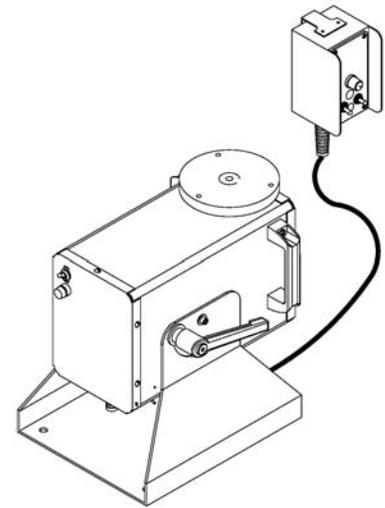
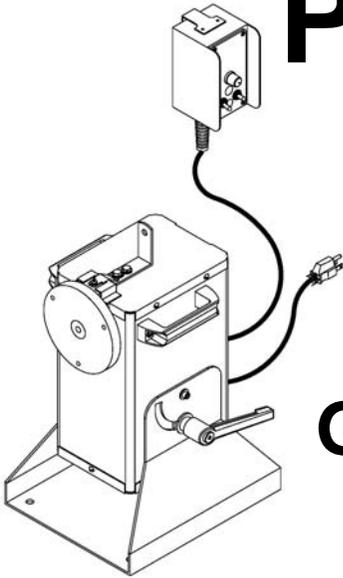




WELDING POSITIONER

*(USING GULLCO GSP-1100
SERIES CONTROLS)*

**MODELS:
GP-200, GPP-200**



TECHNICAL MANUAL

Website: www.gullco.com

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SAFETY INSTRUCTIONS

Although the Gullco welding positioner is manufactured for safe and dependable operation, it is impossible to anticipate those combinations of circumstances, which could result in an accident. An operator of the welding positioner is cautioned to always practice "**Safety First**" during each phase of operation, setup and maintenance.

Read and understand the whole Operating Instructions manual (including this Technical manual complete with the supplementary GSP-1100 Control Manual, "GD-084") before operating or performing service of this equipment. Become familiar with the machines operation, applications and limitations. Keep the operation manual in a clean and readily available location.

This equipment is normally used to automate / semi-automate welding or cutting processes. These processes usually have any combination of the following; bright and hot arcs, flying sparks, fumes, ultraviolet and infrared radiated energy, hot work-pieces, compressed gases, etc.. The onus is on the operator of this equipment to know, understand and follow all the safety precautions associated with the process being used.

A careless operator invites troubles, and failure to follow safety practices may cause serious injury or even death. Important safety precautions are given in the following:

Electrical Shock Prevention

- Do not use this equipment in damp or wet locations.
- Do not expose this equipment to rain.
- Do not touch electrically live parts or electrode with skin or wet clothing.
- Insulate yourself from the work and ground.
- Never carry this equipment by the cables or pull the cables to disconnect from the receptacle.
- Keep all cables from heat, oil and sharp edges.
- Inspect all cables periodically and replace if damaged.
- Inspect the security of all cables periodically and repair if loose.
- Disconnect the power cord when not in use.
- Disconnect the power cord **positively** to prevent electrical shock before repair and service of the equipment.

Bodily Injury Prevention

- Do not wear loose clothing, jewellery or loose, long hair which may get caught into automatic systems or moving parts.
- Keep equipment (especially lifting handles) dry, clean and free from oil & grease.
- Ensure that the positioner is **well** secured to the bench, tabletop, etc., to prevent it from tipping over when subjected to over hung loading.
- Never loosen the tilt-locking lever, nor try to tilt the rotary welding table, when there is a load mounted to the table generating large radial moments.
- Keep hands away from the rotary table when it is in motion, or when there is the slightest possibility of motion.
- Wherever possible, avoid mounting devices, etc., that protrude from the rotating mass, and pose possible pinch-points.
- Make certain that work-piece/mounting device protrusions will not strike the floor, positioner frame or any other object during rotation.
- There should only ever be one (1) operator working at the machine at any given time.
- Do not operate this equipment if drowsy from medication or fatigue.
- Do not lift the machine with heavy accessories or cables attached and only lift using adopted safe lifting standards and practices.

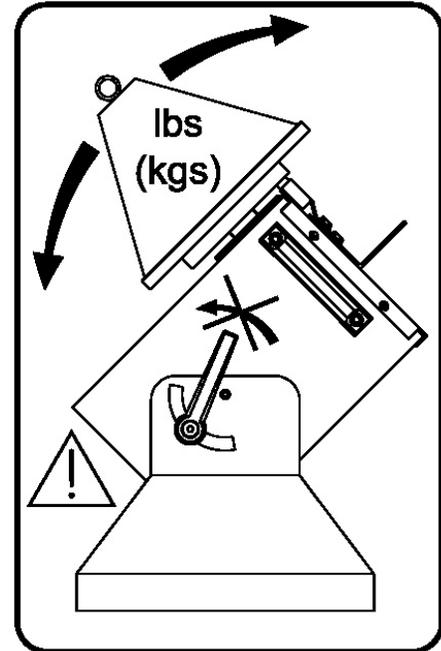
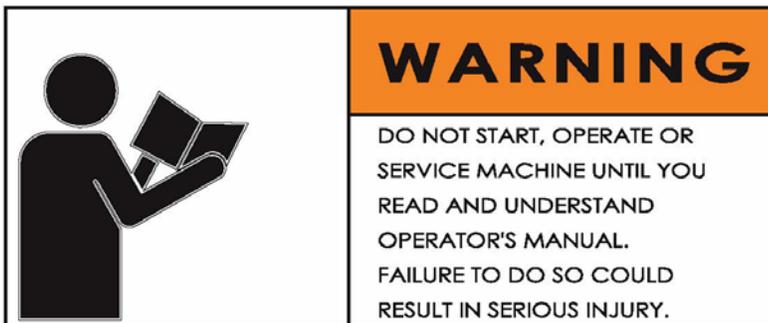
SAFETY PRECAUTIONS

The following cautionary/warning labels are attached to each welding positioner:-

The adjacent label pictorially represents the following:

Warning:-

Do not loosen the tilt clamp lever when there is a load applied to the table. This may result in an unexpected radial movement!



The above label pictorially represents the following:

Warning:-

Do not start, operate or service this equipment until you have read and understood the operator's manual(s)!"

IMPORTANT

READ THIS BEFORE OPERATING THE WELDING POSITIONER

When used with electric arc welding or cutting equipment, ensure that an adequate and well-maintained power return path is provided with good electrical contact. Failure to do so may result in the welding/cutting current passing through the Positioner and damaging the wiring and electrical components.

Important information regarding safety and operation of the "GSP-1100" motor control used in the Positioner is contained in a supplemental manual attached at the end of this manual. It is equally important to read, understand and apply the information contained within that manual. The supplemental manual (GD-084) has a title "Technical Information For The Gullco "GSP-1100" Microprocessor Based Motor Control", and it's pages are numbered with a prefix of "T-".

ALL THE SAFE PRACTICES AND PRECAUTIONS MAY NOT BE GIVEN IN WRITING. SOME ARE BASED ON COMMON SENSE, BUT OTHERS MAY REQUIRE TECHNICAL BACKGROUND TO EXPLAIN.

WELDING POSITIONER

This parts list covers the operation and maintenance requirements of the following Gullco welding positioners:

GP-200-M, GP-200-H, GPP-200-M & GPP-200-H

SPECIFICATIONS

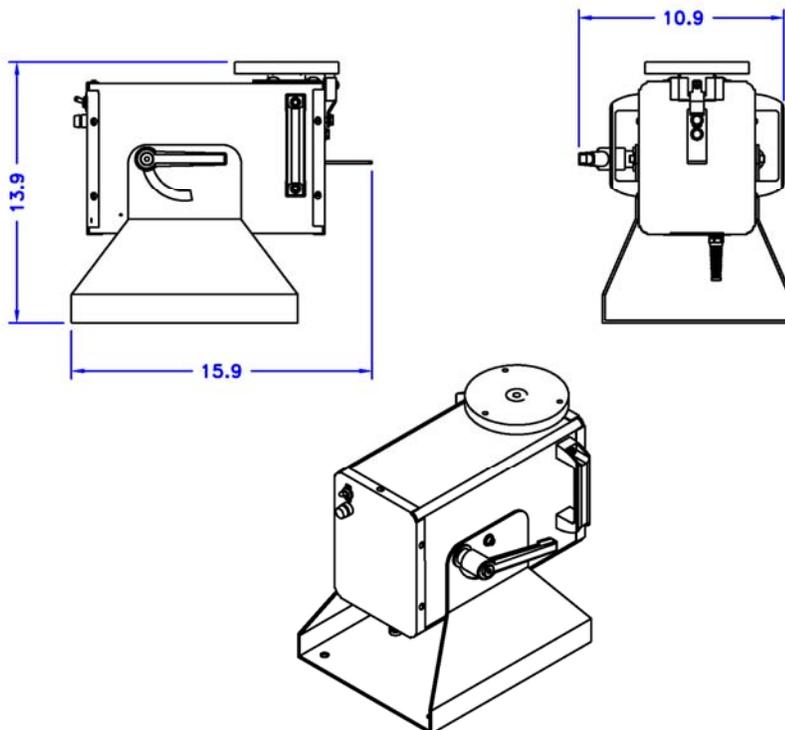
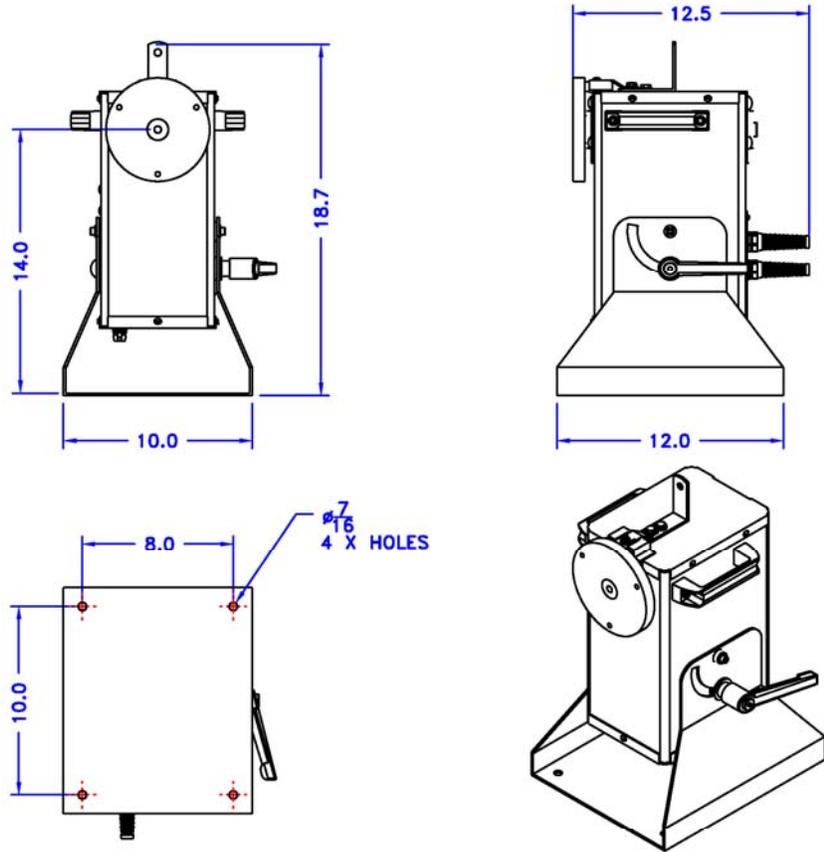
MODEL	0.27 – 4.62962 RPM	0.75 – 12.5000 RPM	GAS PURGE SYSTEM†
GP-200-M	✓		
GP-200-H		✓	
GPP-200-M	✓		✓
GPP-200-H		✓	✓

OVERHUNG LOAD RATING, TABLE VERTICAL			
Distance (C of G)		Load	
Inches	mm.	Lbs.	Kgs.
3	76	150	68
6	152	75	34
9	229	50	22.7
12	305	37.5	17

- Stand alone weight:** 53 Lbs. [24 Kg.]
- Rotational Torque:** 108 in.lbs [124 Kg.cm]
- Vertical Table loading:** 450 in.lbs [518 Kg.cm] from face.
- Horizontal Table Loading:** 300 lbs. [136 Kg.cm]
- Supply voltage:** Either 42, 115 or 230 VAC, single phase, 50/60 Hz., 200 watts.
- Tilt angle:** Infinitely variable from 0 to 90 degrees (horizontal to vertical).
- Welding ground:** Sprung loaded, rotary ground on the underside of the table.
- Drive motor:** 24 VDC permanent magnet gear motor.
- Complies with:** C.S.A. & NRTL/C and C.E. regulations.

† The gas purge system allows pre-weld gas purging by providing a path for the gas through a rotary gas coupling and through the center of the table spindle.

GENERAL DIMENSIONS



INSTALLATION

ELECTRICAL CONNECTION

WARNING! Ensure proper AC earth grounding of the Gullco welding positioner and all auxiliary equipment (where applicable), before applying power. Failure to do so may invalidate the Gullco Warranty.

WARNING! Before connecting the welding positioner to a power source (receptacle, outlet, etc.,) be sure that the voltage supplied is the same as that specified on the nameplate of the positioner. If in doubt, **DO NOT PLUG IN THE WELDING POSITIONER.** Copies of the possible nameplates are shown below:

 <p style="text-align: center;">EQUIPMENT FOR AUTOMATED WELDING AND CUTTING</p> <p style="text-align: center;">WWW.GULLCO.COM</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">MODEL:</td> <td style="width: 50%;">SERIAL:</td> </tr> <tr> <td>SUPPLY: 42 V ~</td> <td>FREQUENCY: 50/60 Hz.</td> </tr> <tr> <td>WATTS: 200</td> <td>FUSE: 5 AMP SLOW BLOW</td> </tr> <tr> <td>PHASE: 1</td> <td>MANUFACTURED: MM/DD/YYYY</td> </tr> </table> <p style="text-align: center;">GULLCO INTERNATIONAL</p> <p>ONTARIO, CANADA LANCASHIRE, U.K. CLEVELAND, OHIO, U.S.A. Phone: (905) 953-4140 Phone: +44 1257-253579 Phone: (440) 439-8333</p> <p>SHANGHAI, CHINA QUEENSLAND, AUSTRALIA PUNE, INDIA Phone: +8621-50460341 Phone: 61 (0) 7 5439-0701 Phone: 91-20-56260382</p> <p style="text-align: right;">    </p>	MODEL:	SERIAL:	SUPPLY: 42 V ~	FREQUENCY: 50/60 Hz.	WATTS: 200	FUSE: 5 AMP SLOW BLOW	PHASE: 1	MANUFACTURED: MM/DD/YYYY	 <p style="text-align: center;">EQUIPMENT FOR AUTOMATED WELDING AND CUTTING</p> <p style="text-align: center;">WWW.GULLCO.COM</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">MODEL:</td> <td style="width: 50%;">SERIAL:</td> </tr> <tr> <td>SUPPLY: 115 V ~</td> <td>FREQUENCY: 50/60 Hz.</td> </tr> <tr> <td>WATTS: 200</td> <td>FUSE: 2.5 AMP SLOW BLOW</td> </tr> <tr> <td>PHASE: 1</td> <td>MANUFACTURED: MM/DD/YYYY</td> </tr> </table> <p style="text-align: center;">GULLCO INTERNATIONAL</p> <p>ONTARIO, CANADA LANCASHIRE, U.K. CLEVELAND, OHIO, U.S.A. Phone: (905) 953-4140 Phone: +44 1257-253579 Phone: (440) 439-8333</p> <p>SHANGHAI, CHINA QUEENSLAND, AUSTRALIA PUNE, INDIA Phone: +8621-50460341 Phone: 61 (0) 7 5439-0701 Phone: 91-20-56260382</p> <p style="text-align: right;">    </p>	MODEL:	SERIAL:	SUPPLY: 115 V ~	FREQUENCY: 50/60 Hz.	WATTS: 200	FUSE: 2.5 AMP SLOW BLOW	PHASE: 1	MANUFACTURED: MM/DD/YYYY
MODEL:	SERIAL:																
SUPPLY: 42 V ~	FREQUENCY: 50/60 Hz.																
WATTS: 200	FUSE: 5 AMP SLOW BLOW																
PHASE: 1	MANUFACTURED: MM/DD/YYYY																
MODEL:	SERIAL:																
SUPPLY: 115 V ~	FREQUENCY: 50/60 Hz.																
WATTS: 200	FUSE: 2.5 AMP SLOW BLOW																
PHASE: 1	MANUFACTURED: MM/DD/YYYY																

 <p style="text-align: center;">EQUIPMENT FOR AUTOMATED WELDING AND CUTTING</p> <p style="text-align: center;">WWW.GULLCO.COM</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">MODEL:</td> <td style="width: 50%;">SERIAL:</td> </tr> <tr> <td>SUPPLY: 230 V ~</td> <td>FREQUENCY: 50/60 Hz.</td> </tr> <tr> <td>WATTS: 200</td> <td>FUSE: 1.25 AMP SLOW BLOW</td> </tr> <tr> <td>PHASE: 1</td> <td>MANUFACTURED: MM/DD/YYYY</td> </tr> </table> <p style="text-align: center;">GULLCO INTERNATIONAL</p> <p>ONTARIO, CANADA LANCASHIRE, U.K. CLEVELAND, OHIO, U.S.A. Phone: (905) 953-4140 Phone: +44 1257-253579 Phone: (440) 439-8333</p> <p>SHANGHAI, CHINA QUEENSLAND, AUSTRALIA PUNE, INDIA Phone: +8621-50460341 Phone: 61 (0) 7 5439-0701 Phone: 91-20-56260382</p> <p style="text-align: right;">    </p>	MODEL:	SERIAL:	SUPPLY: 230 V ~	FREQUENCY: 50/60 Hz.	WATTS: 200	FUSE: 1.25 AMP SLOW BLOW	PHASE: 1	MANUFACTURED: MM/DD/YYYY	
MODEL:	SERIAL:								
SUPPLY: 230 V ~	FREQUENCY: 50/60 Hz.								
WATTS: 200	FUSE: 1.25 AMP SLOW BLOW								
PHASE: 1	MANUFACTURED: MM/DD/YYYY								

As the colours of the wires in the mains lead of this equipment may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

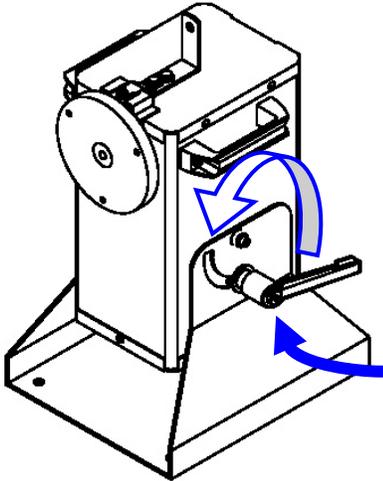
- The Green & Yellow or Green wire must be connected to the terminal in the plug which is allocated for "Earth" / "Ground".
- The Blue or White wire must be connected to the terminal that is allocated for "Neutral".
- The Brown or Black wire must be connected to the terminal that is allocated for "Live".

230V Equipment must be installed in accordance with CEC, NEC or other applicable electrical code.

WARNING! Ensure that the weld ground is properly attached to the ground bracket on the positioner. A poor welding ground circuit will cause the weld ground to pass through the positioner, causing damage to the motor control, cables, drive system and the main spindle bearings. This will invalidate the Gullco warranty.

MECHANICAL INSTALLATION

WARNING! Check to ensure that no parts have become loose during transportation.



The Gullco positioner is equipped with handles for portability. The weight of the positioner is evenly distributed around the handles when tilted and locked in the upright position (as shown adjacent). Lifting the positioner with additional equipment attached (resulting in uneven weight distribution), cables attached, or with the positioners tower in any other position than upright and firmly locked, may present a hazard. Therefore we recommend that care and consideration should be given to removing uneven loads and /or any additions that may make the total weight of the equipment too heavy or awkward to be comfortably lifted.

WARNING! Never disengage the tilt locking lever, when there is a possibility that this action may result in uncontrollable or unsafe radial motion of the positioner tower.

Bolt the welding positioner to a fixed table using four (4), 3/8" or 10mm bolts (not supplied). The center distances of the positioners pre-drilled mounting boltholes are 8" [20.3 cm] wide by 10" [25.4 cm] long.

Check that the welding ground block on the underside of the spindle flange is correctly located and well seated.

Depending on any optional accessories that may have been supplied with the unit, further installation may be required. This typically consists of any combination of simple mechanical erection and simple cable connection (usually through multi-pin connectors).

LOADING

Before mounting any load to the rotary table, the tilt locking adjustable lever should be tested for tightness. When loading the work piece onto the table, take account of the weight, centroid eccentricity and centroid height of both the work piece and all clamping fixtures. When the work piece is large and its weight is one sided at the peripheral portion, inertia start and stop is severe and can cause an overload situation. Wherever possible, counterbalance weights should be used to reduce this stress. Take into consideration the additional weight and distribution of the counterbalance.

WARNING! Lower work pieces onto the turntable gently. Impact and shock loads are many times greater than the "dead-weight" of the work-piece. Dropping loads onto the table can result in damage!

WARNING! Do not use impact or shock techniques to clamp and unclamp self-centering grippers mounted to the positioner turntable. The shock will be transferred to the drive system resulting in damage!

MAINTENANCE

The Gullco welding positioner is a heavy duty, robust piece of equipment, and under normal conditions, it will give you years of trouble free service, if it is operated within the limits of its expected use and if the following maintenance points are adhered to:

Clean all excess dust, spatter, slag etc. from the positioner regularly. Do not allow any foreign material to impede operation. Pay particular attention to the following paragraph regarding inspection.

INSPECTION

The welding ground should be inspected for a secure, clean electrical contact from the welding power source to the grounding bracket of the positioner before the start of each new day of welding. The fasteners of the positioner grounding assembly should be inspected for security. A visual check of the grounding block, springs and ground strap should be performed to ensure that the ground block is seating flat against a clean, spindle flange and that there are no signs of obvious damage occurring.

Frequent inspections should be performed with respect to the stability and rigidity of the positioner mounting. Also, the drive sprockets, chain and spindle bearings should be inspected for signs of wear and replaced if necessary.

The tension of the drive chain should be inspected and adjusted as necessary. The drive chain tension is adjusted by loosening off the four (4) motor mounting button headed cap screws (item# 37 in drawing GP-200 & item# 38 in drawing GPP-200). Then loosen the jam nut and adjust the motor tensioning screw as required (items # 31 & 43 in drawing GP-200 & items 32 & 44 in drawing GPP-200). Once the desired tension has been set, re-tighten the jam nut and the four (4) motor mounting screws.

WARNING! A small amount of radial backlash on the spindle is inherent in the design of the Positioner. Do not over-tension the drive chain in an attempt to remove this backlash as this will cause the motor to overload and possibly result in gear-motor failure and will invalidate the Gullco warranty.

The tachometer feed-back encoder sensor assembly located on the back of the motor should be inspected for dirt accumulation and cleaned where necessary. It is common for the armature shaft of a fatiguing motor to develop excessive axial float. This float sometimes causes the tachometer feed-back sensor wheel to rub on one of the encoder sensor faces, causing damage and failure. Check that the sensor disk is located centrally within the slot of the encoder sensor when the armature shaft is pressed in and pulled out. Adjust as necessary. The frequency of this inspection should increase with the accumulated use and or workload of the gear-motor.

At least once per year, the equipment should be taken out of service, stripped down and all moving parts should be cleaned, greased and inspected for wear and damage. All cables must be inspected for breaks and abrasion and must be well secured. All damaged and worn parts should be replaced, using genuine/authorized replacement parts only. All fastening devices should be inspected for tightness.

NOTE: These inspections should be performed with greater frequency if conditions and usage requires.

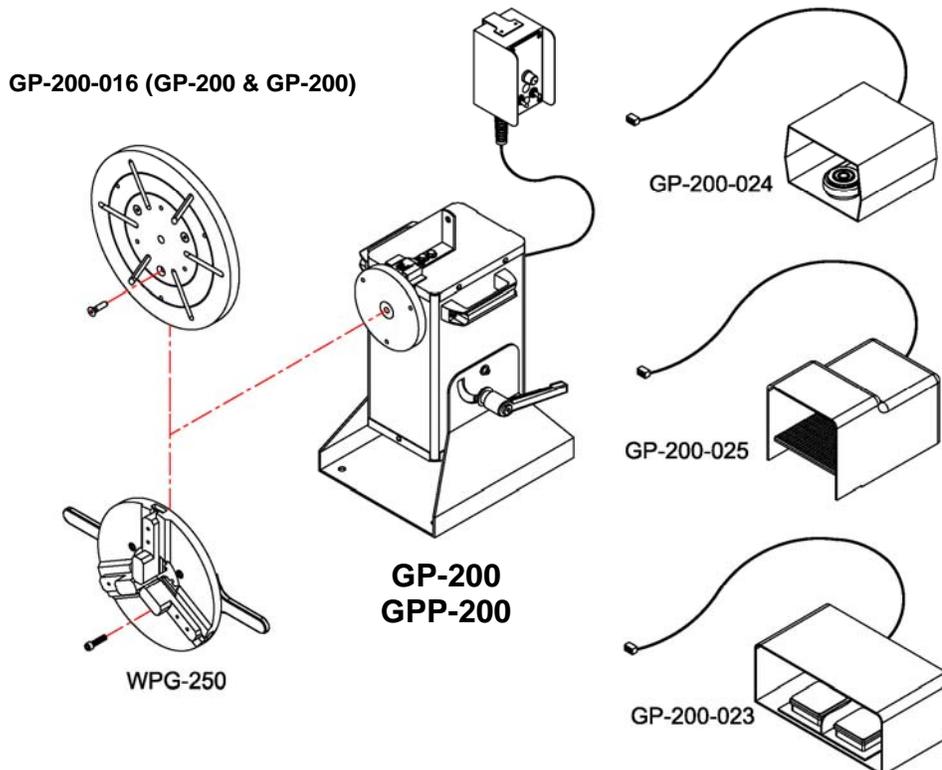
STORAGE

The Gullco welding positioner should be kept in a dry environment with no possibility of impact or damage due to stacking of heavy objects on top of the equipment.

SHIPPING

When shipping the Gullco welding positioner, the rotary table should be locked in the horizontal plane and the mounting table removed and safely packaged. There should be sufficient room around the perimeter of the shipping box to allow packing to be placed to help protect susceptible parts from being damaged in shipping. If possible, the whole positioner should be bolted to a flat piece of wood.

ACCESSORIES



GP-200-024 Run/Stop footswitch assembly for manual operation. This kit provides a run/stop footswitch; a footswitch guard cover; a connecting control cable; and strain relief glands. When activated, the footswitch will provide a run signal to the control.

GP-200-025 Variable Speed footswitch assembly for manual operation. This kit provides a run/stop/variable speed footswitch; a footswitch guard cover; a connecting control cable; and strain relief glands. When activated, the footswitch will provide a run signal to the control and allow regulation of the rotational speed via the compression of the footswitch pedal.

GP-200-023 Forward/Stop/Reverse footswitch assembly for manual operation. This kit provides directional footswitches; a footswitch guard cover; a connecting control cable; and strain relief glands. When activated, the footswitch will provide a run signal and a rotary direction signal to the control.

GP-200-016 12" [305 mm] Diameter mounting table. This round mounting table is used to facilitate direct mounting of components or fixtures and provides six (6) radial mounting slots and various three (3) hole pitch circle bolt patterns. The mounting table is quickly and easily mounted on the positioner spindle flange.

WPG-250 Gullco Self-Centering Welding Grippers are quickly and easily mounted on the positioner spindle flange. They are slim but rugged, weighing only about half of that of a standard chuck, minimizing reduction in positioner capacity. A single lever provides smooth, positive, self-centering open/close action.
External clamping range = 0.38" [10mm] to 11.25" [286mm]
Internal clamping range = 4.25" [108mm] to 15" [381mm]
Weight 20 Lbs. [9 Kg.]

KR-1000 CSB A free standing support and cutting torch holder assembly. 1-1/8" [28.6mm] square rack arms and rack boxes provide 11-1/2" [292.1mm] of vertical adjustment and 10-1/2" [266.7mm] of horizontal adjustment. Supplied with swivel mounted, standard rack-type cutting torch holder.

KR-2000 CSB Same as above, except uses 1-1/2" [38.1mm] rack arms and rack boxes and provides 7-1/2" [190.5mm] of vertical and 6-1/2" [165.1mm] of horizontal adjustment.

KR-1000 WSB A free standing support and welding gun holder assembly. 1-1/8" [28.6mm] square rack arms and rack boxes provide 11-1/2" [292.1mm] of vertical adjustment and 10-1/2" [266.7mm] of horizontal adjustment. Supplied with swivel mounted, adjustable gun holder assembly.

KR-2000 WSB Same as above, except uses 1-1/2" [38.1mm] rack arms and rack boxes and provides 7-1/2" [190.5mm] of vertical and 6-1/2" [165.1mm] of horizontal adjustment.

NOTE: The above cutting torch and welding gun support assemblies can be, and often are, equipped with one (1) or two (2) Gullco motorized rack arms controlled by a remote joystick pendant. Ask your local Gullco representative for further details.

ALSO AVAILABLE:

Gullco frequently designs and manufactures custom welding systems, often utilizing the welding positioner. These systems normally use some, or all of the following; a programmable logic control, a programmable operator interface (that allows the user to easily adjust any of the timed and counted preset values etc.), pneumatic or motorized slide/slides, interfacing with welding/cutting equipment, external safety devices, auxiliary process equipment etc. Your local Gullco representative would welcome the opportunity to discuss how we may assist in automating your specific application.

WELDING POSITIONER PARTS BREAKDOWN

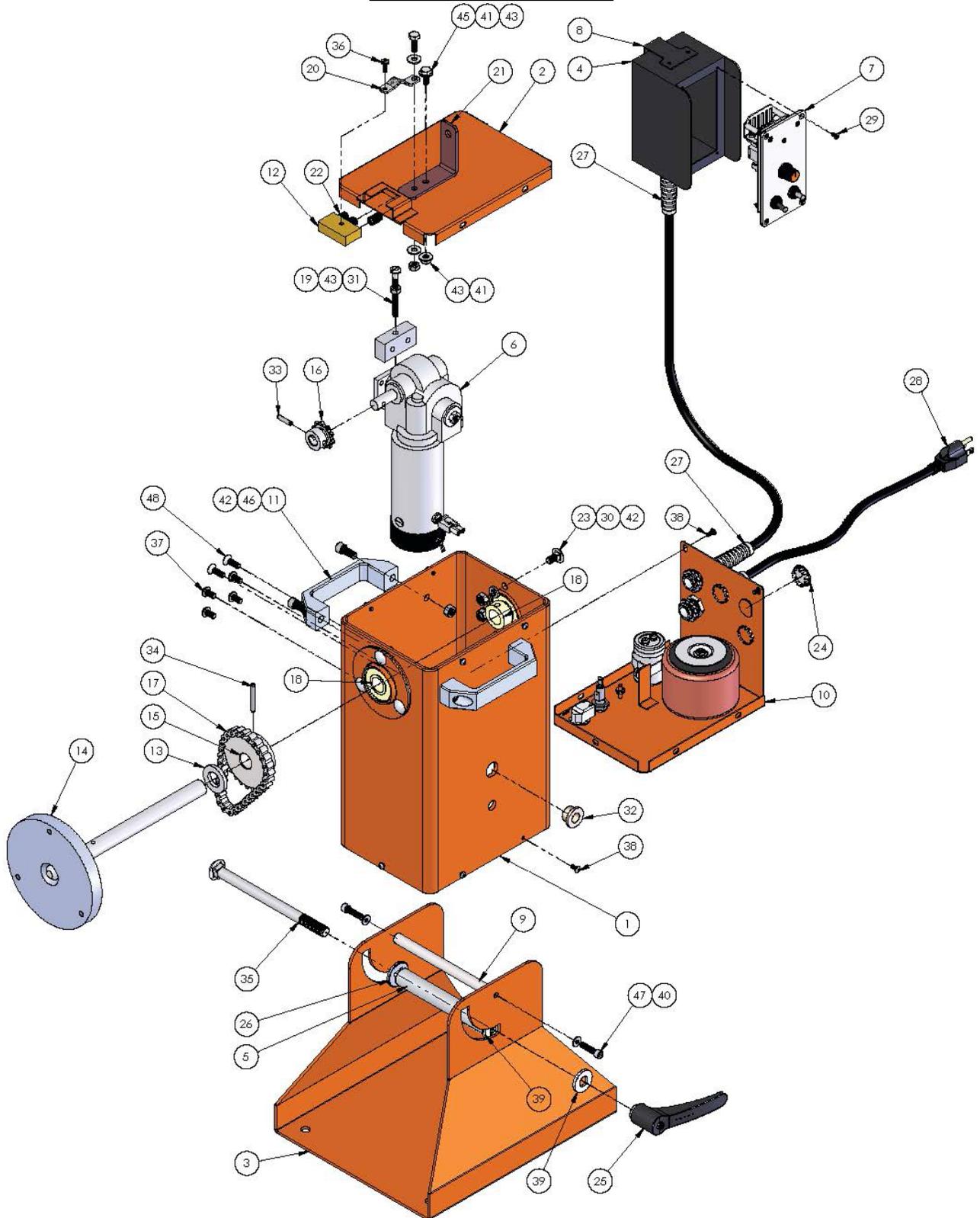
DRAWING GP-200

ITEM	PART NO.	DESCRIPTION	QTY.
1	GP-200-001	MAIN FRAME	1
2	GP-200-003	TOP COVER	1
3	GP-200-002	TILT BASE	1
4	GP-200-013	REMOTE PENDANT ENCLOSURE	1
5	GP-200-012	SLEEVE	1
6	GP-200-011	24 VDC MOTOR ASSEMBLY (200:1)	1
	GP-200-015	24 VDC MOTOR ASSEMBLY (540:1)	
7	GSP-1100	GSP-1100 CONTROL ASSEMBLY	1
8	GP-200-017	REMOTE PENDANT CLIP	1
9	GP-200-010	PIVOT SHAFT	1
10	GP-200-018	POWER SUPPLY UNIT	1
11	GP-200-021	HANDLE	2
12	GP-200-009	GROUND BLOCK	1
13	GP-200-041	SPINDLE SPACER	1
14	GP-200-014	SPLINDLE	1
15	GP-200-008	24 TOOTH #35 SPROCKET	1
16	GP-200-007	10 TOOTH #35 SPROCKET	1
17	GP-200-020	DRIVE CHAIN	1
18	GP-200-039	BEARING FLANGETTE UNIT	2
19	GP-200-022	CHAIN TENSIONER BLOCK	1
20	GP-150-023	GROUND STRAP	1
21	GP-150-009	GROUNDING BRACKET	1
22	GK-116-012	SPRING	3
23	GK-160-012	5/16-18 x 5/8 CARRIAGE BOLT	6
24	GK-155-002	HOLE PLUG, 7/8"	3
25	GK-153-007	1/2-13UNC FEMALE ADJ. HANDLE LEVER	1
26	GP-200-019	CARRIAGE BOLT WASHER	1
27	GK-148-015	PIGTAIL STRAIN RELIEF	3
28	GK-171-032	POWER CORD	1
29	GK-141-014	#6-32UNC x 5/16 FHMS SS	4
30	GK-136-055	LOCK WASHER 5/16 BOLT	6
31	GK-122-051	1/4-20UNC X 2.5" PAN HEAD SCREW	1
32	GK-118-077	1/2" FLANGE BEARING	2
33	GK-117-038	3/16 x 13/16 SPRING PIN	1
34	GK-117-029	3/16 x 1-1/2 SPRING PIN	1
35	GP-200-040	1/2-13 x 7 CARRIAGE BOLT	1
36	GK-112-116	#10-32 x 1/2 BRASS SCREW	1
37	GK-112-106	1/4-20UNC x 1/2 RND HEAD SCREW	4
38	GK-112-061	#8-32UNC x 3/8 RND HEAD SCREW	11
39	GK-111-077	WASHER 1/2 BOLT x 1-1/8 OD x 1/8	2
40	GK-111-063	WASHER #10 BOLT x 1/2 OD x 0.052	2
41	GK-111-051	WASHER 1/4 BOLT X 5/8 OD X 0.057	4
42	GK-109-052	5/16-18UNC HEX NUT	10
43	GK-109-050	1/4-20UNC HEX NUT	3
44	GK-108-059	1/4-20UNC x 3/4 HEX BOLT	1
45	GK-108-050	1/4-20UNC x 5/8 PLATED HEX BOLT	1
46	GK-107-053	5/16-18UNC x 3/4 SHCS	4
47	GK-107-052	1/4-20UNC x 1 SHCS	2
48	GK-105-055	1/4-20UNC x 3/4 FHSCS	2

Specify model and serial numbers when ordering parts.

WELDING POSITIONER PARTS BREAKDOWN

DRAWING GP-200



WELDING GAS PURGE POSITIONER PARTS BREAKDOWN

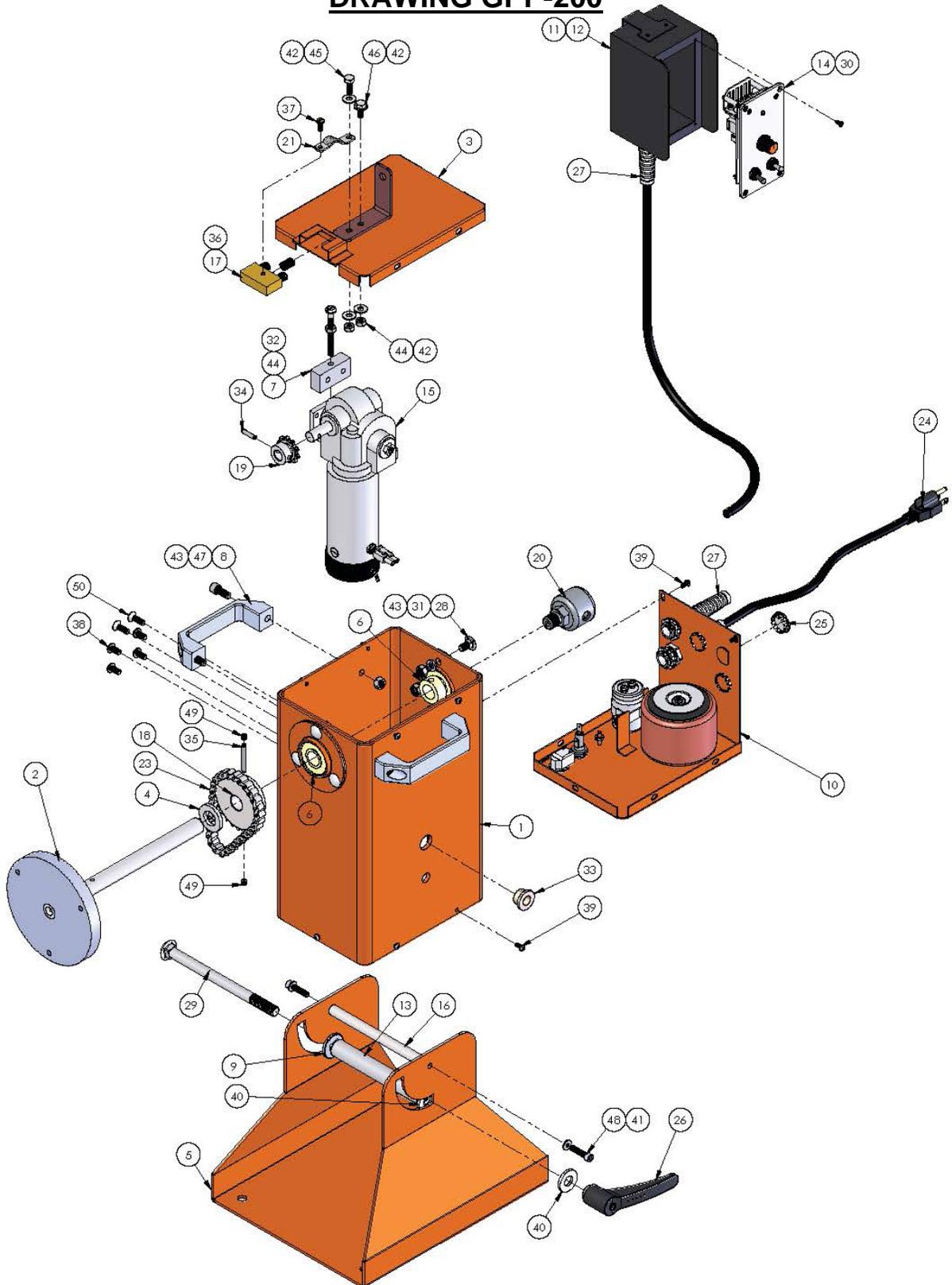
DRAWING GPP-200

ITEM	PART NO.	DESCRIPTION	QTY.
1	GP-200-001	MAIN FRAME	1
2	GPP-200-014	PURGE GAS SPINDLE	1
3	GP-200-003	TOP COVER	1
4	GP-200-041	SPINDLE SPACER	1
5	GP-200-002	TILT BASE	1
6	GP-200-039	BEARING FLANGETTE UNIT	2
7	GP-200-022	CHAIN TENSIONER BLOCK	1
8	GP-200-021	HANDLE	2
9	GP-200-019	CARRIAGE BOLT WASHER	1
10	GP-200-018	POWER SUPPLY UNIT	1
11	GP-200-017	REMOTE PENDANT CLIP	1
12	GP-200-013	REMOTE PENDANT ENCLOSURE	1
13	GP-200-012	SLEEVE	1
14	GSP-1100	GSP-1100 CONTROL ASSEMBLY	1
15	GP-200-011	24 VDC MOTOR ASSEMBLY (200:1)	1
	GP-200-015	24 VDC MOTOR ASSEMBLY (540:1)	
16	GP-200-010	PIVOT SHAFT	1
17	GP-200-009	GROUND BLOCK	1
18	GP-200-008	24 TOOTH #35 SPROCKET	1
19	GP-200-007	10 TOOTH #35 SPROCKET	1
20	GP-150-025	ROTARY GAS COUPLING	1
21	GP-150-023	GROUND STRAP	1
22	GP-150-009	GROUNDING BRACKET	1
23	GP-200-020	DRIVE CHAIN	1
24	GK-171-032	POWER CORD	1
25	GK-155-002	HOLE PLUG, 7/8"	3
26	GK-153-007	1/2-13UNC FEMALE ADJ. HANDLE LEVER	1
27	GK-148-015	PIGTAIL STRAIN RELIEF	3
28	GK-160-012	5/16-18 x 5/8 CARRIAGE BOLT	6
29	GP-200-040	1/2-13 x 7 CARRIAGE BOLT	1
30	GK-141-014	#6-32UNC x 5/16 FHMS SS	4
31	GK-136-055	LOCK WASHER 5/16 BOLT	6
32	GK-122-051	1/4-20UNC X 2.5" PAN HEAD SCREW	1
33	GK-118-077	1/2" FLANGE BEARING	2
34	GK-117-038	3/16 x 13/16 SPRING PIN	1
35	GK-117-029	3/16 x 1-1/2 SPRING PIN	1
36	GK-116-012	SPRING	3
37	GK-112-116	#10-32 x 1/2 BRASS SCREW	1
38	GK-112-106	1/4-20UNC x 1/2 RND HEAD SCREW	4
39	GK-112-061	#8-32UNC x 3/8 RND HEAD SCREW	11
40	GK-111-077	WASHER 1/2 BOLT x 1-1/8 OD x 1/8	2
41	GK-111-063	WASHER #10 BOLT x 1/2 OD x 0.052	2
42	GK-111-051	WASHER 1/4 BOLT X 5/8 OD X 0.057	4
43	GK-109-052	5/16-18UNC HEX NUT	10
44	GK-109-050	1/4-20UNC HEX NUT	3
45	GK-108-059	1/4-20UNC x 3/4 HEX BOLT	1
46	GK-108-050	1/4-20UNC x 5/8 PLATED HEX BOLT	1
47	GK-107-053	5/16-18UNC x 3/4 SHCS	4
48	GK-107-052	1/4-20UNC x 1 SHCS	2
49	GK-106-082	1/4-28UNF x 1/4 SET SCREW	2
50	GK-105-055	1/4-20UNC x 3/4 FHSCS	2

Specify model and serial numbers when ordering parts.

WELDING GAS PURGE POSITIONER PARTS BREAKDOWN

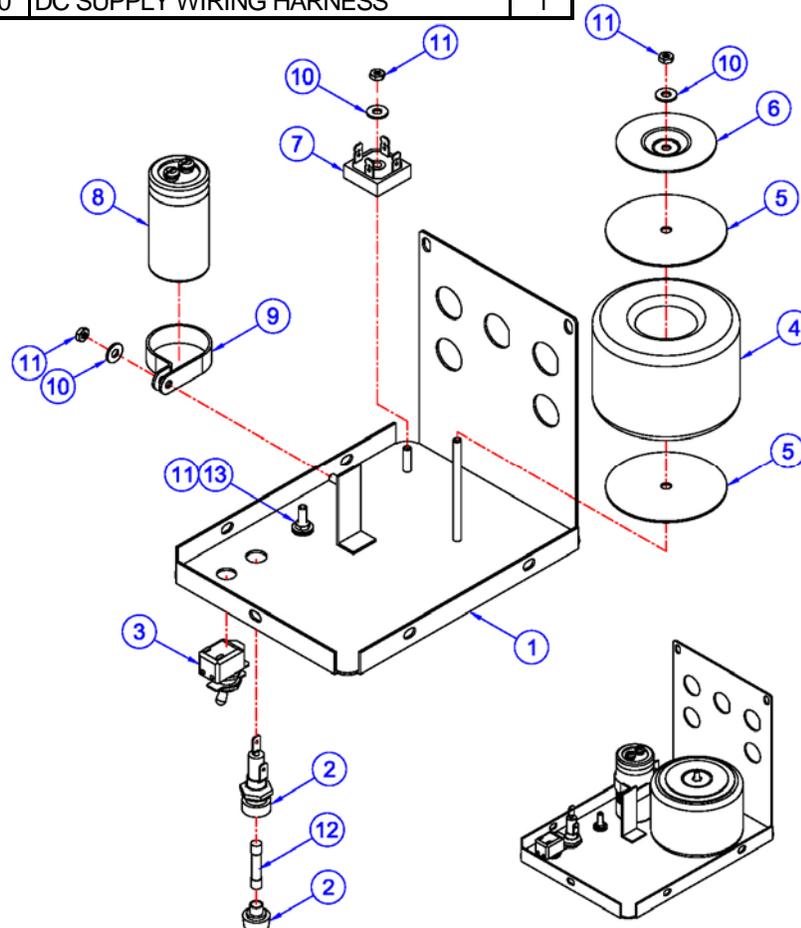
DRAWING GPP-200



POSITIONER POWER SUPPLY ASSEMBLY PARTS BREAKDOWN

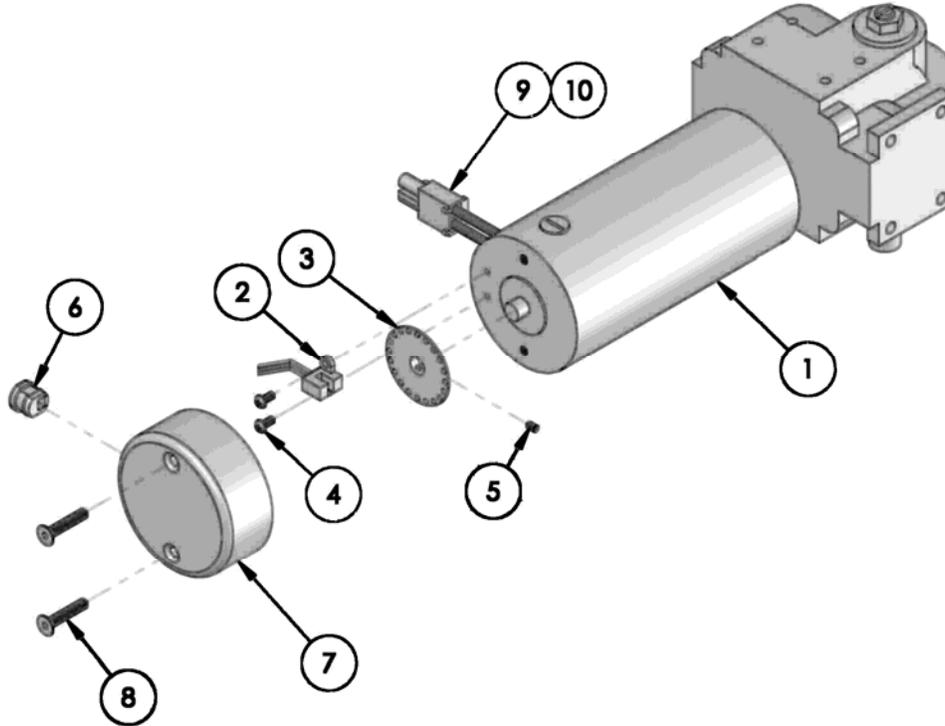
ITEM	PART No.	DESCRIPTION	QTY
1	GP-200-004	BOTTOM COVER	1
2	GK-165-134	FUSE HOLDER ASSEMBLY	1
3	GK-191-P-022	POWER ON/OFF SWITCH	1
	GK-191-P-050	ON/OFF NAME PLATE	1
4	GK-191-P-019-A	42V TRANSFORMER	1
	GK-191-P-019-B	115V TRANSFORMER	
	GK-191-P-019-C	230V TRANSFORMER	
5	GK-191-P-218	TRANSFORMER MTG. PAD	2
6	GK-191-P-105	TRANSFORMER MTG. PLATE	1
7	GK-191-P-020	BRIDGE	1
8	GK-191-P-062	CAPACITOR	1
9	GK-191-P-063	CAPACITOR CLAMP	1
10	GK-111-068	No. 10 WASHER	3
11	GK-135-057	No. 10-32UNF LOCK NUT	5
12	GK-165-098	5A SLOW BLOW FUSE (42V MODELS)	1
	GK-165-099	2.5A SLOW BLOW FUSE (115V MODELS)	
	GK-165-097	1.25A SLOW BLOW FUSE (230V MODELS)	
13	GK-129-012	No. 10 INTERNAL STAR WASHER	1
14	GK-191-P-103	DISCHARGE RES. WIRING HARNESS	1
15	GK-191-P-127	H.F. CAPACITOR WIRING HARNESS	1
16	GK-191-P-128	POWER INTERFACE HARNESS	1
17	GK-191-P-140	DC SUPPLY WIRING HARNESS	1

DRAWING GP-200-018



POSITIONER MOTOR ASSEMBLY PARTS BREAKDOWN

DRAWING GP-200-011 & GP-200-015

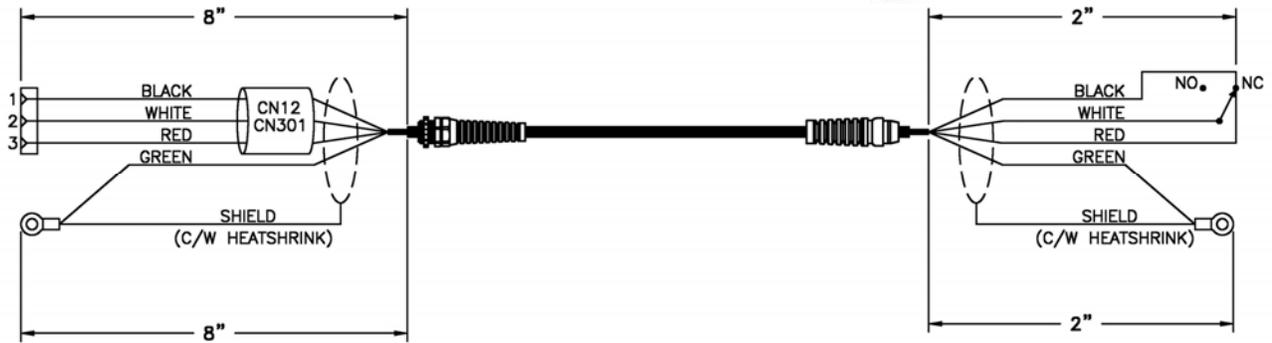
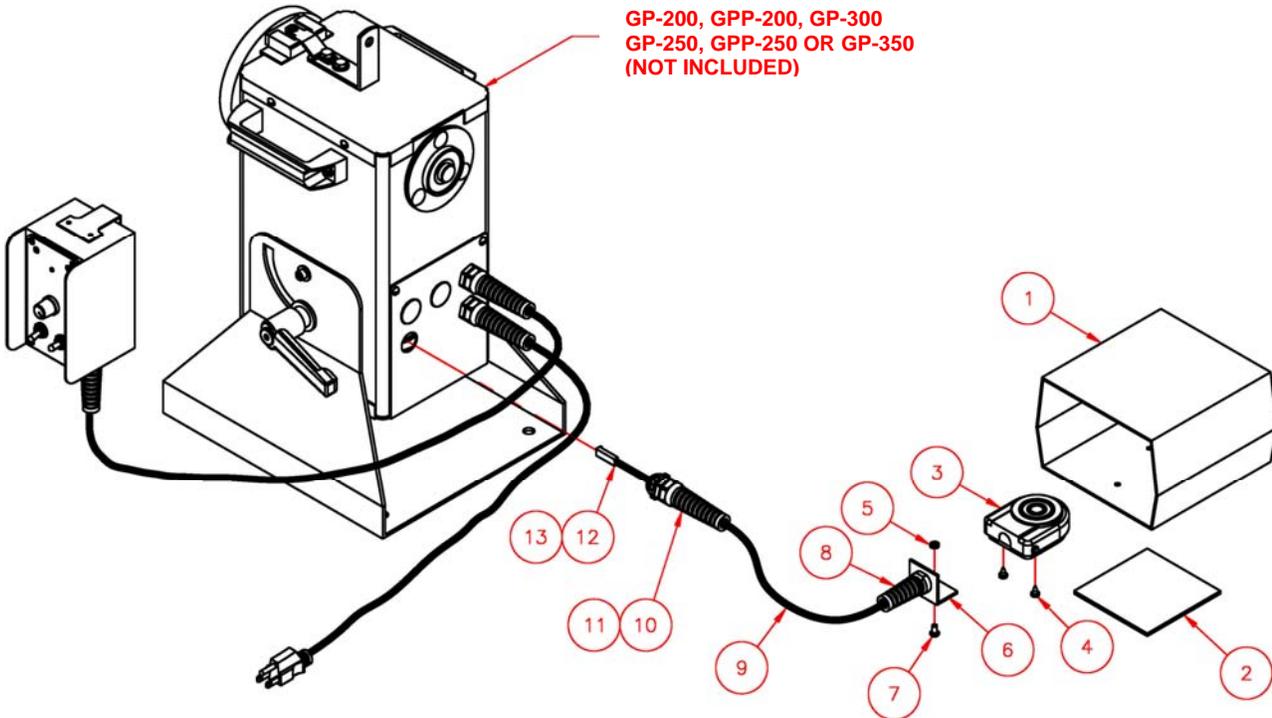


ITEM	PART NO.	DESCRIPTION	QTY
	GP-200-011	POSITIONER MOTOR ASSEMBLY (200:1)	
1	GP-200-131	24VDC GEARMOTOR 200:1	1
2	GK-191-P-035	ENCODER SENSOR, INCLUDING WIRING & CONNECTOR	1
3	GK-191-P-038	ENCODER DISC	1
4	GK-112-060	#4-40UNC x 1/4" ROUND HEAD SCREW	2
5	GK-106-063	#4-40UNC x 3/16" SET SCREW	3
6	GK-148-019	STRAIN RELIEF GLAND	1
7	GK-190-111	ENCODER COVER	1
8	GK-105-086	#8-32UNC x 7/8" FLAT HEAD SOCKET CAP SCREW	2
9	GK-156-003	2 CIRCUIT MALE CONNECTOR HOUSING	1
10	GK-156-016	FEMALE TERMINAL	2
	GP-200-015	POSITIONER MOTOR ASSEMBLY (540:1)	
1	GP-200-133	24VDC GEARMOTOR 540:1	1
2	GK-191-P-035	ENCODER SENSOR, INCLUDING WIRING & CONNECTOR	1
3	GK-191-P-038	ENCODER DISC	1
4	GK-112-060	#4-40UNC x 1/4" ROUND HEAD SCREW	2
5	GK-106-063	#4-40UNC x 3/16" SET SCREW	3
6	GK-148-019	STRAIN RELIEF GLAND	1
7	GK-190-111	ENCODER COVER	1
8	GK-105-086	#8-32UNC x 7/8" FLAT HEAD SOCKET CAP SCREW	2
9	GK-156-003	2 CIRCUIT MALE CONNECTOR HOUSING	1
10	GK-156-016	FEMALE TERMINAL	2

OPTIONAL RUN/STOP FOOTSWITCH PARTS BREAKDOWN

DRAWING GP-200-024

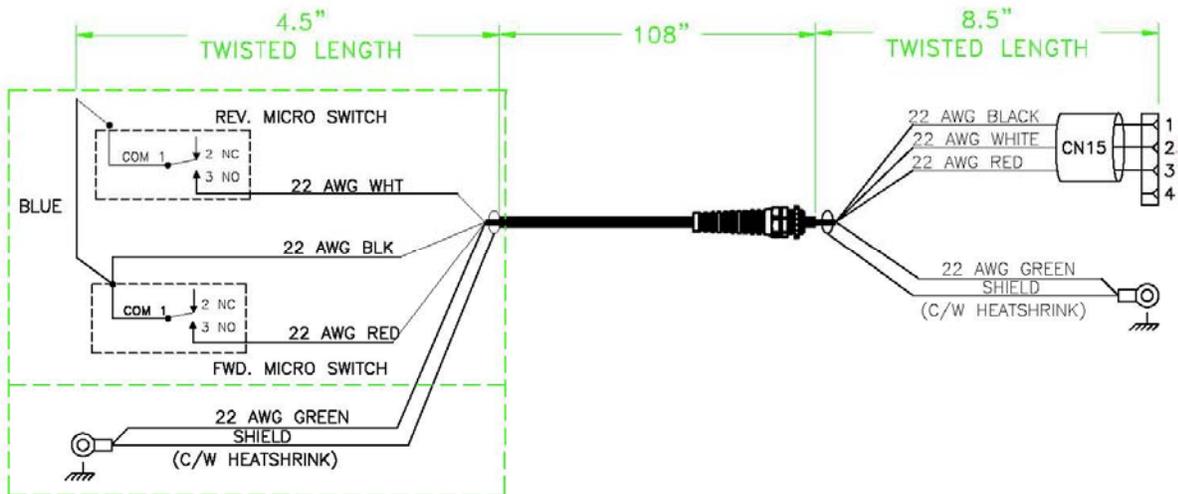
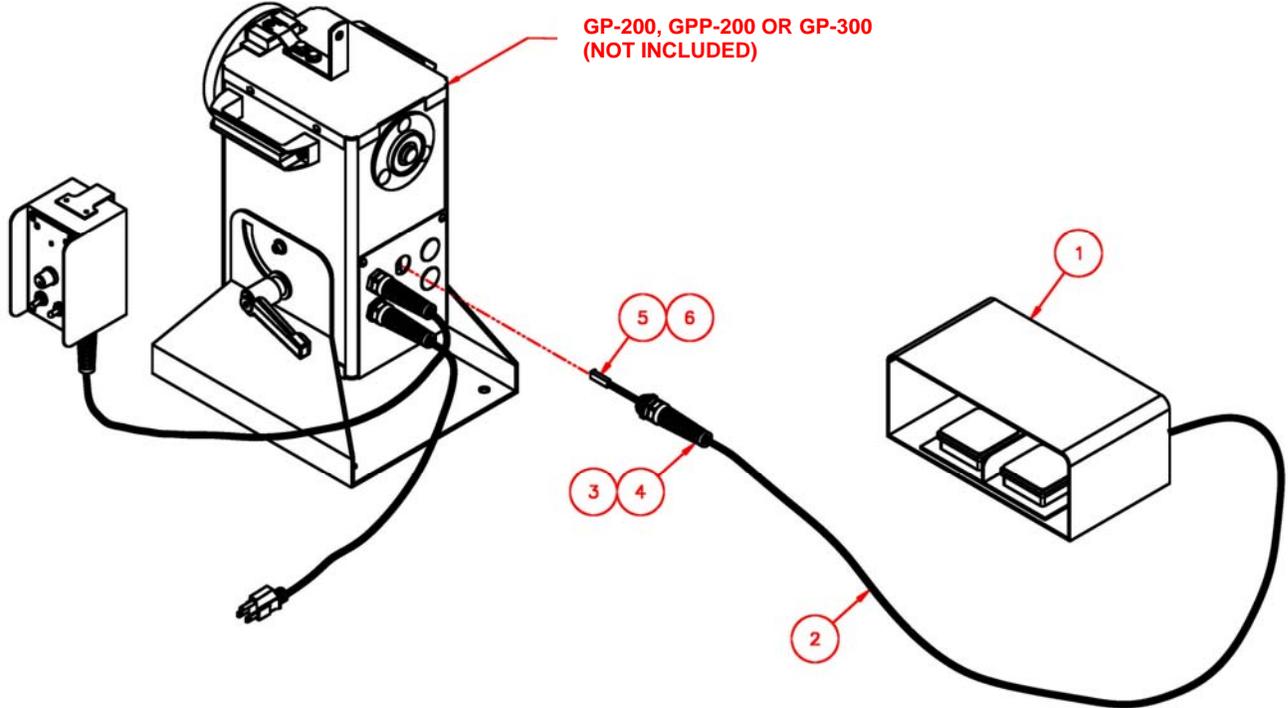
GP-200, GPP-200, GP-300
GP-250, GPP-250 OR GP-350
(NOT INCLUDED)



ITEM	PART No.	DESCRIPTION	QTY
1	KR-179-113	FOOT SWITCH COVER	1
2	KR-179-115	NON-SLIP FOOT SWITCH PAD	1
3	KR-179-122	FOOT SWITCH	1
4	GK-125-055	#8-18 x 3/8" TAP SCREW	2
5	GK-135-057	#10-32UNF LOCK NUT	1
6	KR-190-112	CABLE STRAIN BRACKET	1
7	GK-112-065	#10-32UNF x 3/8" ROUND HEAD SCREW	1
8	GK-148-014	DD STRAIN RELIEF PIGTAIL	1
9	RM-111-110	4 CONDUCTOR SHIELDED CABLE	10'-10"
10	GK-148-017	STRAIN RELIEF LOCK NUT	1
11	GK-148-015	STRAIN RELIEF 7/8"Ø	1
12	GK-156-032	WIRE CONNECTOR 3 POSITION FEMALE	1
13	GK-156-017	WIRE CONNECTOR CRIMP TERMINAL	3
14	GK-156-008	#10 RING TERMINAL CRIMP	2

OPTIONAL FORWARD/STOP/REVERSE FOOTSWITCH PARTS BREAKDOWN

DRAWING GP-200-023

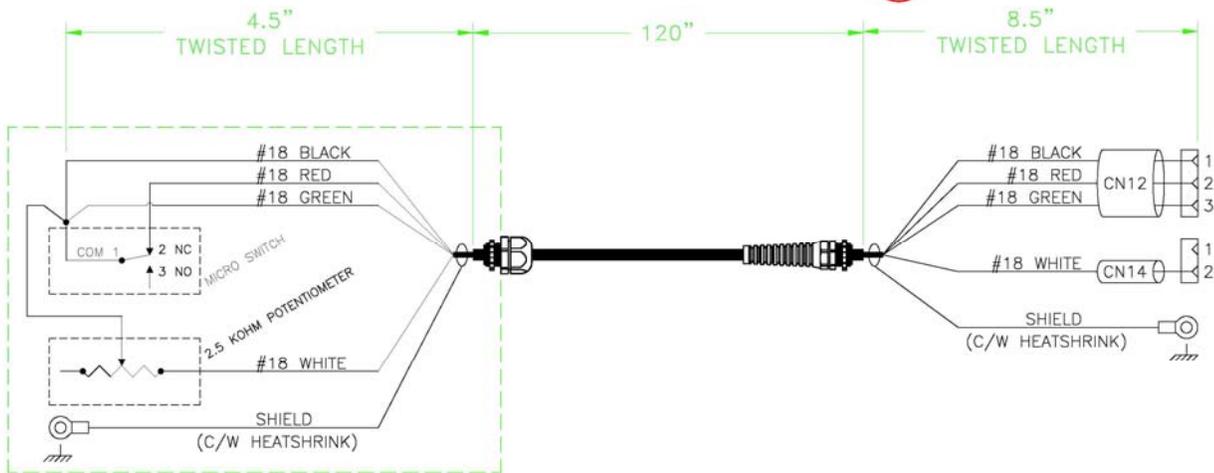
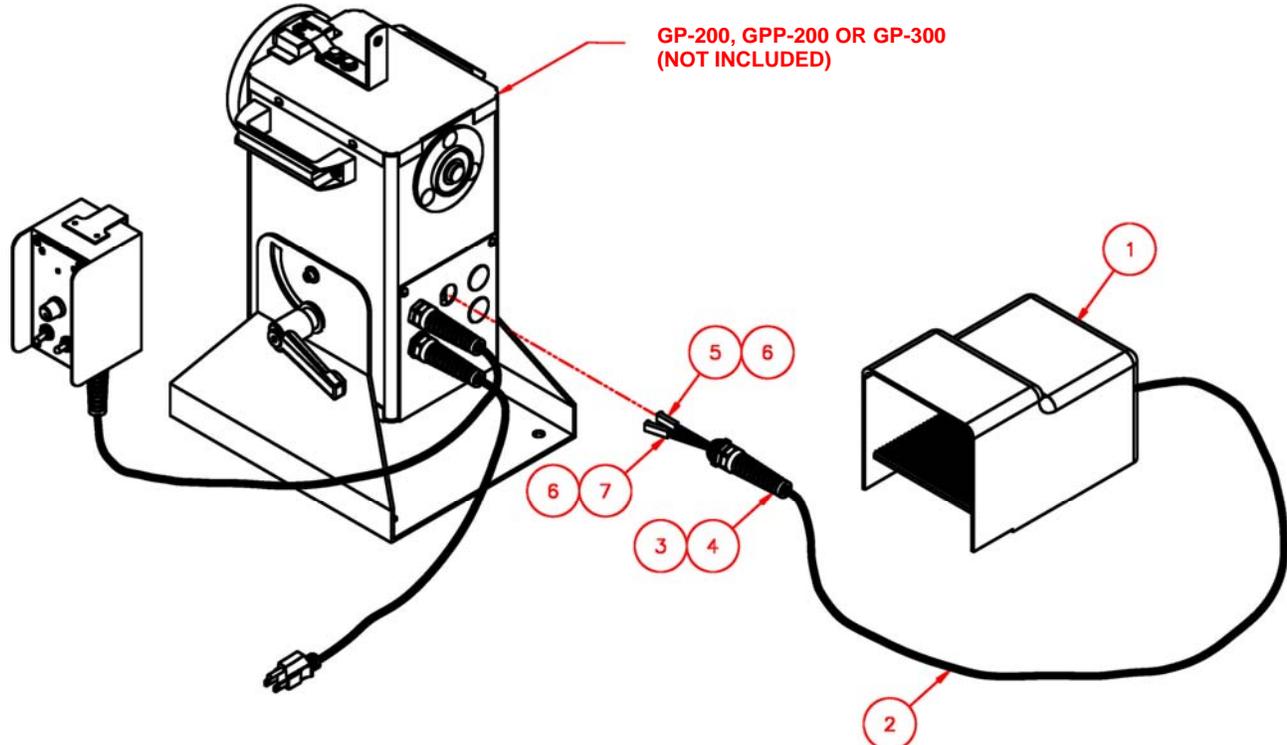


CONNECT TO GSP-1100 CONTROL OR REMOTE CONTROL CABLE

ITEM	PART No.	DESCRIPTION	QTY
1	GP-200-023-1	FWD/STOP/REV FOOTSWITCH	1
2	RM-111-110	4 CONDUCTOR SHIELDED CABLE	10'-6"
3	GK-148-017	STRAIN RELIEF LOCK NUT	1
4	GK-148-015	STRAIN RELIEF 7/8"Ø	1
5	GK-156-033	WIRE CONNECTOR 4 POSITION FEMALE	1
6	GK-156-017	WIRE CONNECTOR CRIMP TERMINAL	3
7	GK-156-008	#10 RING TERMINAL CRIMP	2

OPTIONAL VARIABLE SPEED FOOTSWITCH PARTS BREAKDOWN

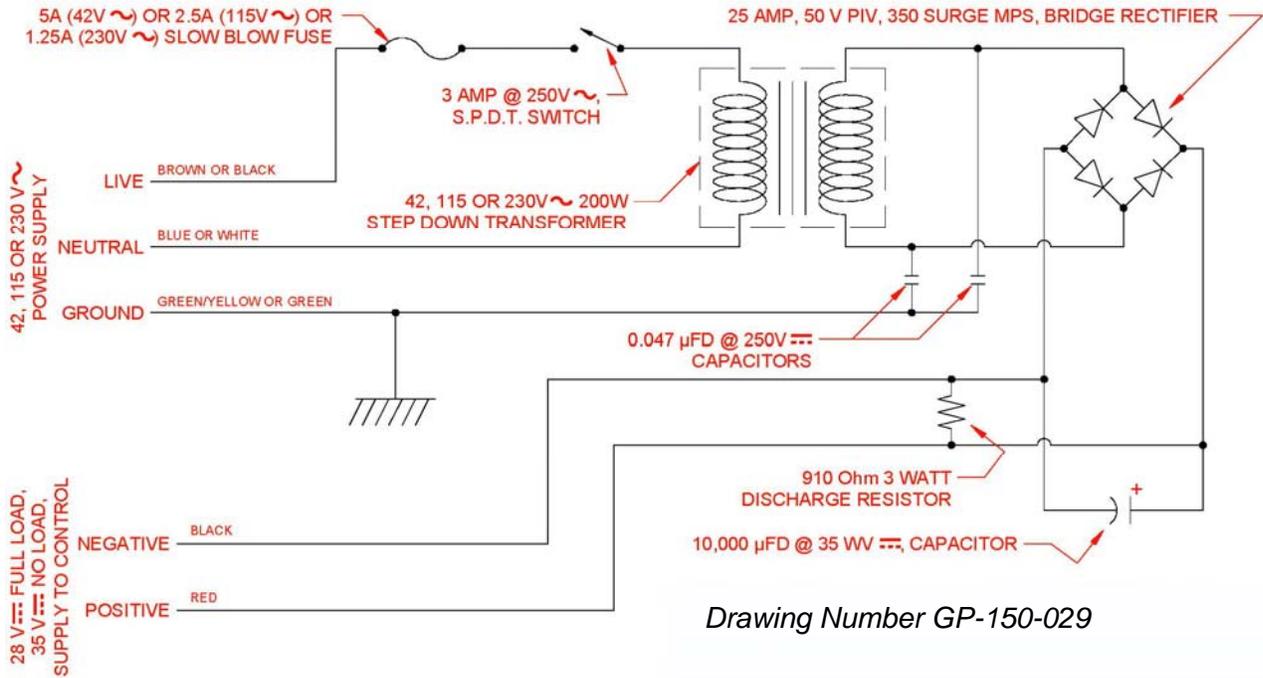
DRAWING GP-200-025



CONNECT TO GSP-1100 CONTROL
OR REMOTE CONTROL CABLE

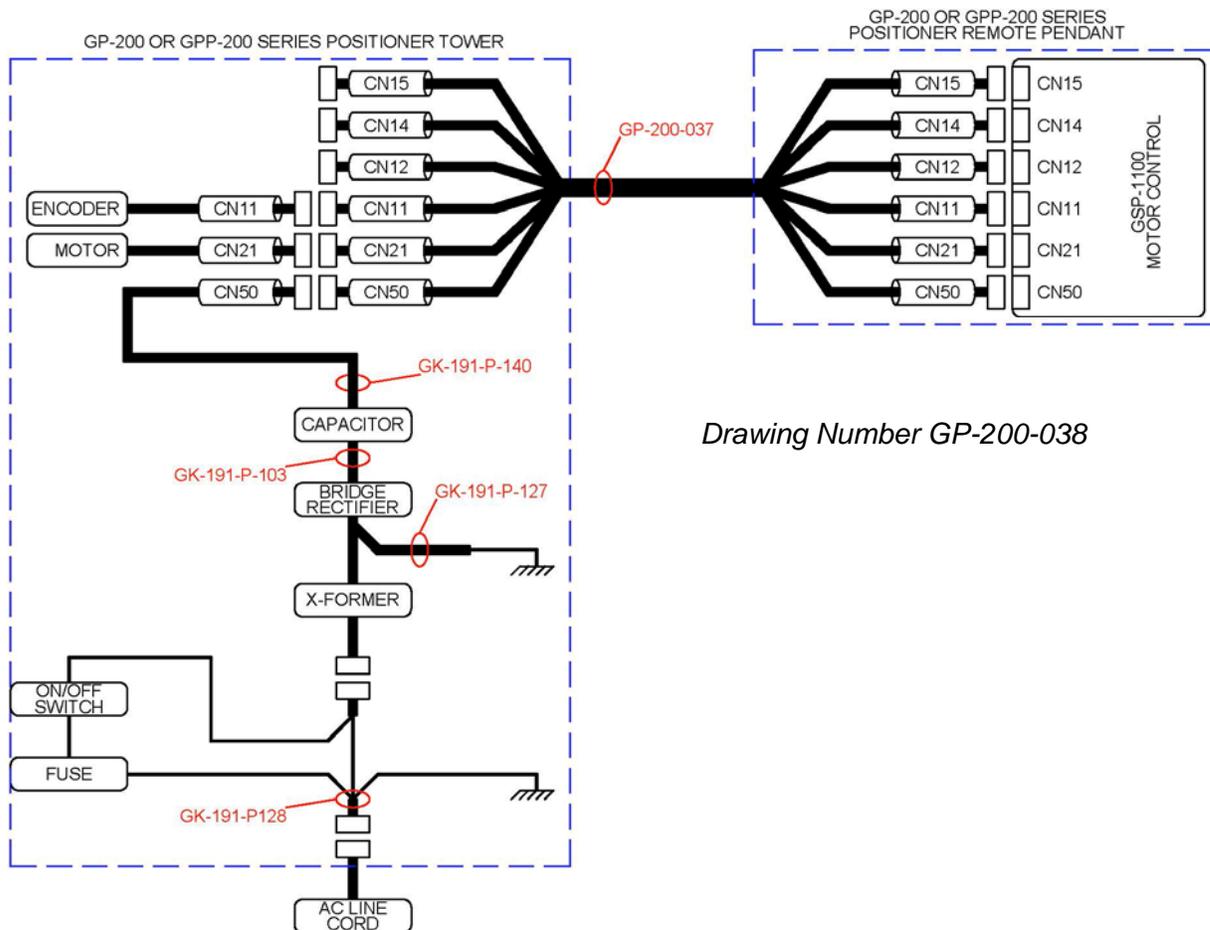
ITEM	PART No.	DESCRIPTION	QTY
1	GP-150-020-A	VARIABLE SPEED FOOT SWITCH	1
2	RM-111-110	4 CONDUCTOR SHIELDED CABLE	10'-6"
3	GK-148-017	STRAIN RELIEF LOCK NUT	1
4	GK-148-015	STRAIN RELIEF 7/8"Ø	1
5	GK-156-032	WIRE CONNECTOR 3 POSITION FEMALE	1
6	GK-156-017	WIRE CONNECTOR CRIMP TERMINAL	4
7	GK-156-031	WIRE CONNECTOR 2 POSITION FEMALE	1
8	GK-148-012	STRAIN RELIEF	1
9	GK-156-008	#10 RING TERMINAL CRIMP	2

WELDING POSITIONER POWER SUPPLY SCHEMATIC



Drawing Number GP-150-029

GP-200 & GPP-200 BASE WELDING POSITIONER BLOCK WIRING DIAGRAM



Drawing Number GP-200-038

REVISIONS LIST

November, 2004

Overall First release.

January, 2007

Title Page Update Gullco contact details.
Page 5 Updated product labels.
Page 8 Updated image of GP-200-023.
Pgs 10 – 18 Updated Bill-Of-Materials.

Sept, 2010

Title Page Update Gullco contact details.
Overall Added GP-300 through bore model.
Back Page Updated back page.

Feb, 2013

Title Page Update Gullco U.K. contact details (e-mail).

March, 2013

Page 3 Added max pipe diameter for the GP-300, 2.375" [60mm]

April, 2015

Title Page Update Gullco India contact details (e-mail).
Overall Remove GP-300 from manual.
Page 21 Updated electrical details.

August, 2016

Overall GSP-1100 motor control replaces GSP-1000.

July, 2018

Title Page Updated Gullco contact details
Page 3 & 5 Removed welding ground amperage rating.

ADDITIONAL NOTES

Specifications and products are subject to change without notice.
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Only use genuine/authorized replacement parts.



GULLCO



LINEAR or RADIAL
HIGH DEPOSIT RATE
QUICK SETUP TIME

KAT® OSCILLATOR

- Motorized weld center line adjustment
- Motorized stroke width
- Oscillation speed control
- Store up to 10 welding programs



PORTABLE PLATE EDGE
BEVELLING MACHINE
QUICK SETUP TIME

KBM®

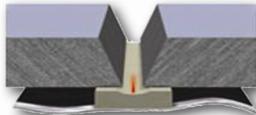
- Produce clean bevels with no thermal distortion
- Bevels angles 22° to 55° (other angles available)
- Hydraulic and Adjustable undercarriages available
- Bevels Mild Steel, Stainless Steel, and Aluminium
- Reduce cost and save time by minimising defects and poor fit up



ONE SIDED WELDING
X-RAY QUALITY BEADS
HIGH DEPOSIT RATE

KATBAK® CERAMIC WELD BACKING

- Eliminate Defects And Rework
- Eliminate Costly Unnecessary Gouging And Grinding
- Sizes 1/4" (6.3 mm) to 2" (51 mm)
- Special Sizes And Configurations Available



Lloyd's Register



PORTABLE AND COMPACT
INCREASE EFFICIENCY
MORE ARC ON TIME

MOGGY® FILLET WELD CARRIAGE

- Single or Dual Torch Models
- Magnet or Non Magnetic Base
- Continuous or Stitch Welding Models
- Fillet, Lap, Butt and Dual Torch Welding





**TECHNICAL INFORMATION
FOR THE GULLCO “GSP-1100”
MICROPROCESSOR BASED
MOTOR CONTROL**

**MODEL:
GSP-1100**



**PARTS LIST
&
OPERATING INSTRUCTIONS**

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IMPORTANT

READ THIS BEFORE OPERATING THE “GSP-1100” CONTROL

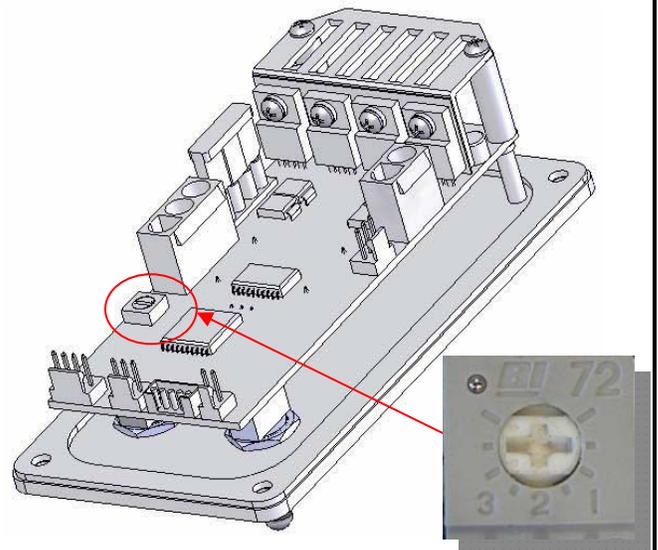
Read and understand the operation manual before operating or performing service of this equipment. Become familiar with the machines operation, applications and limitations. Keep the operation manual in a clean and readily available location.

The motor control must not be continually started and stopped by the removal and reapplying of power to the control. Turning the power off to the control will not provide regenerative braking and continued use will damage the control.

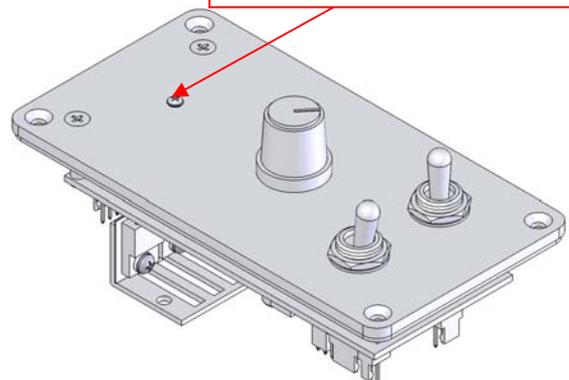
Allow ten (10) seconds after the removal of power before reapplying the power to the "GSP" control.

Current Overload Setting (VR2)

The “Current Limit” (motor overload protection) on this product is typically factory preset to 87% (3.5 position) unless specifically requested at time of order. If a specific application requires that this be changed (to prevent damage to drive mechanism), use the circuit board mounted variable potentiometer, VR2 (located on the underside of the control circuit board). When adjusted, this potentiometer will set the amount of current allowed to pass through the motor control before it will shut-down. It is recommended that the setting be made excessively low, and gradually increased until the desired protection is achieved. Always perform this procedure under worst case allowable conditions, i.e. vertically up instead of vertically down.



Remove this screw to view the diagnostic LED



Diagnostic LED

The microprocessor based “GSP-1100” control has built in safety logic that reduces the risk of injury, damage and faulty operation. The “GSP-1100” control flashes its Diagnostic LED in preset sequences to indicate a potential problem.

The diagnostic LED is visible by removing the round head Philips screw from the faceplate.

The table on the following page provides information regarding the Diagnostic LED.

Upon rectifying the fault, normal operational status may be resumed by first placing the Run/Stop switch into the Stop position (Hold mode).

Diagnostic LED Table

LED Flash Rate	Reason
4 Flashes every 2 seconds	Normal Closed Loop Operation - No problems detected.
24 Flashes every 2 seconds	Open Loop Operation - No problems detected which would prevent the motor from running safely, however a travel speed encoder has not been detected and as such the control will run in open loop mode. The speed regulation is not as accurate in open loop mode.
1 Flash every 2 seconds	The "GSP-1100" control was set to run when electrical power was initially supplied to the control (powered-up). To prevent unexpected motion generated from the "GSP-1100" control, the motor output is disabled and the LED blinks once every two seconds until the control is reset by being placed in "Hold" (stop) mode.
2 Flashes every 2 seconds	The current draw of the motor exceeded that permissible (set by the "Current Limit" potentiometer VR2), resulting in the termination of motor output from the control. Rectify the fault causing the excessive current draw, or increase the value of the "Current Limit" potentiometer - only if it is set too low . Then reset the "GSP-1100" control by either powering-down the control, or by placing the control in "Hold" (stop) mode.
3 Flashes every 2 seconds	A motor travel speed encoder was detected on power-up, but is no longer recognized, resulting in the termination and/or prevention of motor output from the control. Rectify the encoder problem then, reset the "GSP-1100" control by placing the control in "Hold" (stop) mode. Note: If the power is turned off then back on again without rectifying the encoder fault, the control will not detect the encoder on power-up and will only operate in open-loop mode (NO CLOSED-LOOP SPEED REGULATION).
4 Flashes every 2 seconds	A motor travel speed encoder is detected on, but no encoder pulses are received from it during a two second period of the motor output being energized, resulting in the termination of motor output from the control. Rectify the encoder problem then, reset the "GSP-1100" control by placing the control in "Hold" (stop) mode.
5 Flashes every 2 seconds	As port "CN12" is usually used to provide an external "Hold" (stop) command, wiring should run from pin 1 of this port, up to the external device and then back to pin 3, thereby closing the circuit between pins 1 and 3 whenever connected. Each time the "GSP-1100" control is powered-up, it checks the status of pins 1 & 3 of "CN12" and if closed circuit, the control will continue to monitor their status as well as the status of pin 2 with respect to pin 1 (if pin 1 & 3 were open circuit on power-up, the control ignores all signals for port "CN12"). Once the "GSP-1100" control has recognized a device was connected to "CN12" but is no longer connected (i.e. pins 1 & 3 change from closed circuit to open circuit), the motor output is disabled and the LED blinks five times every two seconds. Rectifying the fault and resetting the "GSP-1100" control by placing the control in "Hold" (stop) mode, will clear the error. Note: turning the power to the "GSP" control off, waiting ten (10) seconds then re-applying the power will clear the error, but if the circuit between pin 1 & 3 remains open, all signals coming into "CN12" will be ignored (failing to recognize external "Hold" commands).
6 Flashes every 2 seconds	The GSP-1100 has recognized that a remote speed adjustment potentiometer is connected to port "CN14".

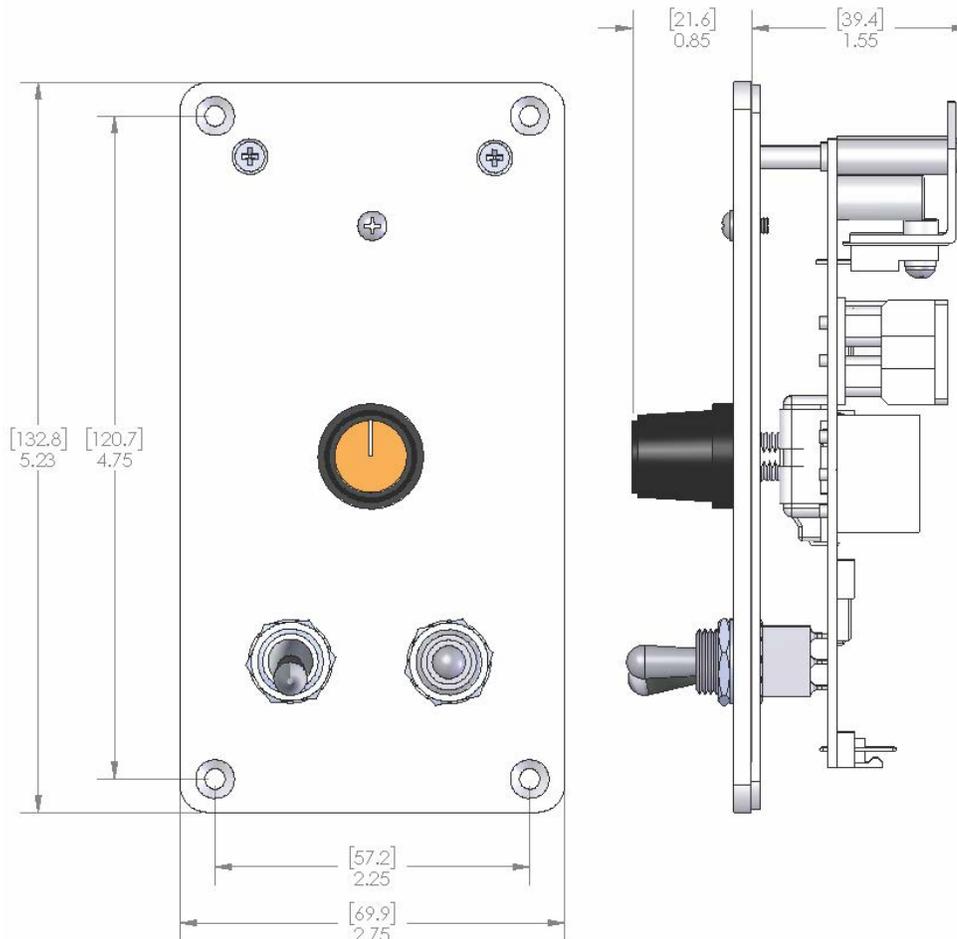
GENERAL SPECIFICATIONS

The "GSP-1100" microprocessor based motor control is a 24 vdc, full "H"-Bridge, pulse width modulation control with regenerative braking. It is designed to run 24 vdc motors and requires a 24 to 42 vdc, no-load, supply (30 to 42 vdc is usually required for Gullco products to meet specifications), usually derived from a full bridge rectified 22-24 vac source. The required wattage of the supply depends upon the size of the motor. These controls can operate any motor with a capacity of up to 250 Watts (1/3 horse power).

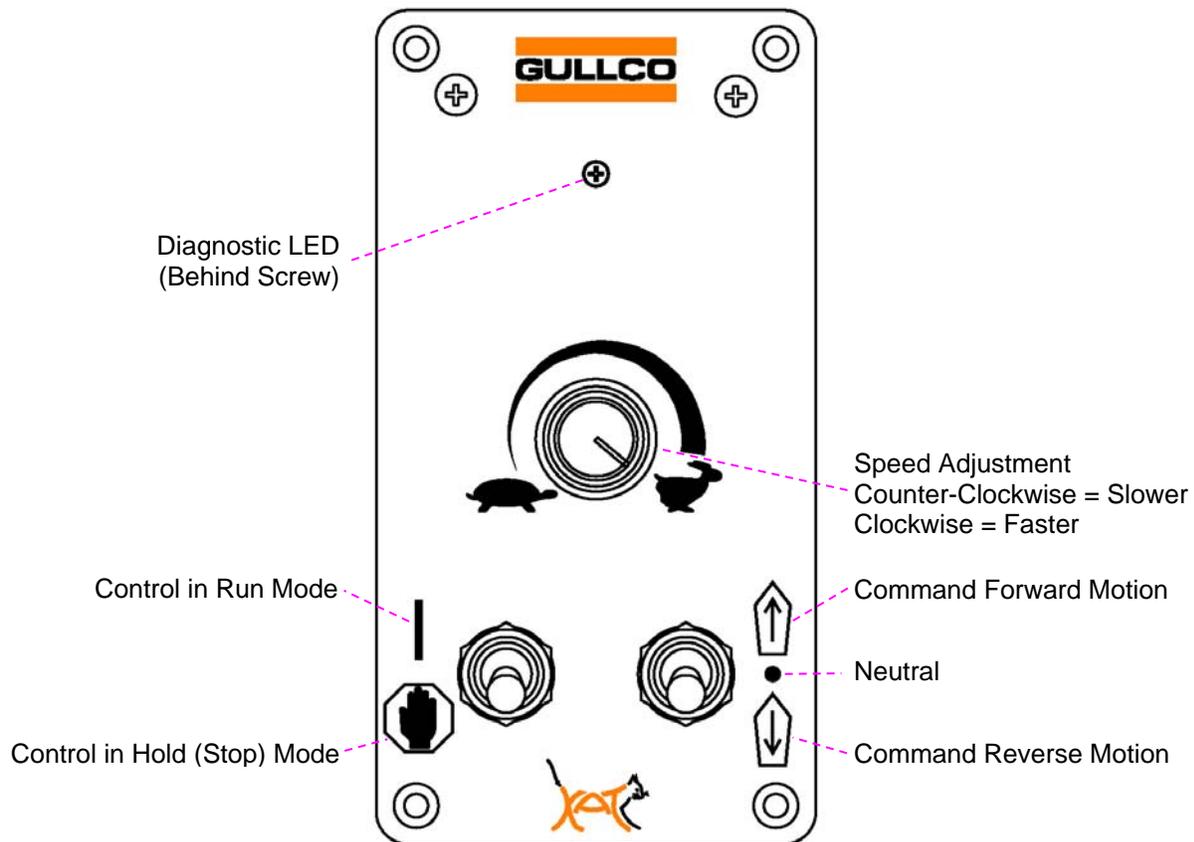
These controls can either operate with or without a closed loop tach feed back system attached to the armature shaft of the motor. A tach feed back is normally recommended as it allows the motor control to constantly monitor and correct the speed of the motor providing accurate speed control regardless of any variance in loading. Open loop (i.e. no tach feed back) may be acceptable for manual motor operation in situations where; the motor sensor is temporarily damaged; the motor sensor is susceptible to failure due to an exceptionally harsh environment; or where accurate calibrated speed is not required and the loading of the motor is constant.

Various input and output ports are provided which are either optically coupled or transistor outputs. These ports are described in detail later in this manual.

GENERAL DIMENSIONS



"GSP-1100" CONTROL PANEL LAY-OUT



OPERATION

Local Control Devices

Externally, the Gullco "GSP-1100" controls have switching for Forward/Neutral/Reverse and Run/Stop, as well as a speed control potentiometer.



= "STOP" - This over-rides all other controls and when activated will apply regenerative braking to the motor to bring it to a dead stop, and will disallow any further operation of the motor while ever it is in this state. This position will also reset an error code once the fault has been rectified.



= "RUN" - This removes the "STOP" command and allows the control to assume an operational status.



= "FORWARD" - When the switch is in this position, the control will drive the motor in the Forward direction when so permitted.



= "NEUTRAL" - When the switch is in this position, the control will not drive the motor in either direction.



= "REVERSE" - When the switch is in this position, the control will drive the motor in the Reverse direction when so permitted.



= "VARIABLE SPEED CONTROL" - By turning the ten potentiometer knob in a clockwise direction, the motor speed will be increased. When rotated in the counter-clockwise direction, the motor speed will decrease.

Local Control Operation

The control is operated by placing the Forward/Neutral/Reverse switch in the desired travel direction, and placing the Run/Stop switch in the Run position. Normally, if there are no other external "Hold" (stop) signals, direction signals or speed signals, the motor will run in the direction selected at the speed set by the Variable Speed Control Knob. The speed may be adjusted at any time and the motor motion may be stopped by placing either the Run/Stop switch in the Stop position or by placing the Forward/Neutral/Reverse switch in the Neutral position.

If an external "Hold" (stop) signal is being used (e.g. Run/Stop footswitch), the motor will only be allowed to run when: the speed adjustment knob is set to a value greater than zero: the Run/Stop switch is in the Run position: the Forward/Neutral/Reverse switch is either set to Forward or Reverse; and the external "Hold" (stop) signal is released (i.e. Run/Stop footswitch is activated).

If external direction signals are being used (e.g. Forward/Neutral/Reverse footswitch), the motor will run in the direction set by either the direction switch located on the "GSP-1100" control or by the external direction signal. In the event of directional conflict (i.e. the local direction toggle switch is requesting a directional command opposite to that of an external direction command) the control will terminate and/or prohibit motor output until the conflict is cleared.

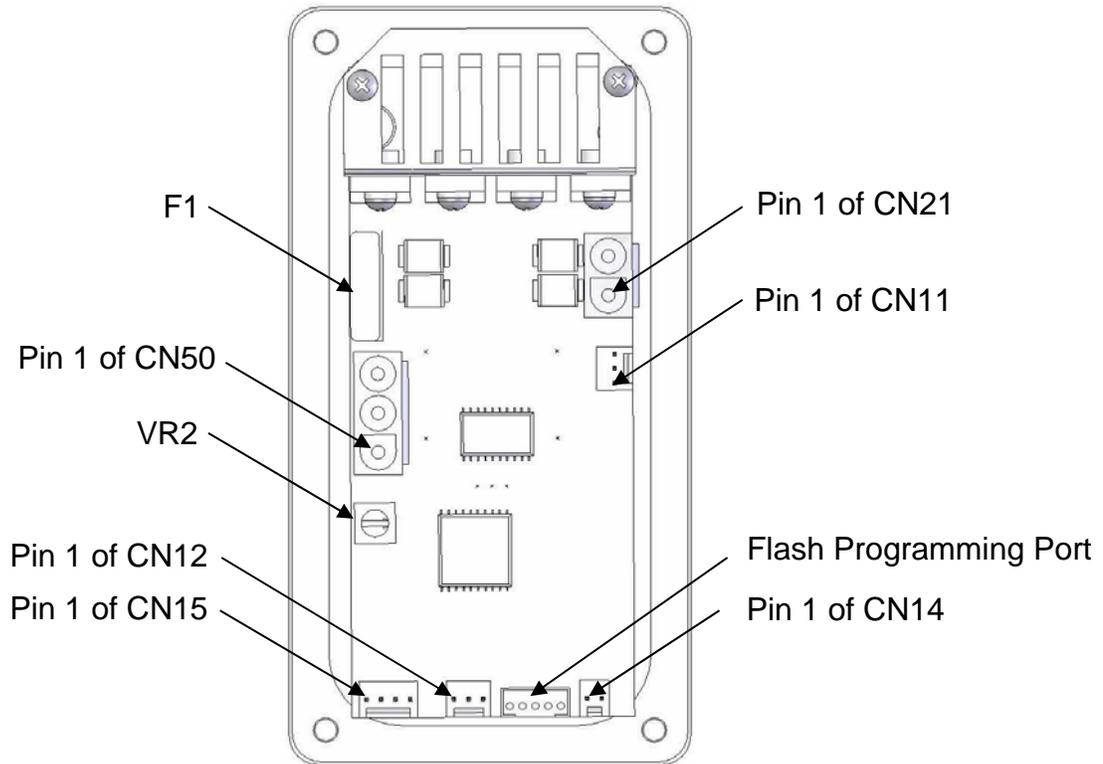
If an external speed signal is being used (e.g. Variable Speed footswitch), the motor will rotate at the speed set by the external speed signal up to the maximum speed set by the Speed Adjustment potentiometer. For example, if the Speed Adjustment potentiometer of the "GSP-1100" control was set to 47% of full speed, then the external speed signal could control the motor speed from zero (0) up to 47% of full speed.

"GSP-1100" CIRCUIT BOARD DETAILS

Major Circuit Board Component Details

F1 - Replaceable, 15 Amp 57 volt automotive fuse.

VR2 – Current Limit setting potentiometer.



Control Connection Details

Note: CN50 & CN21 are Molex 0.093" [2.36mm] series connectors

CN50 - Power Supply Input

- Pin 1 - Optional earth ground
- Pin 2 - Common
- Pin 3 - 24 to 38 Vdc supply

Note:

Pin 1 is not required when control faceplate is secured to a conductive, earthed plane.

CN21 - Motor Output

- Pin 1 - Motor output
- Pin 2 - Motor output

Note:

Pins 1 and 2 may be swapped to reverse polarity (only necessary to match the forward and reverse of the motor with those of the control).

Note: CN11, CN12, CN14 & CN15 are Molex KK, or equivalent, 0.1" [2.54mm] spaced series connectors/headers

CN11 – Tach Feed Back Connection

Pin 1 - Common
Pin 2 – Signal
Pin 3 – Sensor detection & current source

CN12 - Auxiliary “Hold” (Stop) Port

Pin 1 - Common
Pin 2 – “Hold” (Stop) (digital input active LOW)
Pin 3 – Port active recognition

Note:

When the “GSP-1100” control is initially powered-up, it looks to see if pin 1 & 3 are in a closed circuit, thereby indicating a device/signal using this port. If the control does not see pin 3 connected to common, it assumes that nothing is connected to this port and will not look for the auxiliary “Hold” (stop) signal. **Therefore, any auxiliary “Hold” (stop) device that is connected to the control after it has been powered-up will be ignored.** After the microprocessor has recognised that a device is connected to this port, it will activate the “Hold” (stop) command when pin 1 & 2 are in a closed circuit.

CN14 – Remote Speed Port

Pin 1 - Common
Pin 2 – 0 to 2.5 Kohm signal

Note:

The external resistance applied across pins 1 & 2 will regulate the motor speed up to the setting of the Speed adjustment potentiometer on the “GSP-1100” faceplate (not necessarily 0 to 100%).

CN15 – Remote Direction Port

Pin 1 - Common
Pin 2 - Reverse travel direction (digital input active LOW)
Pin 3 - Forward travel direction (digital input active LOW)
Pin 4 - Spare (not used)

Note:

By connecting Pin 1 with either pins 2 or 3 (closing the circuit) the Reverse or Forward commands will be activated. Avoid calling up Forward and Reverse simultaneously. The Hold (stop) command has precedence over the Forward or Reverse commands. If either of these remote directions are opposite to that of the Forward/Neutral/Reverse switch located on the “GSP-1100” control, the motor output will be disallowed until the conflict is resolved.

Flash Programming Port - Factory use only.

Caution:

*Even though this control and its input and output ports have been designed to be as non-destructible, durable and as isolated as possible, extreme radiated high frequency bombardment **may** cause a malfunction of the control. Always use best practices with regards to shielding, bonding and isolating when making any revisions to the equipment.*

Wiring Connector Details

CONNECTOR DESIGNATOR	BOARD MOUNTED HEADER	WIRING CONNECTOR	
	MOLEX PART NUMBER	MOLEX PART NUMBER	GULLCO PART NUMBER
CN11 & CN12	1 x "22-23-2031"	1 x "22-01-2035" 3 x "08-50-0114"	1 x GK-156-032 3 x GK-156-017
CN14	1 x "22-23-2021"	1 x "22-01-2025" 2 x "08-50-0114"	1 x GK-156-031 2 x GK-156-017
CN15	1 x "22-23-2041"	1 x "22-01-2045" 3 x "08-50-0114"	1 x GK-156-033 3 x GK-156-017
CN50	1 x "15-31-1036"	1 x "19-09-1039" 3 x "02-09-1104"	1 x GK-156-004 3 x GK-156-016
CN21	1 x "15-31-1026"	1 x "19-09-1029" 2 x "02-09-1104"	1 x GK-156-003 2 x GK-156-016

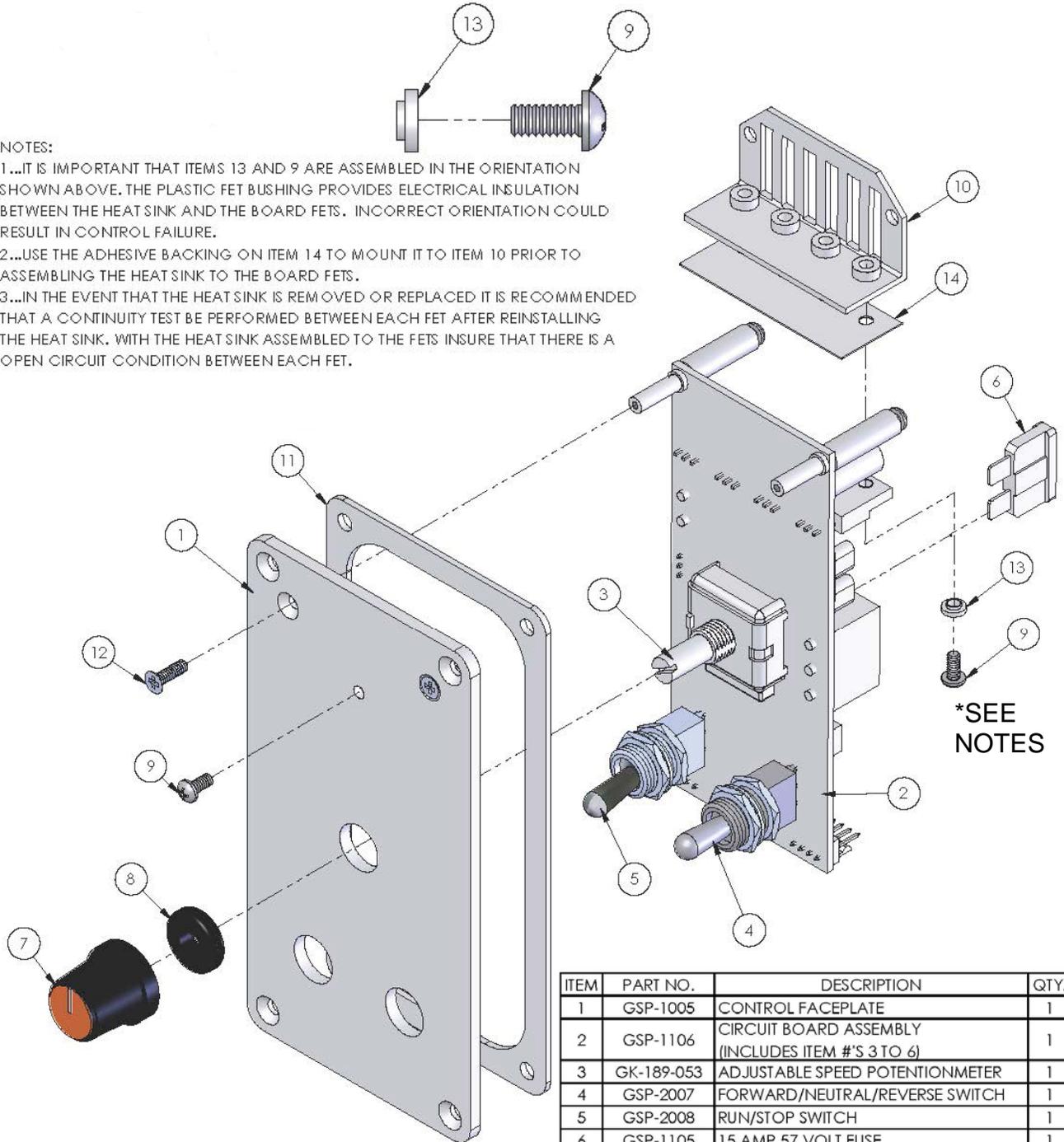
GSP-1100 CONTROL ASSEMBLY BREAKDOWN

NOTES:

1...IT IS IMPORTANT THAT ITEMS 13 AND 9 ARE ASSEMBLED IN THE ORIENTATION SHOWN ABOVE. THE PLASTIC FET BUSHING PROVIDES ELECTRICAL INSULATION BETWEEN THE HEAT SINK AND THE BOARD FETS. INCORRECT ORIENTATION COULD RESULT IN CONTROL FAILURE.

2...USE THE ADHESIVE BACKING ON ITEM 14 TO MOUNT IT TO ITEM 10 PRIOR TO ASSEMBLING THE HEAT SINK TO THE BOARD FETS.

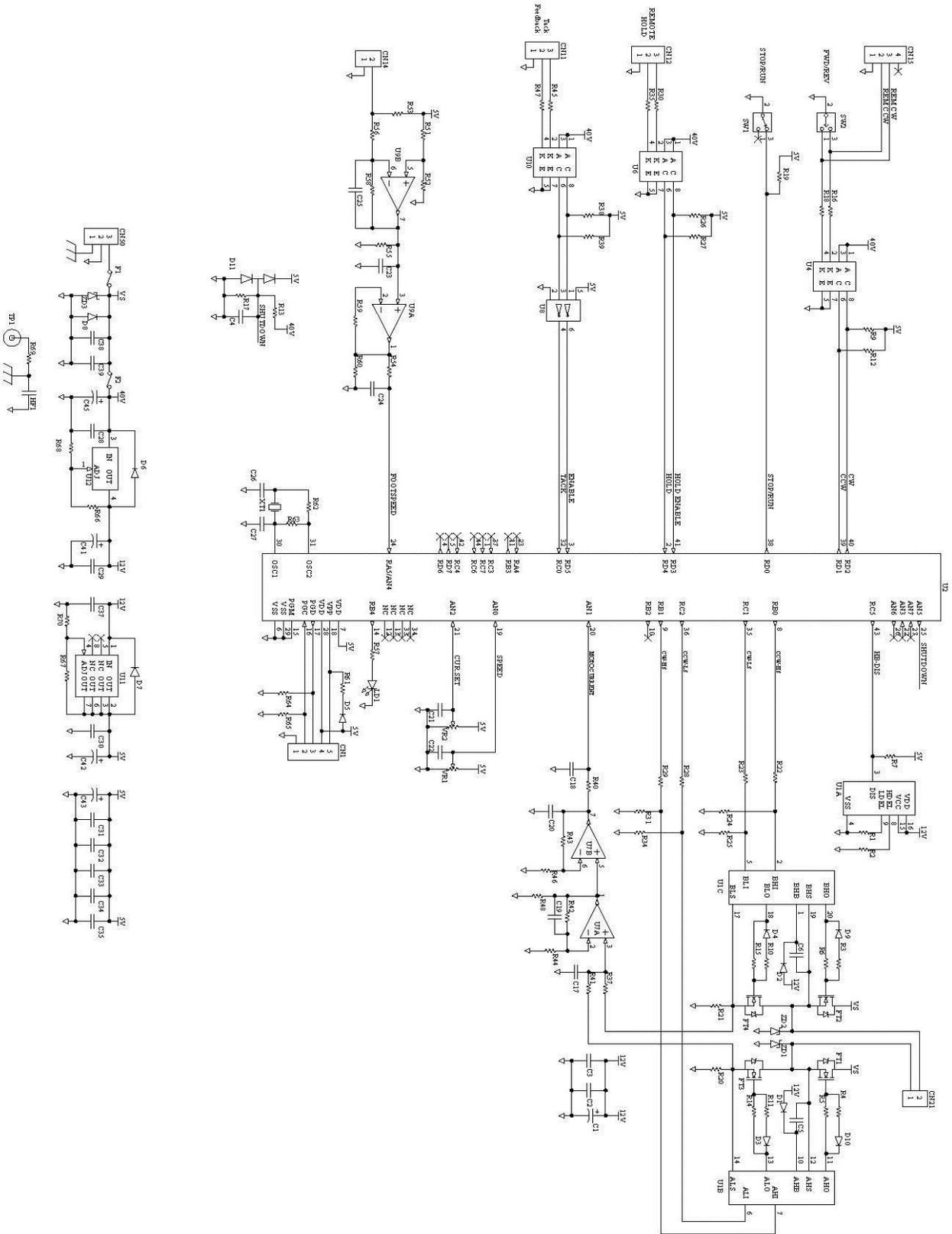
3...IN THE EVENT THAT THE HEAT SINK IS REMOVED OR REPLACED IT IS RECOMMENDED THAT A CONTINUITY TEST BE PERFORMED BETWEEN EACH FET AFTER REINSTALLING THE HEAT SINK. WITH THE HEAT SINK ASSEMBLED TO THE FETS INSURE THAT THERE IS A OPEN CIRCUIT CONDITION BETWEEN EACH FET.



ITEM	PART NO.	DESCRIPTION	QTY.
1	GSP-1005	CONTROL FACEPLATE	1
2	GSP-1106	CIRCUIT BOARD ASSEMBLY (INCLUDES ITEM #'S 3 TO 6)	1
3	GK-189-053	ADJUSTABLE SPEED POTENTIOMETER	1
4	GSP-2007	FORWARD/NEUTRAL/REVERSE SWITCH	1
5	GSP-2008	RUN/STOP SWITCH	1
6	GSP-1105	15 AMP 57 VOLT FUSE	1
7	GK-191-P-097	SPEED SELECTOR KNOB	1
8	GK-151-004	GROMMET	1
9	GK-112-060	#4-40UNC x 1/4 RND HEAD SCREW	5
10	GSP-2024	GSP HEAT SINK	1
11	GSP-2027	GSP FACEPLATE GASKET	1
12	GK-141-018	#4-40UNC x 3/8 FHMS	2
13	GK-156-120	GSP PLASTIC FET BUSHING	4
14	GSP-2028	HEATSINK ISOLATION PAD	1

GSP-1100 CONTROL CIRCUIT BOARD SCHEMATIC

DRAWING G1100-RB REV-B



REVISIONS LIST

July, 2016

Overall

First release.

ADDITIONAL NOTES

Specifications and products are subject to change without notice.
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Only use genuine/authorized replacement parts.



GULLCO



LINEAR or RADIAL
HIGH DEPOSIT RATE
QUICK SETUP TIME

KAT® OSCILLATOR

- Motorized weld center line adjustment
- Motorized stroke width
- Oscillation speed control
- Store up to 10 welding programs



PORTABLE PLATE EDGE
BEVELLING MACHINE
QUICK SETUP TIME

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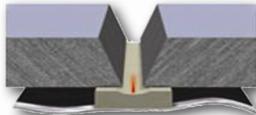
- Produce clean bevels with no thermal distortion
- Bevels angles 22° to 55° (other angles available)
- Hydraulic and Adjustable undercarriages available
- Bevels Mild Steel, Stainless Steel, and Aluminium
- Reduce cost and save time by minimising defects and poor fit up



ONE SIDED WELDING
X-RAY QUALITY BEADS
HIGH DEPOSIT RATE

KATBAK® CERAMIC WELD BACKING

- Eliminate Defects And Rework
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PORTABLE AND COMPACT
INCREASE EFFICIENCY
MORE ARC ON TIME

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- Continuous or Stitch Welding Models
- Fillet, Lap, Butt and Dual Torch Welding

