

MULTI-SCORE/QUICK-SCORE

'V' CUT SCORING MACHINE

INSTRUCTION MANUAL

MULTI-SCORE/QUICK-SCORE

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MACHINE SERIAL NUMBER:.....

Manual Updated May 2008

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DECLARATION OF CONFORMITY

We the Manufacture/Exporter

S.L.C. / Seetrax CAE Ltd
Hoemoor Farm
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Hants
ENGLAND

Description of Product

Model. MULTISCORE (PCB Scoring Machine)

Serial No. From 0703509

Directives/Standards

EN 292 Basic Principles of Design 1993
EN 60204 Electrical Equipment of Industrial Machines 1993
EN 50100 Safety of Machinery Electrosensitive Safety Devices 1993
EN 414 Rules for Drafting and Presentation of Safety Standards
EN 1050 Safety of Machinery – Risk assessment

EC Conformity Mark



Declaration: I declare that as the authorised representative, the above information in relation to the supply/manufacture of this product, is in conformity with the stated standards and other related documents following the provisions of (89/392/EEC) Directives.

Name of Authorised Representative Mr S Cooper
Signature of Authorised Representative

A handwritten signature in blue ink, appearing to be 'S. Cooper', written over a faint horizontal line.

Date 28/7/2003

CHECK LIST

Please uncrate the SCORING MACHINE very carefully. Do not handle SCORING MACHINE roughly. Please also ensure that ALL of the equipment is unwrapped from it's individual packing BEFORE the packaging is discarded.

IMPORTANT NOTE:

THE GUARANTEE ON THIS EQUIPMENT WILL BE INVALIDATED IF DAMAGE IS CAUSED THROUGH MISHANDLING OR IF WRONG INSTALLATION OCCURS.

The following equipment has been packed and checked before despatch.

PACKING LIST

SCORING MACHINE

- * CUTTERS AND HOLDERS
- * SETTING TOOL
- * SET OF ALLEN KEY TOOLS
- * SILICON GREASE
- * SPARE FUSES
- * 2 X PCB SUPPORT SHELVES
- * FEELER GAUGES
- * DRIVE BELT

SAFETY INSTRUCTIONS

- * DO NOT attempt to use this machine until you are totally familiar with how to operate it safely.
Read this Instruction Manual BEFORE SWITCHING THE MACHINE ON.

DO NOT operate the machine with ANY guards removed.

- * DO NOT modify or tamper with any safety devices or guarding.
- * DO NOT perform any setting up procedures with the machine switched ON.
- * DO NOT place hands near the carriage or cutter assembly whilst the machine is cycling.
- * DO NOT wear loose clothing, jewellery or unrestrained hair styles whilst using the machine.
- * ALWAYS disconnect the power supply from the machine BEFORE carrying out repairs or maintenance.
- * ALWAYS wear safety glasses or a face-shield when operating the machine.
- * ALWAYS wear gloves when adjusting the cutters.
- * This machine MUST be operated by only ONE PERSON at any time.

THE SCORING MACHINE IS A SAFE MACHINE TO USE

REGULAR MAINTENANCE AND CLEANING WILL KEEP IT THAT WAY

IF IN DOUBT - PLEASE ASK!

INTRODUCTION

The SCORING MACHINE is designed to accurately score a number of double-sided 'V' grooves for panel separation in a multi pattern PCB panel, as an alternative to routing, which is time consuming, expensive and wasteful of materials.

Using the SCORING MACHINE, your yield per panel will increase compared with drill/routed or pierce/blank. The benefits are considerable, as assembly of PCB's in multiple panels either by hand, auto insertion or pick and place, before separation, is advantageous. The SCORING MACHINE suits the requirements of Printed Circuit Manufacturers who produce an extensive variety of PCB's using datum (tooling) holes, which are put in at an early stage of the production and used through the subsequent processes. The SCORING MACHINE uses these datum holes as location tooling points and not the PCB edges, as the edges are sawed or guillotined and therefore have poor resolution to the artwork and subsequent trackwork.

SETTING

Setting the SCORING MACHINE cutters is simple. A digital display is linked to a locating tool with cursor, which engages the carbide cutters. An accurate measurement is taken off the display from a datum hole to the first and subsequent cut positions. In moving the cursor, the cutter is automatically brought into the correct cut position. The PCB panel(s) is located on the tooling pins, automatically/manually clamped and accurately aligned using micro-manipulators and straight edge, before being driven forward at high speed into the cut start position. On completion of the scoring, the panel(s) returns to the start position for discharge.

CONSTRUCTION

A glass fibre, free-standing cabinet houses the electrical controls and supports the cutter and drive assemblies. Cycle, Start/Stop controls are positioned conveniently to hand. The solid carbide cutters are mounted on fully adjustable shafts incorporating depth of cut gauges. The drive assembly consists of 2/4 sets of locating arms with micro-manipulators, mounted on a high precision steel slide linked to the drive stepper motor. The cutters are fully enclosed in a steel housing with stylish acrylic front facia, protected by safety switches, and incorporating dust exhaust ports.

MULTI-SCORE ONLY: - non-contact switches determine the appropriate carriage start/return and speed change position.

TECHNICAL DATA SHEET

SPECIFICATIONS:

Length: 1575mm (62 in)
Width: 990mm (39 in)
Height: 1300mm (51 in)
Weight: 160kg (352 lbs)

Cutting speed: 2 - 4 Mtrs (78" - 157") per min
Feed/withdrawal speed: 18 - 24 Mtrs (708" - 944") per min (Multi-score only)
Cutter tip speed: 8 Mtrs (314") 30^O (Full angle) (see options below)

Distance between cutters: 20mm (0.78") (Less with multiple tooling holes, or cutter reversal)
Number of cutters: 10 Sets (top and bottom)
Panel positioning: Tooling pin location. Manual clamping
Cutter depth adjustment: Single action lead screws with gauges
Maximum panel size: 711mm X 711mm (28" X 28")
Cutter positioning: Digital setting
Dust extraction ports: 2 X 50mm (2")
Electrical supply: 3 Phase 410v x 6 Amp (others on request)

OPTIONS:

- * Free standing dust extract unit
- * Carbide or diamond cutters with various geometry's
- * Choice of registration pin sizes

Note: Seetrax CAE Ltd reserve the right to change the specification without notice

INSTALLATION PROCEDURE

- * After uncrating your SCORING MACHINE, place the machine on a solid (preferably concrete) floor, away from chemicals, fumes, moisture, etc. The SCORING MACHINE is fitted with both castors and jacking screws to enable it to be moved easily into position, before being jacked up clear of the floor. Rubber machine pads fitted under the jacking bolts will reduce vibration.

IMPORTANT

Ensure there is minimum free space of 1 metre (3 feet) behind the machine to allow the PCB Support arms to protrude when cycling and to allow your Operator access to the cutters for setting. Do not place the rear of SCORING MACHINE near a walkway.

- * Connect your factory vacuum supply to the extract ports at the rear of the machine.

IMPORTANT

You will need a minimum vacuum of 7 CU/MTRs per minute to ensure all dust is extracted away from the cutter assembly housing.

- * Ensure all transit straps are removed from the carriage.
- * Check that the mains electrical supply to the machine is the same as that printed on the label at the rear of the machine. If it is correct, connect to your mains supply. If it is INCORRECT, *DO NOT* connect. Contact Seetrax CAE Ltd or your local Seetrax CAE Ltd Distributor.

PLEASE NOTE:

Your machine is 3 phase and the cutters may run in the wrong direction. Before operating, check cutter rotation through the acrylic facia and compare with the arrows on the bearing blocks. If necessary, change a Brown wire for a Black wire at the 3 Phase connection supply (not at the machine), to change cutter direction.

COLOUR CODING OF MAINS CABLE

| | |
|------------------------|--------------------|
| 3 PHASE MACHINE: BLACK | = PHASE I (LIVE) |
| BROWN | = PHASE II (LIVE) |
| BLACK | = PHASE III (LIVE) |
| BLUE | = NEUTRAL |
| GREEN/YELLOW | = EARTH (GROUND) |

- * **IMPORTANT: Do not use any cable size other than that supplied with the machine, as it is essential that the cable is capable of carrying the relatively high current (without 'volt drop') required to start the cutter assembly. Do not connect to any power supply that is less than 7% of the voltage shown on the machine label.**

- * THE SCORING MACHINE is designed to operate in a temperature range of 12^o to 30^o Centigrade (54^o - 86^o F).

- * Fit the 2 PCB support shelves to the frame edge of SCORING MACHINE using the 4 screws supplied.

- * DO NOT SWITCH ON.

- * Please now read the OPERATING INSTRUCTIONS on page 10.

OPERATING INSTRUCTIONS

- * Ensure that the power is switched OFF to the machine at the isolator.
- * To check or adjust depth of cut, release the 4 bearing block screws (Figure 2, pointer 15) on each side of the machine. Now using a 0,5mm feeler, slowly rotate the cutter shaft whilst adjusting the lead screw (Figure 2, pointer 14) until the cutters just touch the 0,5mm feeler. Slacken the bezel clamp and set gauges to 0,5mm, re-tighten. Do the same operation on both ends of cutter shaft to ensure shafts and gauges are both set parallel and at same setting. Re-tighten 8 bearing block screws.

IMPORTANT

Ensure cutter shafts are parallel.

- * Release the carriage arm clamps, then position the PCB on the carriage arms locating on the tooling pins, (figure 4, pointer 21).
- * MULTI-SCORE ONLY: Release clutch (Figure 1, pointer 10) to allow the carriage to be manually moved.

IMPORTANT

Ensure carriage arm positions do not coincide with cutters before manually pushing the carriage forward. Remove top and end covers to gain access to the depth gauges and cutters.

- * Lower the straight edge (Figure 1, pointer 1) to the horizontal setting position by releasing locking knob (Figure 1, pointer 2). Align the PCB track pattern to the straight edge by manipulating adjusters , pointer 22) and then return the straight edge into the vertical position and lock up. Lock carriage arm clamps (Figure 4, pointer 21).
- * Remove the PCB from the carriage support arms and manually push the carriage into the cutter housing mechanism until pin is directly in line with the cutter positioning tool (Figure 3, pointer 18). Slide the cutter positioning tool mechanism along the beam until it is directly over the tooling pin, lower it to engage with the pin on the support arm. Switch on the Mitutoyo LCD by pressing ON/ZERO.
- * Lift the positioning tool free of the tooling pin and return the carriage to the start position manually. Release the cutter securing screw and locate the cutter in the slot of the positioning tooling device. (Figure 3).
- * Bring the first cutter into the desired position (data taken from artwork) by reading from the LCD display whilst sliding the cutter along the shaft using the positioning tool mechanism. Make final

adjustments to the cut position (if required) and nip up the cutter locking screw. Remove the positioning tool from the cutter.

Repeat setting operation as necessary for further cutters and second axis scoring. Nip up the cutter's securing screws and move the cutter-positioning device to its parked position.

- * Release the bottom cutter from the shaft and align the bottom cutter to the correctly positioned top cutters using the slot in the setting tool provided (round bar with plastic knob at one end and wire cut slot at the other). Repeat as necessary to align all bottom cutters to top cutters.
- * Depth of cut setting: After slackening the 8 bearing block screws (Figure 2, pointer 15) rotate the 2 lead screws (Figure 2, pointer 14) evenly until the correct depth of cut is seen on the gauges. Retighten bearing block screws. NOTE: The cutters move evenly about the centre line. Check tension of cutter drive belt. Tension if necessary, by releasing the screw, moving support and retightening screw. (NOTE: some variation in tensioner design may be seen, depending on model). Re-position end and top covers.
- * Ensure a sample PCB is on the support arms and clamp securely.

MULTI-SCORE ONLY

- * Return carriage. Engage clutch (Figure 1, pointer 10), ensuring the carriage is in the full extent of its travel. Switch power ON to the machine and start the cutter motor by depressing the START button (Figure 1, pointer 8). Ensure EMERGENCY STOP switch is not depressed and the cutters are rotating in the correct direction. (See INSTALLATION PROCEDURE on page 8).
- * Press both CYCLE buttons simultaneously the carriage will index forward into the cut position and then return to the start position. Adjust non-contact switches (Figure 1, pointer 9) until the leading edge of the PCB panel travels at fast speed until it is in line with the acrylic fascia of the cutter housing mechanism. At this stage, it must then slow to the pre-set cutting speed. Both speeds are adjustable using the potentiometers, IN - SPEED - OUT (Figure 1, pointer 5). Trial and error will determine the best cutting and travel speeds. Cycle the machine several times until you are confident you have achieved the optimum speeds and the best cut results.
- * The MULTI-SCORE is now ready for production. Load a PCB panel onto the two left support arms. Depress the 2 X CYCLE buttons simultaneously. The machine will now score and return to the load/offload position. Remove the PCB panel from the support arms and place onto the right-hand support arm at 90°, if second axis scoring is desired. Load a new panel onto the left support arms for first axis scoring. Cycle.

QUICK-SCORE ONLY

- * Slowly push the carriage forward into the cutters at a speed that does not labour either machine or operator. Once you feel the cutters finish cutting finish to the end stop and then withdraw carriage.
- * The QUICK-SCORE is now ready for production. Load a PCB panel onto the two left support arms. Manually push until the end stop is felt and withdraw carriage. Remove the PCB panel from the support arms and place onto the right-hand support arm at 90⁰(if fitted and a second score is desired. Load a new panel onto the left support arms for first axis scoring. Cycle.

ALL MACHINES

- * Inspect the PCB to ensure score lines are in the correct position. If they are found to be to one side of the desired position, tighten micro-manipulator clamps (Figure 4, pointer 23) and release clamping screws (Figure 4, pointer 21) and index the carriage mechanism across, using adjuster (Figure 1, pointer 4). Read the amount of movement off the gauge (Figure 4, pointer 20) and re-tighten clamping screw. Run a sample PCB panel through the machine and make further inspections.
- * The EMERGENCY STOP button and trip wire stop the machine dead. ABORT buttons return the carriage to the start position at fast speed.
- * To add (or remove) cutters – see CUTTER REPLACEMENT on page 15.

IMPORTANT

If any safety covers are not secure, or the EMERGENCY STOP button is depressed, the machine will not 'start up' or cycle.

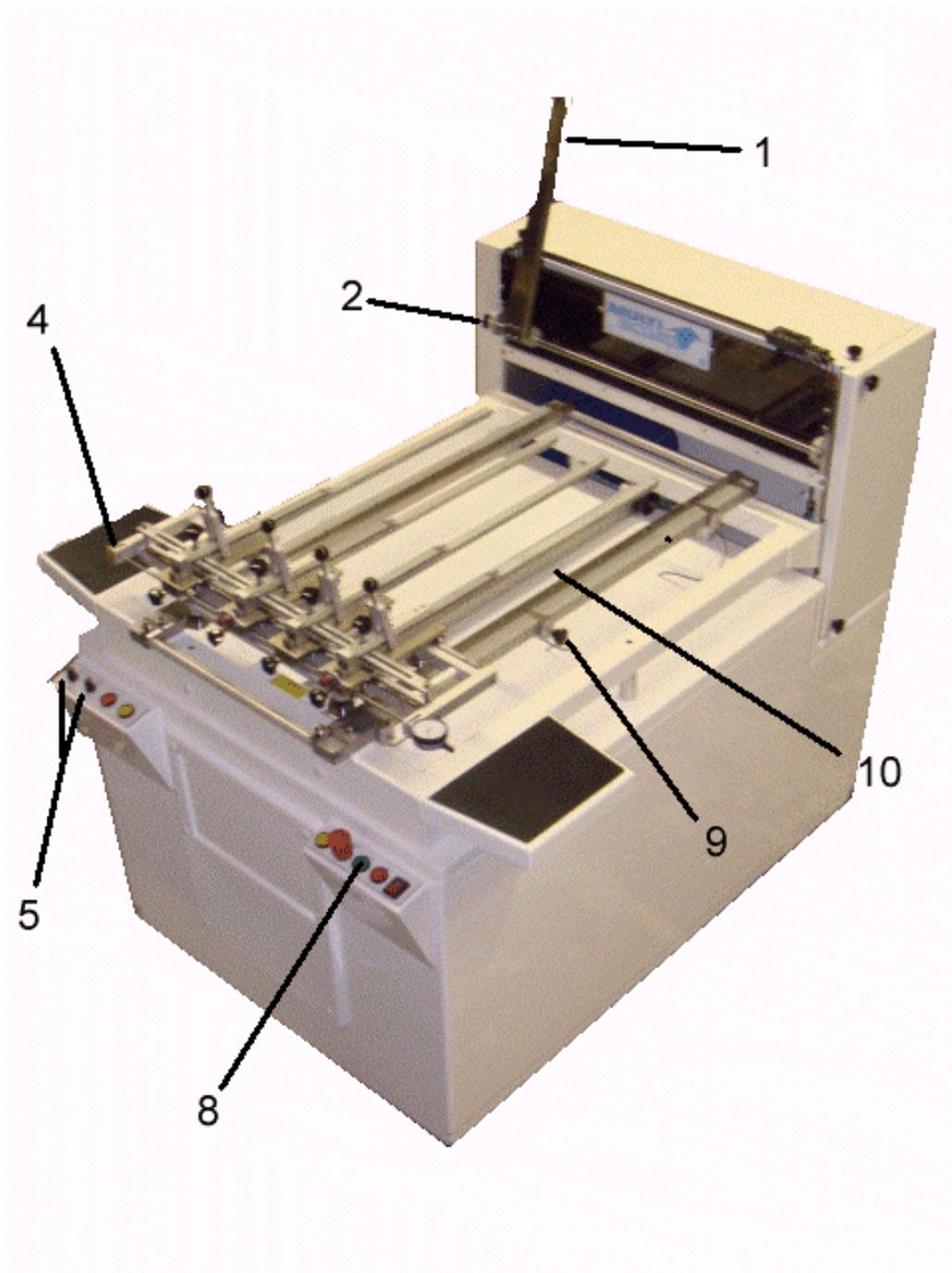


Figure 1

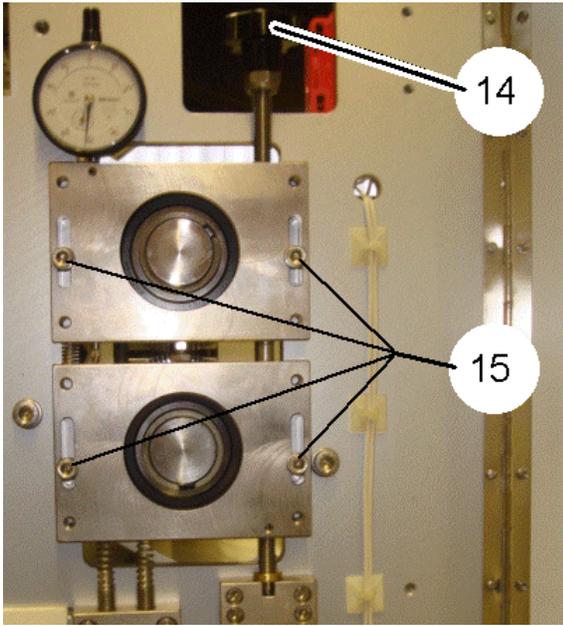


Figure 2

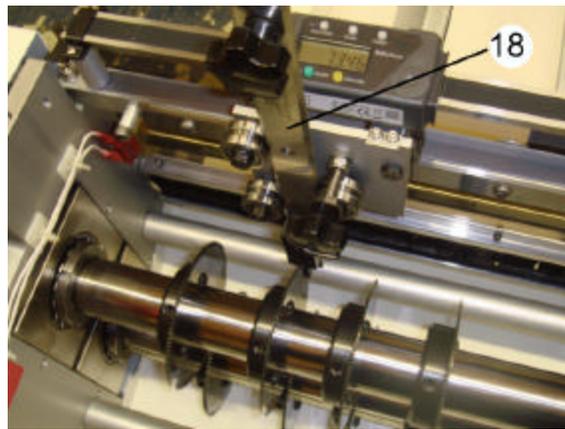


Figure 3

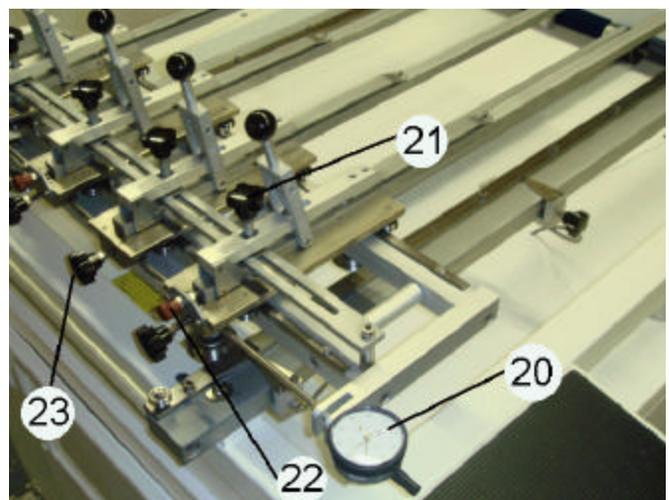


Figure 4

CUTTER REPLACEMENT

To replace damaged or worn cutters or to add or remove cutters follow these simple steps.

ALWAYS WEAR GLOVES FOR PROTECTION.

- * Open the right hand end cover (viewed from the front of the machine not drive belt side). This will give access to the cutter shaft bearing blocks and depth of cut mechanisms. Remove top cover.
- * Right hand bearing block (not drive belt end). (Figure 2, pointer 15). Bend back locking tab and loosen the two castellated nuts holding the shaft to the bearing block. Tap nut with soft headed mallet to release bearing from shaft, if not released turn shaft 90 degrees and tap nut until taper is released. Only then, slacken the 4 bolts holding the (right) bearing block, but do not remove completely.
- * Slacken the screws holding the cutters to the drive shafts. Move the top cutters out of alignment with the bottom cutters to avoid damage to the cutter tips.
- * Remove the 4 screws holding the bearing block and slide the two right side bearing blocks off the shafts simultaneously. If slight force is needed because of a build up of dust, gently tap the bearing blocks, (not the bearings) with a soft headed mallet - NOT A HAMMER.
- * Remove the cutters and holders.
- * If appropriate, remove the damaged cutter from its holder by releasing the 3 dome headed screws. NOTE DIRECTION OF CUTTER TEETH. Fit new cutter to holder. DO NOT TIGHTEN.
- * Slide the cutters back onto the shafts in the correct order and CHECK THAT THE DIRECTION OF EACH CUTTER IS CORRECT! Tighten the 3 dome headed screws to secure each cutter to its holder.
- * Replace and tighten the right side bearing blocks.
- * Using the C spanner supplied, (or mallet and drift), tighten the 2 castellated nuts rotating the shaft to ensure good bearing taper contact. Once tight, bend back locking tabs.
- * To check or adjust depth of cut, release the 4 bearing block screws on each side of the machine. Now using a 0,5mm feeler, slowly rotate the cutter shaft whilst adjusting the lead screw until the cutters just touch the 0,5mm feeler. Slacken the bezel clamp and set gauges to 0,5mm, re-tighten. Do the same operation on both ends of cutter shaft to ensure shafts and gauges are both set parallel and at same setting. Re-tighten 8 bearing block screws.

MAINTENANCE

GENERAL

YOUR SCORING MACHINE is manufactured to the highest possible specifications using the very latest quality materials. With the very minimum of maintenance listed below, your SCORING MACHINE WILL GIVE MANY YEARS OF TROUBLE FREE OPERATION.

PLEASE FOLLOW THIS GUIDE:

| | |
|------------------|---|
| DAILY | VACUUM CLEAN ALL WORKING AREAS OF MACHINE CHECK CUTTERS FOR DAMAGE |
| WEEKLY | CLEAN HEPKO SLIDES (CARRIAGE) CHECK TENSION ON MOTOR DRIVE BELTS LIGHTLY GREASE MICRO-ADJUSTING MECHANISM CHECK DUST EXTRACTION IS WORKING CORRECTLY |
| MONTHLY | VACUUM CLEAN CUTTING CHAMBER OF ALL DUST CLEAN DUST FROM MITUTOYO SPA & DIGITAL DISPLAY CHECK ALL SCREWS ARE TIGHT CHECK & ADJUST HEPKO SLIDES (CARRIAGEWAY) & MECHANISMS |
| 3 MONTHLY | CHECK BEARINGS ARE NOT EXCESSIVELY WORN CHECK ALL SCREWS, NUTS & BOLTS ARE TIGHT CHECK VACUUM EXTRACT IS WORKING 100% CHECK CUTTERS ARE NOT BLUNT (WORN) CHECK CUTTER MOTOR DRIVE BELT IS TIGHT |

RECOMMENDED SPARE PARTS LIST

We recommend the following is stocked to ensure your SCORING MACHINE remains fully operational in the unlikely event of a mechanical failure or through operational 'wear and tear'.

| QUANTITY: | ITEM: | PART NUMBER: |
|-----------|-----------------------------|--------------|
| 6-10 SETS | CARBIDE CUTTERS | MS3 3004 |
| 1 | CUTTER DRIVE BELT (MS ONLY) | MS3 3009 |
| 1 SET | LOCATION PINS (4 PER SET) | MS3 3011 |
| 1 | MOTOR DRIVE BELT | MS3 3012 |
| 6-10 SETS | CUTTER HOLDERS | MS3 3007 |

IMPORTANT:

When ordering spares, please always quote the item and part number.

FAULT FINDING GUIDE

| MALFUNCTION | FAULT DIAGNOSIS | REMEDY |
|---|--|---|
| 'V' GROOVE IS ROUGH | CHECK DIRECTION OF CUTTERS | IF RUNNING BACKWARDS CHANGE DIRECTION OF CUTTERS - SEE INSTALLATION PROCEDURE ON PAGE 8 |
| SCORE LINES NOT CONSISTENTLY STRAIGHT | CHECK LOCATION PIN SIZE IS CORRECT CHECK CUTTER ADJUSTING MECHANISMS ARE TIGHT | CHANGE FOR CORRECT SIZE TIGHTEN |
| MACHINE CUTTER MOTOR WILL NOT START | CHECK ALL GUARDS AND CABINET DOORS ARE SECURE. EMERGENCY START SWITCH IS RELEASED | SWITCH MACHINE OFF AND THEN RESET |
| MACHINE IS LABOURING WHEN CUTTING BOARD | CHECK CUTTING SENSOR IS CORRECTLY ADJUSTED CHECK SPEED CHECK BLADE SHARPNESS | ADJUST AS NECESSARY - SLOW DOWN CUTTING FEED SPEED CHANGE CUTTERS |
| CARRIAGE WILL NOT CYCLE FULL DISTANCE INTO MACHINE (Multi-Score only) | CHECK LIMITING SENSOR IS CORRECTLY ADJUSTED | ADJUST AS NECESSARY |
| MACHINE STOPS FOR NO REASON | CHECK ALL MICRO-SWITCHES, TRIP AND EMERGENCY SWITCHES ARE CORRECTLY POSITIONED | ADJUST AS NECESSARY |
| CUTTER MOTOR STARTS BUT MACHINE WILL NOT CYCLE | CHECK FUSES (IN CABINET ELECTRONICS) | CONTACT SEETRAX CAE LTD |
| CARRIAGE DOES NOT MOVE WHEN CYCLED (Multi-Score only) | CHECK DRIVE BELT IS TIGHTED | TIGHTEN |

THE PROCEDURES DETAILED ABOVE SHOULD ONLY BE UNDERTAKEN BY QUALIFIED AND COMPETENT PERSONS. BEFORE REPLACEMENT OF ANY ASSEMBLY OR PIECE PART, THE SCORING MACHINE MUST BE DISCONNECTED FROM THE MAINS SUPPLY BY THE REMOVAL OF THE MAINS CONNECTOR. USE ONLY GENUINE SEETRAX CAE LTD PARTS.

PROBLEMS

YOU HAVE PROBLEMS?

We are sorry to hear this! Your machine was thoroughly tried and tested by our own QA Department in a full production environment, at your requested voltage/frequency, before shipment, so we know it was functioning correctly when it left us.

ONE OF THREE SITUATIONS HAS OCCURRED!

YOUR MACHINE HAS BEEN DAMAGED IN TRANSIT

In this instance, we will repair the equipment and invoice you. You can then claim on your insurance. This is of course, assuming you insured the machine during transit. (CIF sales excluded).

THE MACHINE HAS NOT BEEN INSTALLED CORRECTLY OR IS BEING USED INCORRECTLY

Have you read the Instruction Manual?

WHAT WE CAN DO - We will advise correct operation, repair any damaged components returned to us (postage paid by you) and replace them as soon as possible, invoicing you accordingly.

THE MACHINE IS MALFUNCTIONING DUE TO A COMPONENT FAILURE SINCE IT LEFT OUR COMPANY

We are sorry if this is the case! These things happen, even with a QA system as tight as ours.

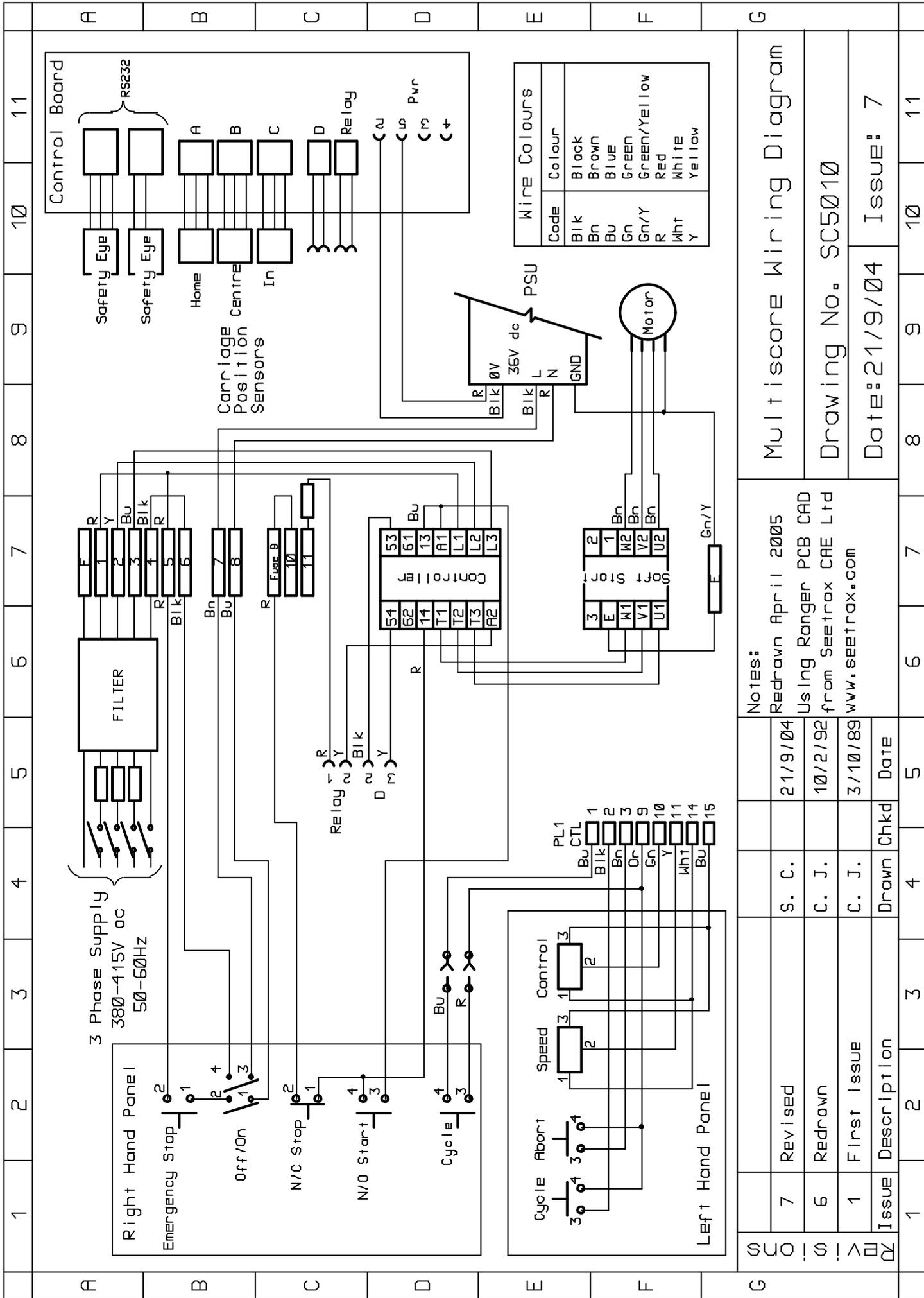
WHAT WE CAN DO - We will advise you of what action to take. We will replace any faulty components returned to our company address (postage paid by you) within the agreed warranty period, free of charge. Thereafter, we will advise you of the cost of replacing the faulty component prior to returning the repaired or new component to you and invoice you accordingly.

IF IN DOUBT - PLEASE CONTACT SEETRAX CAE LTD

SPARE PARTS

| DESCRIPTION | CODE |
|--|------|
| V357 VIARTA BATTERIES | 3001 |
| CARBIDE CUTTERS | 3004 |
| NON-STANDARD CARBIDE CUTTERS (ANY RANGE) | 3006 |
| CUTTER HOLDERS | 3007 |
| CUTTER GRUB SCREWS X 25 | 3008 |
| CUTTER DRIVE BELT | 3009 |
| CUTTER CHAMBER SAFTY SWITCH | 3010 |
| LOCATION PINS - SPECIFY SIZE (4) | 3011 |
| STEPPER MOTOR DRIVE BELTS (2) | 3012 |
| CARRIAGE DRIVE BELT | 3013 |
| CARRIAGE ARM ASSEMBLY-ADJUSTABLE | 3014 |
| CARRIAGE ARM ASSEMBLY - NON ADJUSTABLE | 3015 |
| CLAMPING ARM SPINDLE | 3016 |
| CLAMPING ARM KNOB | 3017 |
| CLAMPING SOLENOID | 3018 |
| STEPPER MOTOR | 3019 |
| MANUAL CLAMP(COMplete ASS) | 3020 |
| CLAMPING ARM | 3021 |
| CARRIAGE SLIDEWAY JOURNALS-LARGE | 3022 |
| CROSS SLIDE JOURNALS-SMALL | 3023 |
| POSITIONAL LIMIT SENSOR POTTED (EACH) | 3024 |
| HEPCO GUIDE RAIL ASSEMBLY | 3025 |
| CONTROLLER BOARD FOR CLAMPING | 3026 |
| MICRO PROCESSOR | 3027 |
| PART EXCHANGE MICRO PROCESSOR | 3028 |
| MULTI-SCORE DRIVERS | 3029 |
| PRE-DRIVERS | 3030 |
| CONTACTOR | 3031 |
| SOFT START | 3032 |
| GUIDE RAILS | 3033 |
| BRUSHES | 3034 |
| POWER SUPPLY (RS) | 3035 |
| CUTTER SHAFT | 3036 |
| CUTTER SHAFT TAPERED BEARINGS (COMPLETE) | 3038 |
| BEARING ONLY | 3039 |
| TAPERED SLEVE | 3040 |
| STAR TAB WASHER | 3041 |
| END FLOAT BEARING | 3042 |
| CUTTER SHAFT PULLEYS | 3043 |
| PULLEY BEARINGS | 3044 |
| IDLE PULLEY | |
| MOTOR PULLEY | |
| RIGHT HAND SIDE BEARING BLOCK ASSEMBLY | 3045 |
| CUTTER ALIGNMENT TOOL | 3046 |
| TOP CUTTER [POSITIONING TOOL | 3064 |
| FIBRE-GLASS DOOR FOR CABINET | 3050 |
| DOOR MICRO SWITCHES | 3051 |
| MITUTOYO SPAR | 3052 |
| MITUTOYO BATTERY | 3053 |
| MITUTOYO DTI | 3054 |
| MITUTOYO DTI WITH 75 MM EXTENSION | |
| MITUTOYO CONNECTING PLATE | 3055 |
| PARALLEL SHAFT BEARING (old m/c) | 3057 |

| | |
|-------------------------------------|------|
| BELT ADJUSTMENT BEARING (4 per m/c) | 3058 |
| CYCLE SWITCH | 3059 |
| START / STOP SWITCH | |
| POWER SWITCH | 3060 |
| OPTO SAFETY SENSOR | |
| POTENTIOMETER | 3061 |
| SMALL STEPPER DRIVE BELT PULLEY | 3062 |
| STEPPER MOTER | 3063 |



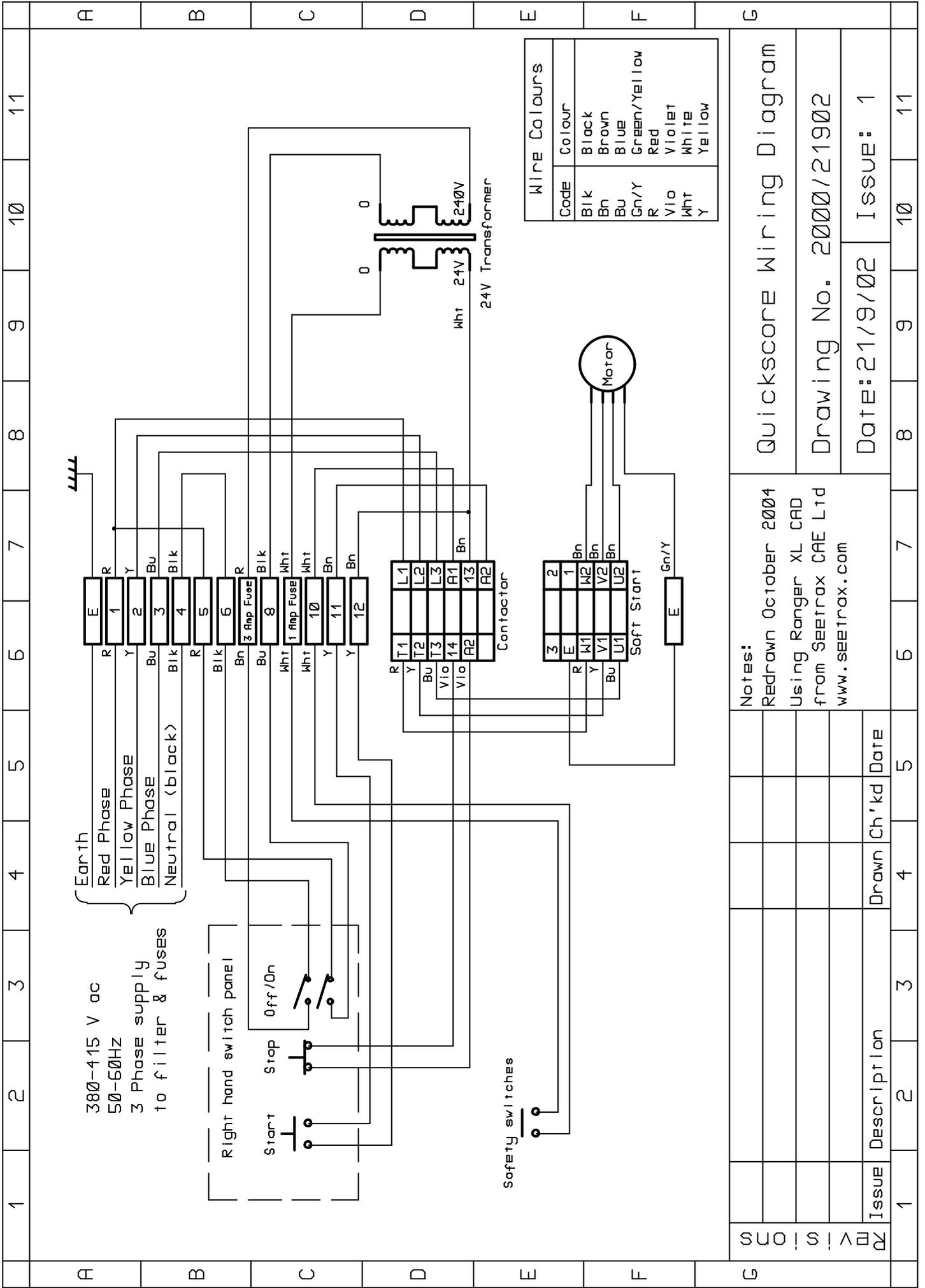
Multiscore Wiring Diagram

Drawing No. SC5010

Date: 21/9/04 Issue: 7

Notes:
 Redrawn April 2005
 Using Ranger PCB CAD
 from Seetrax CAE Ltd
 www.seetrax.com

| Issue | Description | Drawn | Chkd | Date |
|-------|-------------|-------|------|---------|
| 7 | Revised | S. C. | | 21/9/04 |
| 6 | Redrawn | C. J. | | 10/2/92 |
| 1 | First Issue | C. J. | | 3/10/89 |



WARRANTY CLAUSE

- * Replacements will be supplied for parts found to be defective in workmanship or material, under normal one shift conditions, within twelve months from the date of the shipment, upon receipt of the defective parts at our factory. All necessary items or equipment supplied by us with this equipment are subject to the warranty issued by, or considered standard practice, by the respective manufacturers and is warranted or guaranteed by us accordingly.

There will be a charge for service calls made by our technicians if these calls are a result of a failure to follow the installation/operating/maintenance instructions supplied. These charges will be made at our normal service charge rate. No claims will be allowed for production whether or not related to the use, or delivery of any equipment, or for any consequential damage or business loss incurred by buyer. No allowance will be made for repairs or alterations unless specifically authorised by Seetrax CAE Ltd.

- * Consumable items (i.e. Drive belts, cutters, etc.) supplied with the machine are not covered by this warranty.
- * Inadequate vacuum extraction at the cutter assembly is a possible health hazard and also increases cutter and bearing wear and will invalidate this warranty (see INSTALLATION PROCEDURE on page 8).
- * Warranty is invalidated if genuine Seetrax CAE Ltd replacement parts are not used (unless specifically authorised).

Important:

Always quote machine's serial number when ordering spare parts/service.

Seetrax CAE Ltd
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