

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-0713

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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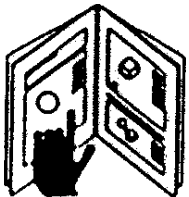
SAFETY

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

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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

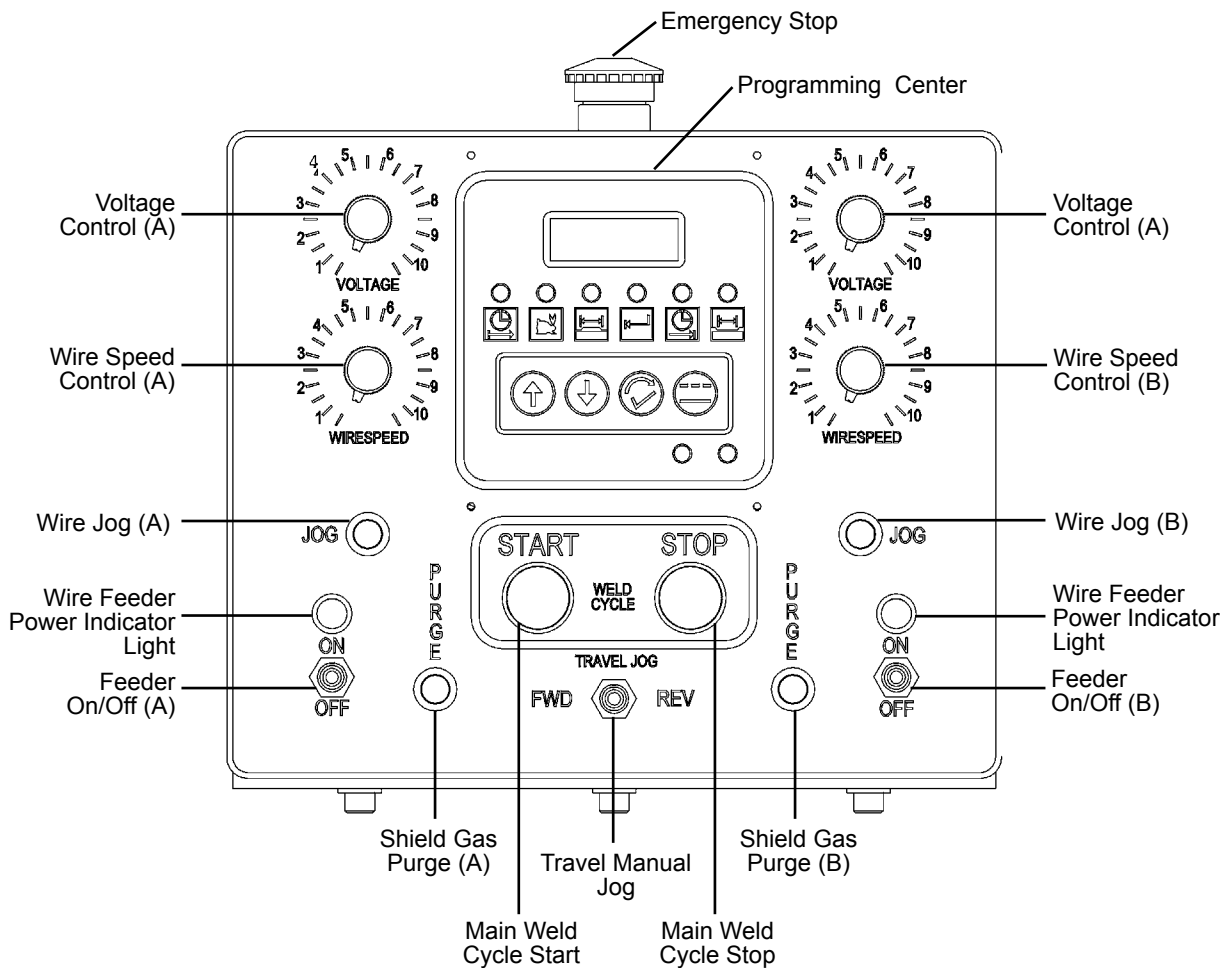
MAIN WELD CYCLE START: Initiates automated weld cycle

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

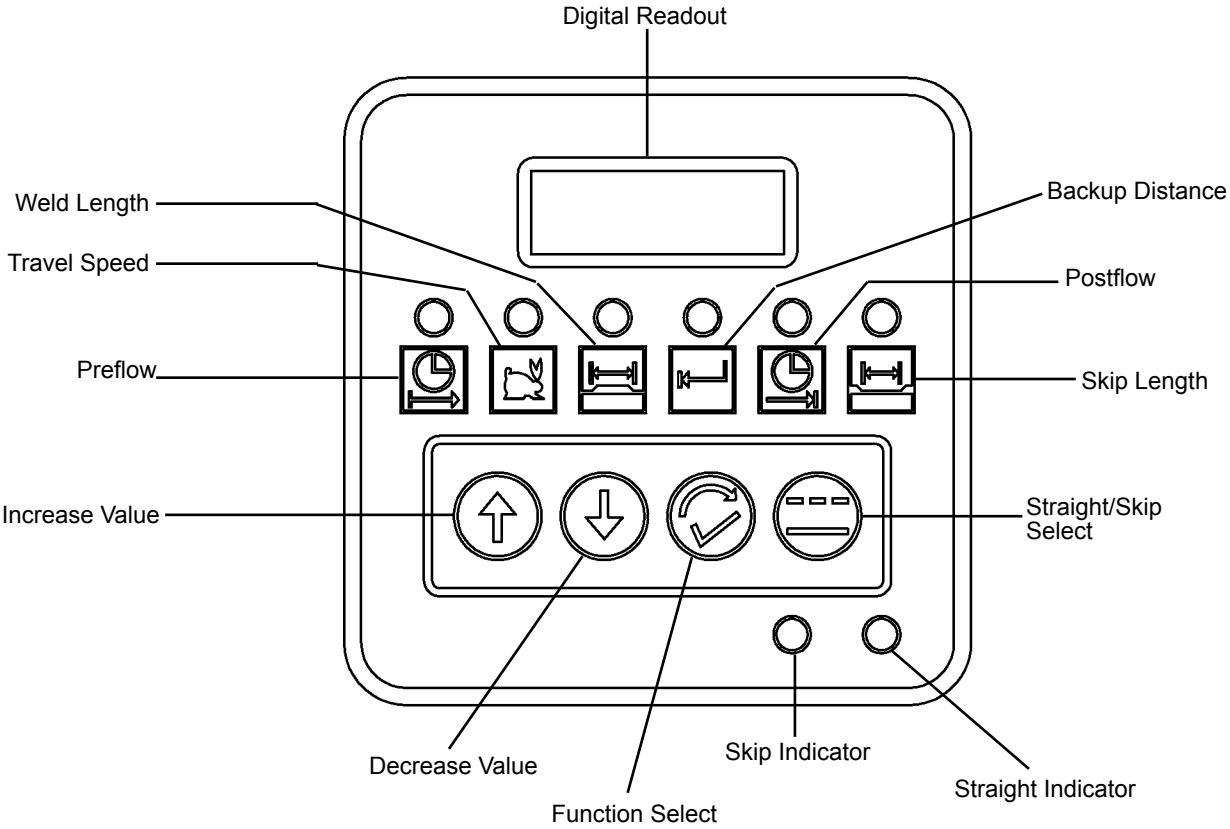
PUDDLE DELAY:

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.

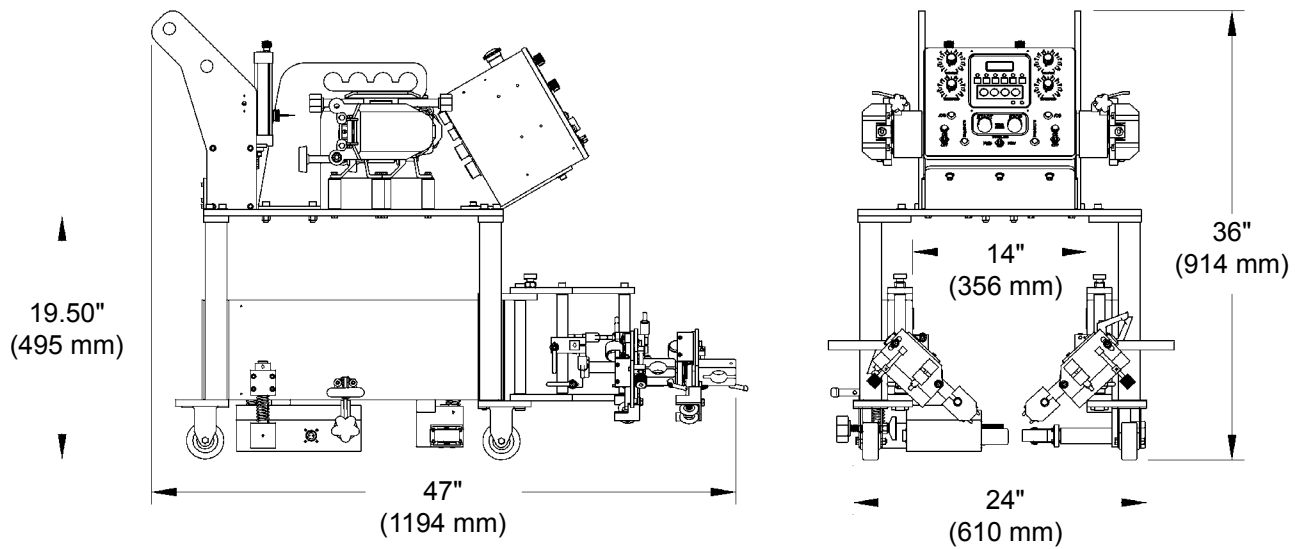
CONTROLS (PROGRAMMING CENTER CONT'D.):



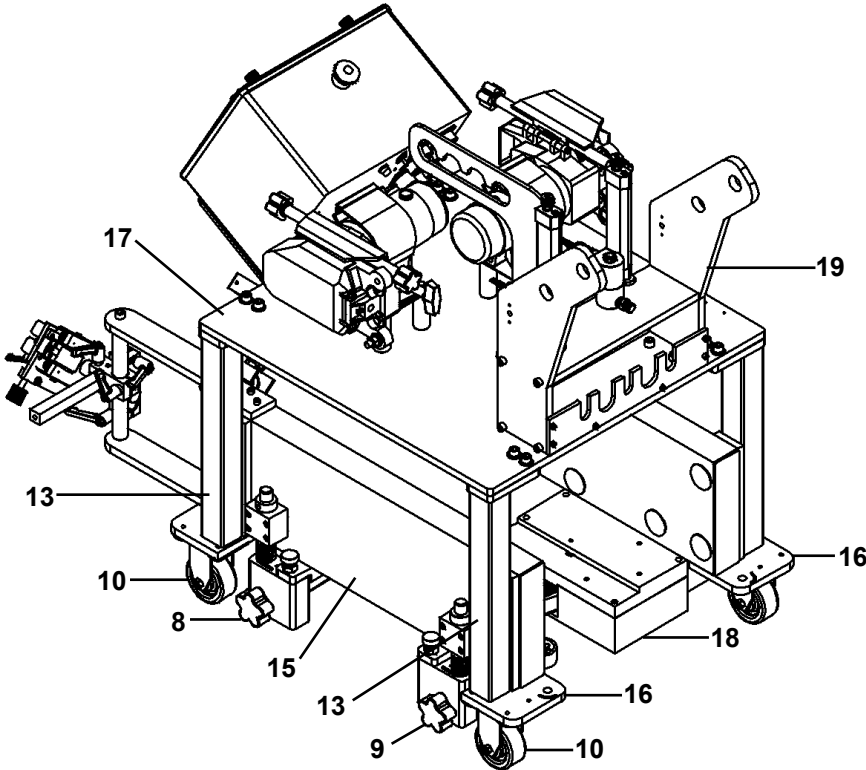
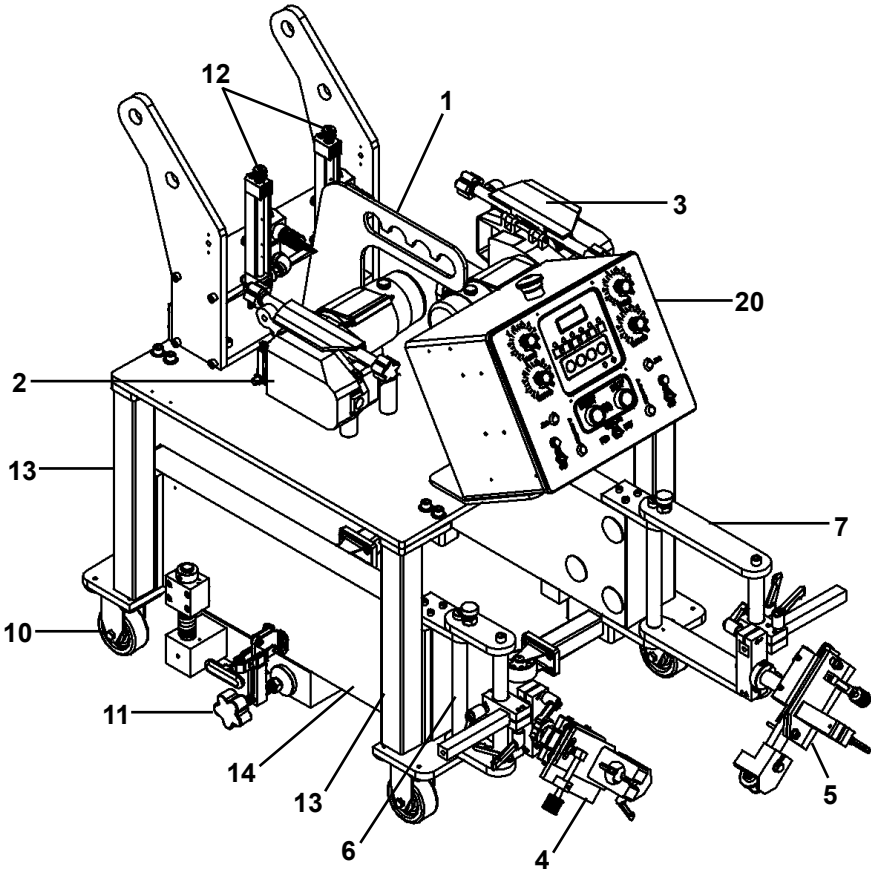
TECHNICAL DATA:

| | |
|--|---|
| 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:



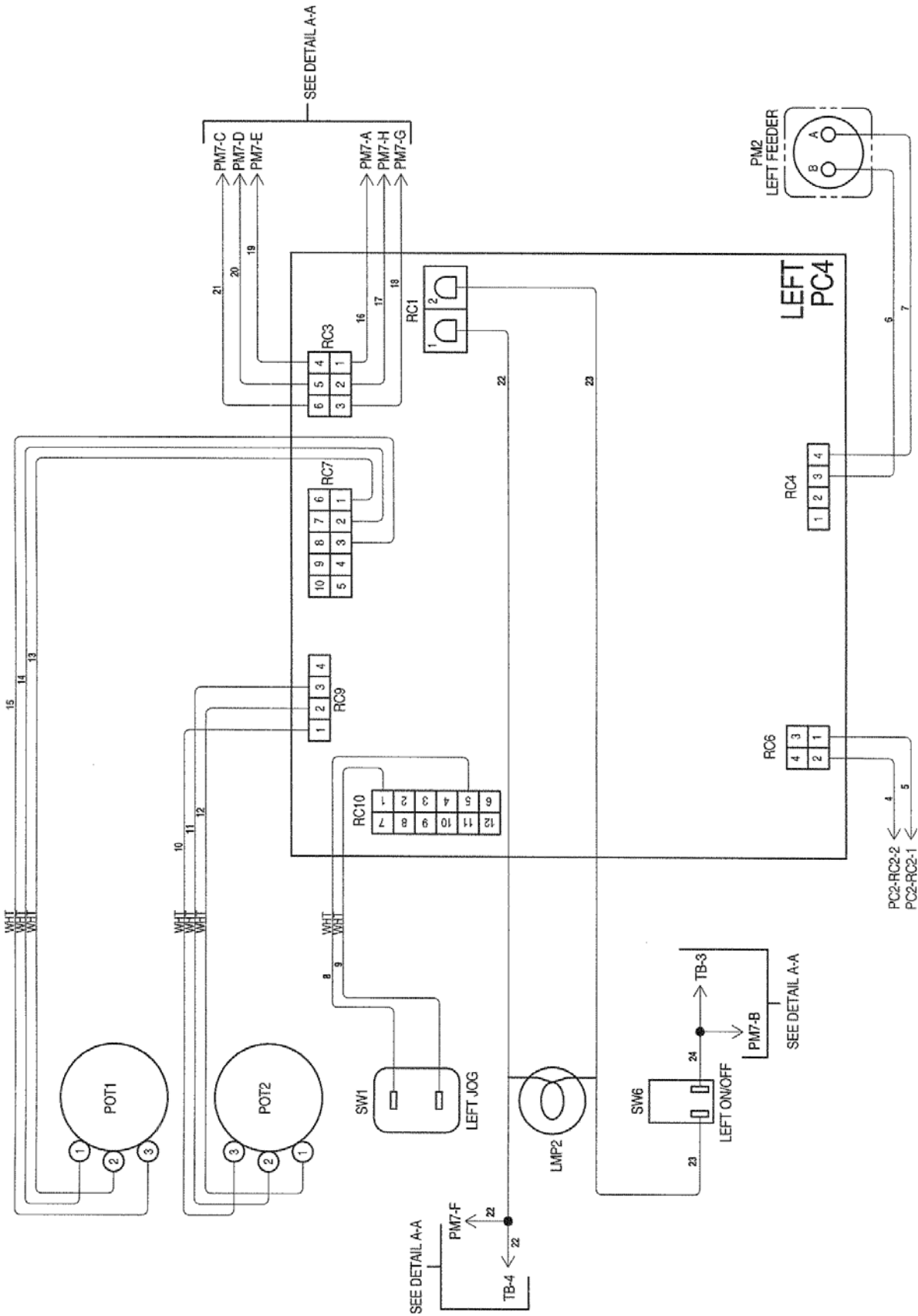
STW-2000 STIFFENER WELDER / MAJOR COMPONENTS



STW-2000 STIFFENER WELDER / PARTS LIST

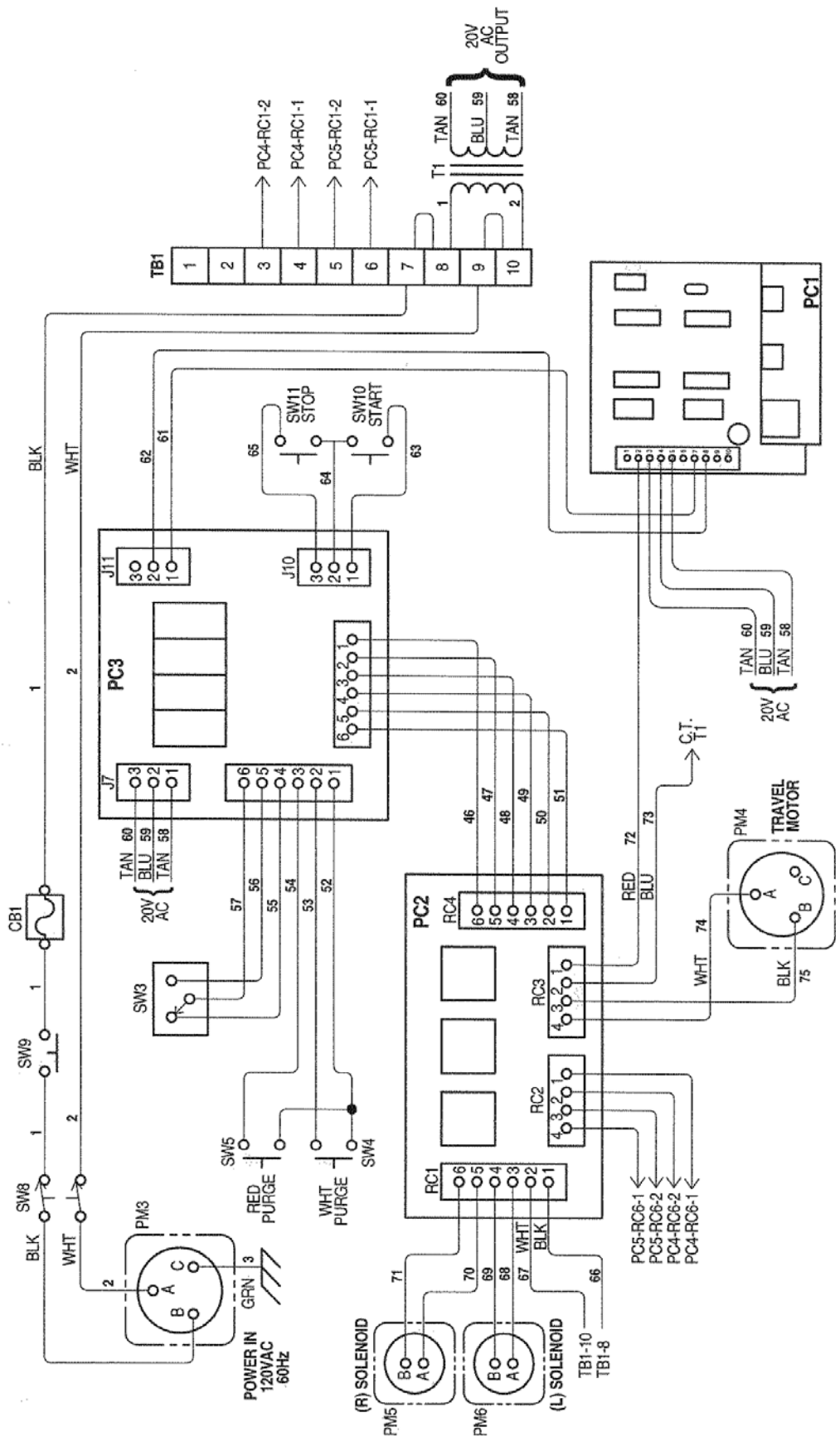
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|----------------------------|
| 1 | 1 | STW-2050 | Lifting Lug |
| 2 | 1 | STW-2080-L | Wire Feeder (Miller) Left |
| 3 | 1 | STW-2080-R | Wire Feeder (Miller) Right |
| 4 | 1 | STW-2140-L | 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 Assy. "A" |
| 9 | 1 | STW-2170-B | Capture Wheel Assy. "B" |
| 10 | 4 | STW-2142 | 3" Phenolic Caster |
| 11 | 1 | STW-2115 | Drive Latch |
| 12 | 2 | STW-2060 | Flow Meter / Valve Assy. |
| 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. Plt. |
| 17 | 1 | STW-2054 | Deck Plt. |
| 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



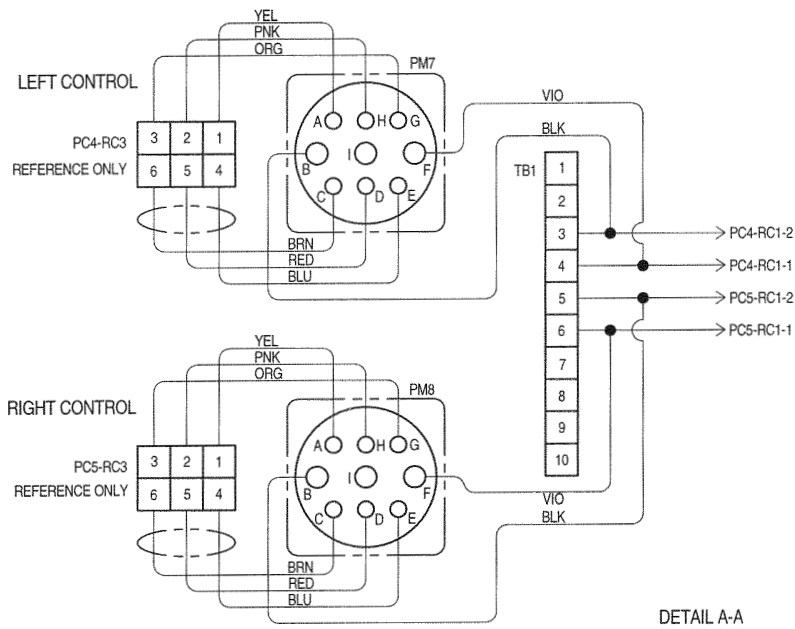
See Electrical Component Chart pg. 15

WIRING DETAIL / MOTION AND SOLENOID CONTROL



See Electrical Component Chart pg. 15

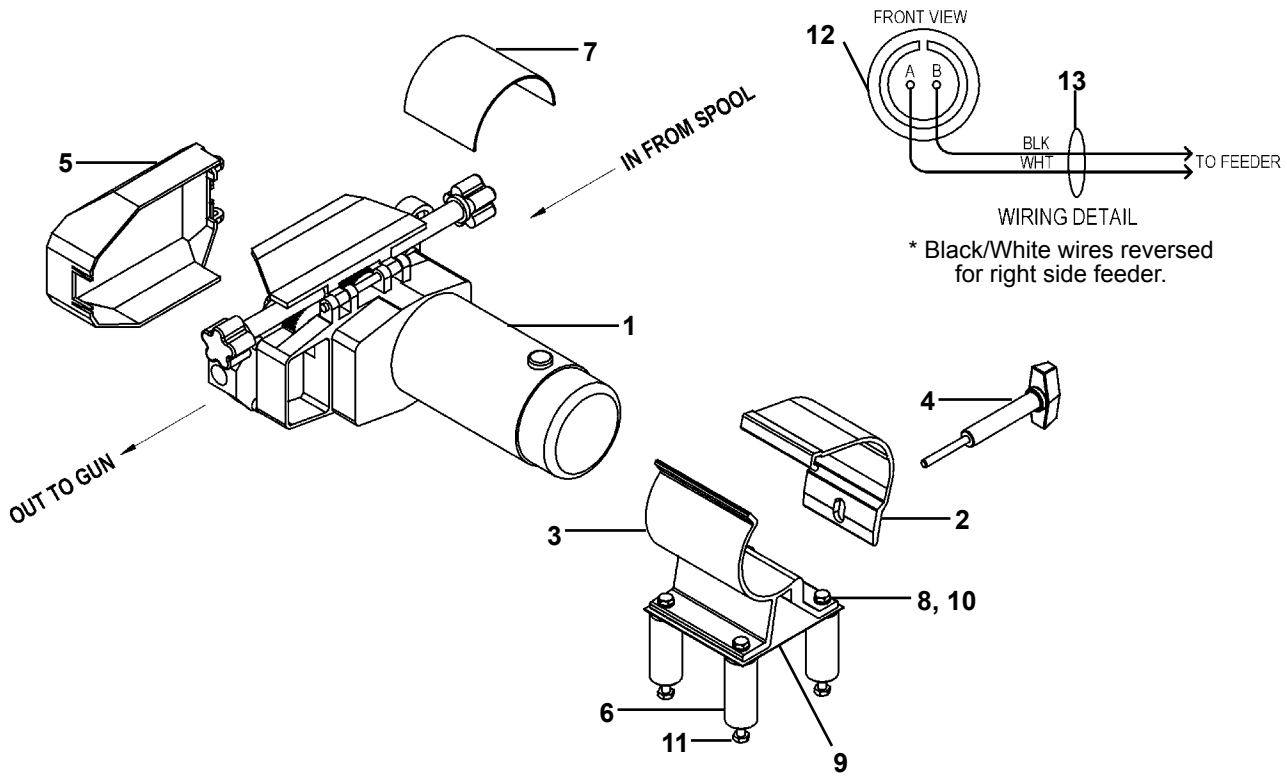
WIRING DETAIL A-A / ELECTRICAL COMPONENT CHART



ELECTRICAL COMPONENT CHART

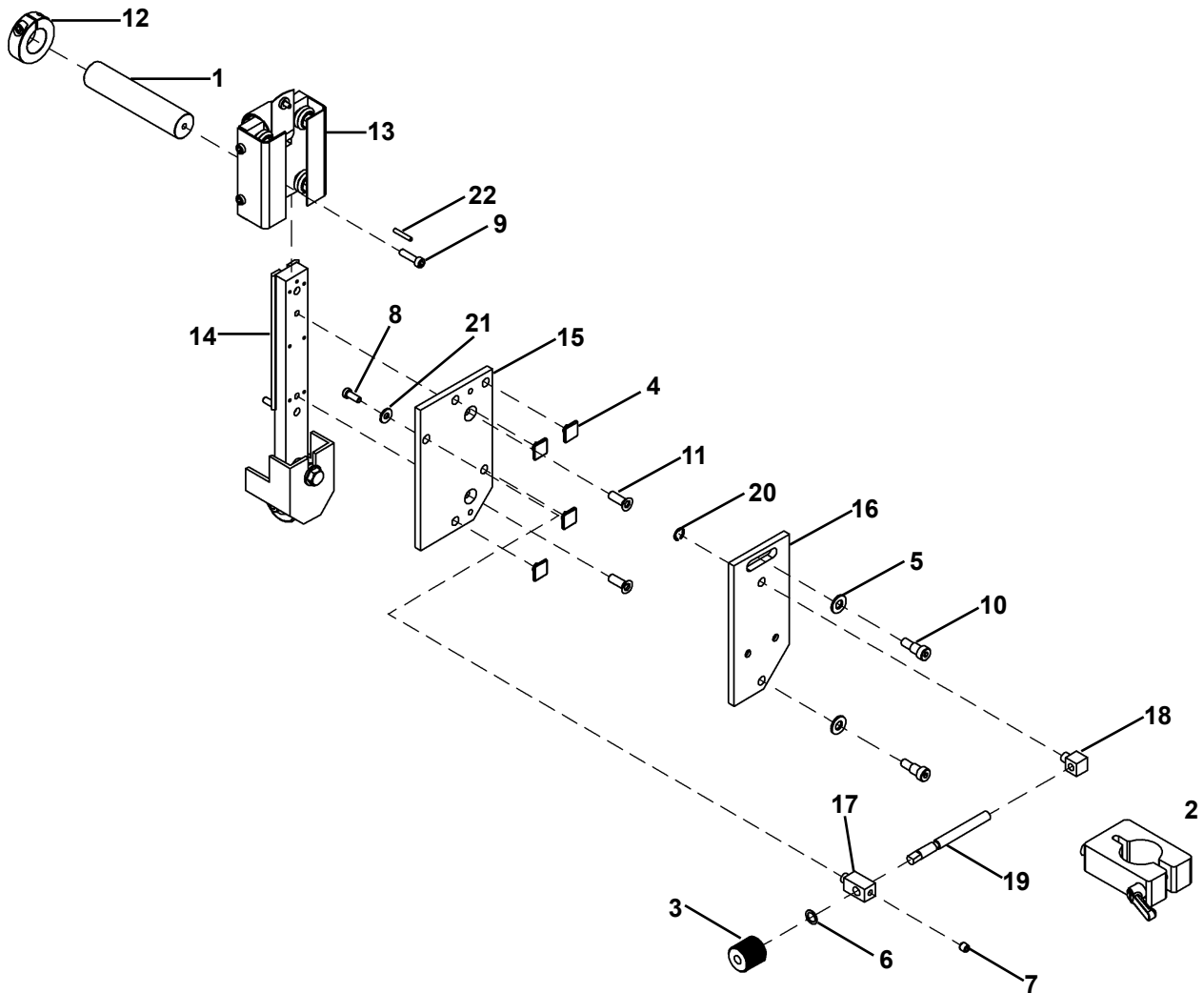
| ELECTRICAL COMPONENT CHART | | |
|----------------------------|-------------|--------------------------------------|
| ITEM | PART # | DESCRIPTION |
| CB1 | BUG-2923 | .7 AMP CIRCUIT BREAKER |
| LMP1 | LAMP-1090 | 28 VAC, GREEN LIGHT |
| LMP2 | LAMP-1090 | 28 VAC, GREEN LIGHT |
| PC1 | BUG-1770 | MOTOR 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



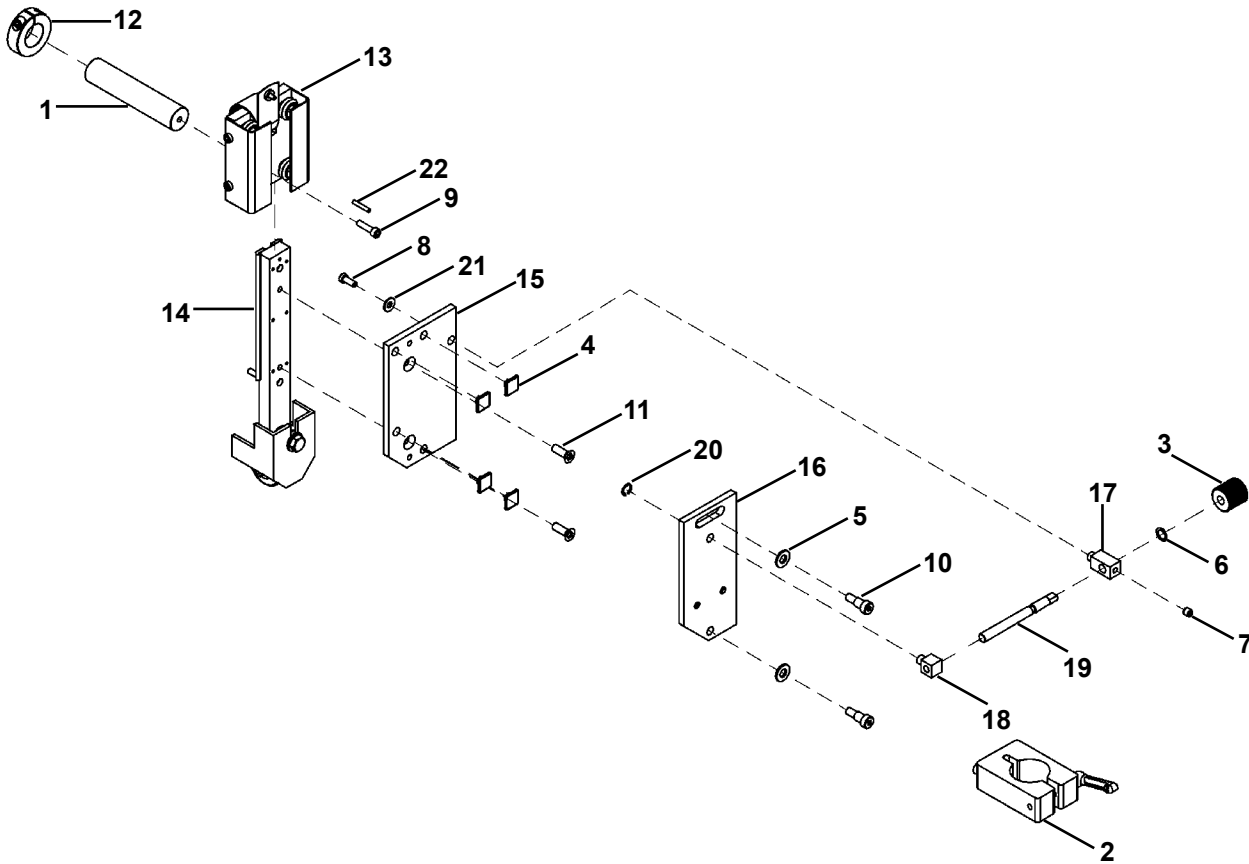
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|------------------------------|
| 1 | 1 | STW-2081 | Drive Assy. |
| 2 | 1 | STW-2082 | Clamp Motor Top |
| 3 | 1 | STW-2083 | Clamp Motor Base |
| 4 | 1 | STW-2084 | Knob w/ Extension |
| 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



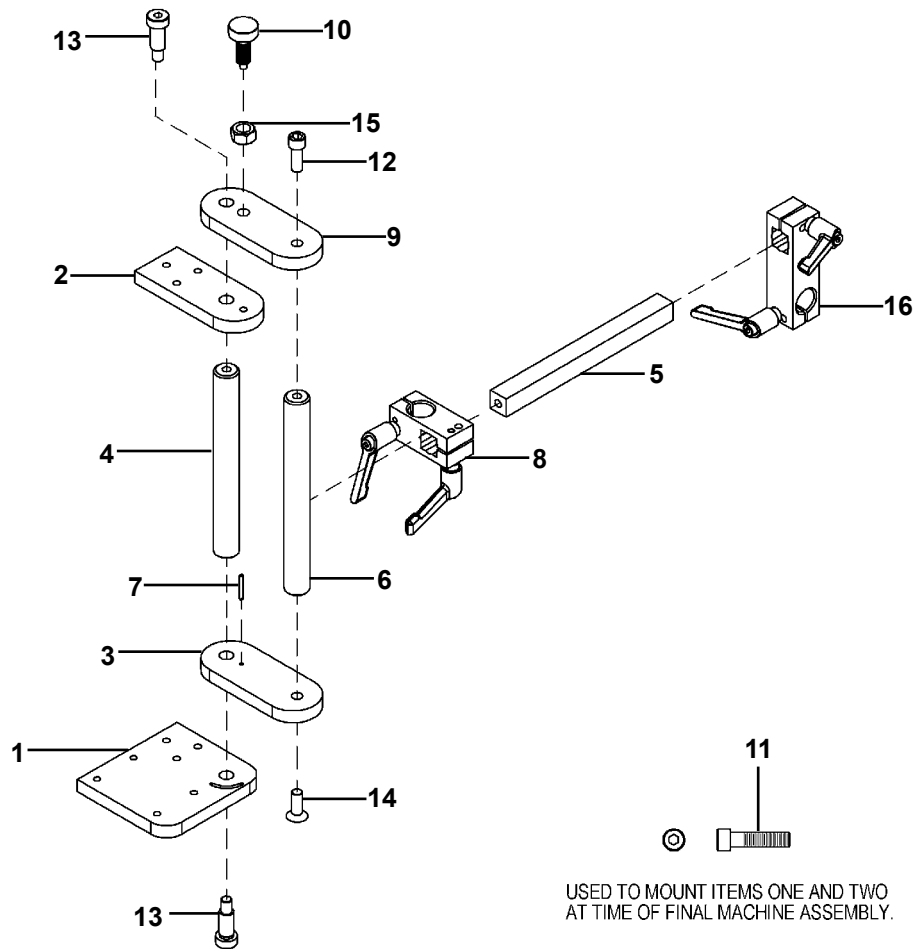
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|----------------------------------|
| 1 | 1 | ARM-2358-4.1 | Leg 4-1/8" |
| 2 | 1 | BGV-1215 | Clamp Block Assy. |
| 3 | 1 | BUG-1857 | Knob w/Set Screw |
| 4 | 4 | BUG-2593 | Glide "Flat" |
| 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 Assy. |
| 14 | 1 | PAN-2125 | Mounting Arm Assy. |
| 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



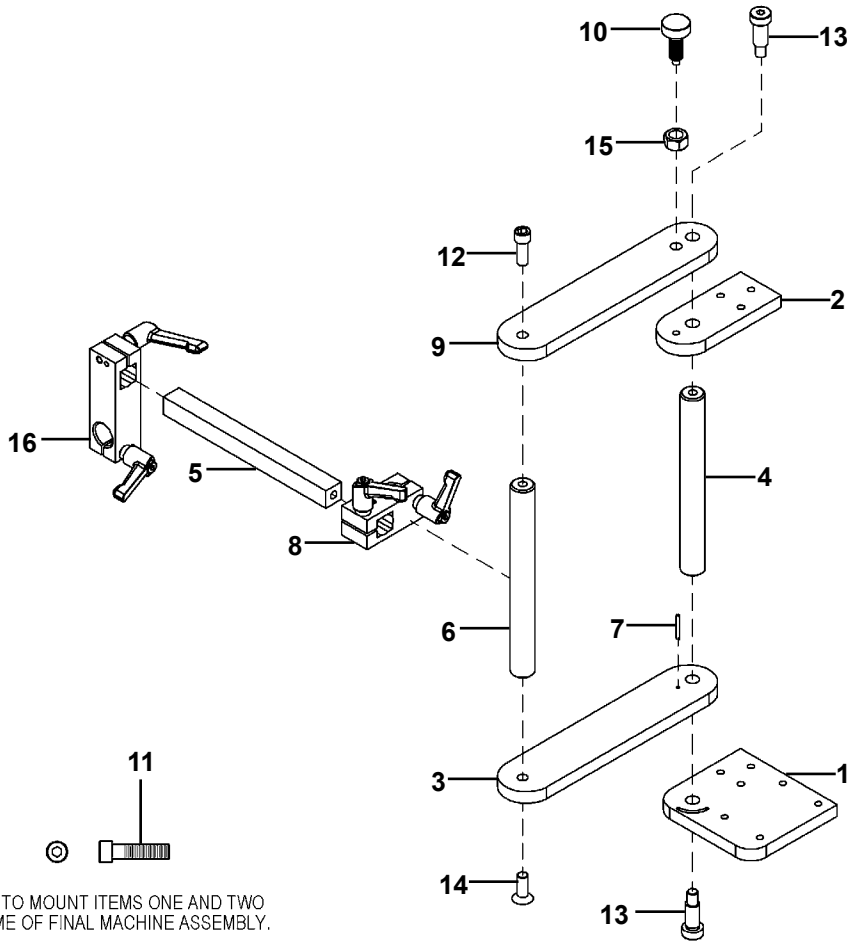
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|----------------------------------|
| 1 | 1 | ARM-2358-4.1 | Leg 4-1/8" |
| 2 | 1 | BGV-1215 | Clamp Block Assy. |
| 3 | 1 | BUG-1857 | Knob w/Set Screw |
| 4 | 4 | BUG-2593 | Glide "Flat" |
| 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 Assy |
| 14 | 1 | PAN-2125 | Mounting Arm Assy |
| 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



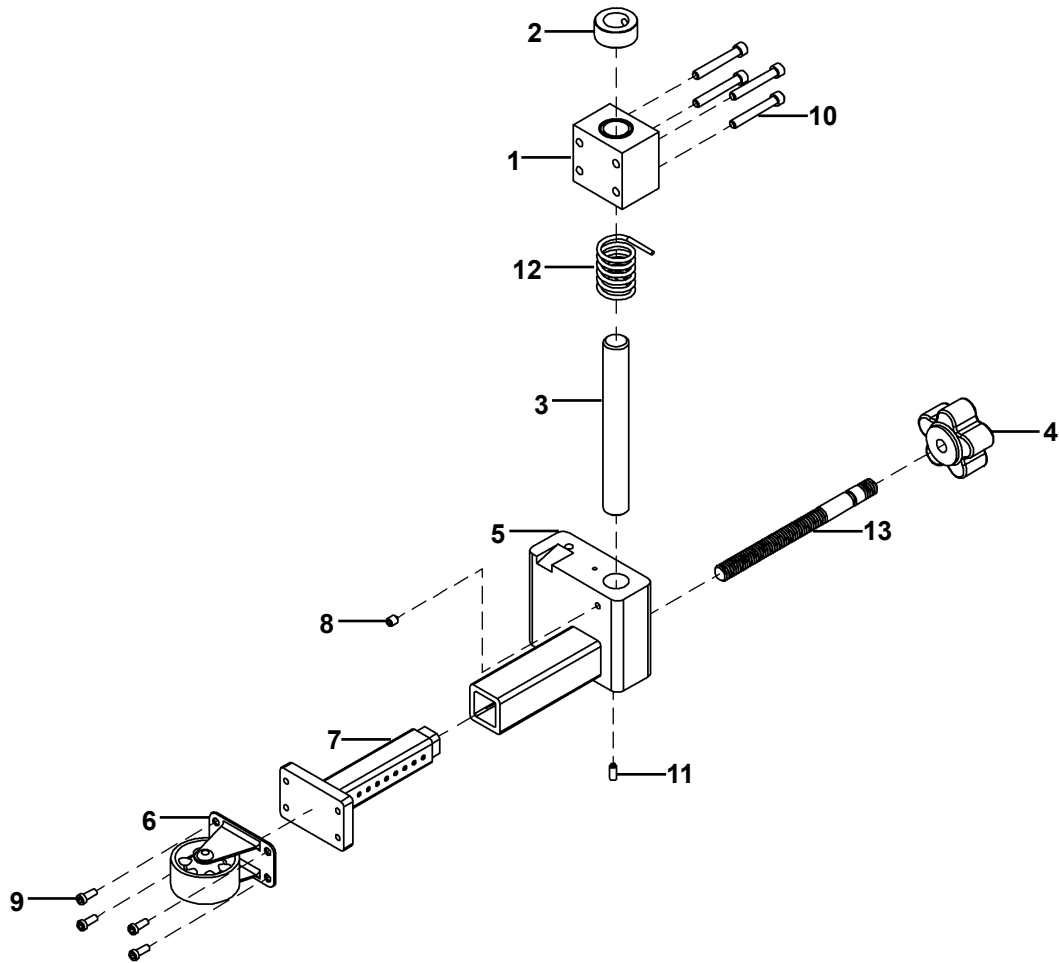
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|-------------------------------|
| 1 | 1 | STW-2151 | Wheel/Hinge Plate |
| 2 | 1 | STW-2152 | Hinge Plate "A" |
| 3 | 1 | STW-2154 | Hinge Plate "C" |
| 4 | 1 | STW-2155 | Hinge Rod |
| 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



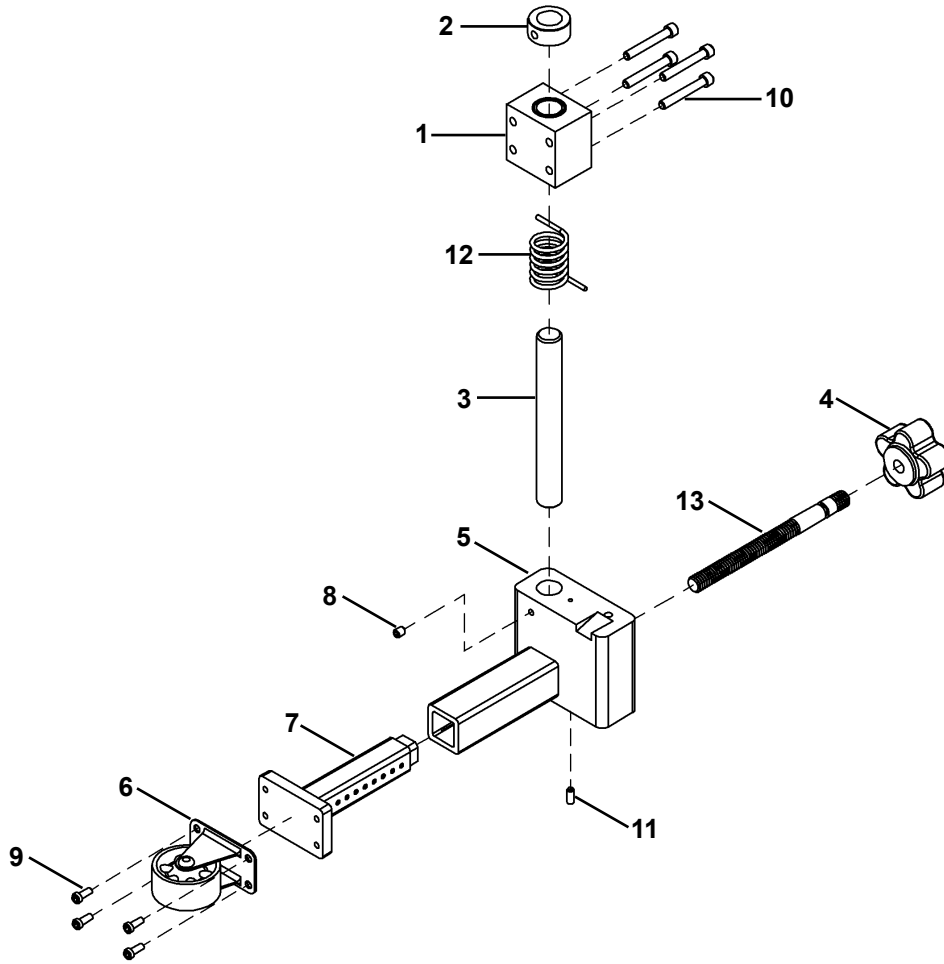
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|-------------------------------|
| 1 | 1 | STW-2151 | Wheel/Hinge Plate |
| 2 | 1 | STW-2152 | Hinge Plate "A" |
| 3 | 1 | STW-2153 | Hinge Plate "B" |
| 4 | 1 | STW-2155 | Hinge Rod |
| 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



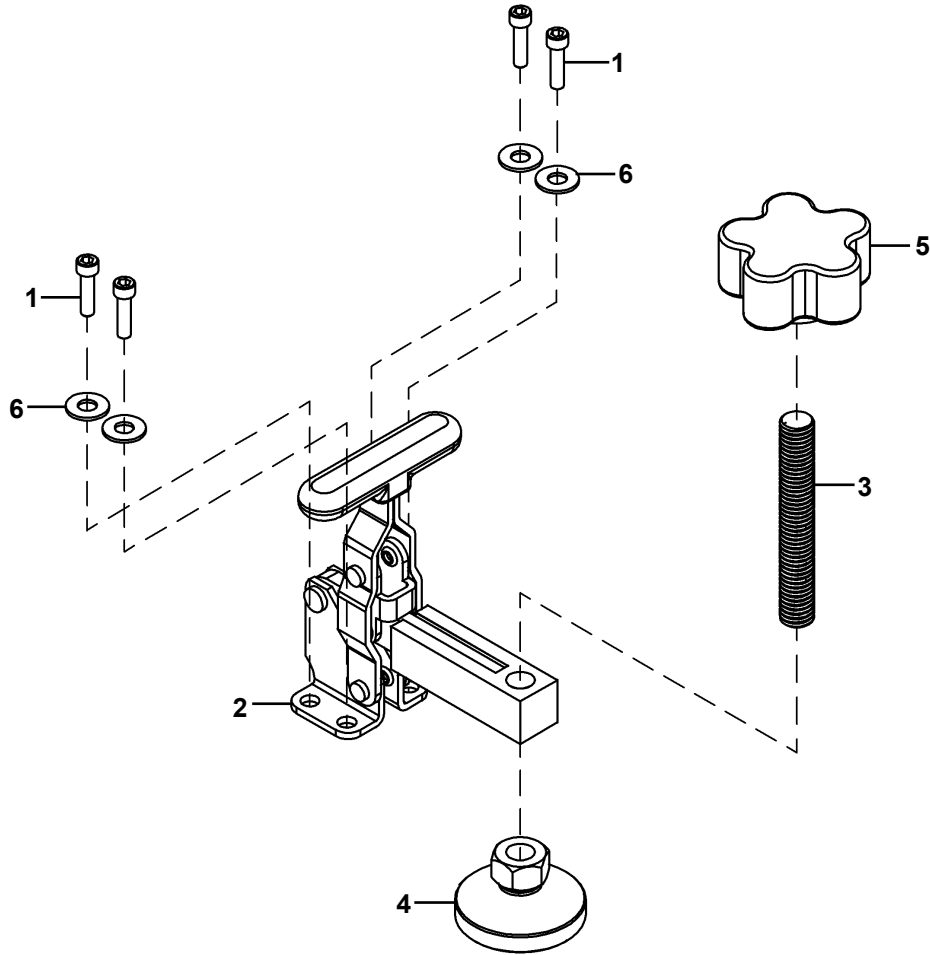
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|----------------------------------|
| 1 | 1 | STW-2135 | Hinge Bearing Block |
| 2 | 1 | STW-2138 | Shaft Collar 3/4" I.D. |
| 3 | 1 | STW-2173 | Follower Hinge |
| 4 | 1 | STW-2174 | Five 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



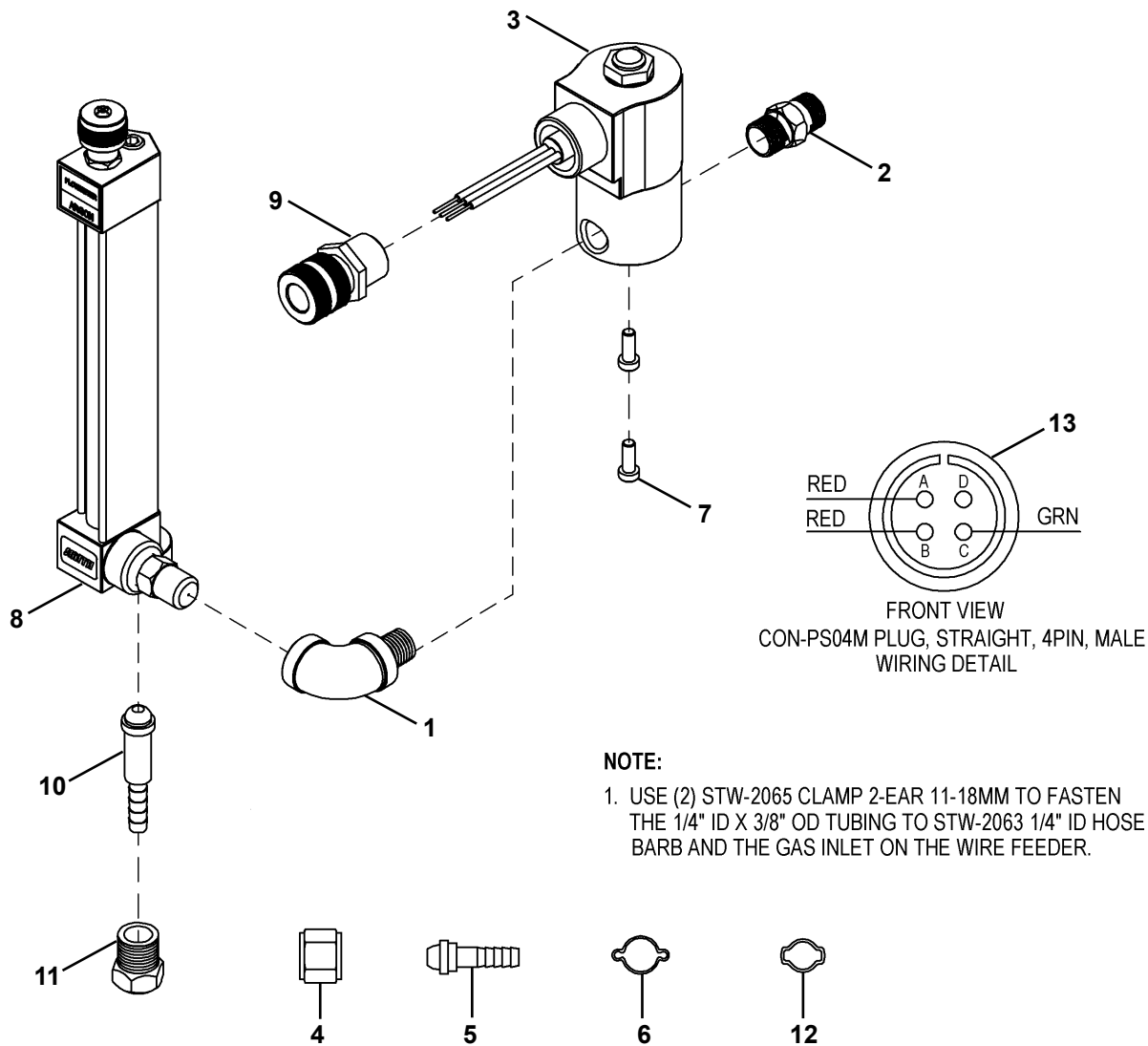
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|----------------------------------|
| 1 | 1 | STW-2135 | Hinge Bearing Block |
| 2 | 1 | STW-2138 | Shaft Collar 3/4" I.D. |
| 3 | 1 | STW-2173 | Follower Hinge |
| 4 | 1 | STW-2174 | Five 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 |

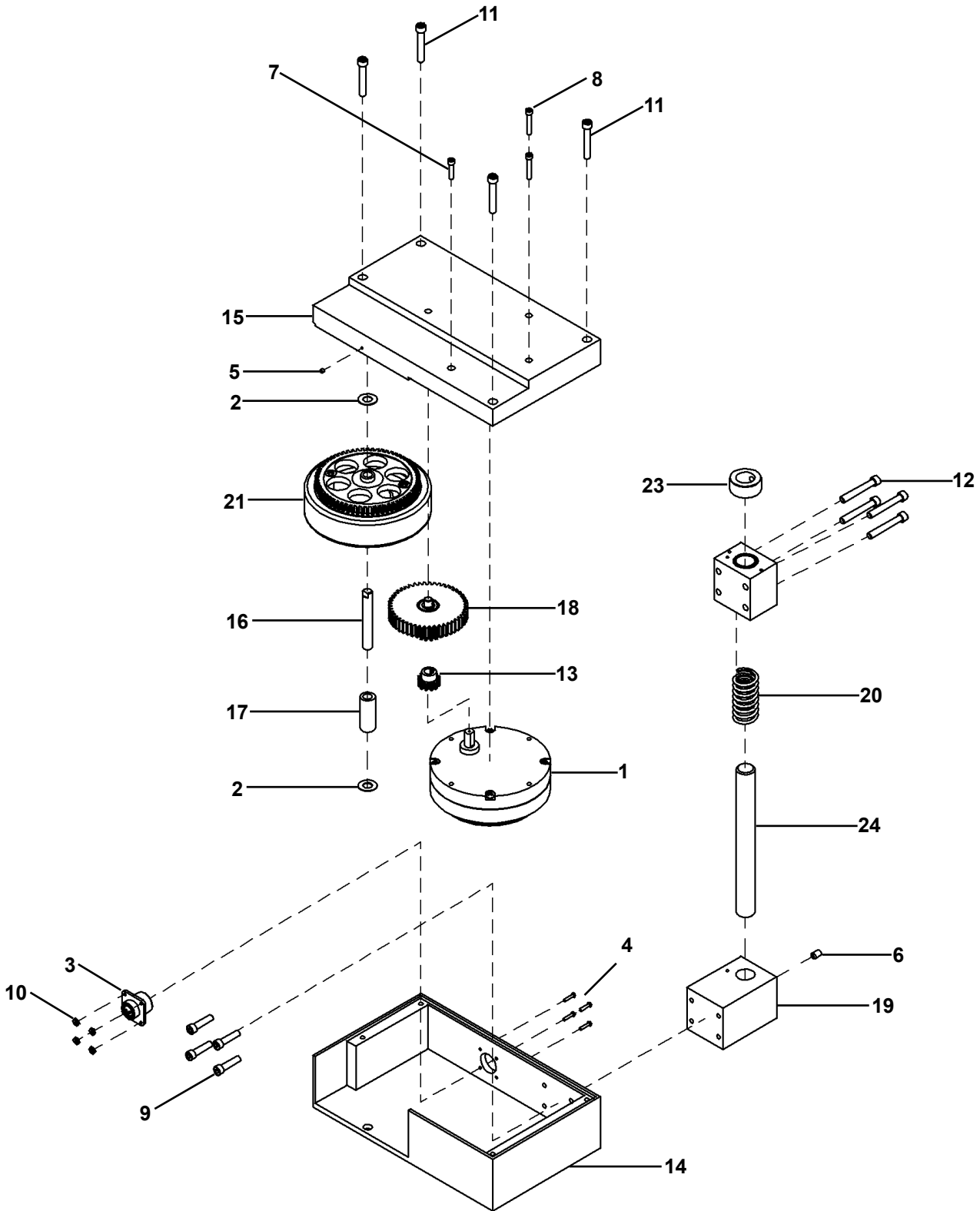
STW-2060 FLOW-METER & VALVE ASSEMBLY / EXPLODED VIEW / PARTS LIST



| <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-0545 | Soc Hd Cap Scr 10-32 x 1/2" |
| 8 | 1 | STW-2061 | Argon Flowmeter |
| 9 | 1 | STW-2062 | Modified Cord Grip |
| 10 | 1 | STW-2063 | 1/4" I.D. Hose Barb |
| 11 | 1 | STW-2064 | Inert Gas Male RH |
| 12 | 2 | STW-2065 | Clamp 2-Ear 8-11mm |
| 13 | 1 | CON-PS04M | Plug, Straight, 4 Pin, Male |
| NS | 26" | 1000-4-002 | 1/4" I.D. x 3/8" O.D. Tube |

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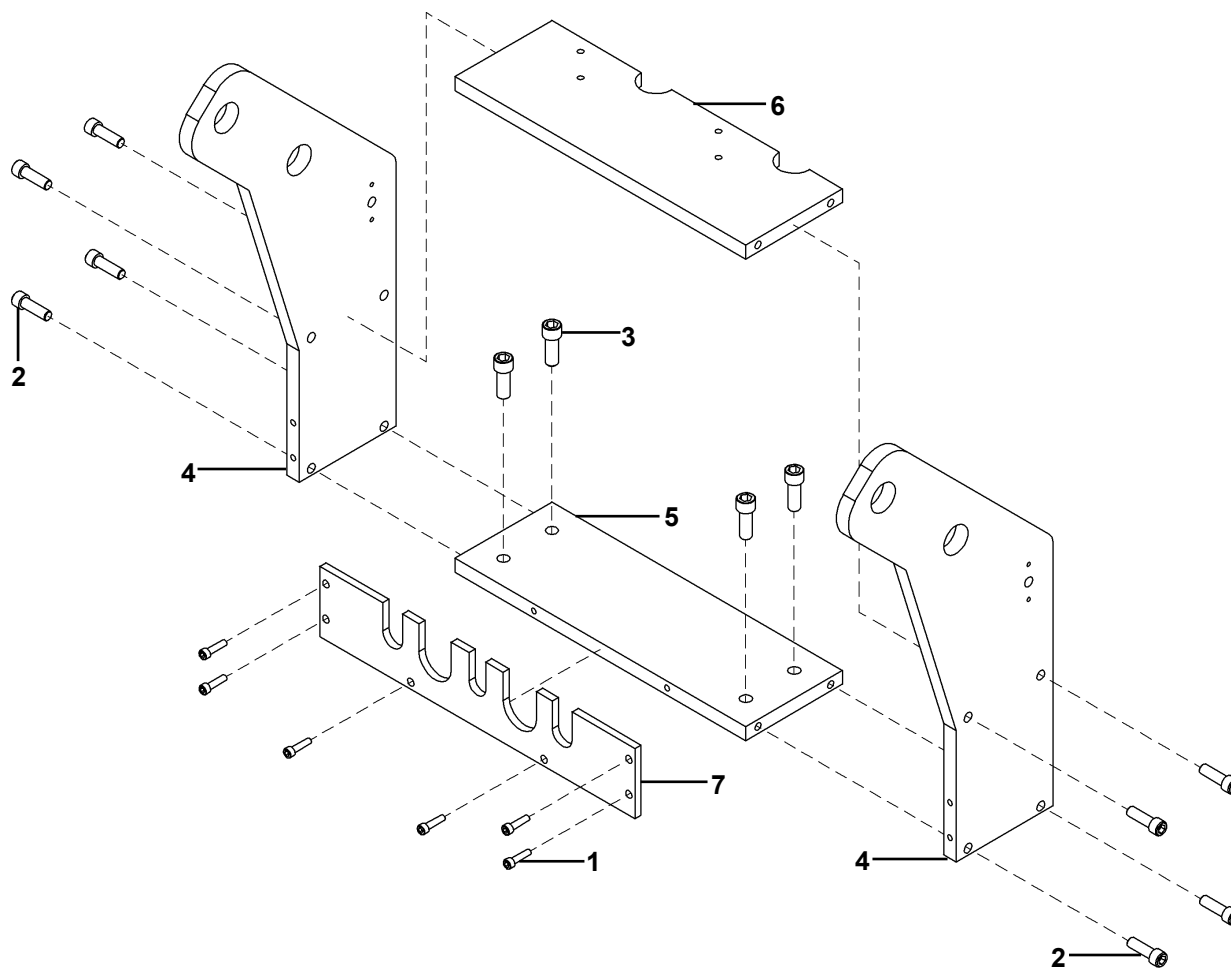
STW-2120 DRIVE UNIT ASSEMBLY / EXPLODED VIEW



STW-2120 DRIVE UNIT ASSEMBLY / PARTS LIST

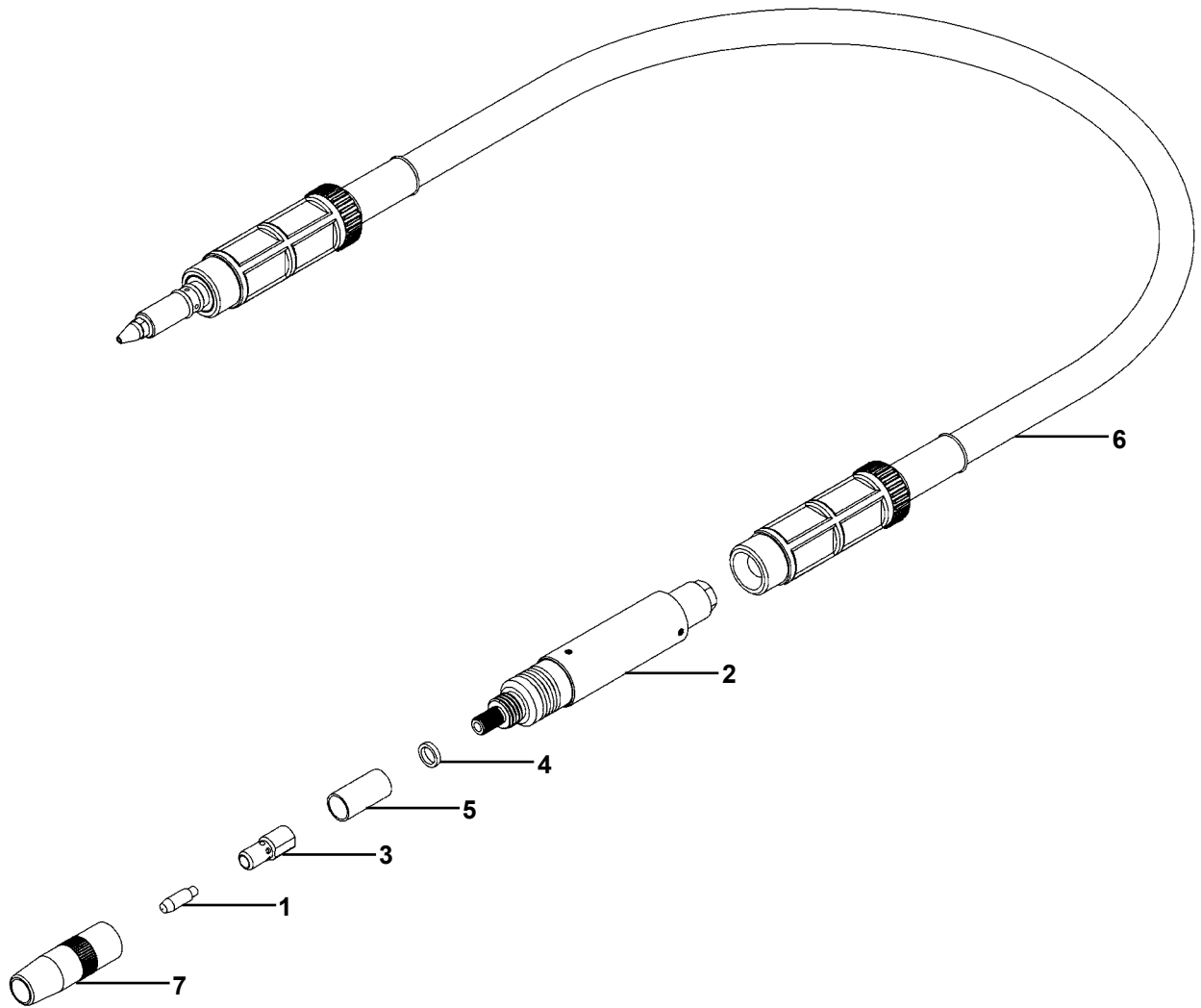
| <u>ITEM</u> | <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|-------------|------------|-----------------|---------------------------------|
| 1 | 1 | BUG-1550 | Gear Motor (150:1) |
| 2 | 2 | BUG-2268 | Thrust Washer |
| 3 | 1 | BUG-9856 | Panel Connector 2-T, Female |
| 4 | 4 | FAS-0205 | Rnd 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-2124 | Bushing |
| 18 | 1 | STW-2125 | Drive Gear Assembly |
| 19 | 1 | STW-2128 | Drive Unit Mounting Block |
| 20 | 1 | STW-2129 | Spring |
| 21 | 1 | STW-2130 | Drive Wheel Assy. |
| 22 | 1 | STW-2135 | Hinge Bearing Assy. |
| 23 | 1 | STW-2138 | Locking Collar |
| 24 | 1 | STW-2139 | Drive Unit Shaft |

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



| ITEM | QTY | PART NO. | DESCRIPTION |
|-------------|------------|-----------------|------------------------------|
| 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

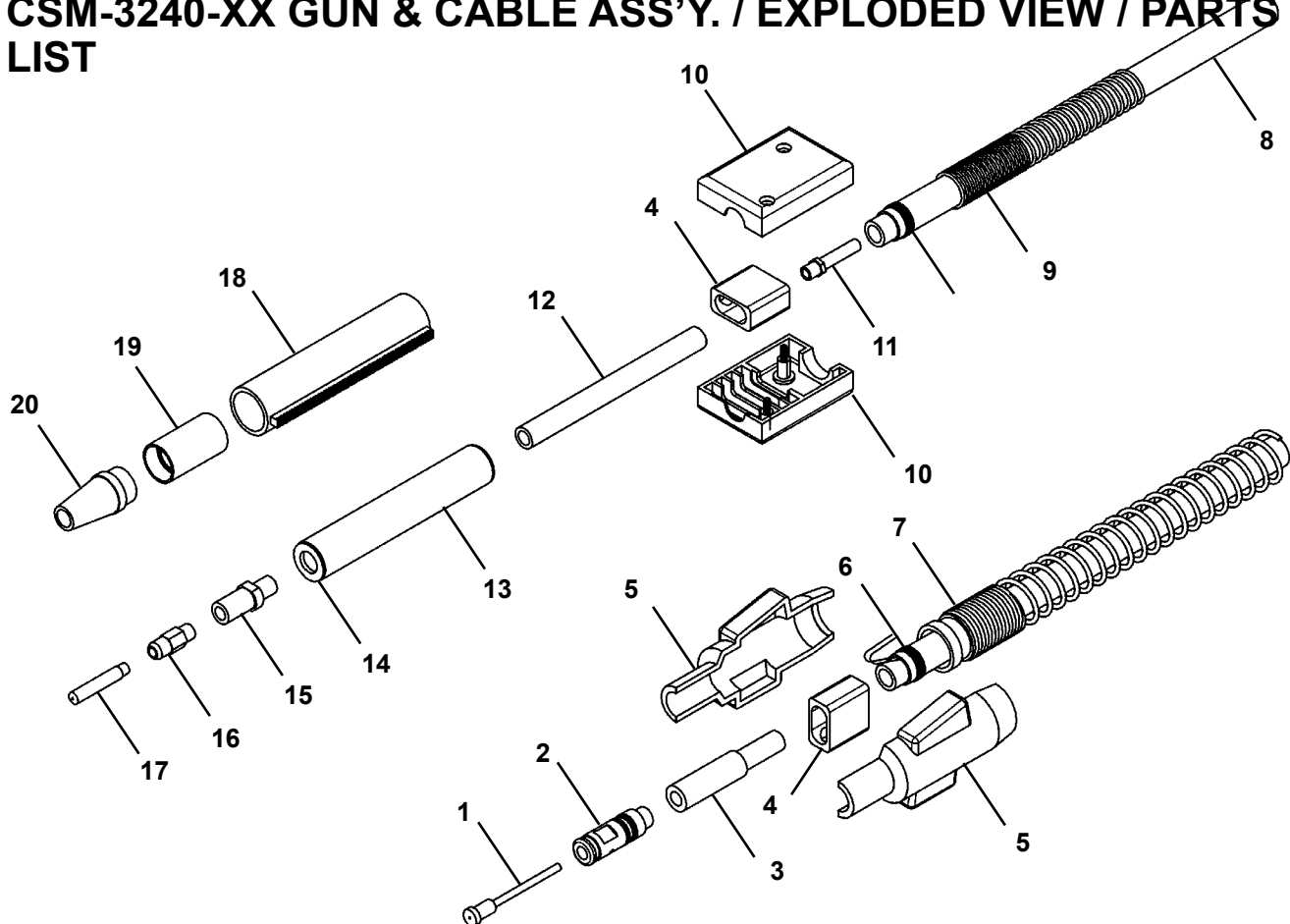


| PARTS LIST | | | | WIRE SIZE | | | |
|------------|-----|-------------|--|-----------|------|------|------|
| ITEM | QTY | PART NUMBER | DESCRIPTION | .035 | .045 | .052 | .062 |
| 1 | 1 | CSM-1091 | Contact Tip .035" | X | | | |
| 1 | 1 | CSM-1092 | Contact Tip .045" | | X | | |
| 1 | 1 | CSM-1093 | 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

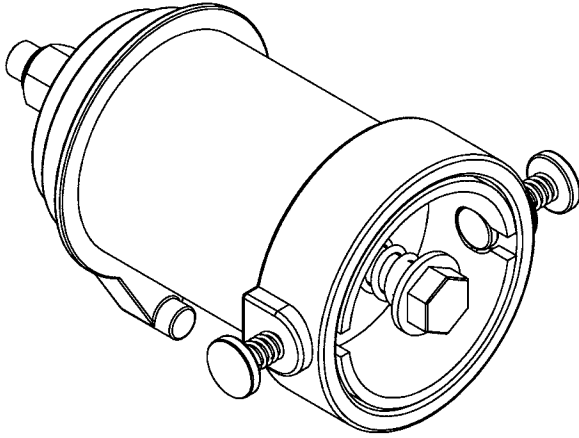
CSM-3240-XX GUN & CABLE ASS'Y. / EXPLODED VIEW / PARTS LIST



| <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

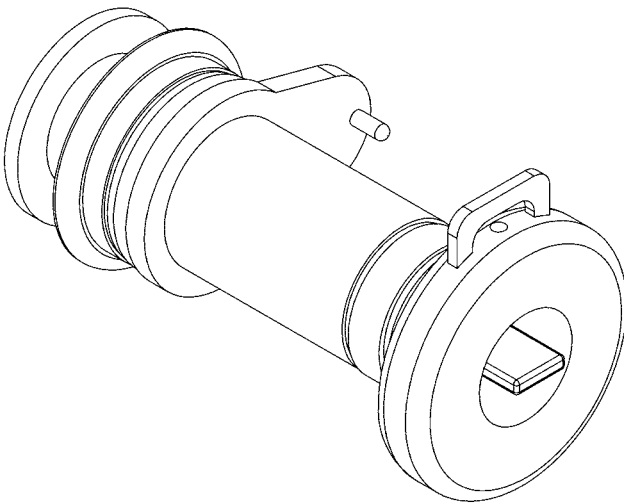
ACCESSORIES (SPOOLS):



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.

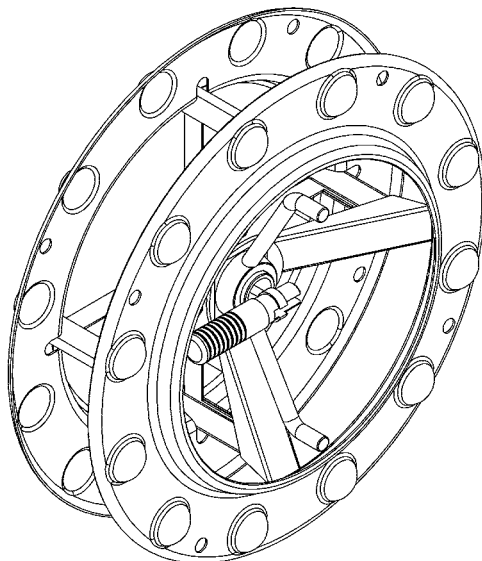
Order **#STW-2100**
Comes in quantities of 1.



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.