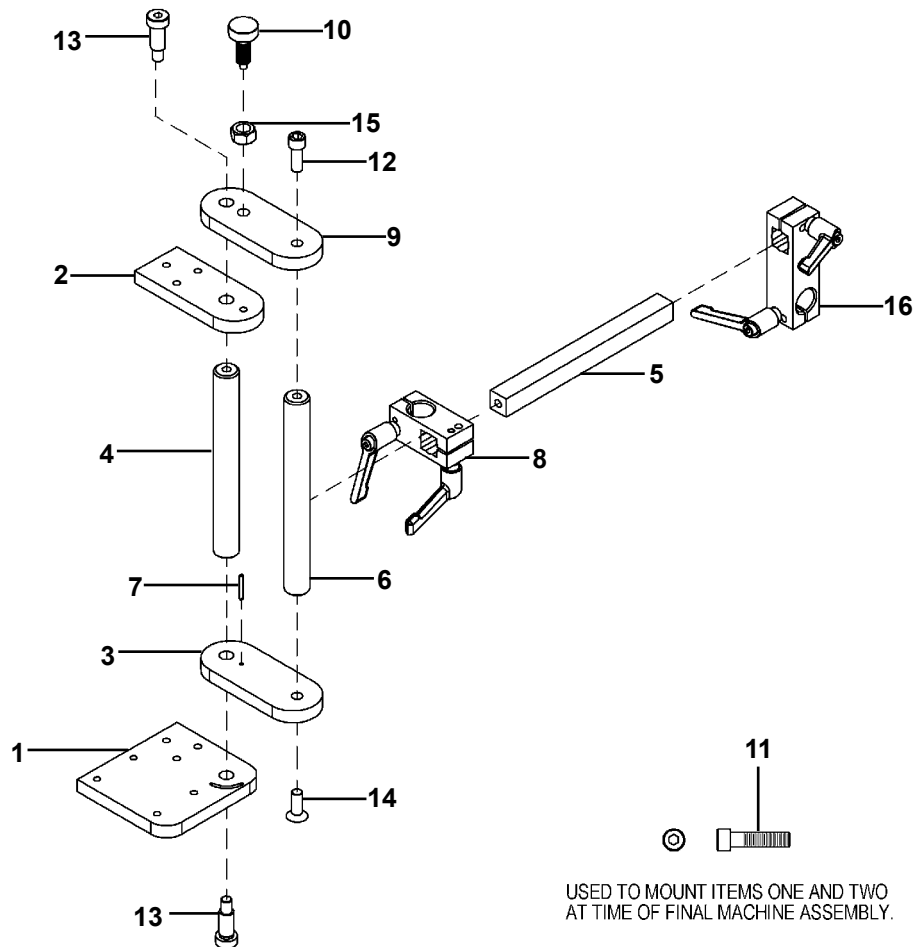
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	ARM-2358-4.1	Leg 4-1/8"
2	1	BGV-1215	Clamp Block Assembly
3	1	BUG-1857	Knob w/Set Screw
4	4	BUG-2593	Glide "Flat"
5	2	BUG-2841	Washer 5/8" O.D. x 5/16" I.D.
6	1	CON-1029	Washer 5/16" x .015" Thk.
7	1	FAS-0453	Set Scr 1/4-20 x 1/4" HDP
8	1	FAS-0535	Soc Hd Cap Scr 10-24 x 1/2"
9	1	FAS-0557	Soc Hd Cap Scr 1/4-20 x 3/4"
10	2	FAS-0654	Soc Hd Shd 5/16" x 3/8" x 1/4-20
11	2	FAS-0957	Flt Hd Soc 1/4-20 x 3/4"
12	1	MUG-1515	Collar
13	1	PAN-1235	Slide Assembly
14	1	PAN-2125	Mounting Arm Assembly
15	1	PAN-2131-L	Mounting Plate, Left
16	1	PAN-2133-L	Slide Plate
17	1	PAN-2134	Screw Retainer
18	1	PAN-2135	Screw Block
19	1	PAN-2136	Adjusting Screw
20	1	PAN-2137	External Retaining Ring
21	1	WAS-0230	#10 SAE Washer
22	1	RPS-0179	Roll Pin

STW-2140-R CORNER FOLLOWER RIGHT / EXPLODED VIEW / PARTS LIST



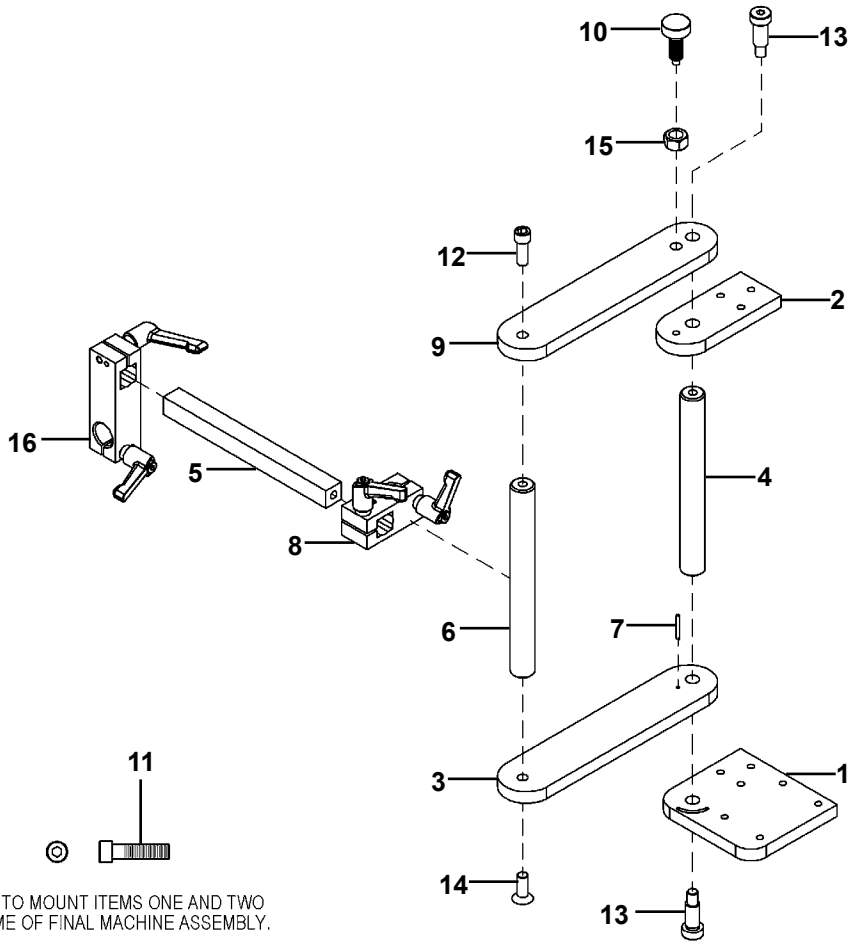
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	ARM-2358-4.1	Leg 4-1/8"
2	1	BGV-1215	Clamp Block Assembly
3	1	BUG-1857	Knob w/Set Screw
4	4	BUG-2593	Glide "Flat"
5	2	BUG-2841	Washer 5/8" O.D. x 5/16" I.D.
6	1	CON-1029	Washer 5/16" x .015" Thk
7	1	FAS-0453	Set Scr 1/4-20 x 1/4" HDP
8	1	FAS-0535	Soc Hd Cap Scr 10-24 x 1/2"
9	1	FAS-0557	Soc Hd Cap Scr 1/4-20 x 3/4"
10	2	FAS-0654	Soc Hd Shd 5/16" x 3/8" x 1/4-20
11	2	FAS-0957	Flt Hd Soc 1/4-20 x 3/4"
12	1	MUG-1515	Collar
13	1	PAN-1235	Slide Assembly
14	1	PAN-2125	Mounting Arm Assembly
15	1	PAN-2131-R	Mounting Plate, Left
16	1	PAN-2133-R	Slide Plate
17	1	PAN-2134	Screw Retainer
18	1	PAN-2135	Screw Block
19	1	PAN-2136	Adjusting Screw
20	1	PAN-2137	External Retaining Ring
21	1	WAS-0230	#10 SAE Washer
22	1	RPS-0179	Roll Pin

STW-2150-L GUN HINGE LEFT / EXPLODED VIEW / PARTS LIST



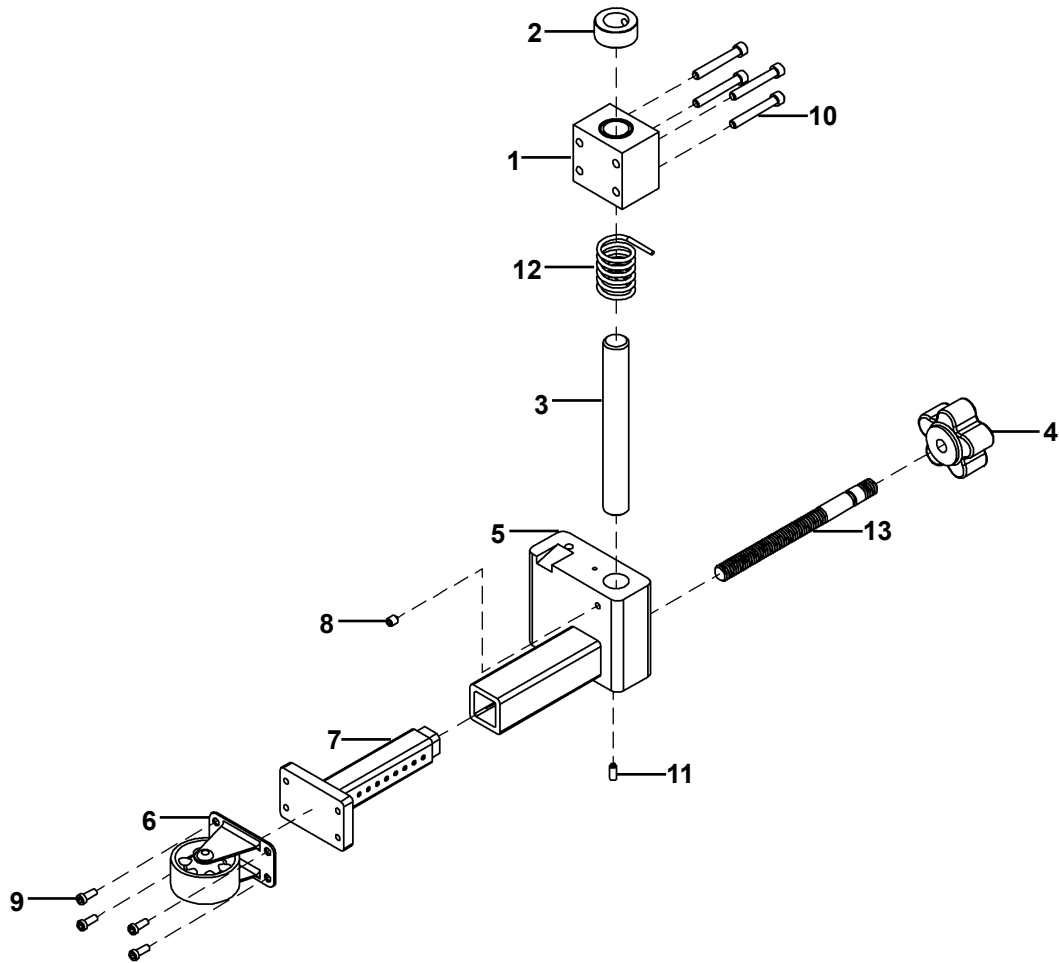
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	STW-2151	Wheel/Hinge Plate
2	1	STW-2152	Hinge Plate "A"
3	1	STW-2154	Hinge Plate "C"
4	1	STW-2155	Hinge Rod
5	1	STW-2156	Mounting Bar
6	1	STW-2158	Vertical Mounting Rod
7	1	STW-2159	SS Pin 1/8" Diameter x 1"
8	1	STW-2160	Clamp Block (Round/Square)
9	1	STW-2168	Hinge Plate "E"
10	1	STW-2178	Knurled Knob Plunger
11	6	FAS-0559	Soc Hd Cap Scr 1/4-20 x 1"
12	1	FAS-0599	Soc Hd Cap 3/8-16 x 1"
13	2	FAS-2693	Soc Hd Shr 1/2" x 1" x 3/8-16
14	1	FAS-0999	Flt Hd Soc 3/8-16 x 1"
15	1	FAS-1301	Hex Nut 1/2-13
16	1	STW-2165	Clamp Block LG (Round/Square)

STW-2150-R GUN HINGE RIGHT / EXPLODED VIEW / PARTS LIST



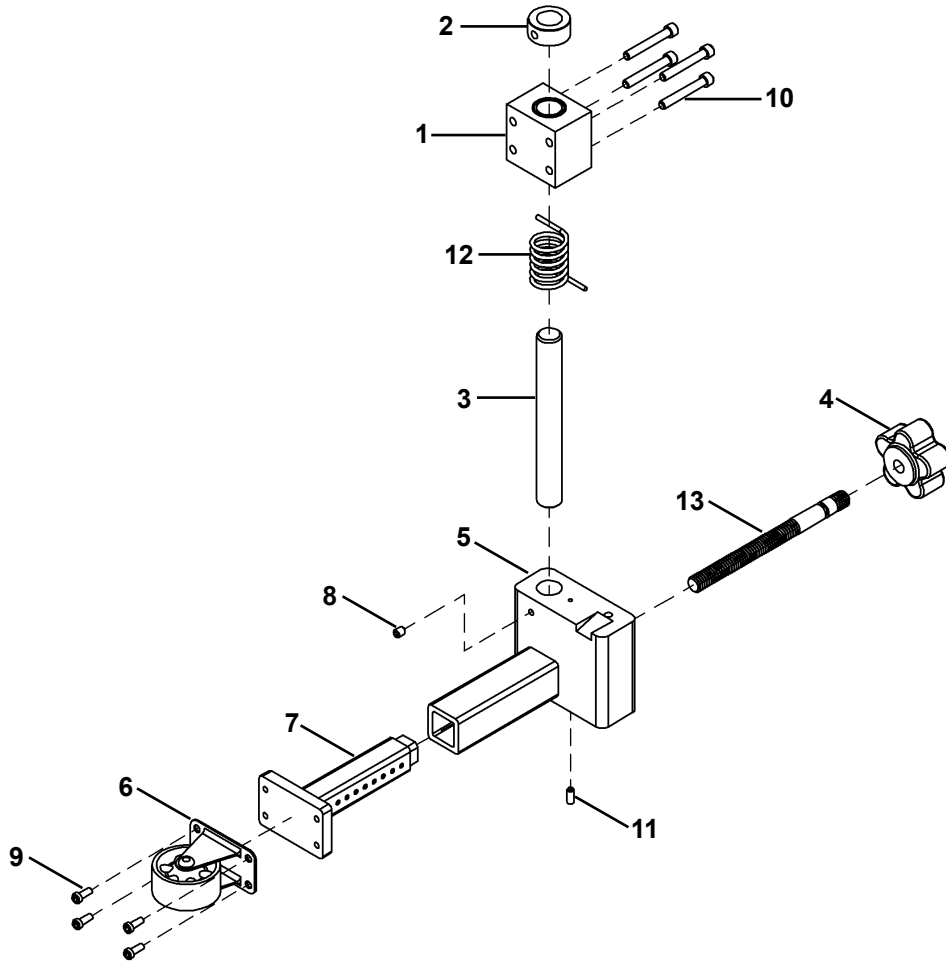
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	STW-2151	Wheel/Hinge Plate
2	1	STW-2152	Hinge Plate "A"
3	1	STW-2153	Hinge Plate "B"
4	1	STW-2155	Hinge Rod
5	1	STW-2156	Mounting Bar
6	1	STW-2158	Vertical Mounting Rod
7	1	STW-2159	SS Pin 1/8" Diameter x 1"
8	1	STW-2160	Clamp Block (Round/Square)
9	1	STW-2167	Hinge Plate "D"
10	1	STW-2178	Knurled Knob Plunger
11	6	FAS-0559	Soc Hd Cap Scr 1/4-20 x 1"
12	1	FAS-0599	Soc Hd Cap 3/8-16 x 1"
13	2	FAS-2693	Soc Hd Shr 1/2" x 1" x 3/8-16
14	1	FAS-0999	Flt Hd Soc 3/8-16 x 1"
15	1	FAS-1301	Hex Nut 1/2-13
16	1	STW-2165	Clamp Block LG (Round/Square)

STW-2170-A CAPTURE WHEEL ASSEMBLY "A" / EXPLODED VIEW / PARTS LIST



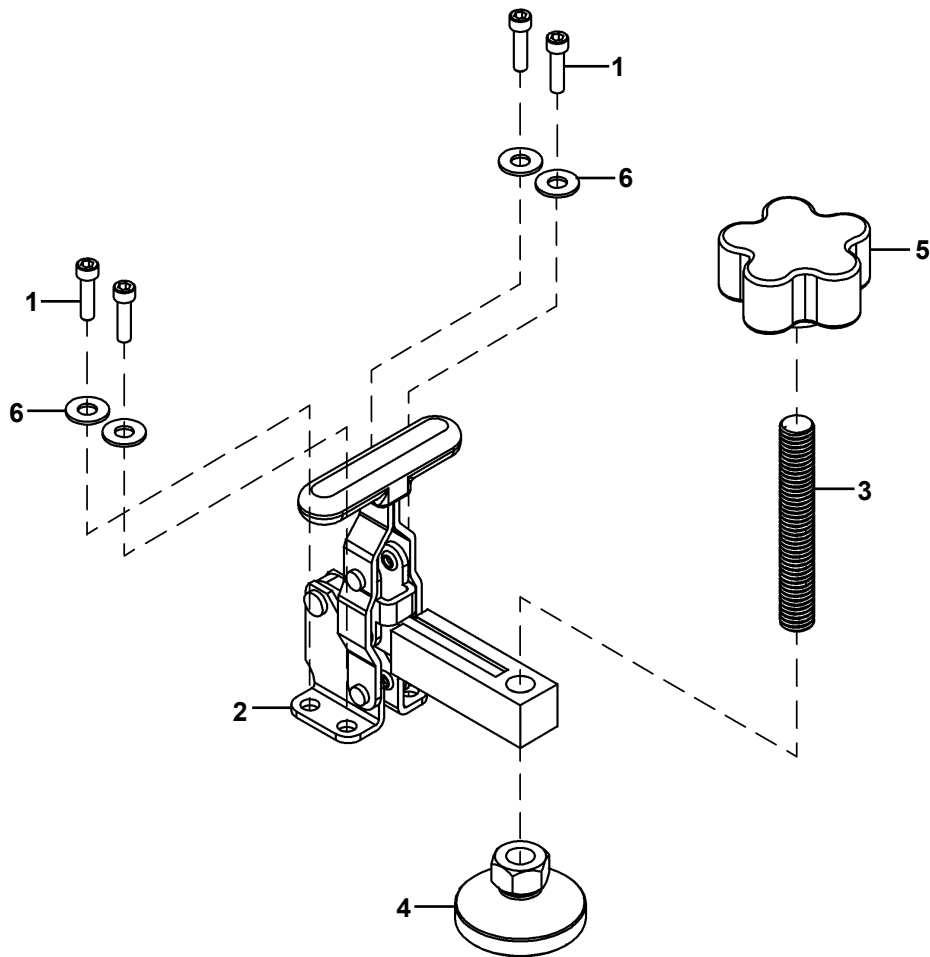
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	STW-2135	Hinge Bearing Block
2	1	STW-2138	Shaft Collar 3/4" I.D.
3	1	STW-2173	Follower Hinge
4	1	STW-2174	Five Lobe Knob / Insert
5	1	STW-2175-A	Female Tube Weldment
6	1	STW-2179	2" Caster / Iron Wheel
7	1	STW-2180	Male Tube Weldment
8	1	FAS-0454-Cone	Set Scr 1/4-20 x 3/8" Cone Point
9	4	FAS-0555	Soc Hd Cap Scr 1/4-20 x 1/2"
10	4	FAS-2554	Soc Hd Cap Scr 1/4-20 x 1-3/4"
11	1	FAS-0455-HDP	Set Scr 1/4-20 x 1/2" Half Dog
12	1	SPR-1001-LH	Left Follower Spring
13	1	STW-2171	Flower Stud

STW-2170-B CAPTURE WHEEL ASSEMBLY "B" / EXPLODED VIEW / PARTS LIST



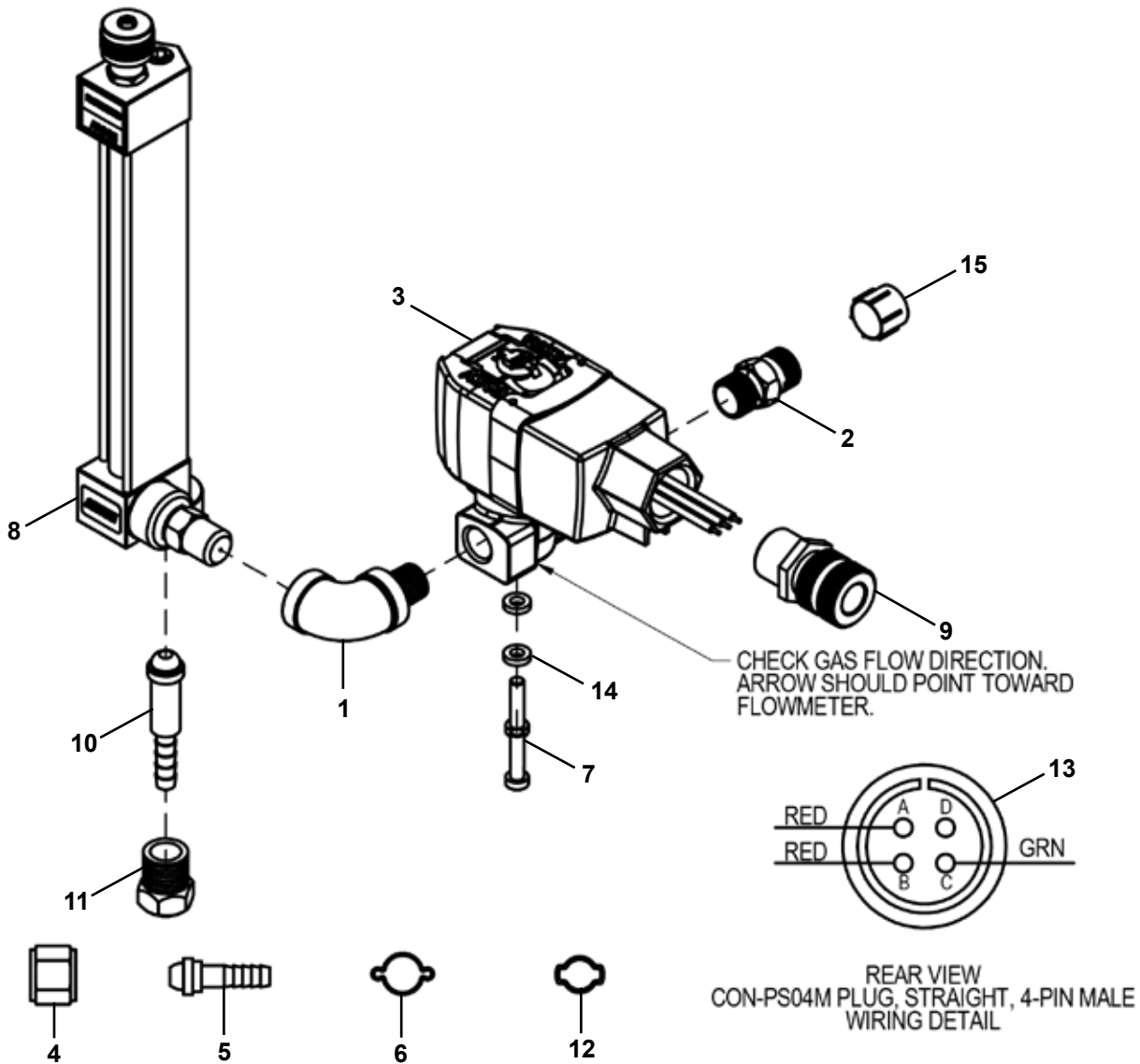
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	STW-2135	Hinge Bearing Block
2	1	STW-2138	Shaft Collar 3/4" I.D.
3	1	STW-2173	Follower Hinge
4	1	STW-2174	Five Lobe Knob/Insert
5	1	STW-2175-B	Female Tube Weldment
6	1	STW-2179	2" Caster/Iron Wheel
7	1	STW-2180	Male Tube Weldment
8	1	FAS-0454-Cone	Set Scr 1/4-20 x 3/8" Cone Point
9	4	FAS-0555	Soc Hd Cap Scr 1/4-20 x 1/2"
10	4	FAS-2554	Soc Hd Cap Scr 1/4-20 x 1-3/4"
11	1	FAS-0455-HDP	Set Scr 1/4-20 x 1/2" Half Dog
12	1	SPR-1001-RH	Right Follower Spring
13	1	STW-2171	Follower Stud

STW-2115 DRIVE LATCH / EXPLODED VIEW / PARTS LIST



ITEM	QTY	PART NO.	DESCRIPTION
1	4	FAS-0557	Soc Hd Cap Scr 1/4-20 x 3/4"
2	1	STW-2116	Drive Latch Weldment
3	1	STW-2118	Screw 1/2-13 x 3-1/2"
4	1	STW-2119	Level Mount
5	1	STW-2174	Five Lobe Knob Insert 1/2-13 RT
6	4	WAS-0240	1/4" SAE Washer

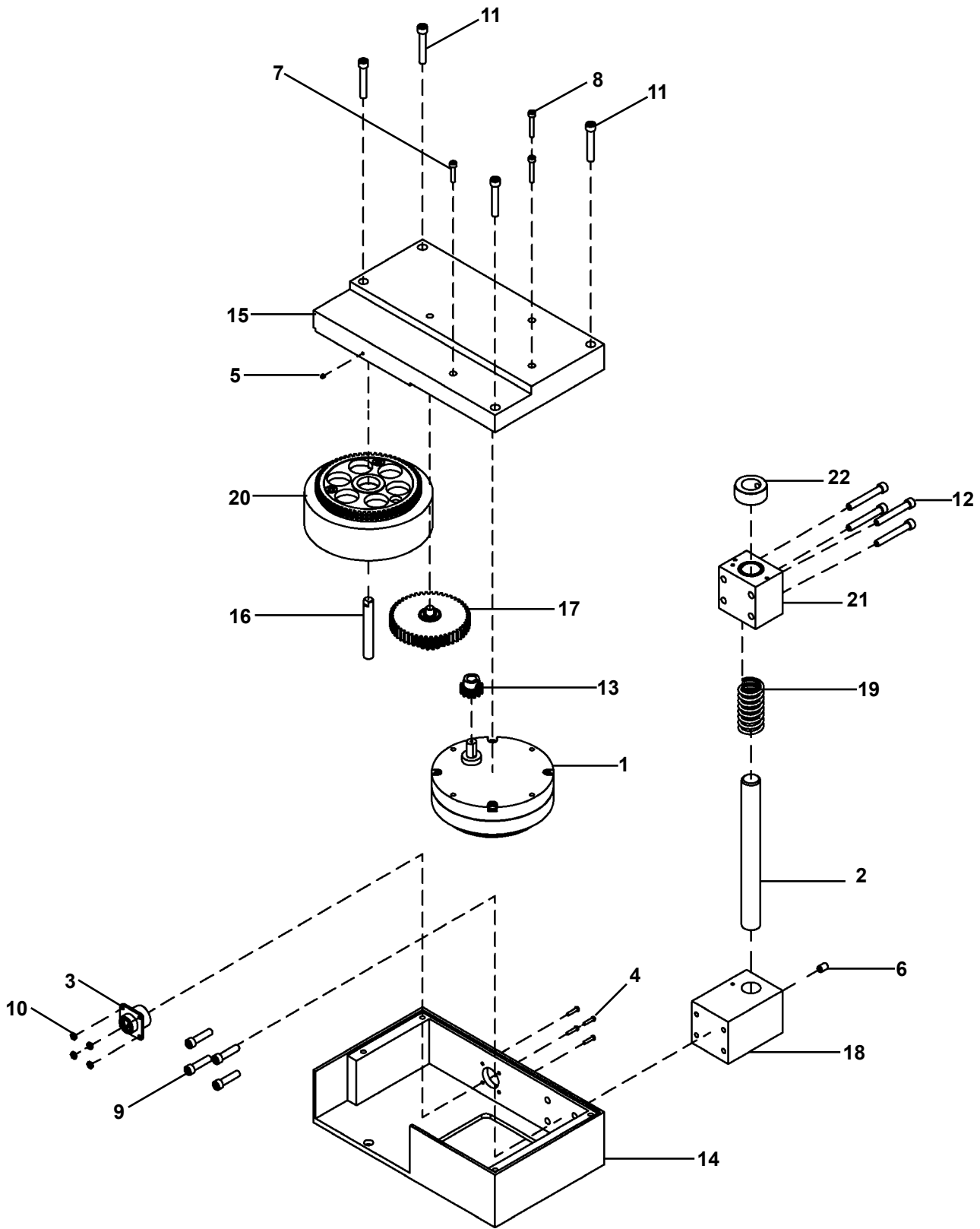
STW-2060 FLOW-METER & VALVE ASSEMBLY / EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	ARV-1113	1/4 NPT 90° Street Elbow
2	1	BUG-9096	Outlet Bushing, Oxygen, Right
3	1	BUG-9102	Magnetic Valve For Use With Oxygen
4	1	CIR-1012	Hose Nut, Oxygen, Right Hand
5	1	CIR-1013	1/4" Hose Nipple
6	1	CIR-1016	Hose Clamp 9/16" Crimp Type
7	2	FAS-0547	Soc Hd Cap Scr 10-30 x 3/4"
8	1	STW-2061	Argon Flowmeter
9	1	STW-2062	Modified Cord Grip
10	1	PWS-1423-P	1/4" I.D. Hose Barb
11	1	PWS-1428	Inert Gas Male RH
12	2	STW-2065	Clamp 2-Ear 8-11mm
13	1	CON-PS04M	Plug, Straight, 4 Pin, Male
14	2	AFR-1015	Spacer Washer
15	1	BUG-2062	Male Thread Protector
NS	26"	1000-4-002	1/4" I.D. x 3/8" O.D. Tube
NS	36"	MUG-1581	#2 Black Fiberglass Sleeving

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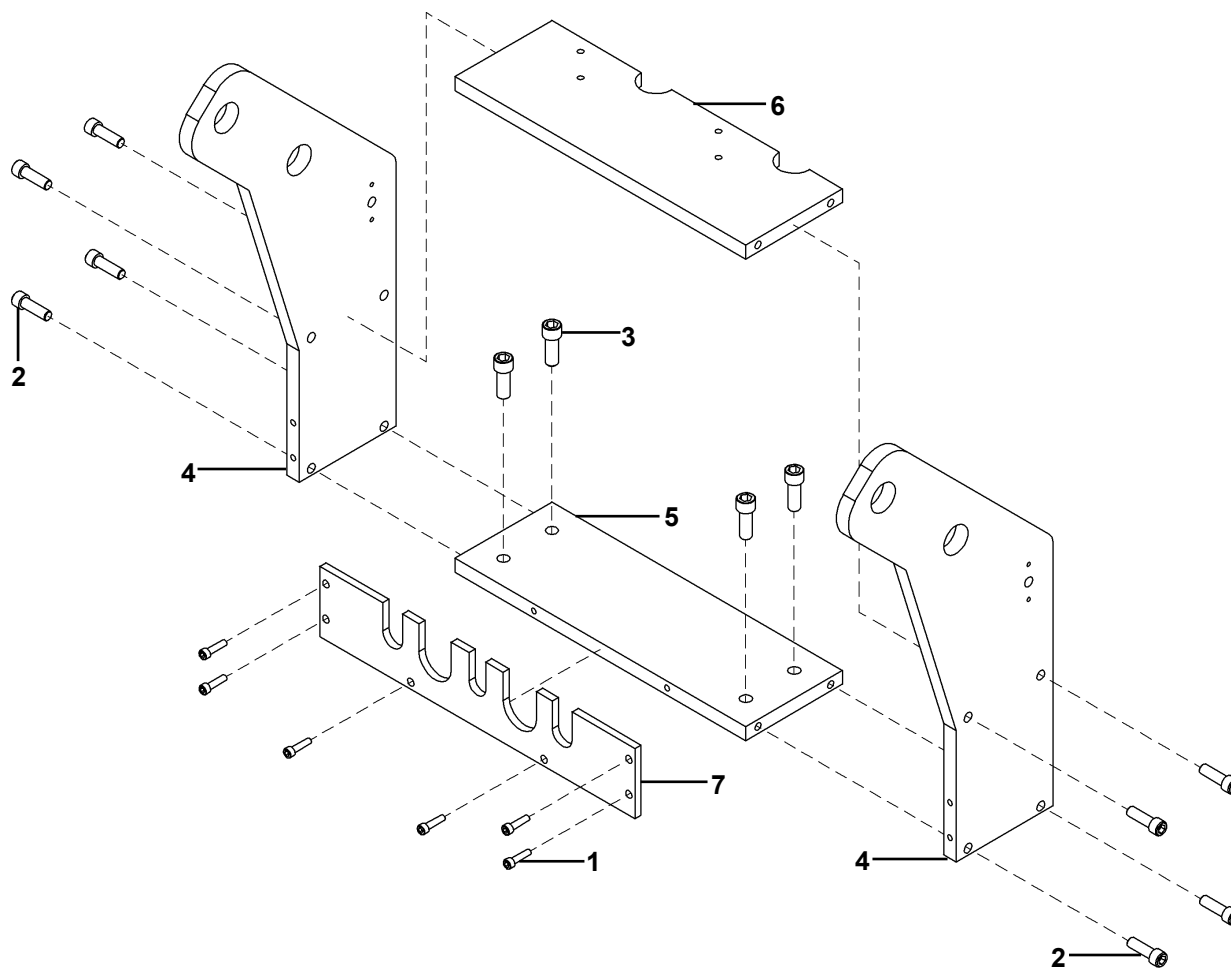
STW-2120 DRIVE UNIT ASSEMBLY / EXPLODED VIEW



STW-2120 DRIVE UNIT ASSEMBLY / PARTS LIST

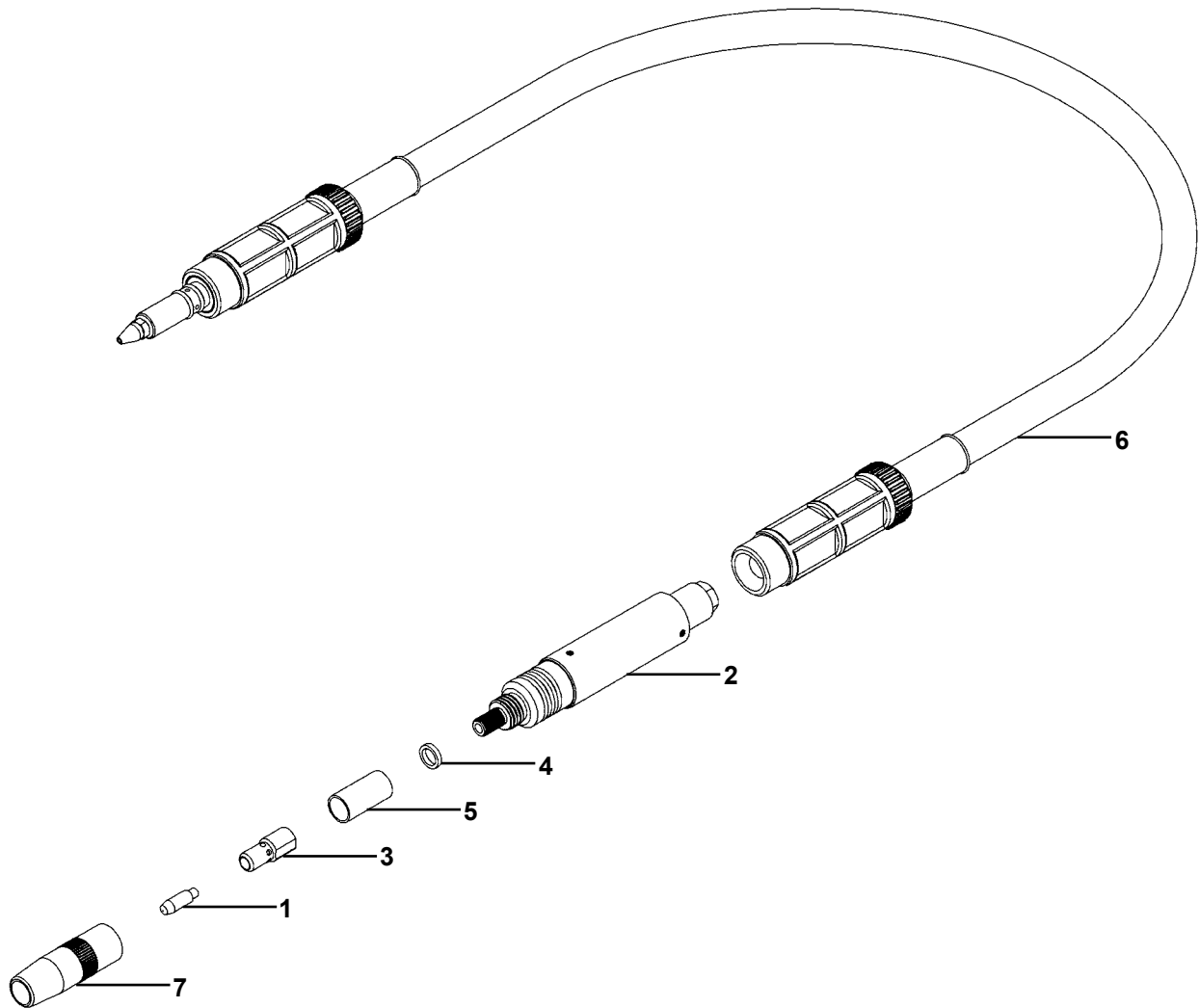
<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	BUG-1595	Gear Motor (100:1)
2	1	STW-2139	Drive Unit Shaft
3	1	BUG-9856	Panel Connector 2-T, Female
4	4	FAS-0205	Rnd Hd Scr 4-40 x 1/2"
5	1	FAS-0410	Set Scr 6-32 x 1/8" Cup Point
6	1	FAS-0454	Set Scr 1/4-20 x 3/8" Cup Point
7	1	FAS-0527	Soc Hd Cap Scr 8-32 x 3/4"
8	2	FAS-0529	Soc Hd Cap Scr 8-32 x 1"
9	4	FAS-0559	Soc Hd Cap Scr 1/2-20 x 1"
10	4	FAS-1305	Hex Nut 4-40
11	4	FAS-2553	Soc Hd Cap Scr 1/4-20 x 1-1/2"
12	4	FAS-2554	Soc Hd Cap Scr 1-20 x 1-3/4"
13	1	GOF-3014	Drive Pinion w/Key & Set Screw
14	1	STW-2121	Drive Unit Bottom Cover
15	1	STW-2122	Drive Unit Top Cover
16	1	STW-2123	Drive Shaft
17	1	STW-2125	Drive Gear Assembly
18	1	STW-2128	Drive Unit Mounting Block
19	1	SPR-1002-LH	Spring
20	1	STW-2130	Drive Wheel Assembly
21	1	STW-2135	Hinge Bearing Assembly
22	1	STW-2138	Locking Collar
23	2	GOF-3036	QD Female, Fully Insulated (not shown)

STW-2195 SPOOL SUPPORT BRACKET / EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	6	FAS-0557	Hex Hd Cap Scr 1/4-20 x 3/4"
2	8	FAS-0579	Hex Hd Cap Scr 5/16-18 x 1"
3	4	FAS-0599	Hex Hd Cap Scr 3/8-16 x 1"
4	2	STW-2069	Spool Mount Plate
5	1	STW-2196	Mount Plate
6	1	STW-2197	Gauge Mount Plate
7	1	STW-2198	Cable Mount

CSM-1100 500 AMP AIR-COOLED GUN / EXPLODED VIEW / PARTS LIST

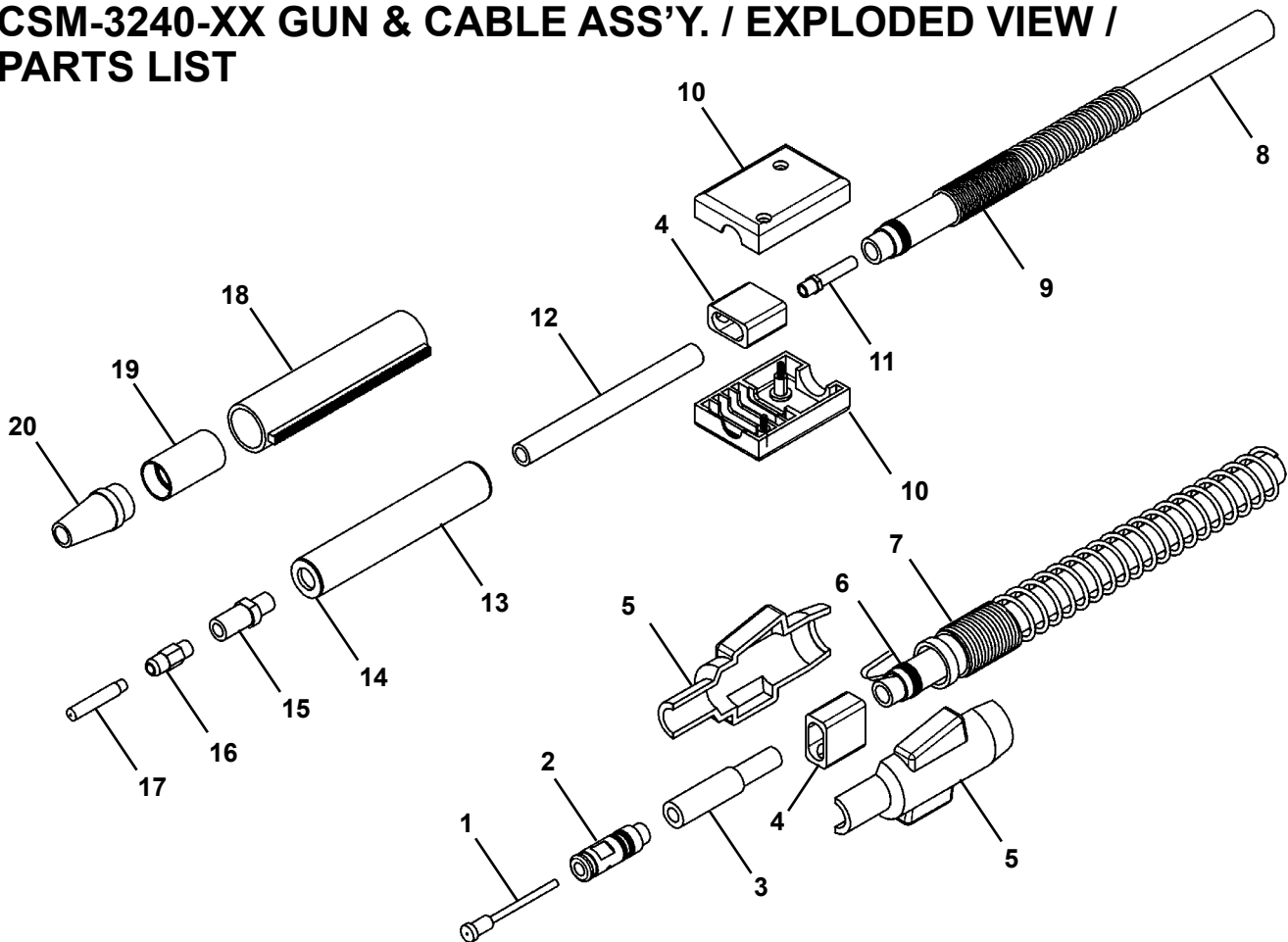


PARTS LIST				WIRE SIZE			
ITEM	QTY	PART NUMBER	DESCRIPTION	.035	.045	.052	.062
1	1	CSM-1091	Contact Tip .035"	X			
1	1	CSM-1092	Contact Tip .045"		X		
1	1	CSM-1093	Contact Tip .052"			X	
1	1	CSM-1094	Contact Tip .062"				X
2	1	CSM-1080	Neck Assy. For 500A-180-03M-BGO	X	X	X	X
3	1	CSM-1081	Gas Diffuser / Tip Holder	X	X	X	X
4	1	CSM-1082	Insulating Washer	X	X	X	X
5	1	CSM-1083	Nozzle Insulator	X	X	X	X
6	1	CSM-1084	3' 500 AMP Power Cable	X	X	X	X
*	1	CSM-1086	Liner (.035-.062)	X	X	X	X
7	1	CSM-1087	5/8" Bore Conical Noz. NI. PLTD. Copper	X	X	X	X
*	1	CSM-1088	5/8" Bore Conical Noz. Bare Copper	X	X	X	X
*	1	CSM-1089	9/16" Bore Tapered Noz. NI. PLTD. Copper	X	X	X	X
*	1	CSM-1090	9/16" Bore Tapered Noz. Bare Copper	X	X	X	X

* ITEMS NOT SHOWN

** ITEMS SOLD SEPARATELY

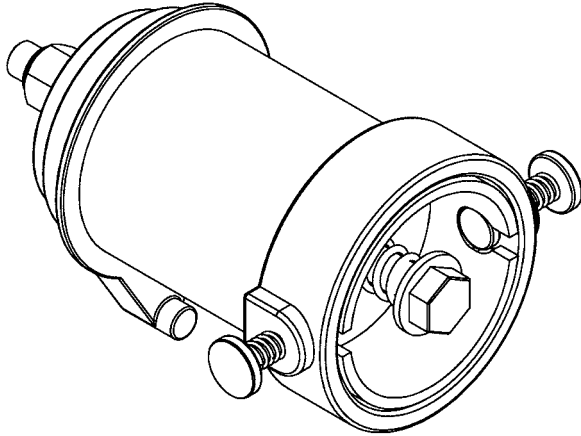
CSM-3240-XX GUN & CABLE ASS'Y. / EXPLODED VIEW / PARTS LIST



<u>ITEM</u>	<u>QTY</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	1	PWS-4405	Coil Liner, .035" .045" Dia. Wire, 15'
*	1	PWS-4406	Coil Liner, 1/16" Dia. Wire, 15'
2	1	PWS-4407	Wire Feeder Connector
*	1	PWS-1432	Set Screw, 8-32
*	1	PWS-4408	O-Ring
3	1	PWS-4409	STD Connector Plug
*	1	STW-3045	Nipple
4	1	PWS-4410	Connector Block Assy
5	1	PWS-4411	Housing, Feeder End
*	1	PWS-4411-SCR	Screws for Housing
6	1	PWS-4412	Spring Clamp
7	1	PWS-4413	Protector Spring, Feeder End
8	1	PWS-4414	500 Amp Mig Cable
9	1	PWS-4415	Protector Spring, Gun End
10	1	PWS-4416	Housing, Gun End
*	1	PWS-4416-SCR	Screws for Housing
11	1	PWS-4417	Nipple, 3/8-24 Thread
12	1	STW-3043	Internal Tube Long (w/ 18-480 Snap Ring)
13	1	STW-3044	Outer Tube Long
14	1	STW-3042	Insulator (2 Rec)
15	1	STW-3041	500 Amp Head
16	1	CWO-8036	Gas Diffuser (3/32 - 7/64" Wire)
17	1	CWO-8028	Contact Tip
18	1	CSM-3141	Barrel w/ 32 Pitch Rack
19	1	CWO-8035	Nozzle Insulator
20	1	CWO-1473	Nozzle 1/2"

* Not Shown

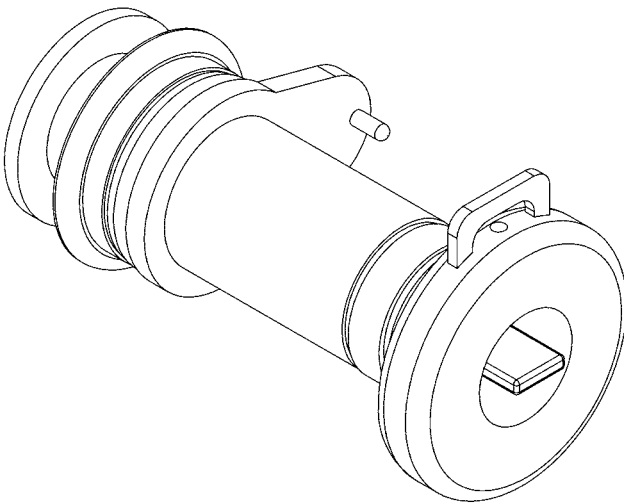
ACCESSORIES (SPOOLS)



10 lb. Spool Kit

The 10 lb. spool kit accepts 10 lb. spools of wire and mounts to the spool mounting bracket on the rear of the welding unit.

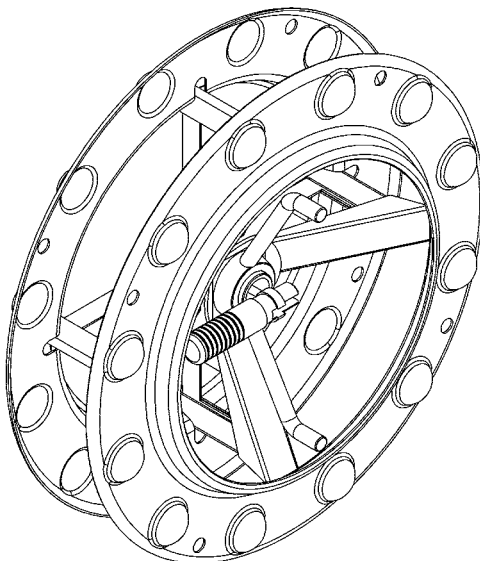
Order **#STW-2100**
Comes in quantities of 1.



30 lb. Spool Kit

The 30 lb. spool kit accepts 30 lb. spools of wire and mounts to the spool mounting bracket on the rear of the welding unit.

Order **#WFU-1041**
Comes in quantities of 1.



60 lb. Spool Kit

The 60 lb. spool kit accepts 60 lb. spools of wire and mounts to the spool mounting bracket on the rear of the welding unit.

Order **#BUG-3293**
Comes in quantities of 1.

WARRANTY

Limited 3-Year Warranty*

Model _____
Serial No. _____
Date Purchased: _____
Where Purchased: _____

For a period ending one (1) year from the date of invoice, Manufacturer warrants that any new machine or part is free from defects in materials and workmanship and Manufacturer agrees to repair or replace at its option, any defective part or machine. HOWEVER, if the invoiced customer registers the Product Warranty by returning the Warranty Registration Card supplied with the product within 90 days of the invoice date, or by registering on-line at www.bugo.com, Manufacturer will extend the warranty period an additional two (2) years which will provide three (3) total years from the date of original invoice to customer. This warranty does not apply to machines which, after Manufacturer's inspection are determined by Manufacturer to have been damaged due to neglect, abuse, overloading, accident or improper usage. All shipping and handling charges will be paid by the customer.

The foregoing express warranty is exclusive and Manufacturer makes no representation or warranty (either express or implied) other than as set forth expressly in the preceding sentence. Specifically, Manufacturer makes no express or implied warranty of merchantability or fitness for any particular purpose with respect to any goods. Manufacturer shall not be subject to any other obligations or liabilities whatsoever with respect to machines or parts furnished by Manufacturer.

Manufacturer shall not in any event be liable to Distributor or any customer for any loss of profits, incidental or consequential damages or special damages of any kind. Distributor's or customer's sole and exclusive remedy against Manufacturer for any breach of warranty, negligence, strict liability or any other claim relating to goods delivered pursuant hereto shall be for repair or replacement (at Manufacturer's option) of the machines or parts affected by such breach.

Distributor's Warranty:

In no event shall Manufacturer be liable to Distributor or to any customer thereof for any warranties, representations or promises, express or implied, extended by Distributor without the advance written consent of Manufacturer, including but not limited to any and all warranties of merchantability or fitness for a particular purpose and all warranties, representations or promises which exceed or are different from the express limited warranty set forth above. Distributor agrees to indemnify and hold Manufacturer harmless from any claim by a customer based upon any express or implied warranty by Distributor which exceeds or differs from Manufacturer's express limited warranty set forth above.

HOW TO OBTAIN SERVICE:

If you think this machine is not operating properly, re-read the instruction manual carefully, then call your Authorized BUG-O dealer/distributor. If they cannot give you the necessary service, write or phone us to tell us exactly what difficulty you have experienced. BE SURE to mention the MODEL and SERIAL numbers.

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