



# ***T2 / T3***

## ***Potato Harvester Control System***

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# **IMPORTANT**

This operator's handbook should be regarded as part of the machine. Suppliers of both new and second-hand machines are advised to retain documentary evidence that this handbook was supplied along with the machine.

The contents of this handbook, although correct at the time of publication, may be subject to alteration by the manufacturers without prior notice.

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### Introduction to the Handbook

This handbook provides the information for the operation, adjustment and maintenance of your Standen T2 / T3 CAN-Bus electrical control system. To enable you to achieve the best results from the machine, the manufacturer recommends that you read the handbook thoroughly prior to using the machine for the first time.



This symbol indicates important safety messages within this handbook. When you see this symbol, be alert to the possibility of injury to yourself or others and/or damage to the machine and carefully read the message that follows.

Throughout this handbook the terms 'front', 'rear', 'left-hand' (LH) and 'right-hand' (RH) are derived from the tractor driver's position facing forward in the normal direction of travel.

Adjustments to the machine may have to be made singly or in combination according soil conditions. Always allow the machine to settle to a new setting before making further adjustments.

### TRANSPORT WARNING:



Always switch off the electrical control system before transporting the harvester on the road.

### WELDING WARNING:



Before carrying out any welding on the harvester **always** disconnect the KS1 & KS2 plugs (item 2 & 5, fig 28) from the bottom of the harvester control module and completely disconnect the harvester from the tractor. Failure to observe the above precautions may cause severe damage to the harvester and tractor electrical systems. For plug removal procedure see the maintenance section of this handbook.

## CAN-Bus Control System Installation

The harvester CAN-Bus control system will only operate as a complete circuit. The system requires a 12 Volt negative earth power supply fed directly from the tractor battery using only the 50Amp power lead supplied. Red cable to positive (+) and black cable to negative (-).



Ensure the polarity of the battery connections are made correctly to prevent damage to the system components.

The touch-screen service terminal (see fig 1) and the slave box (see fig 2)) should be mounted inside the tractor cab so that controls can be comfortably reached from the drivers seat.



Care should be taken to ensure the units do not obstruct the driver's visibility and access to the tractor controls. Always use existing mounting holes within the cab, as drilling additional holes may reduce the cab's integrity and is illegal.



Fig 1

The cab loom (see fig 3) should be routed into the cab through existing apertures to allow the 12 pin plug to couple into the front of the slave box. Mount the loom plug housing to the rear of the tractor cab so that it can be reached from the ground and through the opened rear window. Connect the display loom (see fig 4) into the plug on the rear of the service terminal, and route it safely to plug into the 4 pin plug on the front of the slave box. Connect the power lead (see fig 5) to the cab loom plug.

The tractor loom plug housing is used as the main power lead junction and the power pins are permanently live when connected to the battery. When all mechanical and hydraulic connections have been made to the tractor, the harvester loom can be plugged into the cab loom completing the electrical circuit. Ensure the plug is clean and dry and has not been dropped on the ground. The plug latch must be fully closed to ensure correct connection. When not in use, the harvester plug should be latched into the blank cover on the support stem. The circuit is completed by the manual emergency stop switch at the rear of the harvester which allows the main power relays to latch on.

Along with the touch-screen service terminal, all of the commonly used ram service controls are repeated on the slave box (see fig 2).

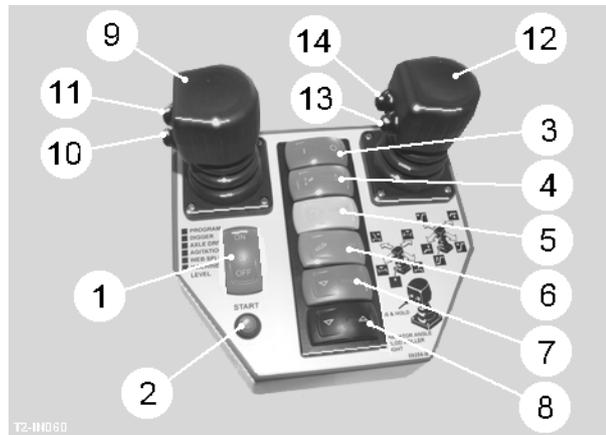


Fig 2

Slave box switch functions are listed below:

- Item 1 - Main system display screen on/off.
- Item 2 - Start switch for machine control module.
- Item 3 - Program start / stop.
- Item 4 - Digger auto-lower, off, manual raise.
- Item 5 - Powered axle forward, off, reverse.
- Item 6 - Agitation run, stop.
- Item 7 - Web split raise, lower.
- Item 8 - Machine level raise, lower.
  
- Item 9 - Joystick default functions: North/south axis – Drawbar steer.  
East/west axis - Axle steer.
- Item 10 - Axle automatic self-centre.
- Item 11 - Joystick second functions: North/south axis – 1<sup>st</sup> Omega clod roller height.  
East/west axis – 1<sup>st</sup> Omega angle.
- Item 12 - Joystick default functions: North/south axis – Elevator fold in/out.  
East/west axis – Swan neck raise/lower.
- Item 13 - Elevator stop/run.
- Item 14 - Joystick second functions: North/south axis – 2<sup>nd</sup> Omega clod roller height.  
East/west axis – 2<sup>nd</sup> Omega angle.

Where slave box functions are duplicates of touch pad switches on the service terminal, the switch on the service terminal will be highlighted when the slave box switch is operated.



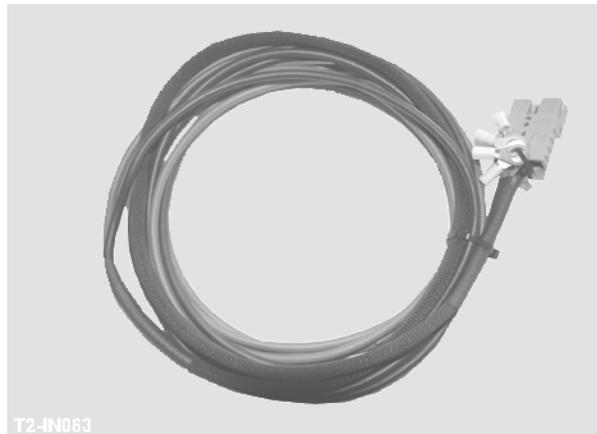
T2-IN061

Fig 3



T2-IN062

Fig 4



T2-IN063

Fig 5

## Starting the System

The control system has to be turned ON and OFF in sequence to allow the touch-screen service terminal to start correctly, and to ensure that the machine control module turns off correctly.

On the slave box, press the red rocker switch (item 1, fig 2) to the ON position. The following screen will show on the service terminal when it is ready (see fig 6).



Fig 6

On the slave box, press the green START button (item 2, fig 2), this will turn on the control module on the harvester.

## To Turn Off the System

It is necessary to turn off the machine control module before turning off the slave box, this prevents the module draining the battery.

To turn off, touch the red and yellow emergency stop pad on the service terminal screen. The display reverts to the screen above. At the screen above, turn OFF the red rocker switch (item 1, fig 2) on the slave box. The screen will go blank.

## Operating and Setting

When the system has been turned on, the service terminal will display the default operating screen (see fig 7).

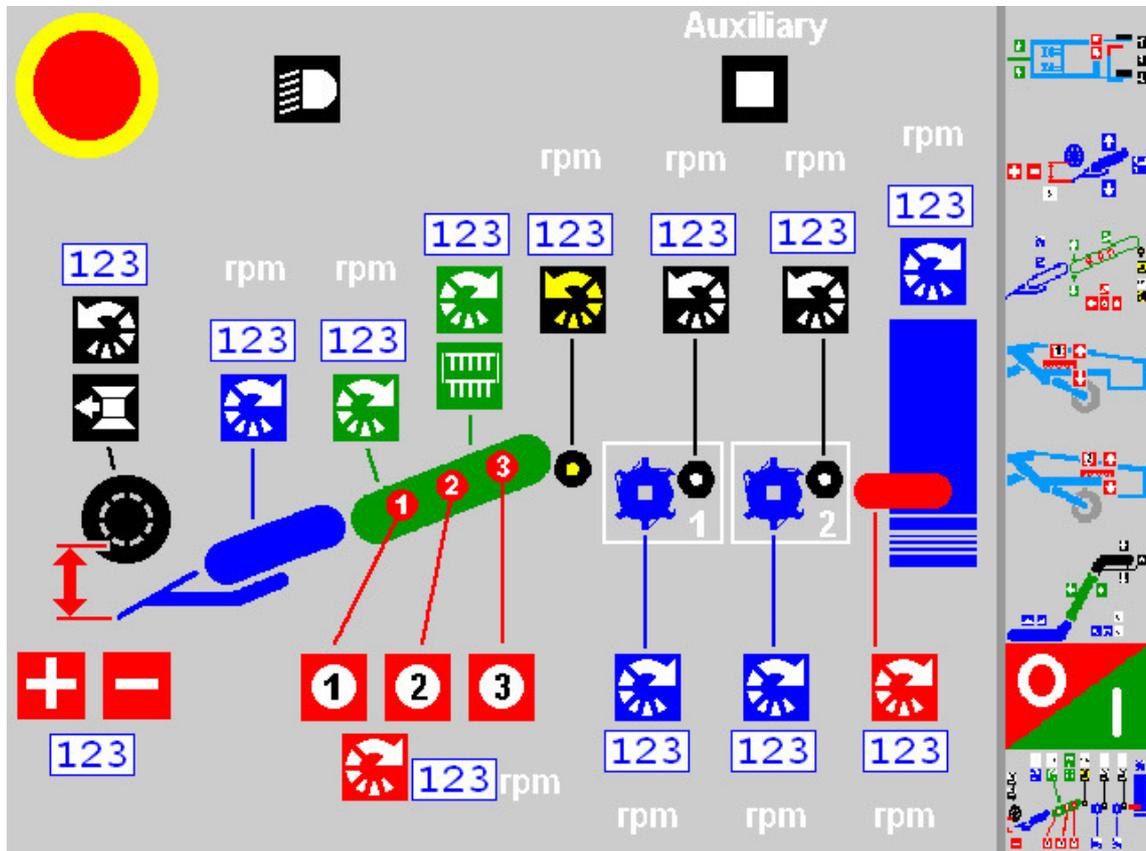
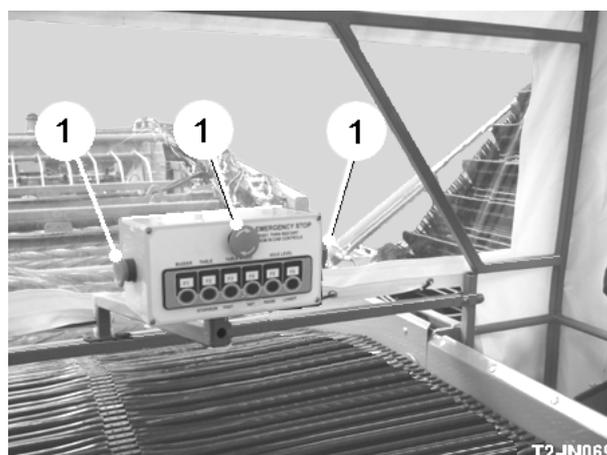


Fig 7

## Emergency Stop

The red and yellow emergency stop pad is present on all the display screens, and is linked electrically to the mechanical emergency stop buttons (item 1, fig 8) mounted at the rear of the harvester. When any of the emergency stop switches are activated, the harvester control module shuts down. The service terminal screen reverts to the start screen, but stays live. All electro-hydraulically operated functions are stopped, leaving the mechanical drive into the hydraulic pumps still running. If a mechanical emergency stop button (item 1, fig 8) has been pressed, the button must be reset before pressing the slave box green start button to restart the control module.



T2-IN069 Fig 8

## Default Screen

In conjunction with the slave box, the default screen (see fig 7) allows the operator direct access to the regularly used functions.



### Work lights

The touch pad turns on the relay in the lighting distribution box. The relay is rated to operate up to 3 x 60 Watt work lights.



### Auxiliary

When a water misting kit is fitted, the touch pad turns on the auxiliary relay mounted on the main CAN distribution board to power the pump motor.



### Digger depth adjust

When the digger is operating in auto-depth mode, the digging depth can be increased or decreased by touching the plus or minus pads on the display. The set depth is displayed in the box below the touch pads. The + pad increases the depth and the – pad decreases the depth.



### Powered Diablo

The powered diablo option is stopped and started by the touch pad. Speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed.



### Digger web

Digger web speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed.



### Sieving web

Sieving web speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed.



### Haulm roller

Haulm roller speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed.



### Agitation

Agitator speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed. Individual shaft stop/start is selected by the touch pads 1, 2, 3.



### Sweeping clod fingers

The sweeping clod finger option is stopped and started by the touch pad and the speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed.



### 1<sup>st</sup> separator scrolls / 2<sup>nd</sup> separator scrolls

Scroll shaft speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed.



### 1<sup>st</sup> separator clod rollers / 2<sup>nd</sup> separator clod rollers

Clod roller speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed.



### Spreader / picking table

The spreader or picking table speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed.



### Discharge elevator

The discharge elevator speed is adjusted by selecting the speed box touch pad which will highlight. Rotating the encoder (see fig 1) sets the required speed (clockwise to increase/anticlockwise to decrease), then pressing the encoder in to set and save the revised speed.

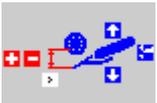
## Screen Select Buttons

Down the right-hand side of each screen is a row of common touch pad buttons which allow quick access to the alternative main screens. From each of these screens, links are available to access the parameter and diagnostics for all the functions covered by that screen.



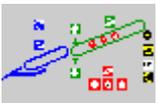
### Chassis and axle screen

This screen covers drawbar steer, axle side shift, axle steering and machine levelling.



### Digger depth screen

This screen covers automatic depth control, manual depth control and single side lifting.



### Webs screen

This screen covers web functions, agitation, web split height, haulm roller speed and rotation.



### 1<sup>st</sup> separator screen

Depending on separator configuration, the 1<sup>st</sup> separator speeds and heights are covered from this screen.



### 2<sup>nd</sup> separator screen

Depending on the separator configuration, the 2<sup>nd</sup> separator speeds and heights are covered from this screen.



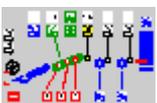
### Spreader / table and discharge elevator screen

This screen covers the spreader / picking table and discharge elevator speeds, height, and auto-height functions.



### Auto start / stop and run program screen

The switch sequences on this screen allow the operator to save alternative operating programs.



### Default screen

This screen covers the commonly used basic speed adjustment functions.

## Chassis and Axle Screen

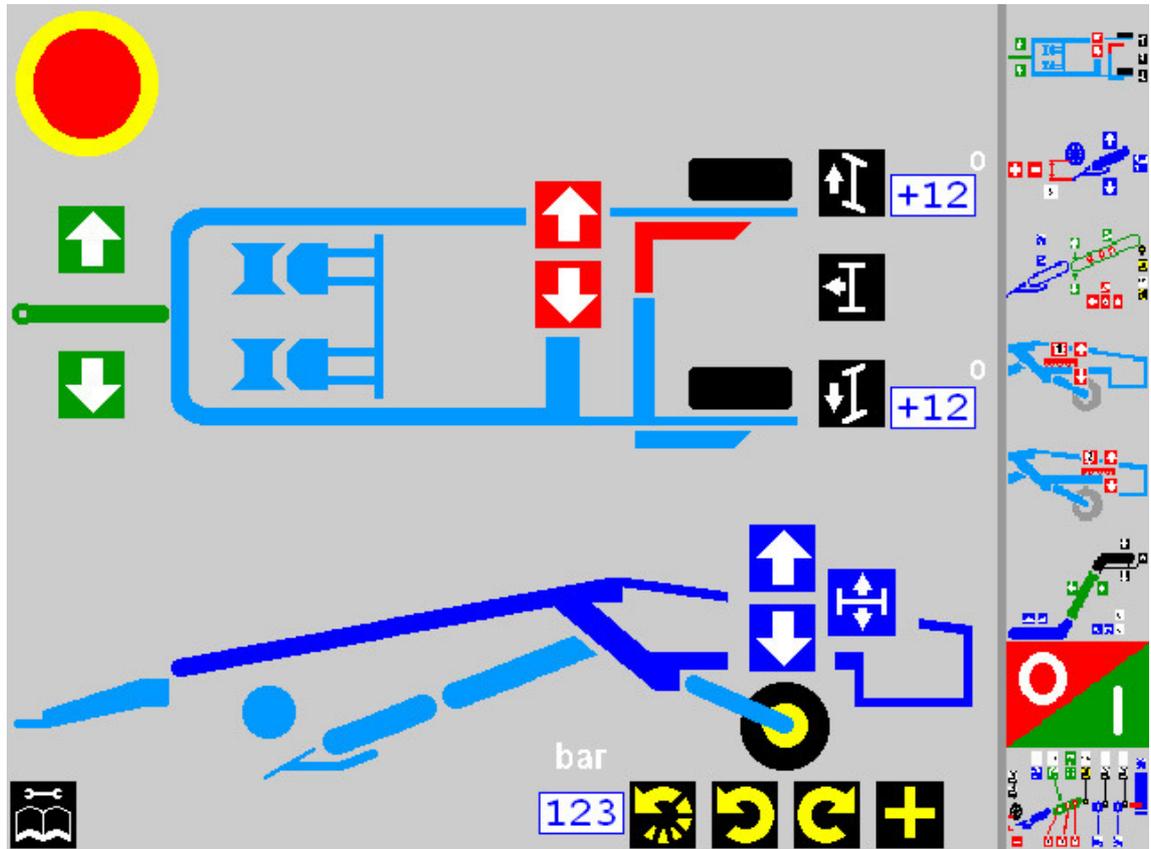


Fig 9



### Drawbar steer

The touch pads operate the master valve and slave valve to move the drawbar right or left.



### T2 axle side-shift

The touch pads operate the master valve and slave valve to slide the axle legs in or out.  
**NOTE:** Manual shut-off valves are fitted to each side-shift ram to allow the rams to be selected as required and also to prevent inadvertent operation of the rams during transport.



**To prevent damage to the machine, always follow the tracking procedure outlined in the operator's handbook.**



### T3 axle rotate

The touch pads operate the master valve and slave valve to rotate the right-hand axle leg in or out for transport. A proximity sensor signals when the correct outboard position is reached.

**T2 machine level**

The touch pads operate the master valve and slave valve to raise or lower the right-hand side of the machine. The machine auto-level touch pad enables signals from the level sensor to automatically maintain the machine level within the mechanical limits of the ram.

**T3 machine level**

The touch pads operate the master valve and slave valve to raise or lower the right-hand side of the machine. The machine auto-level touch pad enables signals from the level sensor to automatically maintain the machine level within the mechanical limits of the ram. **NOTE:** A manual shut-off valve is fitted to the level ram.

**T2 axle steer**

Axle steering is controlled by a rotary potentiometer on top of each kingpin. A double-acting valve for each wheel is then driven by the control module to maintain the tracking. Touch pads on the service terminal, or the left-hand joystick on the slave box, operate the steering with the centre button triggering the self-centre routine. The wheel angle is repeated on the display, with the centre button being highlighted when the centre routine is running.

**T3 axle steer**

Axle steering is controlled by a hall-effect rotary sensor linked to the top of the right-hand kingpin. A double-acting valve is then driven by the control module, with a hydraulic loop circuit to maintain the tracking. Touch pads on the service terminal, or the left-hand joystick on the slave box, operate the steering with the centre button triggering the self-centre routine. The wheel angle is repeated on the display, with the centre button being highlighted when the centre routine is running.

**T2 axle drive**

The powered axle drive is controlled by a pair of double-acting valves. The touch pads on the service terminal, and the rocker switch on the slave box, switch the drive into forward or reverse. On the service terminal, the override button boosts the system to maximum pressure for bad conditions.

**T3 axle drive**

The powered axle drive is controlled by pair of double-acting valves. The touch pads on the service terminal, and the rocker switch on the slave box, switch the drive into forward or reverse. When the axle rotate limit-switch operates, the control module reverses the drive rotation for the right-hand wheel. On the service terminal, the override button boosts the system to maximum pressure for bad conditions.

### Setting Adjustments and Diagnostic Feedback

From the first screen, two further levels of each display are accessible.



**Service symbol**

This touch pad is used to switch on the screen for the next level of parameters and the diagnostic level of the control system.



**Page return**

When the service levels are selected, this switch pad will appear which is used to return to the previous level on the service terminal.

### Chassis and Axle Flow Setting Parameter Screen

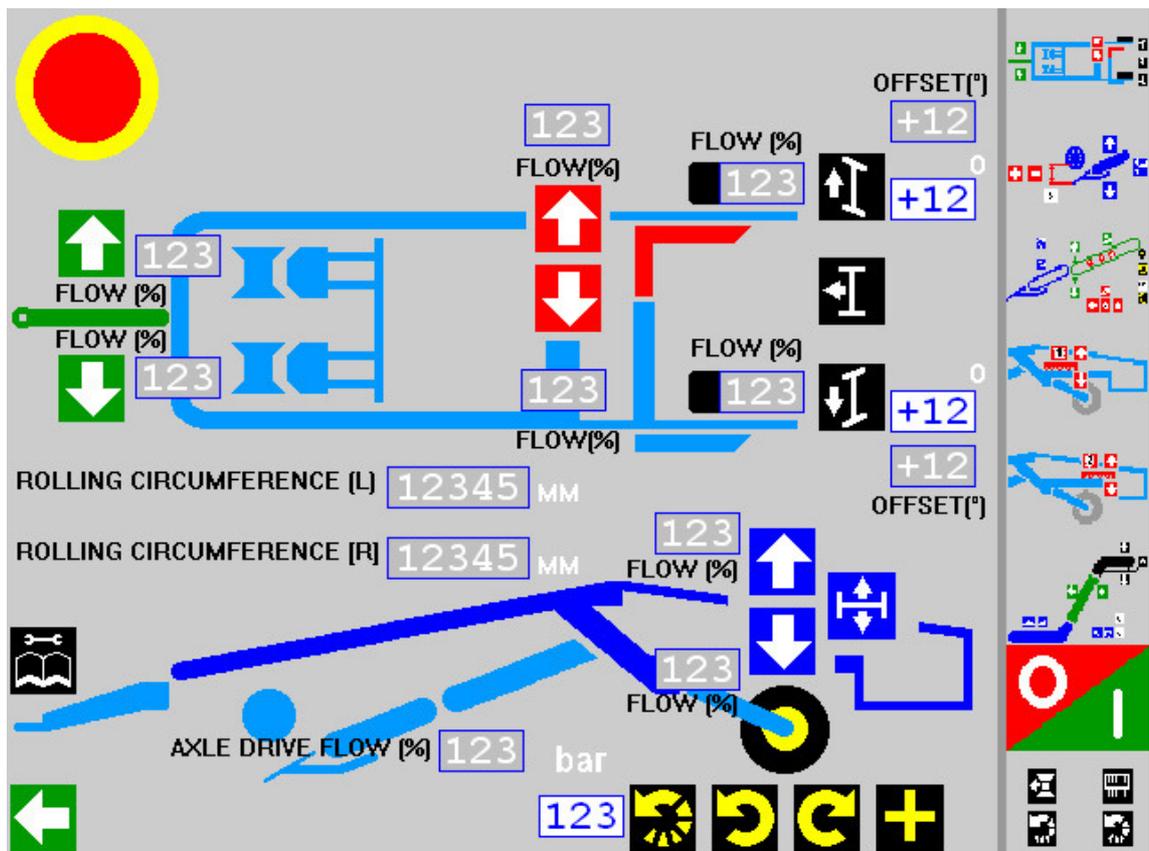


Fig 10

This screen is the first level of flow settings and control parameters. It is accessed by pressing the service symbol pad on any of the individual setting screens when the service symbol appears.

## Flow Rate and Speed Adjustments

Flow adjustment is a basic setting which is available on all ram functions, and is carried out in the same way on all flow and parameter screens. The flow % box, adjacent to each function switch pad, shows the percentage flow set on the valve spool. Select the required box by touching it. The box will highlight in red when selected. The speed boxes are selected in the same way. When highlighted, rotating the encoder (see fig 1) sets the required percentage (clockwise to increase and anticlockwise to decrease). Press the encoder in to set and save the revised percentage. The select box changes colour from red to black. When the box changes to black, the revised flow percentage is operational and will remain as the parameter setting until any further change is made.

## Axle Steering Parameters

In addition to the flow percentage settings on the axle steering valves, settings are also available to adjust the tracking of the wheels.

### T2 Axle Steering Parameters

On T2, the right-hand wheel is used as the master wheel to control the tracking. This can be adjusted for its centre position by selecting the 'OFFSET' box which will highlight in red. Rotating the encoder sets the required degree of offset (clockwise to increase and anticlockwise to decrease), then pressing the encoder in to set and save the revised figure. The select box changes colour from red to black. When the box changes to black, the revised offset angle is operational and will remain as the parameter setting until any further change is made. With the right-hand wheel set, the left-hand wheel is matched to it by adjusting the 'OFFSET' as above, until the wheels centre in line. These settings should be made with the wheels jacked off the ground or, if made in the field, with the machine being moved backwards or forwards to minimise resistance from the ground which would cause false readings.

### T3 Axle Steering Parameters

On T3, the right-hand wheel is used as the master wheel to control the tracking. This can be adjusted for its centre position by selecting the 'OFFSET' box which will highlight in red. Rotating the encoder sets the required degree of offset (clockwise to increase and anticlockwise to decrease), then pressing the encoder in to set and save the revised figure. The select box changes colour from red to black. When the box changes to black, the revised offset angle is operational and will remain as the parameter setting until any further change is made. The left-hand wheel is then set hydraulically as per the instructions in the T3 manual.

## Powered Axle Drive Parameters

Additional parameters are applied to the powered axle drive to allow the operator to tune the system to suit conditions.

### Wheel rolling circumference (T2 only)

This is able to be set for each wheel individually to accommodate the alternative wheel sizes that can be fitted to the T2. The control module meters the oil from the two spool valves to ensure that the circumferential speed of the wheels match, thus minimising wheel slip. The LH and RH wheel circumferences in millimetres are entered on the service terminal screen. For example: Tyre size 420/70 R24 circumference = 3714mm. Tyre size 560/60 R22.5 = 3807mm. Tyre size 560/45 R22.5 = 3374mm etc.

**Axle drive flow**

This is set to match the wheel speed to the forward operating speed of the machine.

**Axle drive pressure**

The pressure is set to a lower value to maintain the constant working assistance required and minimising the power used.

**Chassis and Axle Feedback Screen**

The feed back screen is used as a diagnostic display which shows the electrical status of the control system.

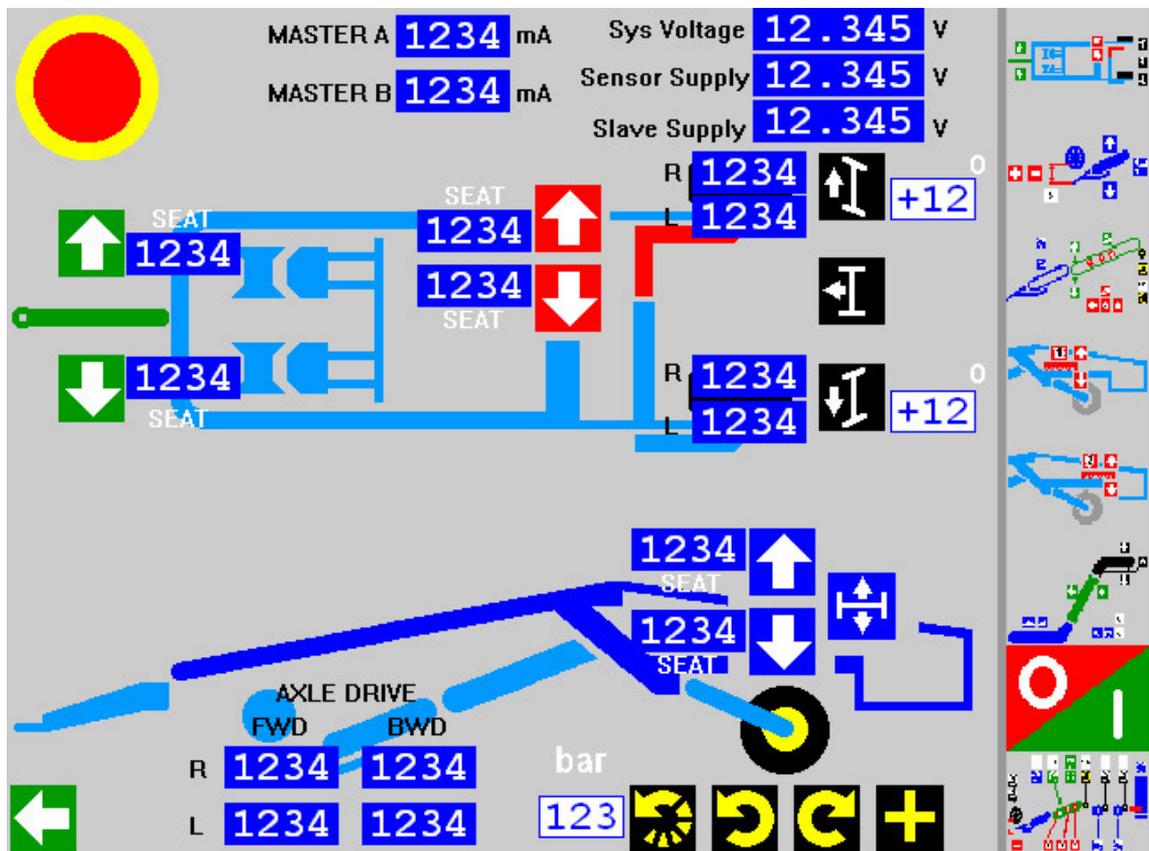


Fig 11

**System voltage**

This shows the voltage supply to the machine from the tractor.

**Sensor supply**

The depth and steer sensors work at a nominal voltage of 8.5 volts.

**Slave supply**

The slave box joysticks operate at a voltage of 5.0 volts. These voltages are displayed on all the feedback screens.

**Master A / Master B**

The master valve operates proportionally in front of the slave check valves. The display shows the current in mA feeding the proportional coils. The boxes marked 'SEAT' show the current in mA feeding the slave check valve coils operating simultaneously. These currents are displayed on all the feedback screens.

**Axle drive and steering coils**

The proportional operating current in mA is shown in the relevant boxes as the valves are operated.

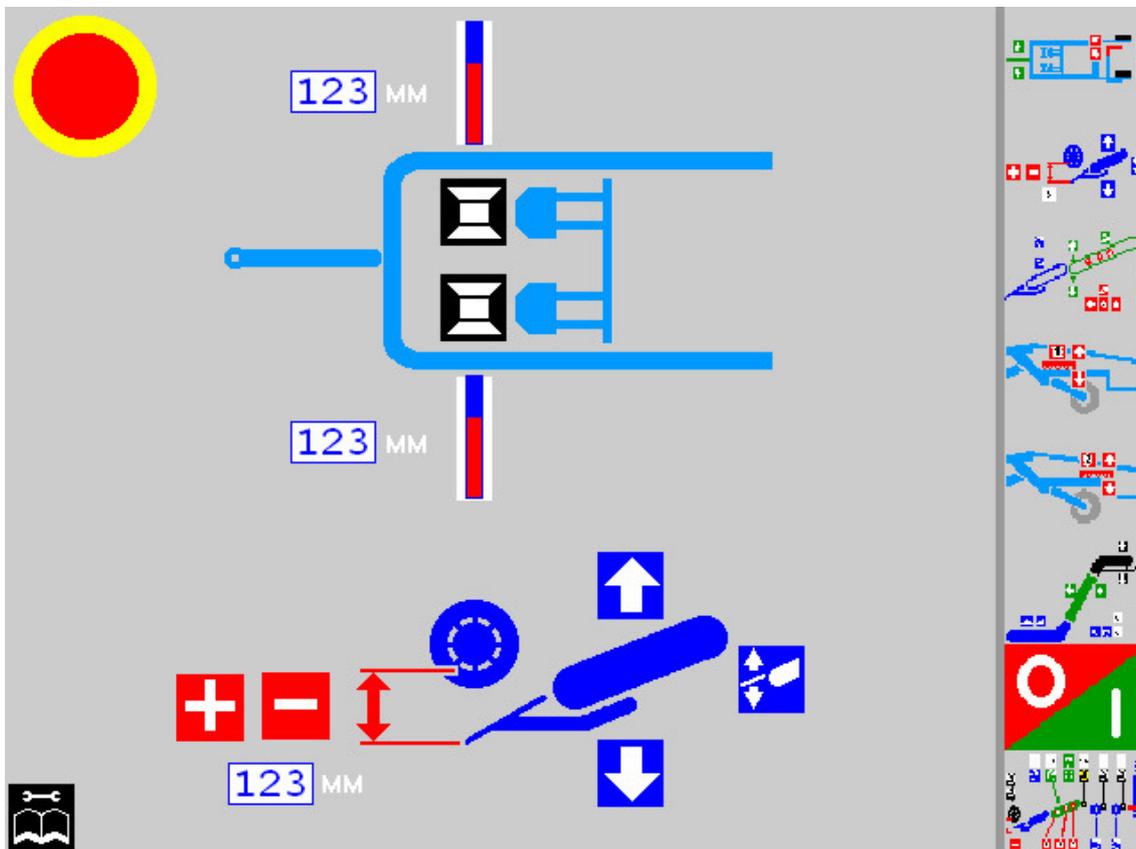
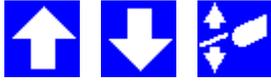
**Digger Depth Control Screen**

Fig 12

**Digger depth adjust**

When the digger is operating in auto-depth mode, the digging depth can be increased or decreased by the touch pads on the display. The set depth is displayed in the box below the touch pads. The + pad increases the depth and the – pad decreases the depth.

**Digger lift**

Digger raise and lower is operated by the touch pads on the service terminal and from the green rocker switch on the slave box. The service terminal pads manually raise and lower the digger and the auto-depth pad will turn on the automatic depth control. On the slave box, the rocker switch will manually raise the digger and turn on the automatic depth control.

**Depth sensor indicator**

Working position of the auto-depth sensors is indicated on the display which can be used as a quick guide to monitor the depth control operation.

**Depth sensing**

A depth sensor is fitted to each depth wheel (outside wheels only on T3) which controls the digger lift ram on that side of the machine. The sensors maintain the correct digging depth across the width of the machine. If the digging depth on one side needs to be locked (because of a bad sprayer wheeling for example), the depth on that side of the digger can be manually lowered to a fixed position, and the other side then selected to run on auto-depth.

## Digger Depth Control Flow Setting Parameter Screen

The depth control has a large set of parameters applied to it, but allows for the operator to fine-tune the machine response to match the broad spectrum of soil conditions encountered.

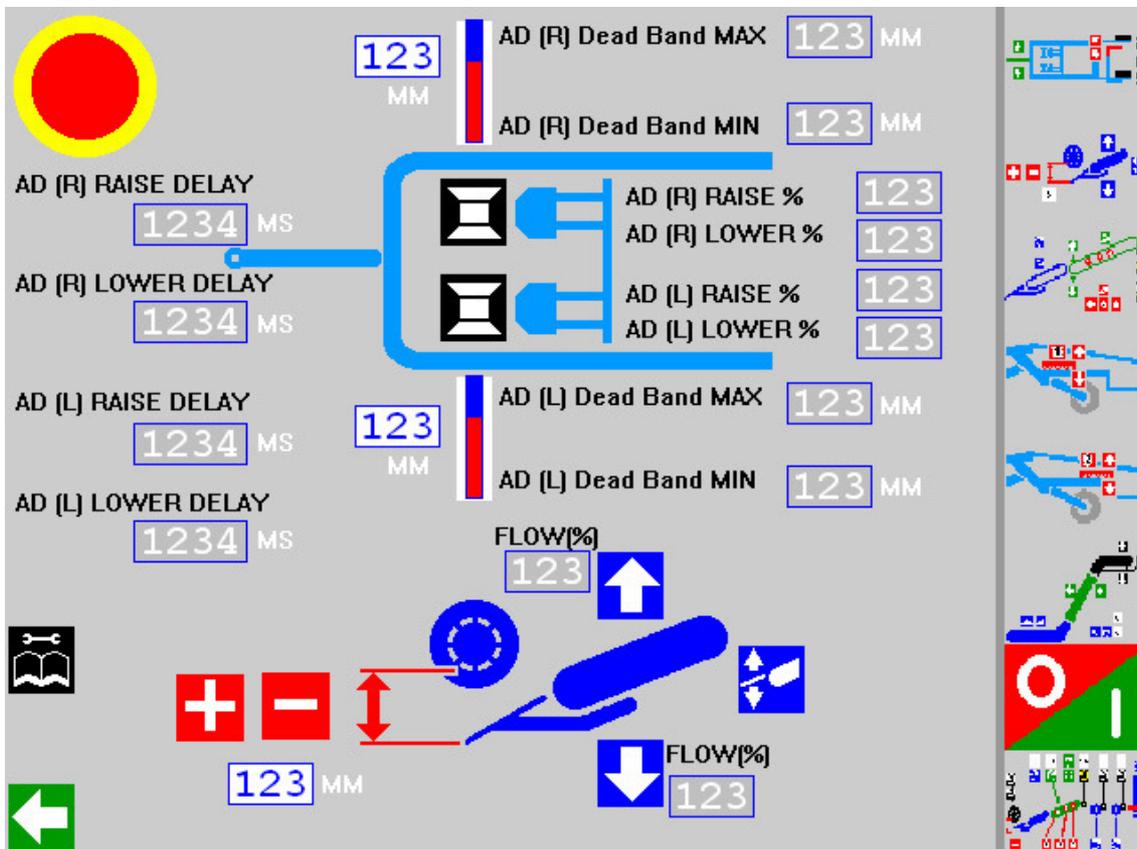


Fig 13

### Raise and lower delay

Four parameter boxes, for right and left raise and lower, are used to set the delay times in milliseconds. Initially, both sides should be set to the same setting and then adjusted as required.

### Manual raise and lower flows

These are set in the boxes adjacent to the switch pads and automatically apply to both sides. A 'stop time' parameter operates when the auto-stop/start program is running, and is used to set a raise time in seconds for the auto-stop sequence.

### Automatic raise and lower flows

These four parameters are set individually for right raise/lower and left raise/lower. The final parameter on the depth control is the raise and lower dead-band for each side. This sets the tolerance in millimetres at which the depth sensors switch when close to the set depth. Initially, set the maximum and minimum figure to be the same for both sides and then adjust as necessary when working.

## Digger Depth Control Feedback Screen

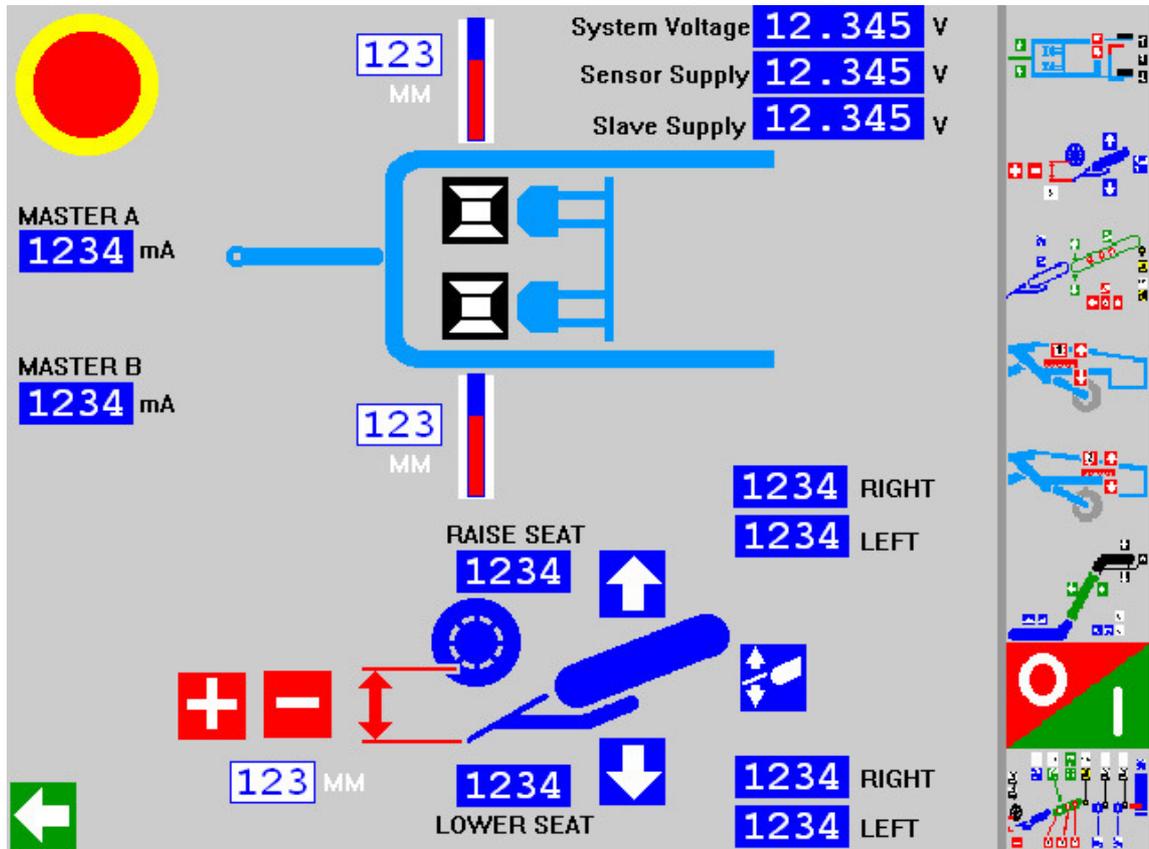


Fig 14

### Digger raise coils

The left-hand and right-hand 'digger raise' coils operate together in manual mode, and individually when switched to auto-depth mode.

### Digger lower coils

The left-hand and right-hand 'digger lower' coils operate together in manual mode in conjunction with the lower seat valves, and individually with the seat valve when switched to auto-depth mode.



**Ensure the safety chains are in place when checking the digger electrics as you may lower the digger inadvertently.**

## Webs Screen

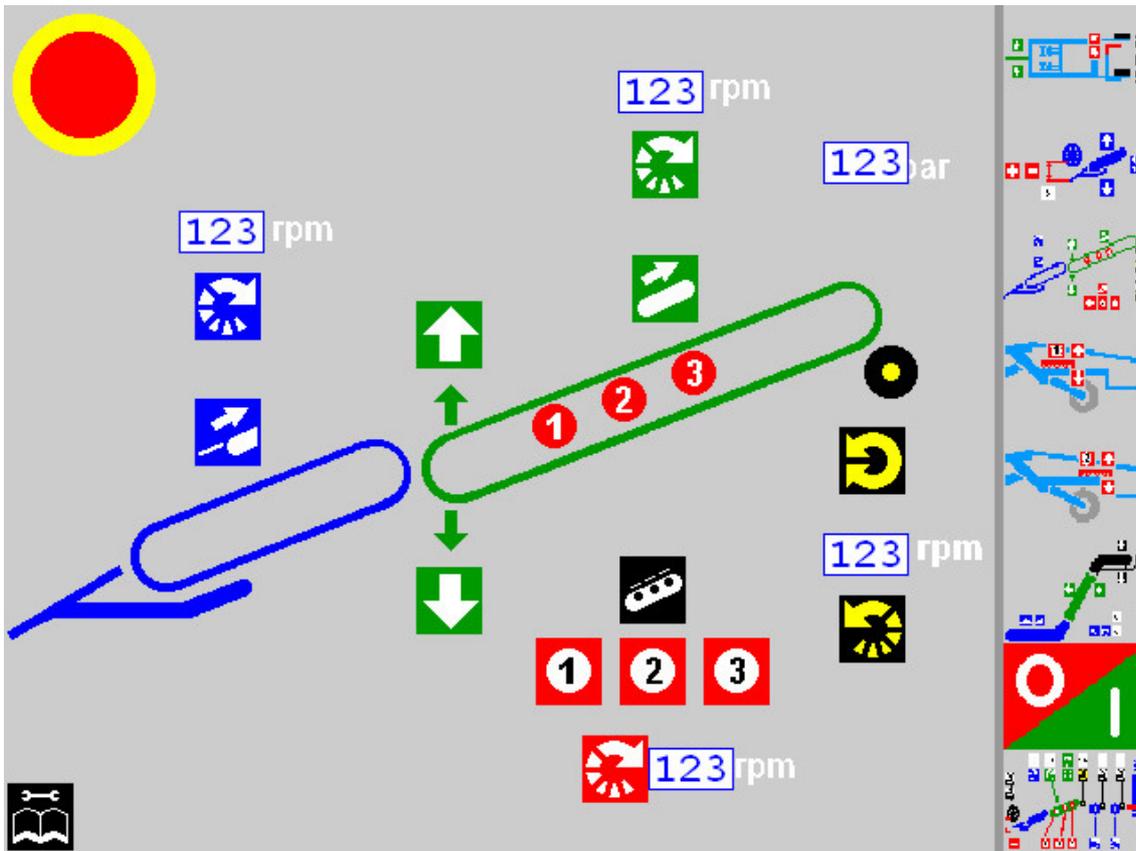
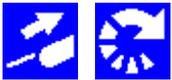


Fig 15



### Digger web

The touch pad stops and starts the digger web. Speed is adjusted by selecting the speed box touch pad.



### Web split

The front of the sieving web is raised or lowered using the touch pads on the service terminal or the grey rocker switch on the slave box.



### Sieving web

The touch pad stops and starts the sieving web. Speed is adjusted by selecting the speed box touch pad.



### Haulm roller

The haulm roller stops and starts with the sieving web. By default, the roller runs in the opposite direction to the web to pinch the haulm and trash. The touch pad reverses the roller to run with the crop flow if required. Roller speed is adjusted by selecting the speed box touch pad.

 **Agitation**

The agitators are stopped and started using the touch pad on the service terminal or the orange rocker switch on the slave box. Individual shaft stop/start is selected by the touch pads 1, 2, and 3. Agitation speed for all the shafts is adjusted by selecting the speed box touch pad.

**Webs Flow Setting Parameter Screen**

The parameters for the web split raise/lower flows are set in the boxes adjacent to the touch pad switches.

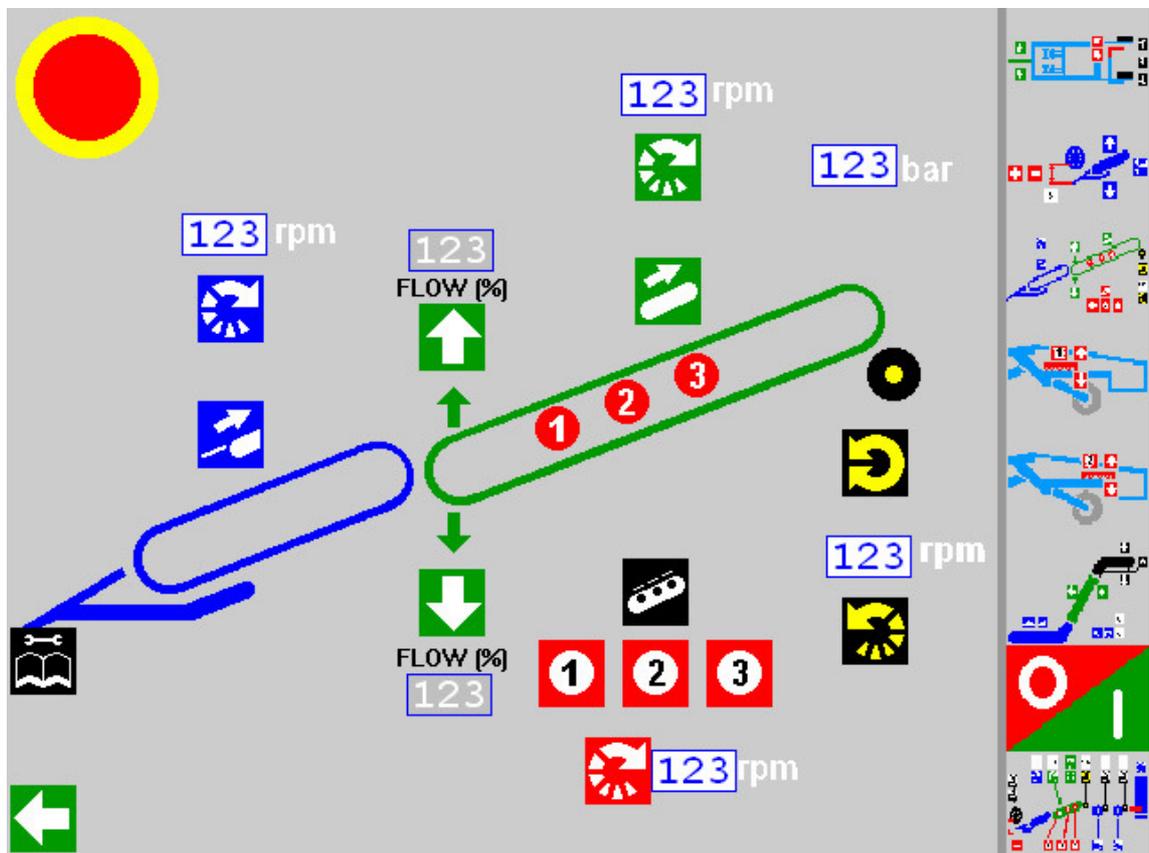


Fig 16

### Webs Feedback Screen

Digger web, sieving web, haulm roller and agitator coils proportional operating current in mA is shown in the relevant boxes as the valves are operated.

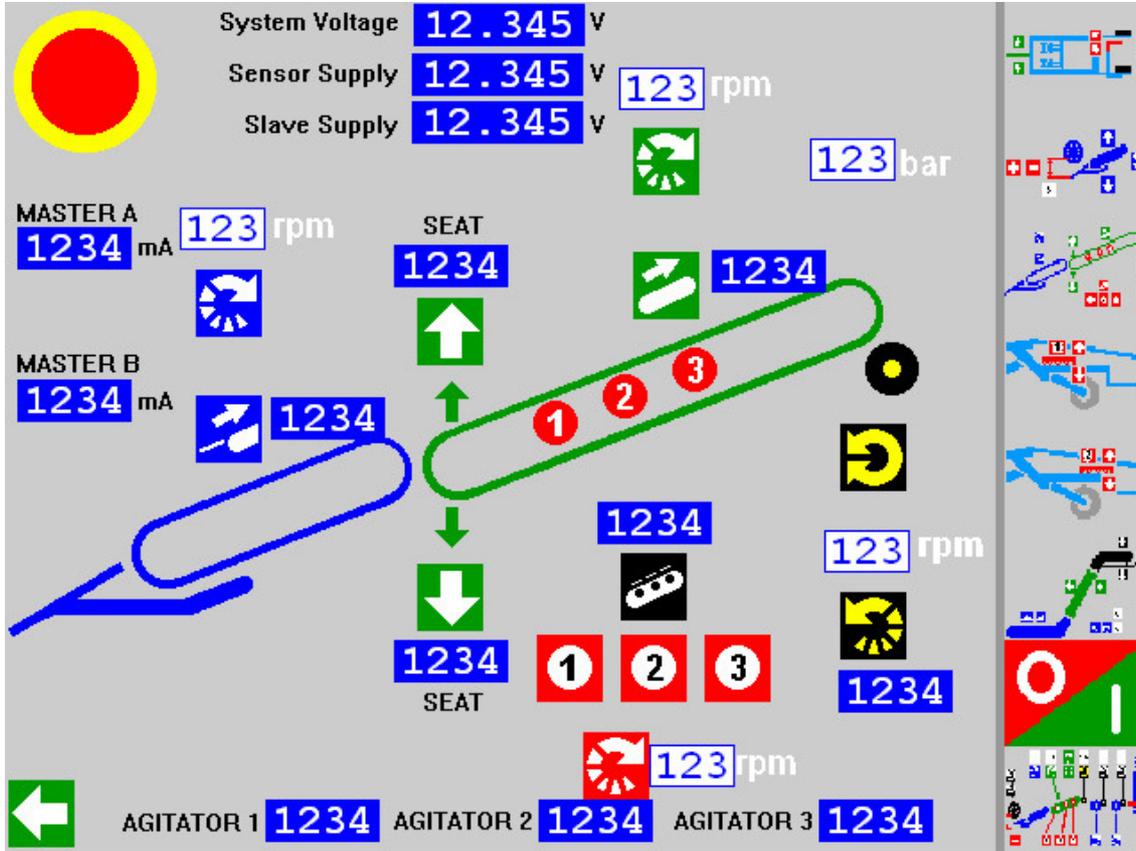


Fig 17

## 1<sup>st</sup> Separator Screen

The separators shown for these instructions are the Standen 'Omega' type units. Alternative units may be fitted, depending on the machine specification, where the controls will be allocated to similar functions.

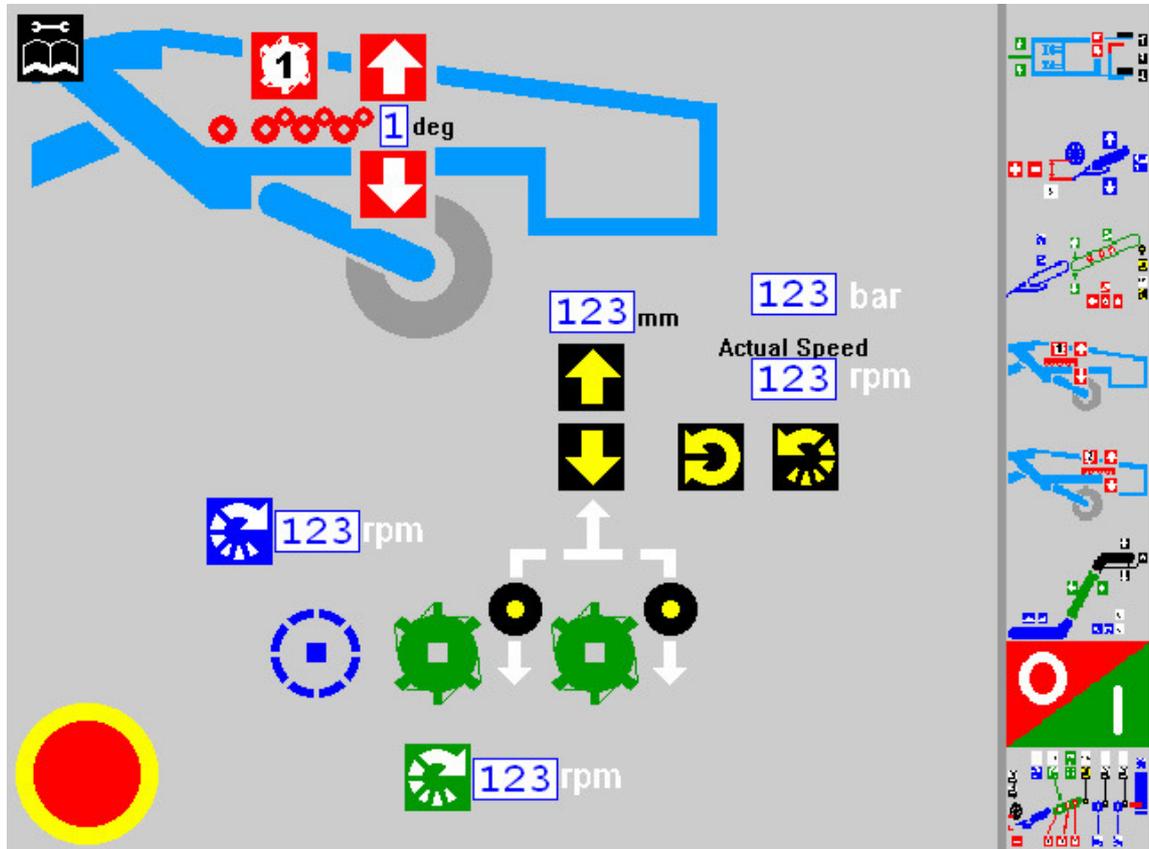


Fig 18



### 1<sup>st</sup> separator

The touch pad switch starts and stops the feed scroll unit and 1<sup>st</sup> separator unit.



### 1<sup>st</sup> separator angle

The separator angle can be set from the touch pad switches, or from the second function on the slave box left-hand joystick. The angle of the unit is displayed on the service terminal screen



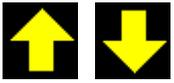
### Feed scroll unit speed

The feed unit scrolls and its clod roller are hydraulically linked. The scroll and clod roller speed is adjusted by selecting the speed box touch pad.



### 1<sup>st</sup> separator scrolls speed

The separator scroll speed is adjusted by selecting the speed box touch pad.



### 1<sup>st</sup> separator clod roller height

Clod roller height can be set from the touch pad switches, or from the second function on the slave box left-hand joystick. The height of the rollers is displayed on the service terminal above the switches.



### 1<sup>st</sup> separator clod roller rotation and speed

The rollers (as a set) can be reversed from the service terminal by the touch pad switch. Clod roller speed is adjusted by selecting the speed box touch pad. The clod roller speed setting covers all the rollers in the unit even when they are manually reversed.

## 1<sup>st</sup> Separator Flow Setting Parameter Screen

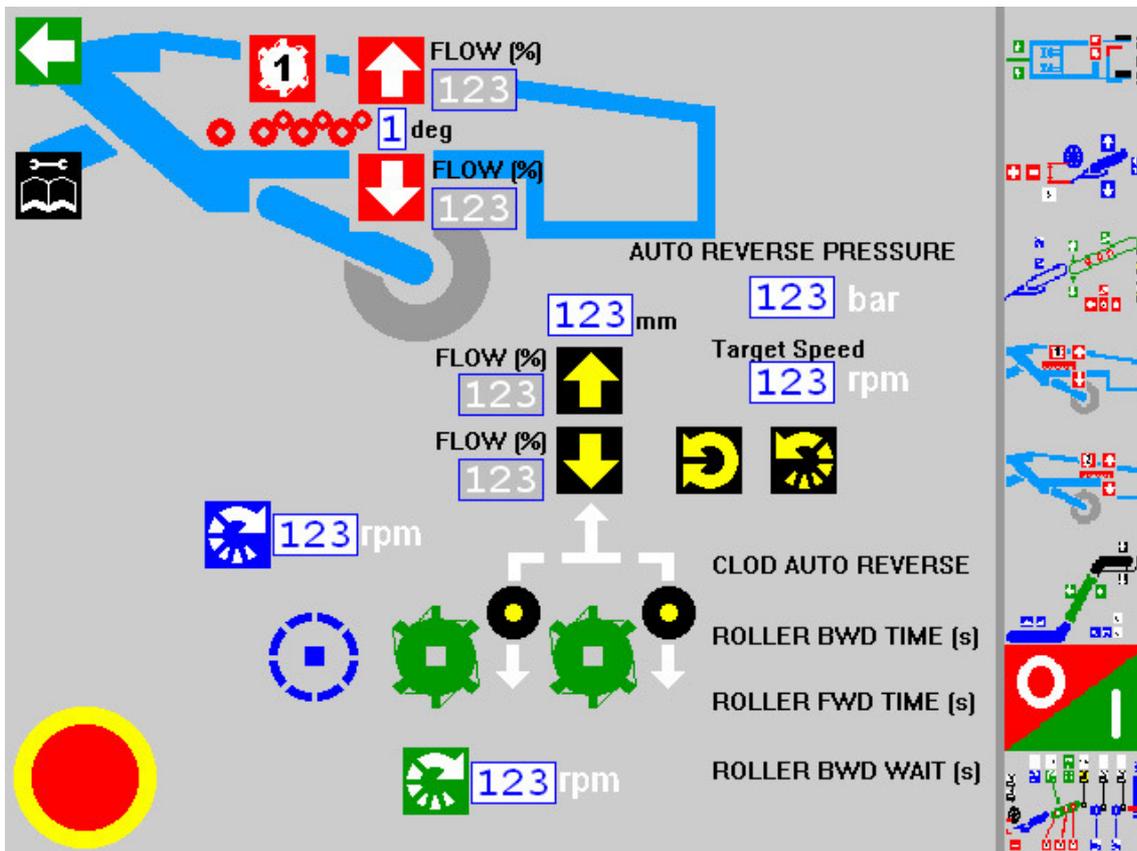


Fig 19

### Clod roller height and separator angle

Flow setting parameters for the clod roller raise and lower, and for the separator angle are set from the boxes adjacent to the touch pads.

### Scroll and clod roller speed

The speeds for the scrolls and the clod rollers can be set from this screen or from the default screen.

## 1<sup>st</sup> Separator Feedback Screen

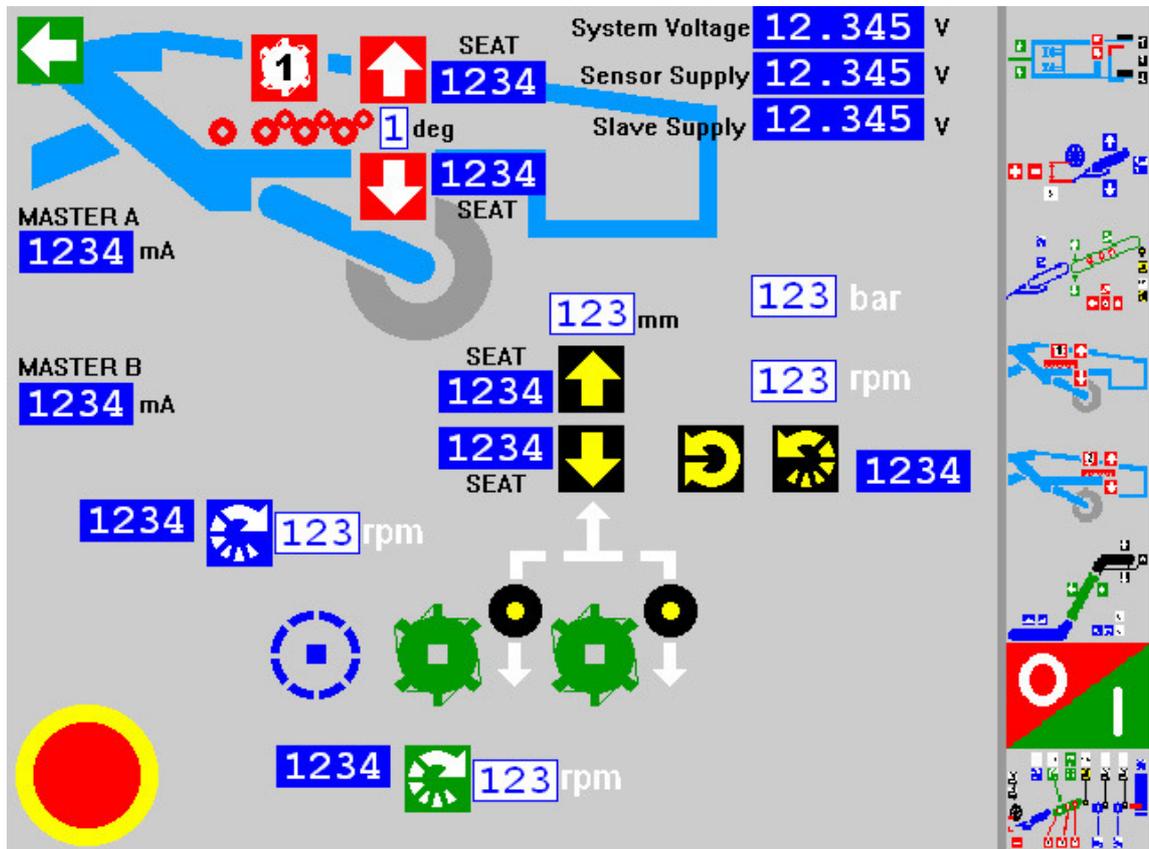


Fig 20

### System voltage

This shows the voltage in the supply to the machine from the tractor.

### Sensor supply

The depth and steer sensors work at a nominal voltage of 8.5 volts.

### Slave supply

The slave box joysticks operate at a voltage of 5.0 volts. These voltages are displayed on all the feedback screens.

### Master A / Master B

The master valve operates proportionally in front of the slave check valves. The display shows the current in mA feeding the proportional coils. The boxes marked 'SEAT' show the current in mA feeding the slave check valve coils operating simultaneously. These currents are displayed on all the feedback screens.

### Scroll drives and clod roller coils

The proportional operating current in mA is shown in the relevant boxes as the valves are operated.

## 2<sup>nd</sup> Separator Screen

The separators shown for these instructions are the Standen 'Omega' type units. Alternative units may be fitted, depending on the machine specification, where the controls will be allocated to similar functions.

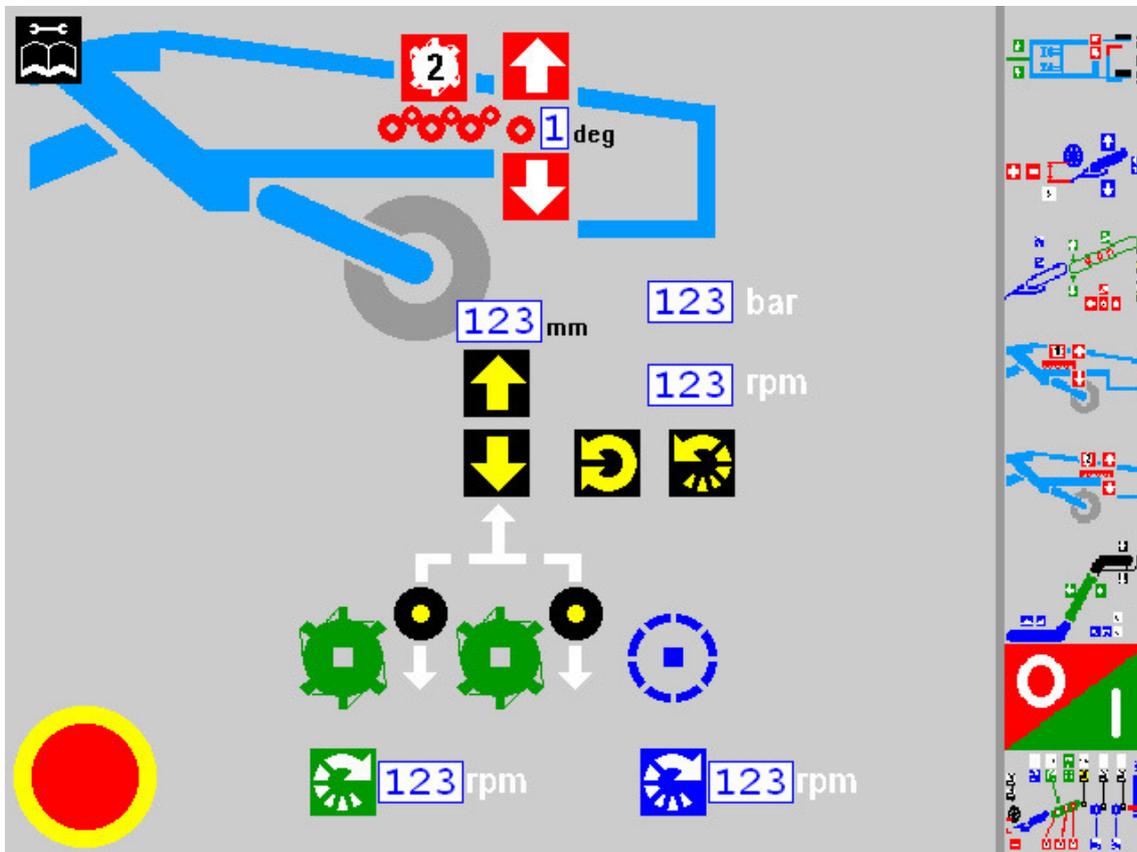


Fig 21

### 2<sup>nd</sup> separator

The touch pad switch starts and stops the 2<sup>nd</sup> separator unit and transfer scroll unit.

### 2<sup>nd</sup> separator angle

The separator angle can be set from the touch pad switches, or from the second function on the slave box right-hand joystick. The angle of the unit is displayed on the service terminal screen

### 2<sup>nd</sup> separator scrolls

The separator scroll speed is adjusted by selecting the speed box touch pad.

### 2<sup>nd</sup> separator clod roller height

Clod roller height can be set from the touch pad switches, or from the second function on the slave box right-hand joystick. The height of the rollers is displayed on the service terminal above the switches.



### 2<sup>nd</sup> separator clod roller speed and rotation

The rollers (as a set) can be reversed from the service terminal by the touch pad switch. Clod roller speed is adjusted by selecting the speed box touch pad. The clod roller speed setting covers all the rollers in the unit even when they are manually reversed.



### Transfer scroll unit

The transfer unit scrolls and its clod roller are mechanically linked. The scroll and clod roller speed is adjusted by selecting the speed box touch pad.

## 2<sup>nd</sup> Separator Flow Setting Parameter Screen

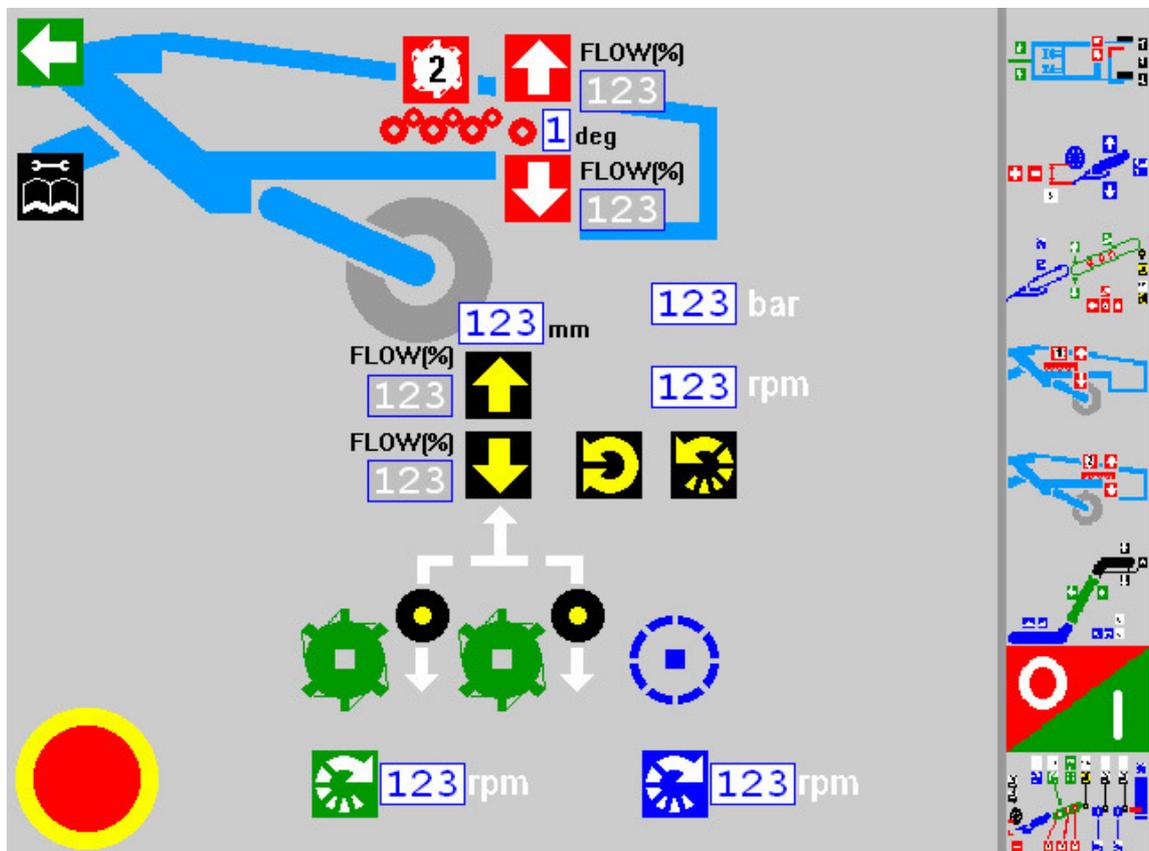


Fig 22

### Clod roller height and separator angle

Flow setting parameters for the clod roller raise and lower, and for the separator angle are set from the boxes adjacent to the touch pads.

### Scroll and clod roller speed

The speeds for the scrolls and the clod rollers can be set from this screen or from the default screen.

## 2<sup>nd</sup> Separator Feedback Screen

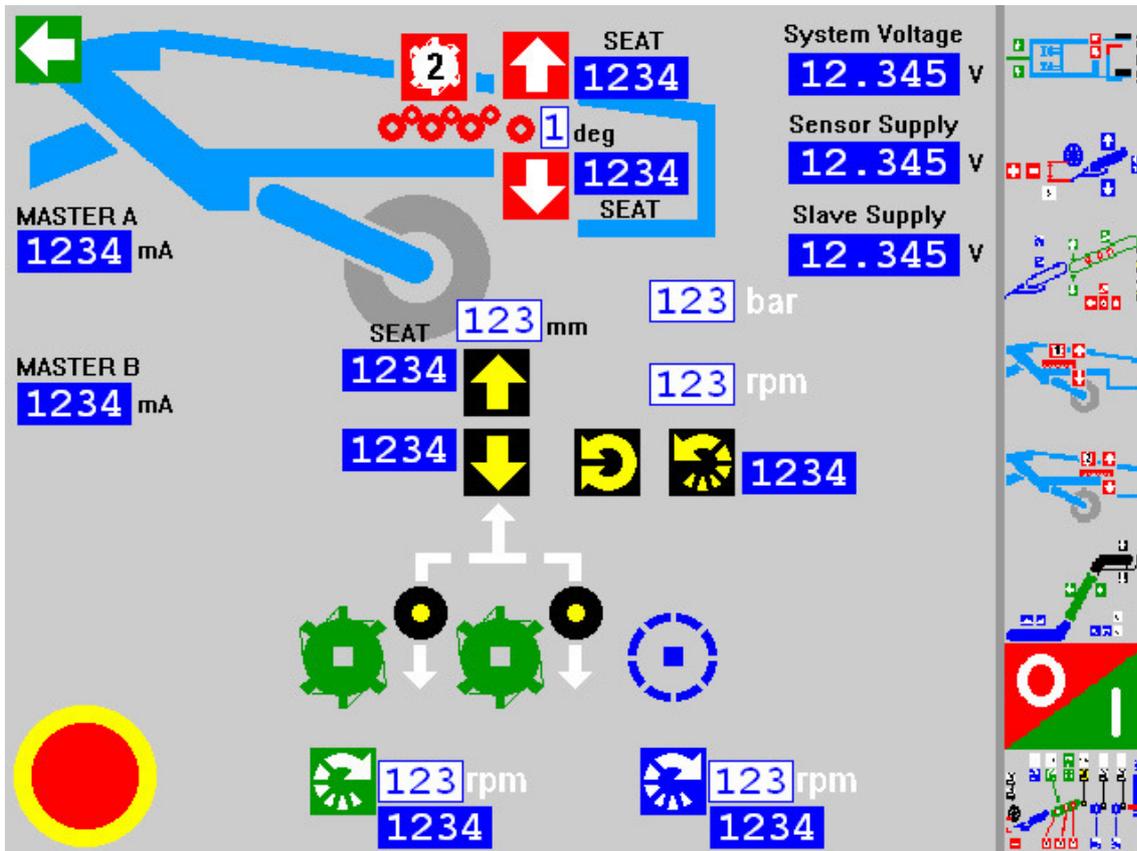


Fig 23

### System voltage

This shows the voltage in the supply to the machine from the tractor.

### Sensor supply

The depth and steer sensors work at a nominal voltage of 8.5 volts.

### Slave supply

The slave box joysticks operate at a voltage of 5.0 volts. These voltages are displayed on all the feedback screens.

### Master A / Master B

The master valve operates proportionally in front of the slave check valves. The display shows the current in mA feeding the proportional coils. The boxes marked 'SEAT' show the current in mA feeding the slave check valve coils operating simultaneously. These currents are displayed on all the feedback screens.

### Scroll drives and clod roller coils

The proportional operating current in mA is shown in the relevant boxes as the valves are operated.

## Spreader / Table and Discharge Elevator Screen

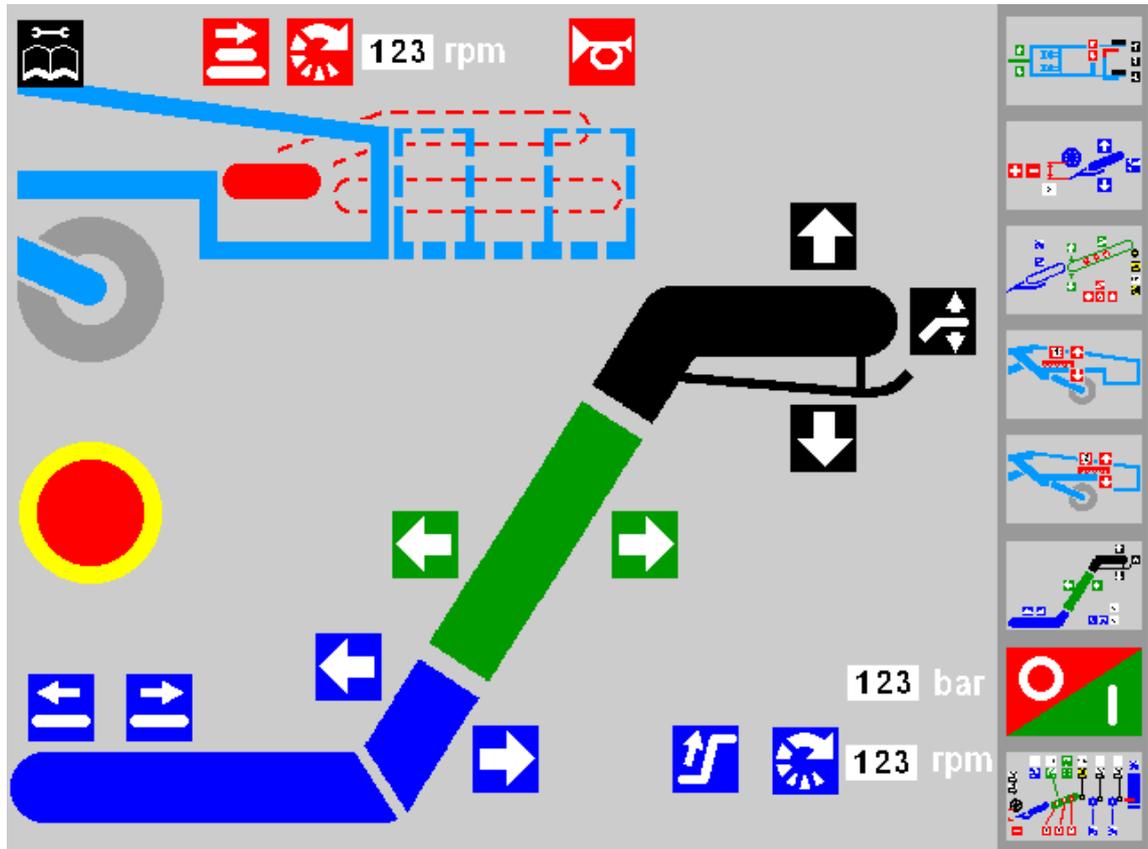


Fig 24



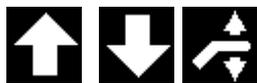
### T3 Elevator base section

T3 has a three section elevator with a folding base section operated by the service terminal touch pad switches.



### Elevator centre section

The centre section of the elevator is operated either by the slave box right-hand joystick, or by the touch pad switches.



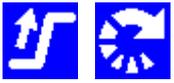
### Elevator swan neck section

The elevator swan neck is operated either by the slave box right-hand joystick, or by the touch pad switches. When an auto-height unit is fitted it is activated from the service terminal touch pad



### Discharge direction

The spreader webs and discharge web are fed from the same proportional valve. To enable the elevator to discharge to the right, the 'right-hand discharge' touch pad must first be activated. The 'left-hand discharge' touch pad is active only on machines fitted with a 'windrow' option.



### Elevator run

The elevator run stops, and starts the elevator web. This can be activated either from the right hand joystick front push button, or from the service terminal touch pad. Speed is adjusted by selecting the speed box touch pad.



### Spreader / picking table

With the elevator run activated, the spreader or picking table can be turned on from the service terminal touch pad. Speed is adjusted by selecting the speed box touch pad.

## Spreader / Table and Discharge Elevator Flow Setting Screen

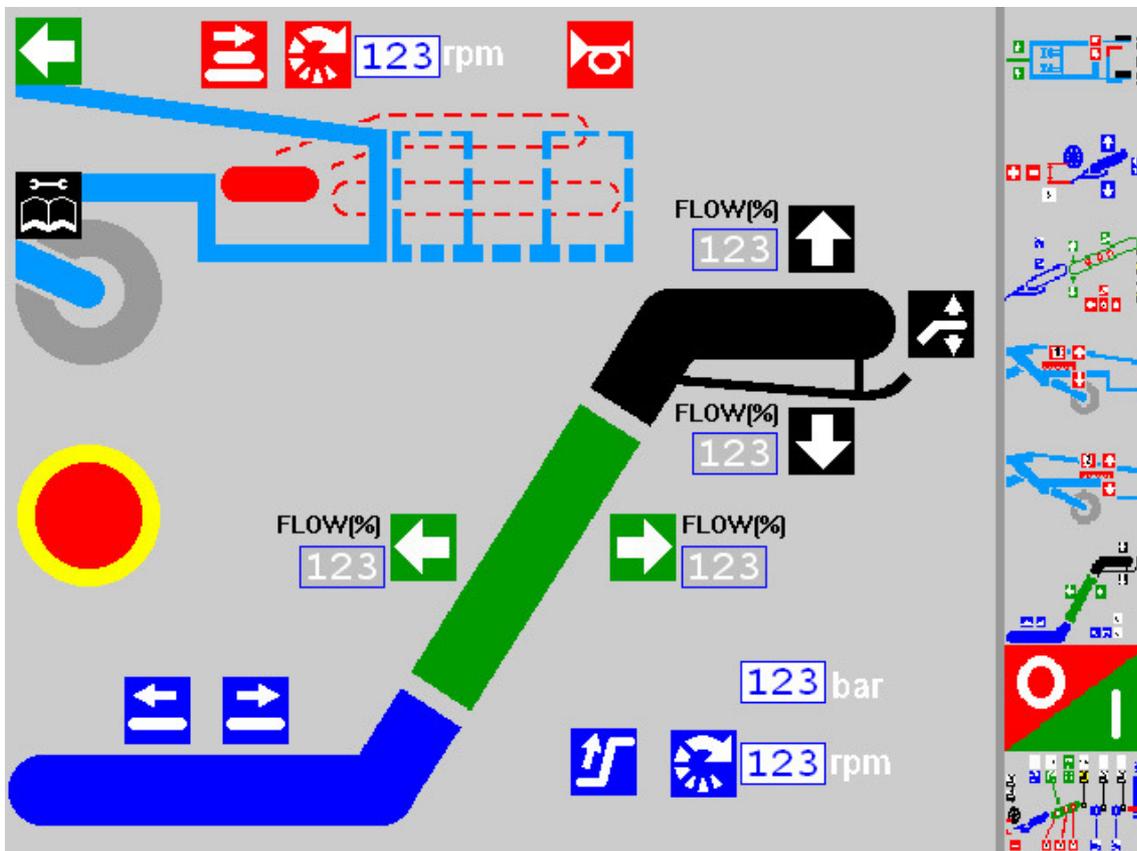


Fig 25

### Spreader / table and elevator web speeds

The speeds for the spreader / picking table and the elevator webs can be set from this screen or from the default screen.

### Elevator hydraulic ram flow rates

The flow rates to the elevator rams are set from this screen.

### Auto stop / start

The operating time for the elevator centre section and swan neck section can be included in the auto-stop sequence. The parameter 'stop time' allows a ram operating time to be set for retracting the elevator.

Spreader / Table and Discharge Elevator Feedback Screen

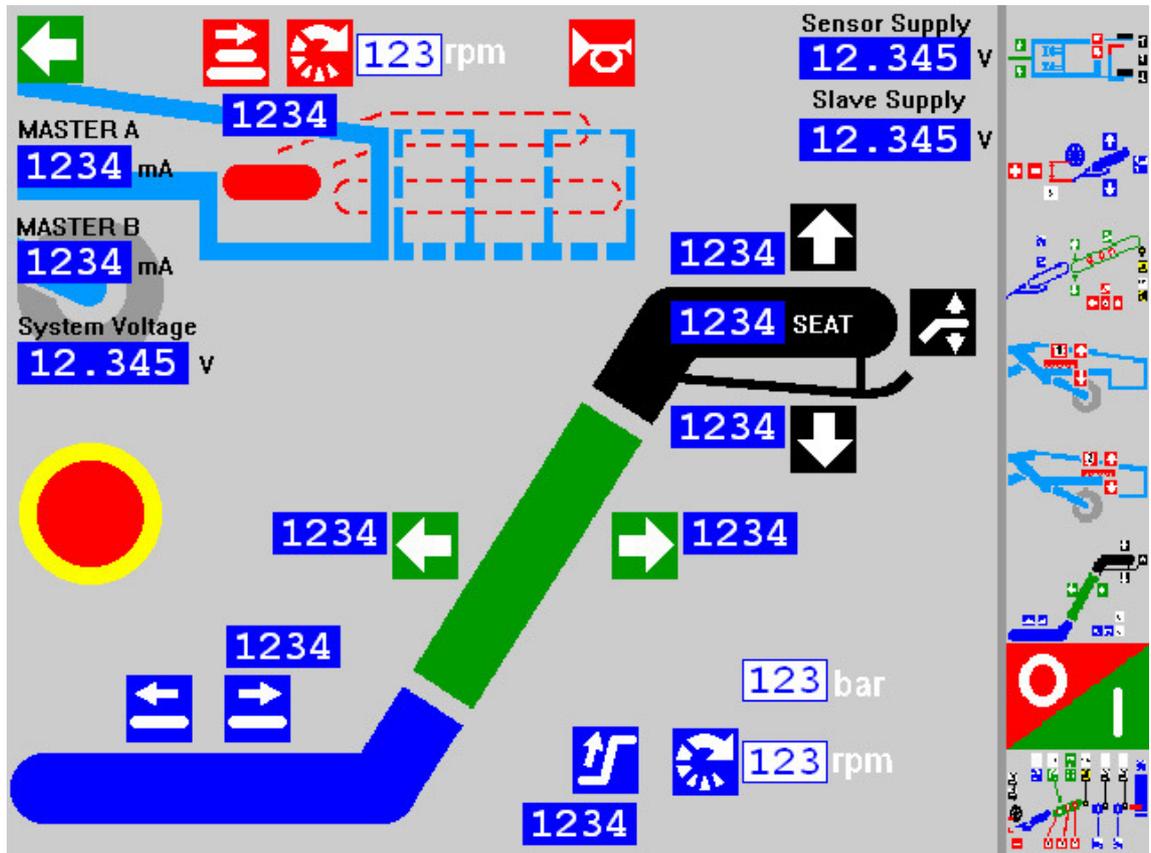


Fig 26

**Elevator proportional valves**

The proportional operating current in mA is shown in the relevant boxes as the valves are operated.

## Auto Start / Stop and Speed Set Program Screen

This screen allows the operator to program three separate start / stop sequences and three separate speed set-ups each of which can be activated by pressing a single switch.

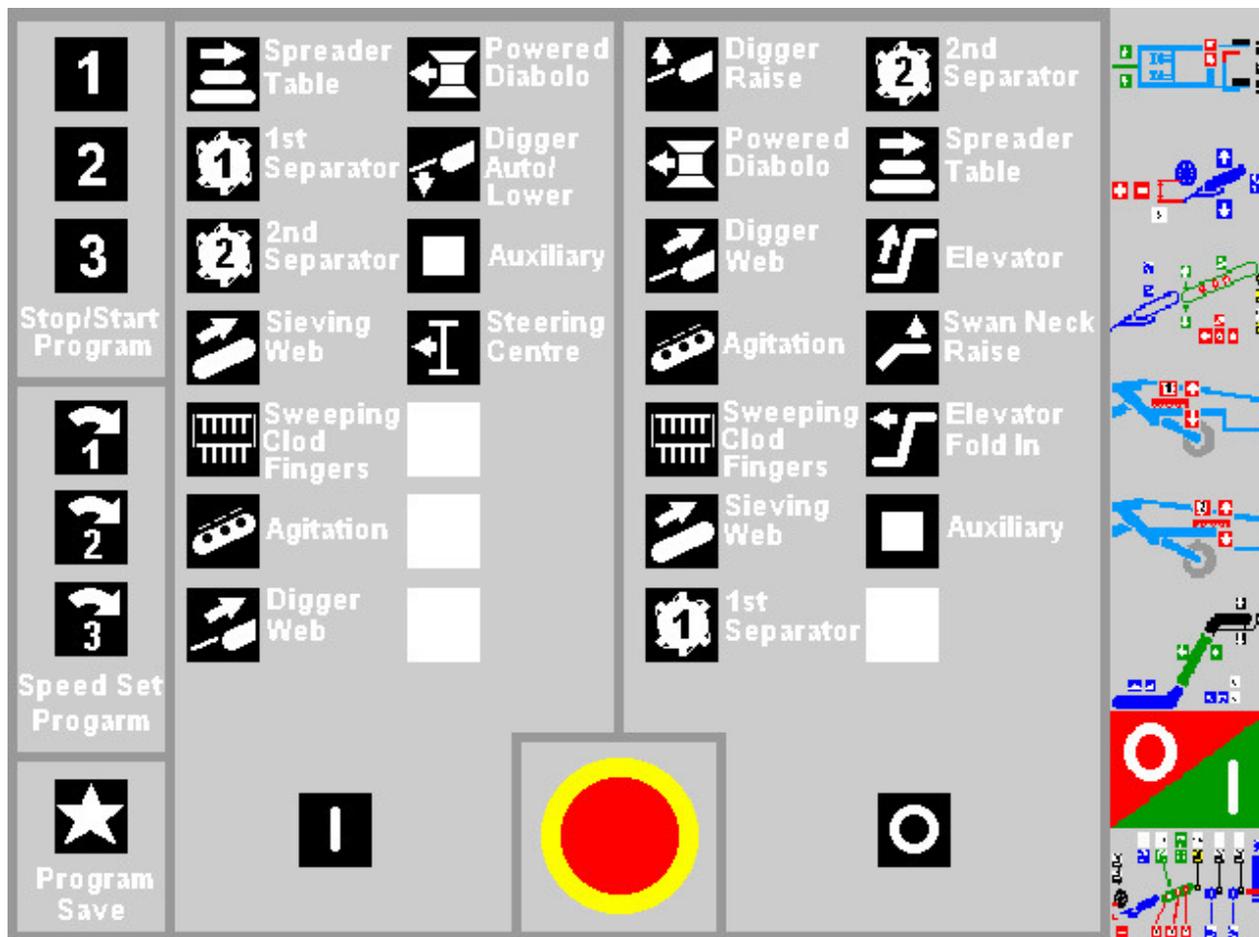


Fig 27

## Auto Start / Stop Programming

Select either **1**, **2** or **3**. The touch pad will highlight.

In the 'START' area, select which machine elements you want to start in the sequence.

In the 'STOP' area, select which machine elements you want to stop in the sequence.

Press  to save the programme.

To run the start / stop programs:

Select the program  ,  or  and then use the start  and stop  touch pads, or the slave box red rocker switch (item 3, fig 2) to run the sequences.

## Speed Set Programming

When the control system is turned on it automatically loads the default speed settings for the webs and separators etc.. The default speed settings have been found to give a basic operating set-up.

When changes to the speed settings have been made during operation, the operator can save the settings as follows:

Select either  ,  or  . The touch pad will highlight.

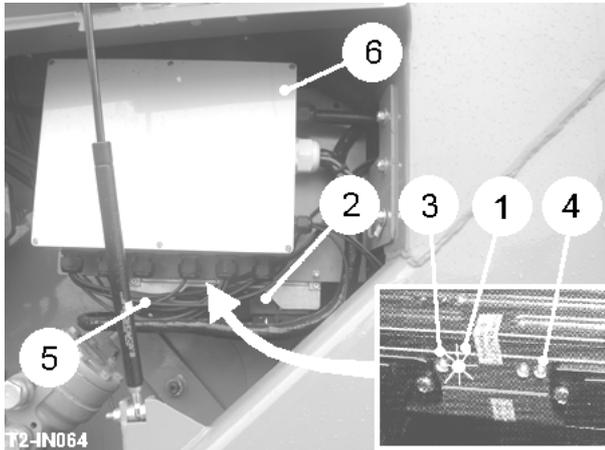
Press  to save the program.

To run the speed set programs:

Select either  ,  or  . The machine will run at the saved settings.

## If the System Fails to Run

If the system fails to run, check that the green L.E.D. (item 1, fig 28) under the control module is flashing. The flashing L.E.D. is second from the left. When flashing, this is the refresh rate of the CAN-Bus system. If the L.E.D. is not flashing, check the front KS1 plug (item 2, fig 28) connection to the module. See removing/fitting KS1 & KS2 plugs.



- Item 1 = Flashing green L.E.D.
- Item 2 = KS1 plug
- Item 3 = Constant green L.E.D.
- Item 4 = Constant green L.E.D.
- Item 5 = KS2 plug
- Item 6 = Main distribution box

Fig 28

## Removing / Fitting KS1 & KS2 Plugs

The KS1 and KS2 plugs (item 2 & 5, fig 28) are removed as follows (KS2 plug shown).

Removing a plug:

1. Press and hold the button (item 1, fig 29).
2. Fully rotate the lever (item 2, fig 29) to raise and release the plug.
3. Gently pull the plug from the socket.

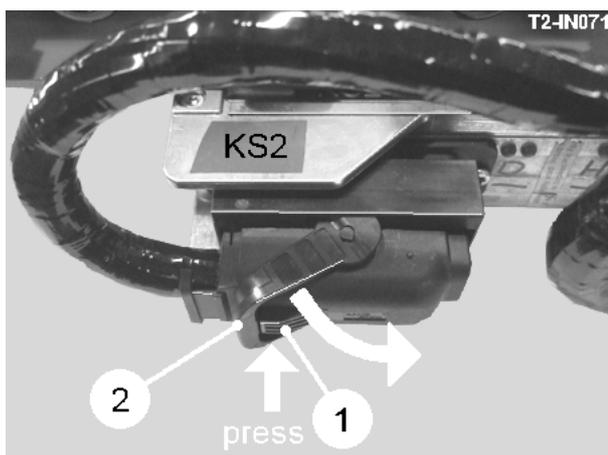


Fig 29

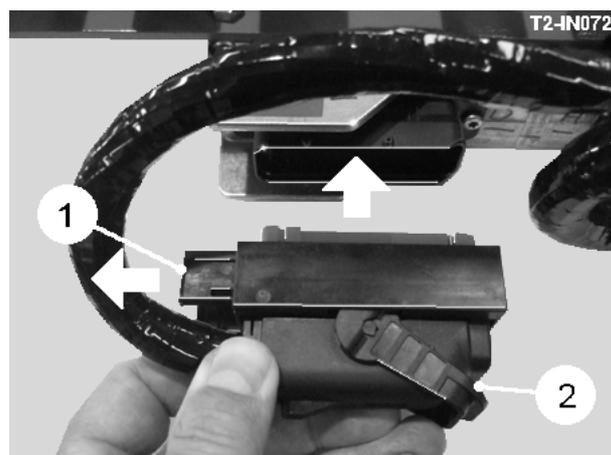


Fig 30

Fitting a plug:

1. Ensure the slider (item 1, fig 30) is fully out by rotating the lever (item 2, fig 30).
2. Gently press the plug home into its socket.
3. Rotate the lever (item 2, fig 30) to lower the plug fully into the socket. Continue until the lever is locked behind the button (item 1, fig 29).

## System Fuses

The power lead attached to the tractor is permanently live.

The feed to the slave box and service terminal is protected by the 2Amp fuse (item 1, fig 31) inside the slave box.

The main distribution box (item 6, fig 28) contains the following fuses:

- 4x 25Amp fuses to protect the module power feeds (item 1, fig 32).
- 1x 25Amp fuse to protect the light and oil cooler feed (item 2, fig 32).
- 1x 2Amp fuse to protect the 5.0Volts joystick feed (item 3, fig 32).
- 1x 2Amp fuse to protect the 8.5Volts joystick feed (item 4, fig 32).
- 3x 2Amp fuses to protect the sensor power feeds (item 5, fig 32).

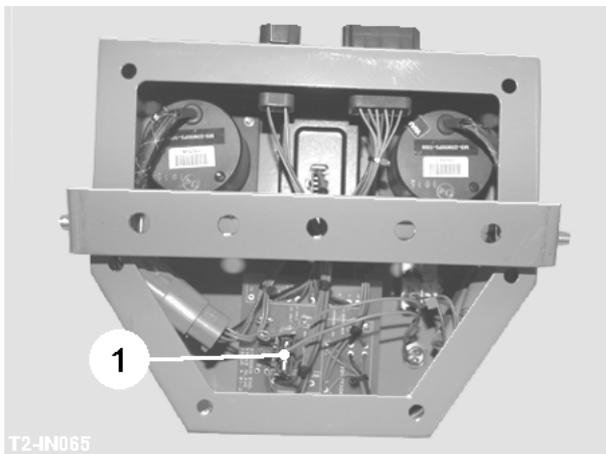


Fig 31

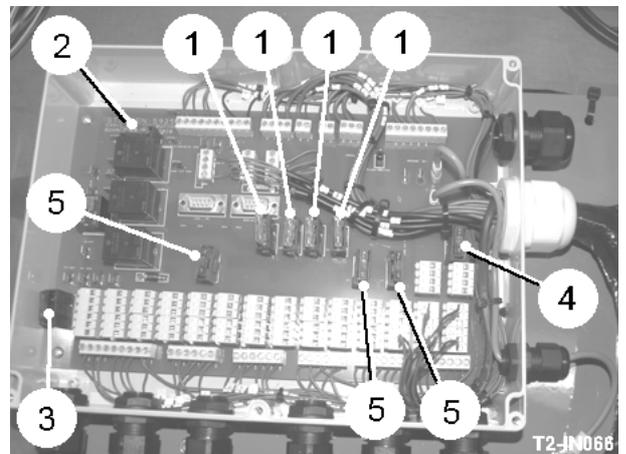


Fig 32



It should be noted that the service terminal, rocker switch bank, joysticks, and control module are all fitted with a warranty seal. These units are not user serviceable, and can only be repaired by the original manufacturer. They will not be covered by warranty if the seal has been disturbed.

## Valve Connections

Most valve plugs are 'Amp' Junior power timer connectors. These are released from the valve coil by squeezing in the wire release, and sliding the plug off the coil.



## **CIRCUIT DIAGRAMS**

ESX-3XL Controller Plug Pin Allocation	2.1
Machine Lighting Layout	2.5
Slave Box General Assembly	2.6
Slave Box Board	2.7
CAN-BUS Distribution Board	2.8
Distribution Box Loom	2.9
Left-hand Loom	2.10
Main Valve Loom	2.11
Display Loom	2.12
Cab Loom	2.13

## ESX-3XL Controller Plug Pin Allocation

PLUG	PIN	T2 FUNCTION	T3 FUNCTION
KS1	1	B+ 12VOLT	B+ 12VOLT
KS1	2	B- 0 VOLT	B- 0 VOLT
KS1	3	B+ 12VOLT	B+ 12VOLT
KS1	4	B+ 12VOLT	B+ 12VOLT
KS1	5	B+ 12VOLT	B+ 12VOLT
KS1	6	B+ 12VOLT	B+ 12VOLT
KS1	7	Vehicle CAN	Vehicle CAN
KS1	8	Vehicle CAN	Vehicle CAN
KS1	9	Elevator Speed Sensor (A) RPM	
KS1	10		Axle Steer RIGHT Wheel Rotary sensor
KS1	11	Agitation Pressure Transducer (AIN)	
KS1	12	Axle Steer RIGHT Wheel Rotary Pot (AIN)	
KS1	13	FIRST AGITATION ON/OFF	FIRST AGITATION ON/OFF
KS1	14	SECOND AGITATION ON/OFF	SECOND AGITATION ON/OFF
KS1	15	Swan Neck Auto Lower ON/OFF (DIN)	Swan Neck Auto Lower ON/OFF (DIN)
KS1	16	1ST SCROLL SHAFTS	1ST SCROLL SHAFTS
KS1	17	ELEVATOR ON/OFF	ELEVATOR ON/OFF
KS1	18		RIGHT AXLE reverse, & rotate in limit
KS1	19	PICKING TABLE /SPREADER	SPREADER
KS1	20	ELEVATOR FOLD IN	ELEVATOR FOLD IN
KS1	21	1st SEPARATOR LOWER	1st SEPARATOR LOWER
KS1	22	WEB SPLIT RAISE	WEB SPLIT RAISE
KS1	23	AXLE LEVEL RAISE	AXLE LEVEL RAISE
KS1	24	B- 0 VOLT	B- 0 VOLT
KS1	25	B+ 12VOLT	B+ 12VOLT
KS1	26	Vehicle CAN	Vehicle CAN
KS1	27	Vehicle CAN	Vehicle CAN
KS1	28	FIRST SEP CLOD ROLLER HGT	FIRST SEP CLOD ROLLER HGT
KS1	29	FIRST SEPERATOR ANGLE	FIRST SEPERATOR ANGLE
KS1	30	1st Separator Pressure Transducer (AIN)	1st Separator Pressure Transducer (AIN)
KS1	31	Axle Drive Pressure Transducer (AIN)	Axle Drive Pressure Transducer (AIN)
KS1	32	RIGHT AXLE DRIVE FORWARD	RIGHT AXLE DRIVE FORWARD
KS1	33	LEFT AXLE DRIVE FORWARD	LEFT AXLE DRIVE FORWARD
KS1	34	Auto Lower ON/OFF (DIN)	Auto Lower ON/OFF (DIN)
KS1	35	2nd CLOD ROLLER FORWARD	2nd CLOD ROLLER FORWARD
KS1	36	1st CLOD ROLLER FORWARD	1st CLOD ROLLER FORWARD
KS1	37		
KS1	38	POWERED DIABLO ON/OFF	POWERED DIABLO ON/OFF
KS1	39	ELEVATOR FOLD OUT	ELEVATOR FOLD OUT
KS1	40	B- 0 VOLT	B- 0 VOLT
KS1	41	1st CLOD ROLLER LOWER	1st CLOD ROLLER LOWER
KS1	42	AXLE TRACK IN	AXLE TRACK IN
KS1	43	DRAWBAR STEER LEFT	DRAWBAR STEER LEFT
KS1	44	Diagnostics	Diagnostics
KS1	45	Joystick CAN	Joystick CAN

PLUG	PIN	T2 FUNCTION	T3 FUNCTION
KS1	46	Joystick CAN	Joystick CAN
KS1	47	8.5V Vref GND	8.5V Vref GND
KS1	48	SECOND SEP CLOD ROLLER HGT	SECOND SEP CLOD ROLLER HGT
KS1	49	2nd Separator Pressure Transducer (AIN)	2nd Separator Pressure Transducer (AIN)
KS1	50	Digger Left Linear Pot (AIN)	Digger Left Linear Pot (AIN)
KS1	51	RIGHT AXLE DRIVE REVERSE	RIGHT AXLE DRIVE REVERSE
KS1	52	LEFT AXLE DRIVE REVERSE	LEFT AXLE DRIVE REVERSE
KS1	53	Brake Light Signal ON/OFF (DIN)	Brake Light Signal ON/OFF (DIN)
KS1	54	2nd CLOD ROLLER REVERSE	2nd CLOD ROLLER REVERSE
KS1	55	1st CLOD ROLLER REVERSE	1st CLOD ROLLER REVERSE
KS1	56	B- 0 VOLT	B- 0 VOLT
KS1	57	SOUNDER IN	SOUNDER IN
KS1	58	SWAN NECK LOWER	SWAN NECK LOWER
KS1	59	HAULM ROLLER FORWARD	HAULM ROLLER FORWARD
KS1	60	1st CLOD ROLLER RAISE	1st CLOD ROLLER RAISE
KS1	61	AXLE TRACK OUT	AXLE TRACK OUT
KS1	62	DRAWBAR STEER RIGHT	DRAWBAR STEER RIGHT
KS1	63	Diagnostics	Diagnostics
KS1	64	Joystick CAN	Joystick CAN
KS1	65	Joystick CAN	Joystick CAN
KS1	66	8.5V Reference	8.5V Reference
KS1	67	Auto Raise ON/OFF (DIN)	
KS1	68	Elevator Pressure Transducer (AIN)	Elevator Pressure Transducer (AIN)
KS1	69	Digger Right Linear Pot (AIN)	Digger Right Linear Pot (AIN)
KS1	70	Axle Steer LEFT Wheel Rotary Pot (AIN)	
KS1	71	THIRD AGITATION ON/OFF	THIRD AGITATION ON/OFF
KS1	72	2ND FEED ROLLER	2ND FEED ROLLER
KS1	73	Swan Neck Auto Raise ON/OFF (DIN)	Swan Neck Auto Raise ON/OFF (DIN)
KS1	74	1ST FEED ROLLER	1ST FEED ROLLER
KS1	75	DIGGER WEB	DIGGER WEB
KS1	76	N/A	
KS1	77	SWAN NECK RAISE	SWAN NECK RAISE
KS1	78	HAULM ROLLER REVERSE	HAULM ROLLER REVERSE
KS1	79	1st SEPARATOR RAISE	1st SEPARATOR RAISE
KS1	80	WEB SPLIT LOWER	WEB SPLIT LOWER
KS1	81	AXLE LEVEL LOWER	AXLE LEVEL LOWER

## 2.3

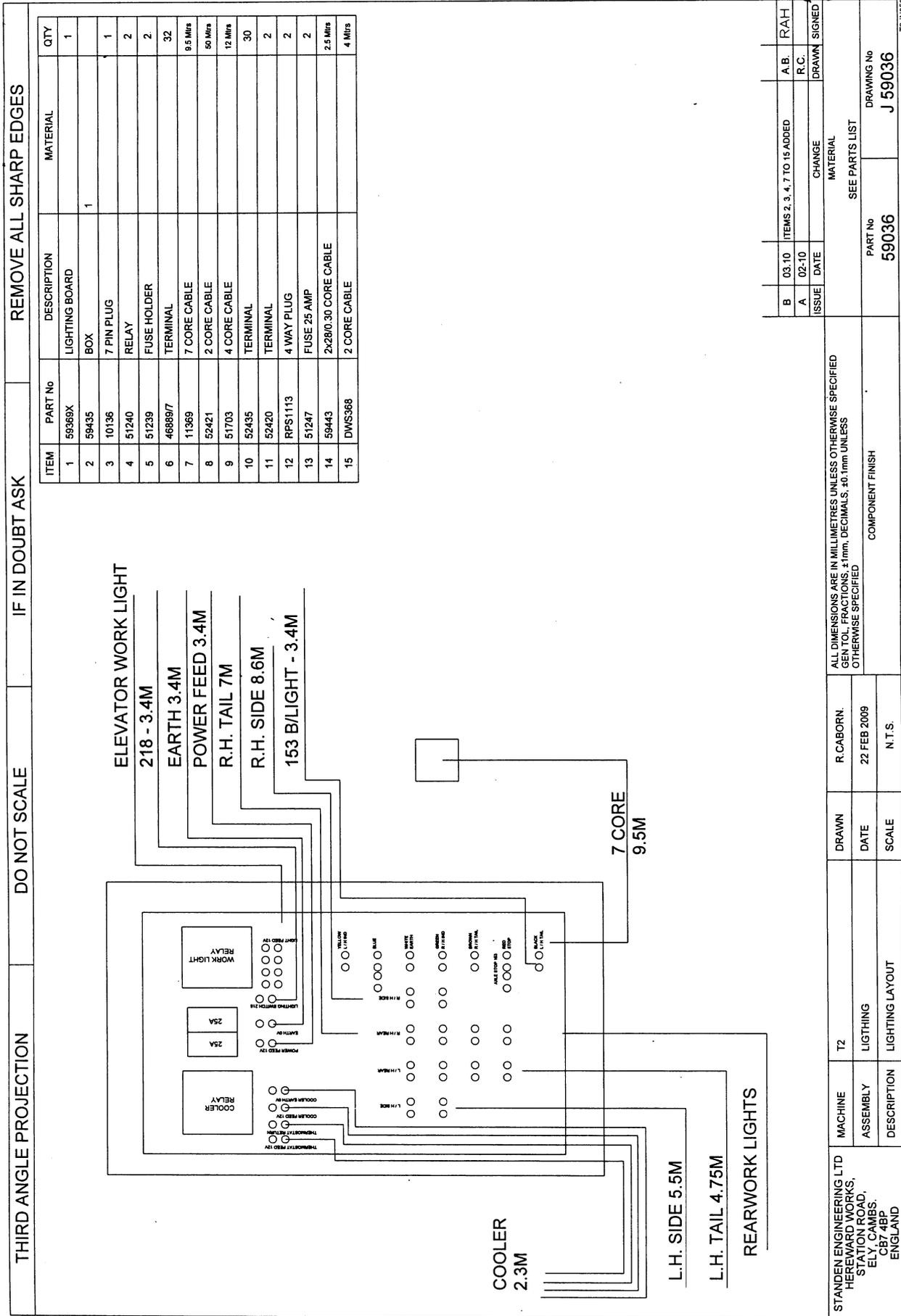
## CIRCUIT DIAGRAMS

PLUG	PIN	T2 FUNCTION	T3 FUNCTION
KS2	1	B+ 12VOLT	B+ 12VOLT
KS2	2	B+ 12VOLT	B+ 12VOLT
KS2	3	B+ 12VOLT	B+ 12VOLT
KS2	4	B+ 12VOLT	B+ 12VOLT
KS2	5	B+ 12VOLT	B+ 12VOLT
KS2	6	N/A	
KS2	7	Uext3 Ground	Uext3 Ground
KS2	8	Sieving Web Speed Sensor (RPM)	
KS2	9	1st Separator Speed Sensor (B) (RPM)	
KS2	10	2nd Separator Speed Sensor (C ) RPM	
KS2	11	MAX PRESSURE OVERRIDE	MAX PRESSURE OVERRIDE
KS2	12	AGITATION MASTER	AGITATION MASTER
KS2	13	SCROLL SHAFTS	SCROLL SHAFTS
KS2	14	RIGHT DIGGER RAISE_PROP	RIGHT DIGGER RAISE_PROP
KS2	15	LEFT DIGGER RAISE_PROP	LEFT DIGGER RAISE_PROP
KS2	16	2nd SEPARATOR RAISE	2nd SEPARATOR RAISE
KS2	17	OPTION 1 LOWER	ELEVATOR BASE OUT
KS2	18	LIGHT RELAY	LIGHT RELAY
KS2	19	N/A	
KS2	20	N/A	
KS2	21	N/A	
KS2	22	AUX RELAY	AUX RELAY
KS2	23	N/A	
KS2	24	N/A	
KS2	25	N/A	
KS2	26	Vref (2.5V to 10.5V)	Vref (2.5V to 10.5V)
KS2	27	Digger Web Speed Sensor (RPM)	
KS2	28	1st Separator Speed Sensor (A) (RPM)	
KS2	29	2nd Separator Speed Sensor (B) RPM	
KS2	30	MASTER B (102)	MASTER B (102)
KS2	31	LEFT AXLE STEER LEFT	
KS2	32	LEFT AXLE STEER RIGHT	
KS2	33	LEFT DIGGER LOWER_PROP	LEFT DIGGER LOWER_PROP
KS2	34	N/A	
KS2	35	2nd SEPARATOR LOWER	2nd SEPARATOR LOWER
KS2	36	OPTION 1 RAISE	ELEVATOR BASE IN
KS2	37	SWAN NECK	SWAN NECK
KS2	38	N/A	
KS2	39	N/A	
KS2	40	N/A	
KS2	41	SOUNDER	SOUNDER
KS2	42	N/A	
KS2	43	N/A	
KS2	44	N/A	
KS2	45	5V Reference GND	5V Reference GND

T2-IN048

PLUG	PIN	T2 FUNCTION	T3 FUNCTION
KS2	46	Elevator Speed Sensor (B) RPM	
KS2	47	Agitation Speed Sensor (RPM)	
KS2	48	2nd Separator Speed Sensor (A) RPM	
KS2	49	MASTER A (101)	MASTER A (101)
KS2	50	RIGHT AXLE STEER LEFT	RIGHT AXLE STEER LEFT
KS2	51	RIGHT AXLE STEER RIGHT	RIGHT AXLE STEER RIGHT
KS2	52	RIGHT DIGGER LOWER_PROP	RIGHT DIGGER LOWER_PROP
KS2	53	2nd CLOD ROLLER LOWER	2nd CLOD ROLLER LOWER
KS2	54	DIGGER LOWER	DIGGER LOWER
KS2	55	OPTION 2 LOWER	
KS2	56	N/A	
KS2	57	N/A	
KS2	58	N/A	
KS2	59	N/A	
KS2	60	E_STOP OUTPUT	E_STOP OUTPUT
KS2	61	N/A	
KS2	62	N/A	
KS2	63	N/A	
KS2	64	5V Reference	5V Reference
KS2	65	SECOND SEPERATOR ANGLE	SECOND SEPERATOR ANGLE
KS2	66	Haulm Roller Speed Sensor (RPM)	
KS2	67	1st Separator Speed Sensor (C ) (RPM)	
KS2	68		
KS2	69	SIEVING WEB	SIEVING WEB
KS2	70	CLOD FINGERS ON/OFF	CLOD FINGERS ON/OFF
KS2	71	DISCHARGE ON/OFF	DISCHARGE ON/OFF
KS2	72	2nd CLOD ROLLER RAISE	2nd CLOD ROLLER RAISE
KS2	73	DIGGER RAISE	DIGGER RAISE
KS2	74	OPTION 2 RAISE	
KS2	75	N/A	
KS2	76	N/A	
KS2	77	N/A	
KS2	78	B- 0 VOLT	B- 0 VOLT
KS2	79	N/A	
KS2	80	N/A	
KS2	81	N/A	

Machine Lighting Layout



## Slave Box General Assembly

THIRD ANGLE PROJECTION

DO NOT SCALE

IF IN DOUBT ASK

REMOVE ALL SHARP EDGES

ITEM	PART No	DESCRIPTION	MATERIAL	QTY
1	59246	SLAVE BOX HOUSING		1
2	59247	SLAVE BOX COVER		1
3	59248	SLAVE BOX STIRRUP		1
4	RPS443	SPRING CLIP		6
5	RPS444	SCREW		6
6	59239	SWITCH ASSY		1
7	59240	JOYSTICK		2
8	59241	ROCKER SWITCH		1
9	57243	PUSH BUTTON		1
10	59254	DECAL		1
11	59368	SLAVE BOARD ASSY	SEE DETAIL	1

ISSUE	DATE	CHANGE	MATERIAL
A	02-10		

COMPONENT FINISH SEE PARTS LIST	DRAWING No <b>J 59046</b>
------------------------------------	------------------------------

MACHINE T2 / T3	DRAWN R. CABORN.	DATE 18 FEB 2010	SCALE NTS
ASSEMBLY SLAVE BOX			
DESCRIPTION GENERAL ASSY			

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED  
 GEN TOL. FRACTIONS: ±1mm, DECIMALS: ±0.1mm UNLESS OTHERWISE SPECIFIED

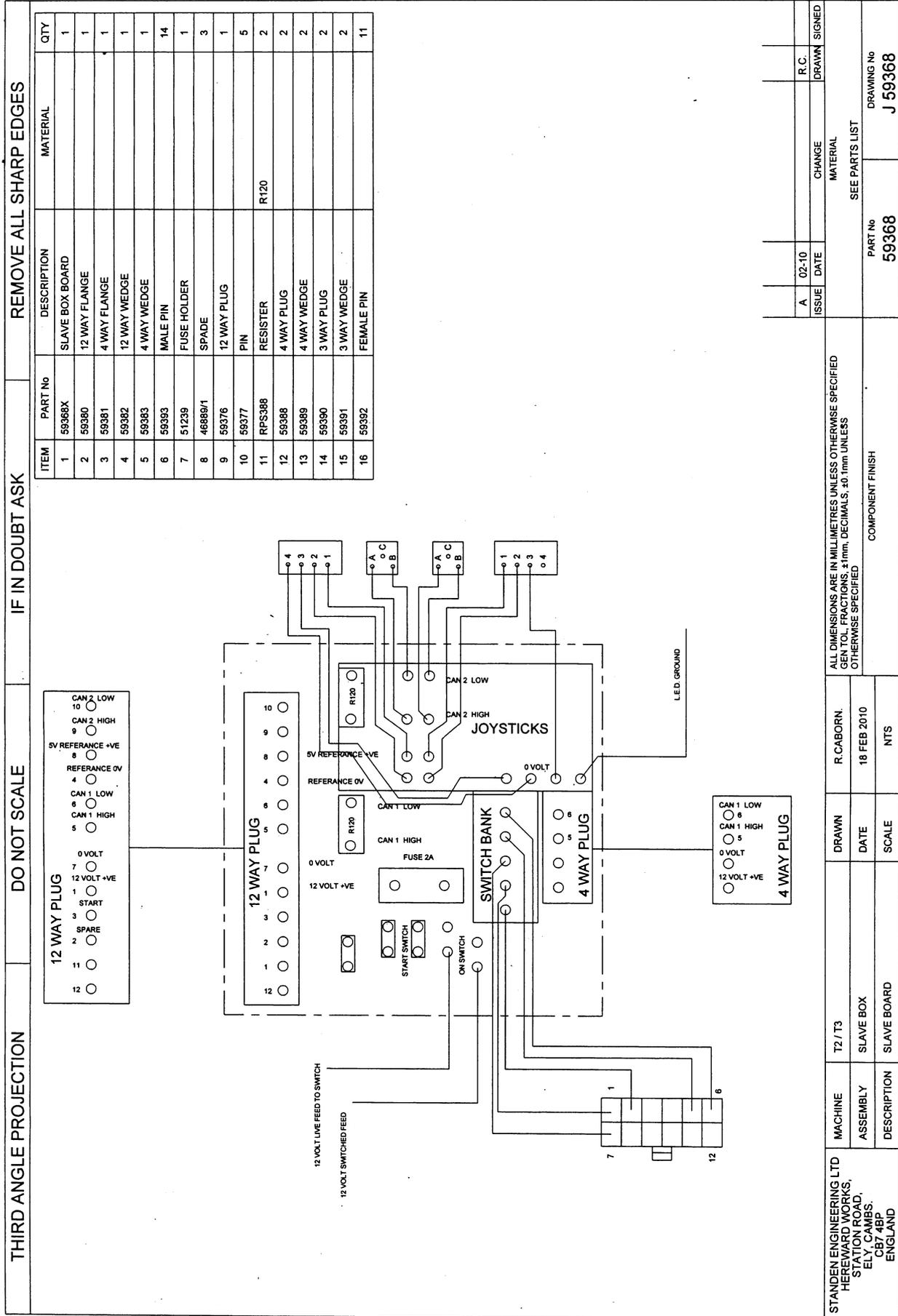
STANDEN ENGINEERING LTD  
HEATH ROAD WORKS,  
STATFORD ROAD,  
ELY CAMBS.  
CB7 4BS  
ENGLAND

PART No  
**59046**

DRAWING No  
**J 59046**

T2-IN051

Slave Box Board

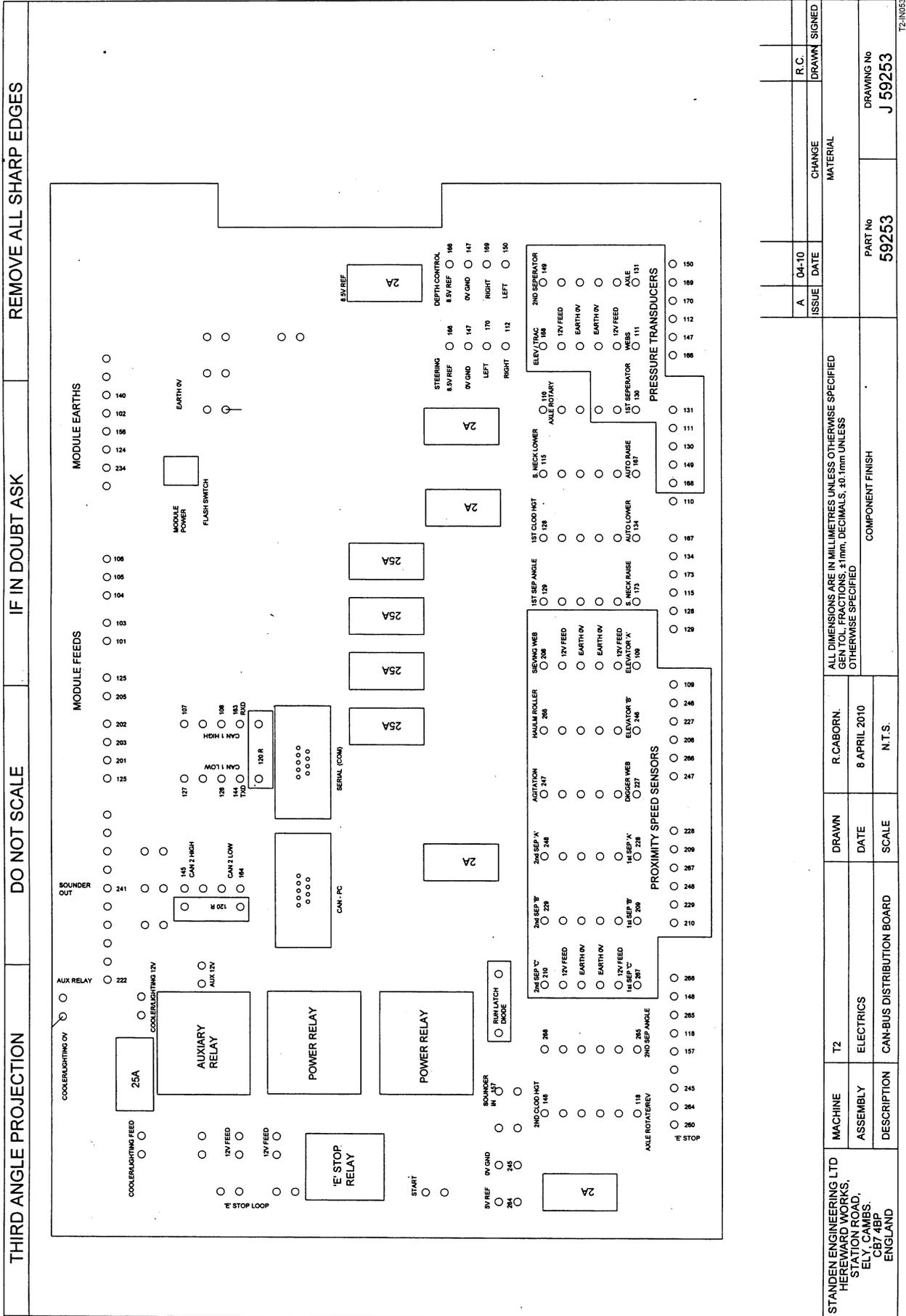


STANDEN ENGINEERING LTD  
HEERWARD WORKS,  
STATION ROAD,  
ELY CAMBS.  
CB7 4BP  
ENGLAND

MACHINE T2 / T3  
ASSEMBLY SLAVE BOX  
DESCRIPTION SLAVE BOARD

DRAWN R. CABORN.  
DATE 18 FEB 2010  
SCALE NTS

## CAN-BUS Distribution Board



MATERIAL		CHANGE		DRAWN		SIGNED	
ISSUE	DATE	CHANGE	DATE	DRAWN	DATE	SIGNED	DATE
A	04-10						

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED GEN TOL FRACTIONS ±1mm, DECIMALS ±0.1mm UNLESS OTHERWISE SPECIFIED	COMPONENT FINISH PART No <b>59253</b>
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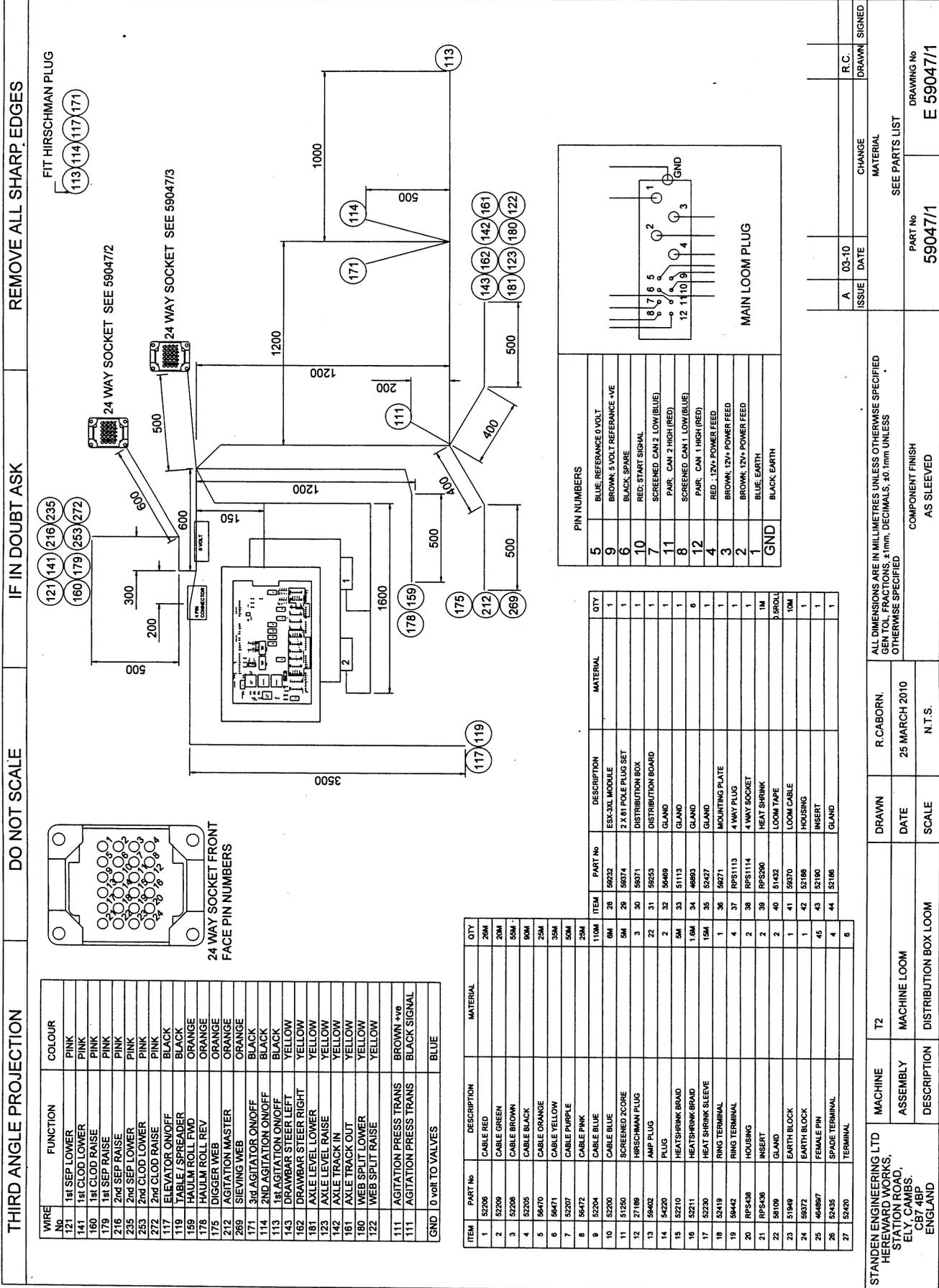
  

MACHINE	DRAWN	R. CABORN.	T2
ASSEMBLY	DATE	8 APRIL 2010	ELECTRICS
DESCRIPTION	SCALE	N.T.S.	CAN-BUS DISTRIBUTION BOARD

DRAWING No  
**J 59253**

T2-ING55

Distribution Box Loom



T2-ING54



Main Valve Loom

THIRD ANGLE PROJECTION	DO NOT SCALE	IF IN DOUBT ASK	REMOVE ALL SHARP EDGES
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PIN No	WIRE No	FUNCTION	COLOUR
1	120	ELEVATOR FOLD IN	BLACK
2	139	ELEVATOR FOLD OUT	BLACK
3	158	SWAN NECK LOWER	BLACK
4	177	SWAN NECK RAISE	BLACK
5	214	RIGHT DIG RAISE PROP	BLACK
6	215	LEFT DIG RAISE PROP	BLACK
7	230	MASTER 'B'	BLACK
8	231	LEFT AXLE STEER LEFT	BLACK
9	232	LEFT AXLE STEER RIGHT	BLACK
10	233	LEFT DIG LOWER PROP	BLACK
11	249	MASTER 'A'	BLACK
12	250	RIGHT AXLE STEER LEFT	BLACK
13	251	RIGHT AXLE STEER RIGHT	BLACK
14	252	RIGHT DIG LOWER PROP	BLACK
15	254	RIGHT DIG LOWER CHECK	BLACK
16	270	CLOD FINGERS PROP	BLACK
17	271	DISCHARGE PROP	BLACK
18	273	LEFT DIG LOWER CHECK	BLACK
19	237	SWAN NECK CHECK	BLACK
20	236	ELEV BASE IN	BLACK
21	217	ELEV BASE OUT	BLACK
22			
23	168	ELV/TRAC PRESS TRANS	BROWN +ve
24	168	ELV/TRAC PRESS TRANS	BLACK SIGNAL
CASE	GND	0 volt TO VALVES	BLUE

24 WAY PLUG

24 WAY PLUG FRONT  
FACE PIN NUMBERS

ITEM	PART No	DESCRIPTION	MATERIAL	QTY
1	52208	CABLE BROWN		1M
2	52205	CABLE BLACK		23M
3	52204	CABLE BLUE		22M
4	59402	AMP PLUG		21
5	54220	PLUG		1
6	52211	HEATSHRINK BRAID		0.6M
7	52230	HEAT SHRINK SLEEVE		13.5M
8	52419	RING TERMINAL		2
9	RPS439	HOUSING		1
10	RPS437	INSERT		1
11	58109	GLAND		1
12	46489/6	MALE PIN		23

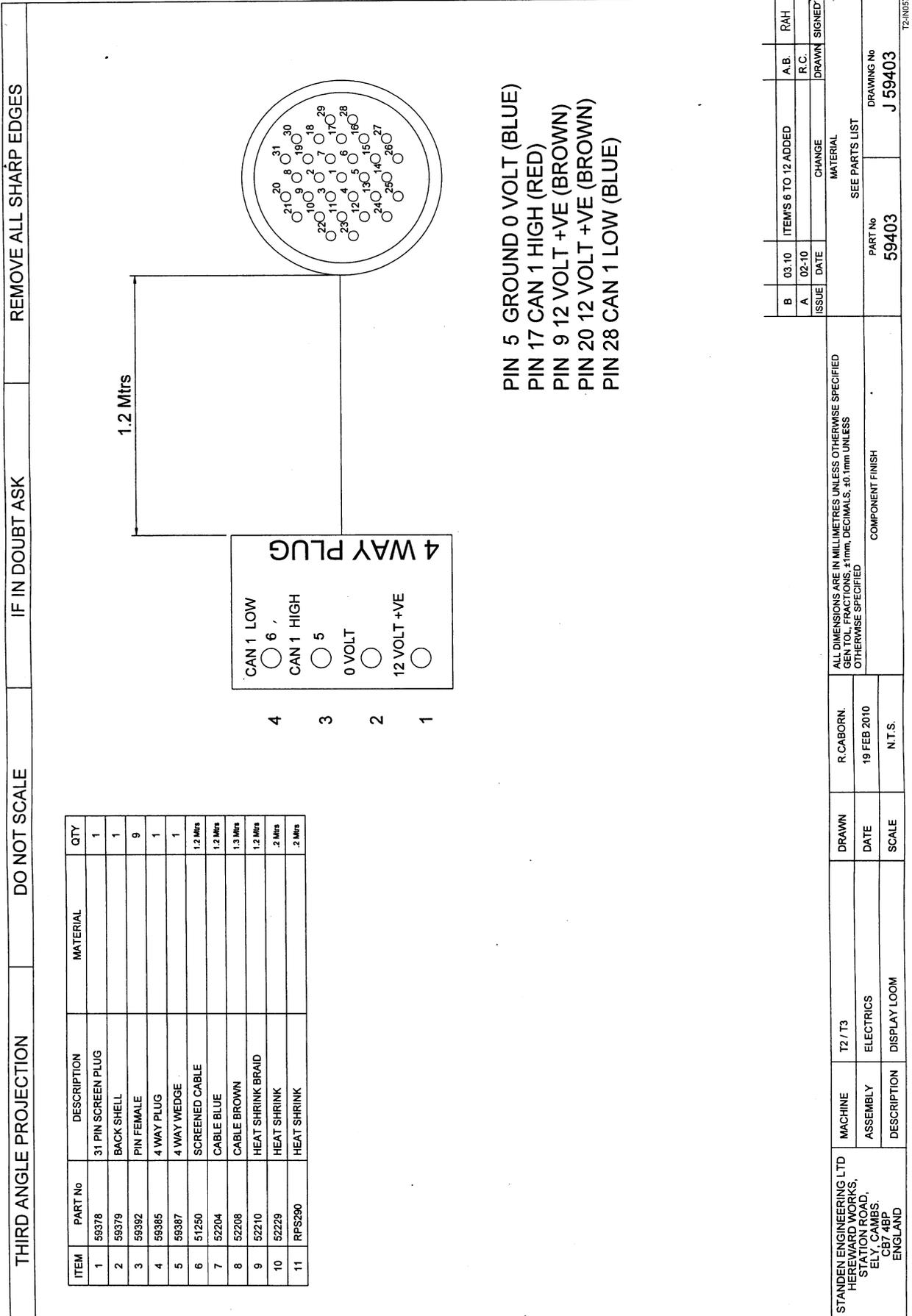
STANDEN ENGINEERING LTD HEREWARD WORKS, STATION ROAD, ELY, CAMBS. CB7 4BP ENGLAND	MACHINE ASSEMBLY DESCRIPTION	T2 MACHINE LOOM MAIN VALVE LOOM	DRAWN DATE SCALE	R. CABORN. 23 MARCH 2010 N.T.S.
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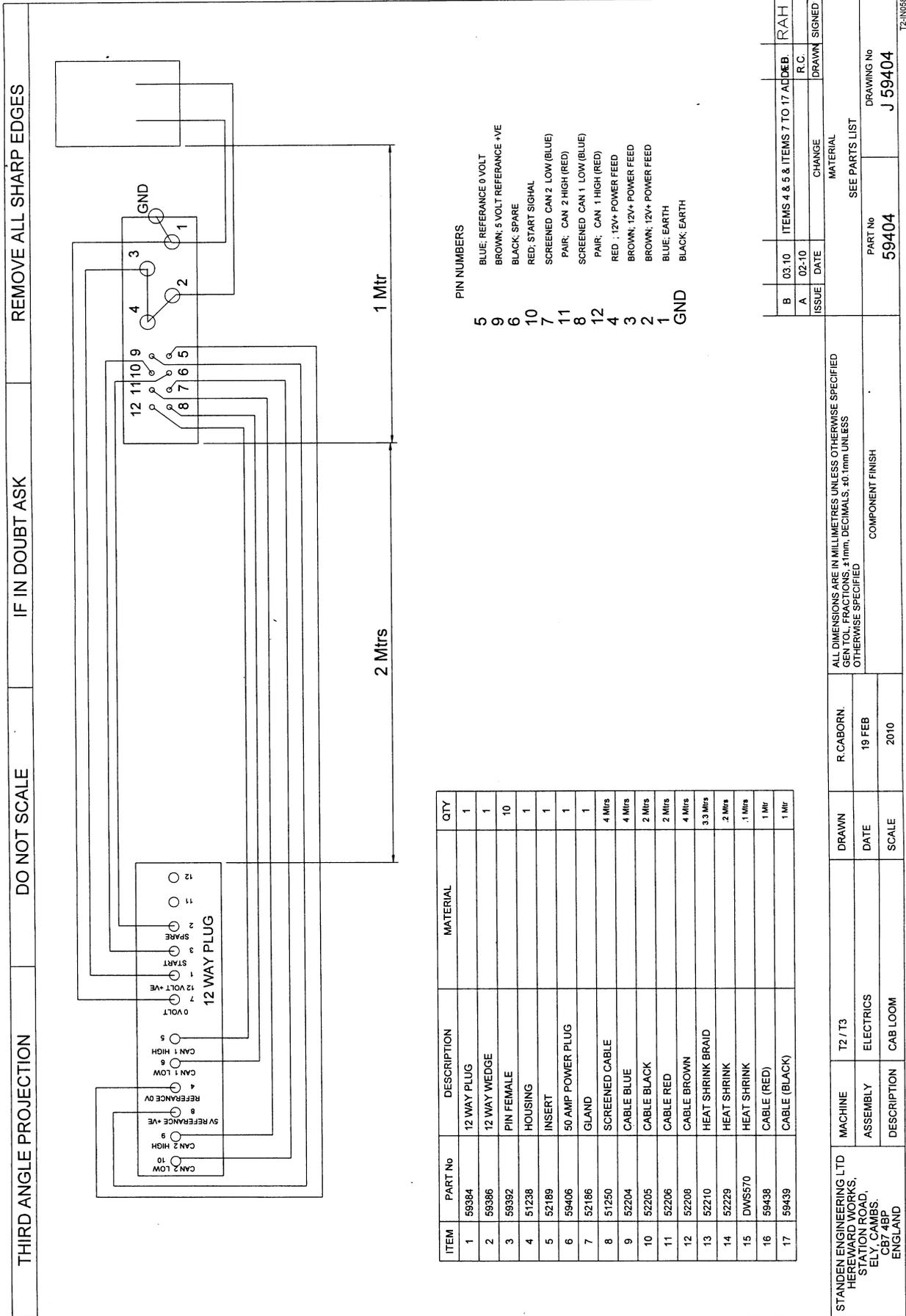
ISSUE	A	03-10	DATE	CHANGE	MATERIAL	DRAWN	SIGNED
				SEE PARTS LIST		R.C.	
PART No			59047/3			DRAWING No	
			J 59047/3				

T2-IN056

## Display Loom



Cab Loom



- PIN NUMBERS**
- 5 BLUE; REFERENCE 0 VOLT
  - 9 BROWN; 5 VOLT REFERENCE +VE
  - 6 BLACK; SPARE
  - 10 RED; START SIGNAL
  - 7 SCREENED CAN 2 LOW (BLUE)
  - 11 PAIR; CAN 2 HIGH (RED)
  - 8 SCREENED CAN 1 LOW (BLUE)
  - 12 PAIR; CAN 1 HIGH (RED)
  - 4 RED; 12V+ POWER FEED
  - 3 BROWN; 12V+ POWER FEED
  - 2 BROWN; 12V+ POWER FEED
  - 1 BLUE; EARTH
  - GND BLACK; EARTH

ITEM	PART No	DESCRIPTION	MATERIAL	QTY
1	59384	12 WAY PLUG		1
2	59386	12 WAY WEDGE		1
3	59392	PIN FEMALE		10
4	51238	HOUSING		1
5	52189	INSERT		1
6	59406	50 AMP POWER PLUG		1
7	52186	GLAND		1
8	51250	SCREENED CABLE		4 Mtrs
9	52204	CABLE BLUE		4 Mtrs
10	52205	CABLE BLACK		2 Mtrs
11	52206	CABLE RED		2 Mtrs
12	52208	CABLE BROWN		4 Mtrs
13	52210	HEAT SHRINK BRAID		3.3 Mtrs
14	52229	HEAT SHRINK		.2 Mtrs
15	DWS570	HEAT SHRINK		.1 Mtrs
16	59438	CABLE (RED)		1 Mtr
17	59439	CABLE (BLACK)		1 Mtr

STANDEN ENGINEERING LTD HERWARD WORKS, STATION ROAD, ELY, CAMBS., CB7 4BP, ENGLAND		MACHINE	T2 / T3	R. CABORN.	ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED GEN TOL. FRACTIONS. ±1mm. DECIMALS. ±0.1mm UNLESS OTHERWISE SPECIFIED
ASSEMBLY	ELECTRICS	DATE	19 FEB	19 FEB	SEE PARTS LIST
DESCRIPTION	CAB LOOM	SCALE	2010	2010	COMPONENT FINISH
				PART No	J 59404
				DRAWING No	J 59404

T2-IN058

THIRD ANGLE PROJECTION

DO NOT SCALE

IF IN DOUBT ASK

REMOVE ALL SHARP EDGES

2 Mtrs

1 Mtr