GULLCO

Equipment for
Mechanisation and Automation
Of Welding and Cutting

STAR-TRAC II GOUGING CONTROLLER FOR INTERFACE WITH "KAT"® CARRIAGE

SAFETY INSTRUCTIONS
PARTS LIST

READ THIS MANUAL IN CONJUNCTION WITH ALL OTHER ASSOCIATED EQUIPMENT MANUALS SUPPLIED WITH THIS SYSTEM

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SAFETY INSTRUCTIONS

Although this equipment is manufactured for safe and dependable operation, it is impossible to anticipate those combinations of circumstances, which could result in an accident. All operators are cautioned to always practice "**Safety First**" during each phase of operation, setup and maintenance.

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

This equipment is normally used in conjunction with the arc-air process. This process usually has 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.
- 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 secureness 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 and loose, long hair, which may get caught into automatic systems or moving parts.
- Keep lifting points dry, clean and free from oil and grease.
- Keep hands away from the underside of the "SAM" carriage when there is the slightest possibility of motion.
- Wherever possible, avoid (or at least protect against) objects protruding from the moving equipment, posing possible pinch-points.
- There should only ever be one (1) operator working at the machine at any given time.

Warnings

- The equipment should only be used by fully trained and competent operators.
- The Manual must be read and fully understood **BEFORE** operating the equipment.
- A safe System of Work should be established prior to use and the operator must be fully conversant with this Safe System of Work.
- Damp or Wet Gouging Electrodes **MUST NOT BE USED.**
- Damp or Wet Electrodes should be placed in an oven and heated at 250° C for a minimum period of (4) four hours.

IMPORTANT SAFEGUARDS WHEN USING AIR-ARC GOUGING.

- The Air-Carbon-Arc Gouging process generates extreme localised heat and intense ultra-violet rays.
- Never attempt to gouge without a welding helmet that is fitted with the correct lens and complies with published guidelines. For most applications a #12 or 13 shade lens is satisfactory, however we strongly recommend the use of a #14 shade lens when using 5/8" gouging electrodes.
- Make sure that other workers in the vicinity are protected from arc rays and sparks. Approved shielding curtains and appropriate safety eye wear should be used to provide protection to others in the immediate vicinity of the operation.
- Skin should always be protected from arc rays, heat and molten metal. Always wear protective gloves and suitable clothing.
- Always wear ear protection.
- Electric shock can cause death or injury. Instal and maintain the equipment in accordance with National and Local Codes of Practise.
- Do not service or repair the equipment whilst it is connected to the supply.
- Service and Repair must only be undertaken by qualified and trained personnel.
- Sparks generated during the gouging process can cause fire and explosions. Remove combustible material from the work area and provide a fire watch during and for some time after the operation has ceased.
- **NEVER** use oxygen with the air-carbon-arc process.

BASIC INSTRUCTIONS TO WIRE AND OPERATE
STAR-TRAC II DIGITAL AUTOMATIC GOUGING TORCH

Listed below are the standard length cables to be connected to the back of the control unit:

- Black 118 inch AC power cable
- Black 40 inch servo motor cable
- Black 240 inch welding machine contactor wire
- Red 48 inch voltage sensor torch (+)
- Green 192 inch wire sensor to the work (-)
- Black Controller to KAT interface cable.

1. Connect the 115V***** AC cord to the controller marked 'input AC 115V"***** and to a grounded wall socket.
   *** Note – Also available in 220 volt model – Check Data Plate.**

2. Connect the interface cable to the controller outlet marked "carriage".

3. Connect the servo motor cable to the controller marked "motor".

4. Connect the red sensor wire to the bottom of the brass shoe and to the controller marked "voltage sense torch (+)".

5. Connect the green sensor wire to the plate to be gouged and to the controller marked "work (-)".

6. Connect the black two wire sensor cable to the controller marked "Weld Machine" and to the welding machine's two contactor closure terminals. (I.E. if using a Lincoln Welder connect to posts 2 & 4).

7. Connect the welding machine positive cable to the concentric power cable lug.

8. Connect the air supply (minimum 30 CFM at 80 PSI) to the air inlet on our concentric power cable.

9. Connect the welding machine ground clamp to the plate to be gouged.

10. Adjust the torch head assembly to allow for a 3" carbon stick-out (maximum) and a 45° angle to the plate.

11. Turn on the 115V***** main power rocker switch located on the rear of the panel. The digital screen will illuminate.
    *** Note – Also available in 220 volt model – Check Data Plate.**

12. Setting the delay timer requires two steps: 1) Move the toggle switch located on the front lower right of the control panel to (DELAY). 2) Turn the control knob located in the center of the panel to the amount of start delay time you desire. This can be set to a 5 second maximum. For example, when a one second start delay is set, the digital screen will read (d 1.0).

13. The travel carriage will move as long as the carriage switch is in the manual position. When set up is complete and you are ready to begin gouging, move the switch to auto. Move the carriage directional switch to 'forward'.

14. After the carbon is inserted into the rear of the torch head, it can be moved using the forward/reverse "JOG" switch. The electrode should be positioned ¼" from the work piece prior to starting the gouge.

15. Setting the voltage requirement is a two step operation: 1) Move the toggle switch located on the front lower right of the control panel to 'DISPLAY VOLTAGE CONTROL'. 2) Turn the control knob until the digital screen reads (40.0).

16. Move the toggle switch located on the lower right of the control panel to 'VOLTAGE'. The digital window will now read (0.0) until the welding machine is turned on.

17. Switch on the welding machine. The digital reading will fluctuate until the gouging process is started.

18. Toggle the "Gouging Start" switch to start. After the arc is established and the delay/start times out the carriage will begin moving at your preset speed. The digital reading will now be hovering around the welders operating voltage.

19. When the gouge is complete, hit the "stop" switch. The carriage will stop and the electrode will retract for seven seconds.

***POWER SOURCE REQUIREMENT:**

1. Welding machine should be able to deliver enough amperage depending on the size of the electrode. For example, if using a 3/8" gouging electrode, the welding machine should deliver between 400 and 650 amps.

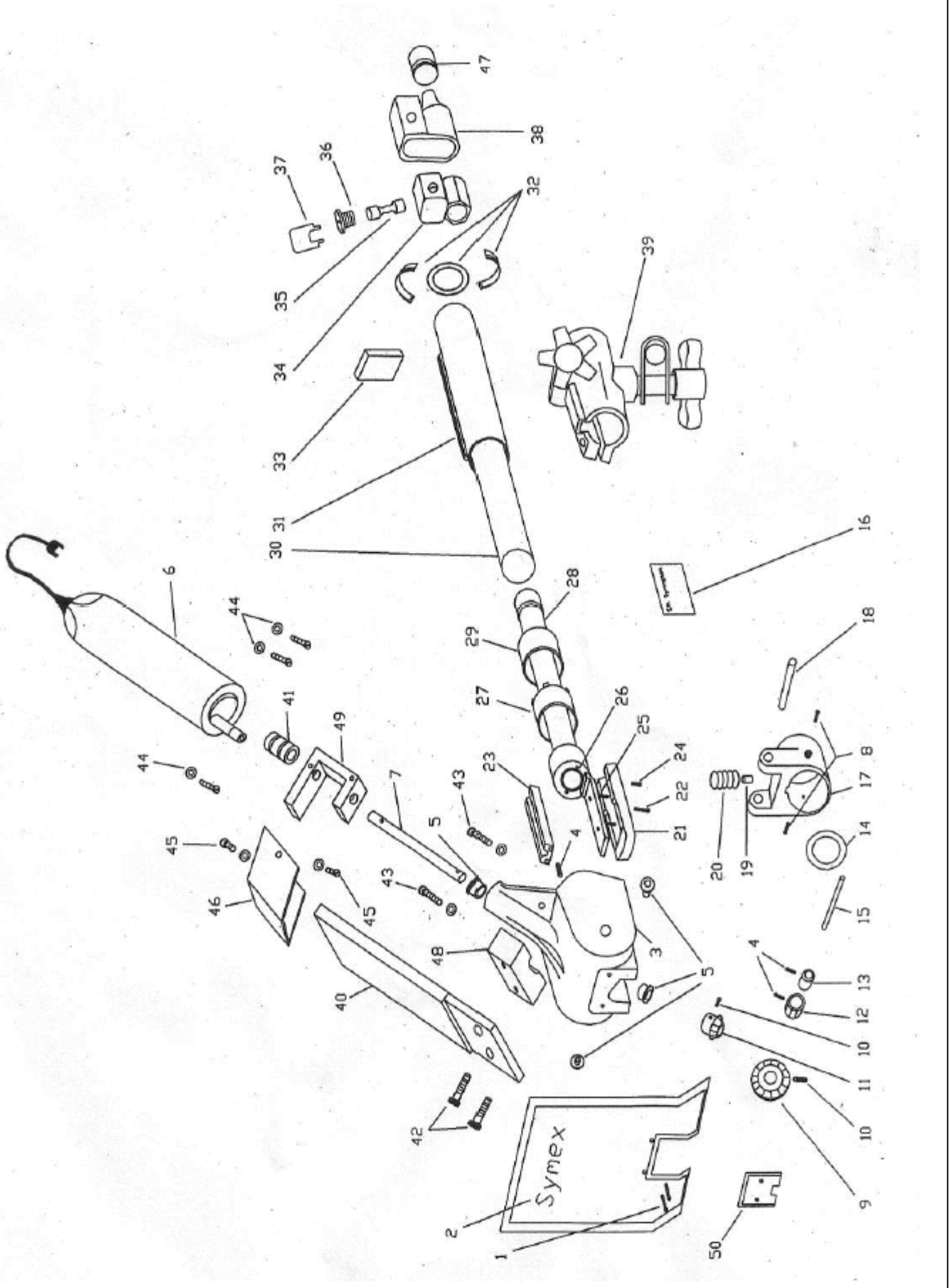
2. Welding machine should be switched to "CC" mode or variable voltage.

3. Operating voltage should not exceed 60V.

4. Open circuit voltage (OCV) should not be less than 70V.If there is a Panel/Remote switch, it should be set in the Panel position.

5. The wire from the controller marked "Weld Machine" should be connected to the welding machine's two contactor posts. For example, Lincoln's contactor activation terminals are #2 and #4. All other connections should be removed from these two contactor activation terminals. Check your welding machine's schematic before you connect.

NOTE: We do not recommend the use of a Lincoln 1500 amp power supply.


Symex

GULLCO STAR-TRAC II
AUTOMATIC GOUGING HEAD

REF. #	DESCRIPTION	CAT. #
1	Shield Screws (2 required)	51007
2	Shield	51006
3	Aluminum Housing	51046
3	Special Aluminum Housing for Lower Shield	51096
NS	Special 3 piece Lava Lower Shield with screws	51091
4	Allen Screw 10-32 X ¼"	51016
5	Brass Bushing (4 required)	51017
6	Digital Servo Motor	68799
7	Drive Shaft	51101
8	Allen Screw ¼" – 20 X ½" with nylon tip	51019
9	Drive Gear with screw	51020
10	Allen Screw 10 – 32 X 5/8"	51021
11	Pinion Gear with screw	51003
12	Drive Roll with screw	51009
13	Drive Roll Fiber Bushing with screw	51013
14	Clevis Insulator	51043
15	Drive Roll Shaft	51014
16	Name Plate (2 required)	51023
17	Bronze Clevis	51024
18	Clevis Shaft	51025
19	Spring Retainer Pin (2 required)	51026
20	Chrome Spring	51027
21	Brass Shoe Insulator	51028
22	Insulator Screw	51029
23	Shoe Cap 5/16"	51008
23	Shoe Cap 3/8"	51010
23	Shoe Cap ½"	51011
23	Shoe Cap 5/8"	51012
24	Shoe Cap Screw	10091
25	Brass Shoe	51047
26	Front Collar	51032
27	Front Collar Insulator	51033
28	Brass Current Tube	51034
29	Rack Tube Insulator	51035
30	Current Tube Insulator	51036
31	Tube and Rack Assembly	51037
32	Rear 3 pc. Insulating Collar	51038
33	Air Plug	51039
34	Valve Body Assembly	51040
	Valve Bonnet Assembly	10060
35	Spool Assembly	10067
36	Bonnet	10068
37	Spanner Wrench	10083
38	Valve Body Insulator	51041
39	Torch Holder Bracket	51042
40	Servo-Motor Guard	51048
41	Shaft Coupling	51104
42	Servo-Motor Guard Screws (2 required)	51050
43	Servo-Motor Mount Screws (2 required)	51083
44	Servo-Motor Screws (3 required)	51052
45	Motor Mount Cover Screws (2 required)	51085
46	Motor Mount Cover	51084
47	Electrode Alignment Tube	51045
48	Servo-Motor Guard Mounting Block	51049
49	Servo-Motor Mount	51103
50	Auxiliary Hi Temp. Lava Shield 5/16"	51090
50	Auxiliary Hi Temp. Lava Shield 3/8"	51086
50	Auxiliary Hi Temp. Lava Shield 1/2"	51087
50	Auxiliary Hi Temp. Lava Shield 5/8"	51088

INFOSIGHT#	MFG#	MFG	DESCRIPTION
ITM13116	1755752	PHOENIX	CONNECTOR,PHOENIX,HEADER,4PIN,5.08MM,VERT,END CAP (P2)
ITM18818	1755794	PHOENIX	CONNECTOR,PHOENIX,HEADER,8PIN,5.08MM,VERT,END CAP (P1)
ITM20008	103309-5	TYCO/AMP	CONNECTOR,HEADER,20 PIN,STRAIGHT,SHROUDED (P3,P4)
ITM20014	7105SYCQE	C&K	SWITCH,TOGGLE,SPDT CTR OFF,MOM,PCB MT,C&K 7000 SER (SW2,SW4)
ITM20015	7101SYCQE	C&K	SWITCH,TOGGLE,SPDT,PCB MT,C&K 7000 SERIES (SW1)
ITM20017	7103SYCQE	C&K	SWITCH,TOGGLE,SPDT CTR OFF,PCB MT,C&K 7000 SERIES (SW3)
ITM20079	RTE24024F	TYCO/P&B	RELAY,PC-MOUNT,DPDT,8A CONTACTS,24V/16.7MA COIL (REL1,REL2)

Connections to the boards are listed below:

Connector P1:

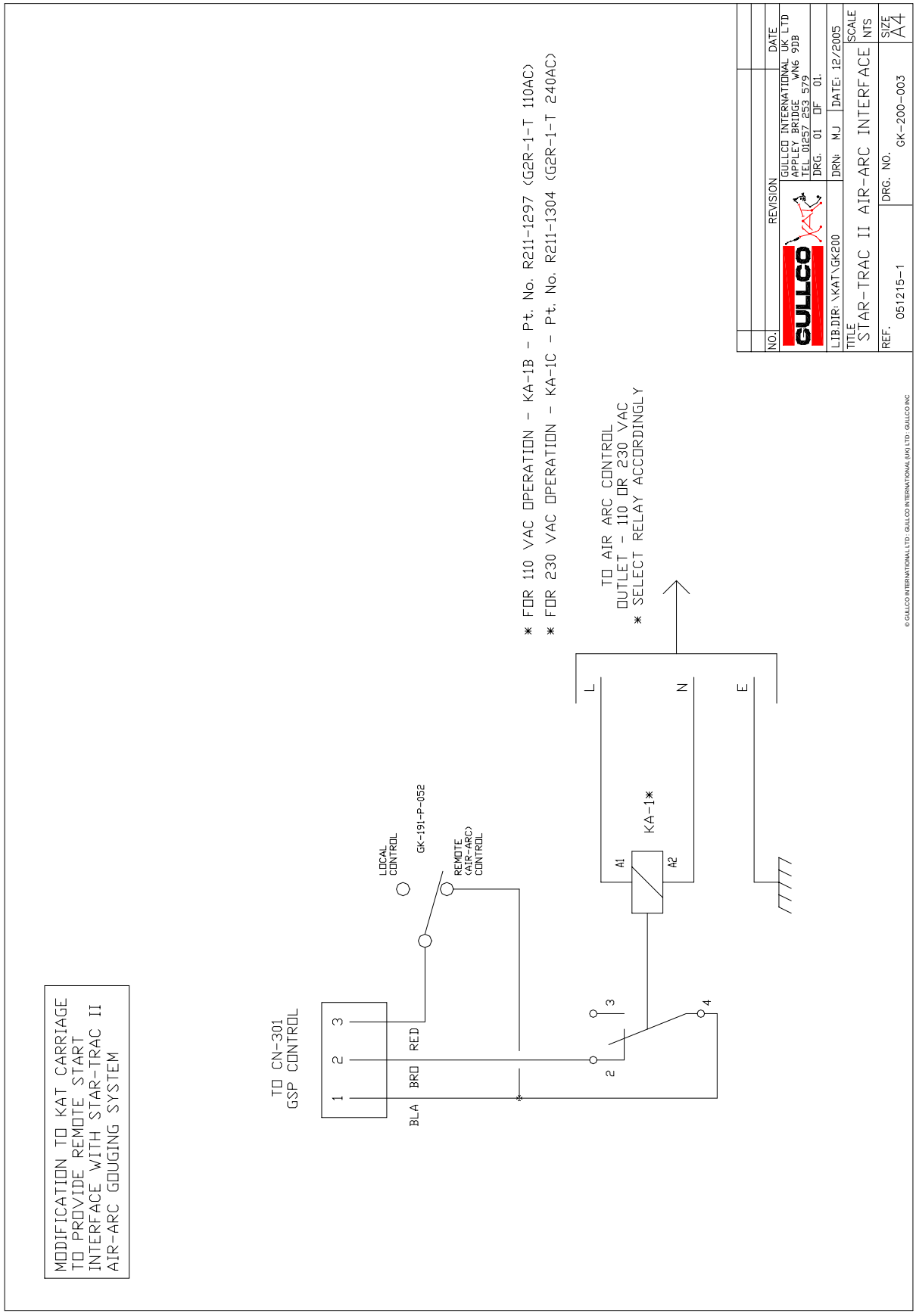
PIN 1: CARRIAGE 220VAC-2	SWITCHED VIA RELAY (REL1) TO 220VAC-2 (P1 PIN2) to turn on Carriage
PIN 2: 220VAC-2	AC INPUT CONNECTED TO RELAY CONTACT (REL1)
PIN 3: CARRIAGE 220VAC-1	SWITCHED VIA RELAY (REL1) TO 220VAC-1 (P1 PIN4) to turn on Carriage
PIN 4: 220VAC-1	AC INPUT CONNECTED TO RELAY CONTACT (REL1)

Connector P2:

PIN 1: 24VAC-1	24VAC INPUT FROM TRANSFORMER
PIN 2: 24VAC-2	24VAC INPUT FROM TRANSFORMER
PIN 3: WELD-A	RELAY CONTACT CLOSURE (REL2) TO WELDER
PIN 4: WELD-B	RELAY CONTACT CLOSURE (REL2) TO WELDER
PIN 5: MOTOR-A	OUTPUT TO DC SERVO MOTOR THROUGH 1A CIRCUIT-BREAKER (24VDC MAX)
PIN 6: MOTOR-B	OUTPUT TO DC SERVO MOTOR (24VDC MAX)
PIN 7: WORK-	INTERNAL CONNECTION TO SIGNAL GROUND (EXTERNALLY CLAMPED TO WORK)
PIN 8: TORCH+	INTERNAL HIGH-IMPEDANCE CONNECTION (>30K OHM) TO A/D CONVERTER (EXT CONNECTED TO WELD ROD)
	(MAX VOLTAGE FOR TORCH+ IS DEPENDANT ON THE WELDER)

Connectors P3 and P4 are ribbon-cable connections that carry +5VDC and Ground as well as 5V logic connections to the front-panel. All voltages on the front-panel are 5V or less.

INTERFACE TO KAT CARRIAGE



CE DECLARATION OF CONFORMITY

We hereby declare that the following machinery complies with the essential health and safety requirements of the Machinery Directive 89/392/EEC, 91/368/EEC and 94/44/EEC enacted in the United Kingdom by The Supply of Machinery (Safety) Regulations 1992.

Machine description**: Automatic Gouging System**

Make: **Symex** **Model: STAR TRAC II**

Serial number: **Series Production**

Manufactured by: **C H Symington**
6063 Frantz Road, Suite 103
Dublin
Ohio 43017
USA

This machine has been designed and manufactured in accordance with the following transposed harmonised European standards.

EN 292 parts 1 and 2 : 1991 Safety of Machinery - Basic concepts, general principles for design.
EN 294 : 1992 Safety of Machinery - Safety distances to prevent danger zones being reached by the upper limbs.
EN 60204-1 : 1993 Safety of Machinery - Electrical equipment of machines - Specification for general requirements.
EN 418 : 1992 Safety of Machinery - Emergency stop equipment, functional aspects - Principles for design.
PR EN 1050 : Risk analysis.
EN 50 081 part 2 : EMC - Generic Emission Standard - Industrial Environment
EN 50 082 part 2 : EMC - Generic Immunity Standard - Industrial Environment
73/23/EEC : Low Voltage Directive.

In addition, this machinery has been designed and constructed in accordance with

BS 5304 : 1988 Safety of Machinery.
BS 3456 part 201 : Safety of household and similar electrical appliances.
BS 6217 : 1981 Graphical symbols.
BS 7324 : 1990 Graphical symbols.

A technical construction file for this machinery is retained at the following address.

Gullco International (UK) Ltd
5 Stonecrop
North Quarry Business Park
Appley Bridge
Lancs
England WN6 9DB

Signed:  Date: **March 2006**

Name: Malcolm Jackson Position: Technical Director

Being the responsible person appointed by the manufacturer (or nominated representative of the manufacturer established in the EC), and employed by Gullco International (UK) Limited.

TECHNICAL FILE REF: Star Trac II

This Declaration of Conformity complies with Regulation 22 of The Supply of Machinery (Safety) Regulations 1992. It is not to be used with machinery listed in annex IV of the Regulations.