



T2 / T3

***Potato Harvester
Control System***
(machines from 2014)

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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 to soil conditions. Always allow the machine to settle to a new setting before making further adjustments.

TRANSPORT WARNING:



Always switch off the 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 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 requires a 12 Volt negative earth power supply fed directly from the tractor battery using 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 terminal (fig 1) and the slave box (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



Fig 2

The cab loom (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 (fig 4) into the plug on the rear of the touch-screen terminal, and route it safely to plug into the 4 pin plug on the front of the slave box. Connect the power lead (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(es) at the rear of the harvester which allow the main power relays to latch on.



Fig 3



Fig 4



Fig 5

Starting the Control System

1. Set the rocker switch (item 1, fig 6) to the ON position.
2. The START screen (see fig 7) will display after approximately 45 seconds.
3. Press and hold the green start button (item 2, fig 6) for 3 seconds.
4. The MAIN screen will display (see fig 8).

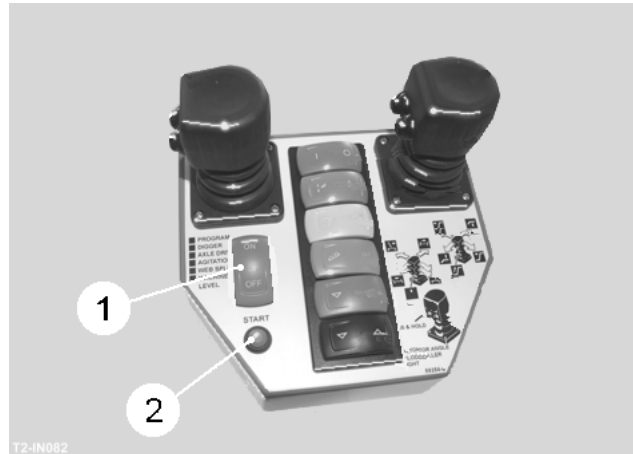


Fig 6



Fig 7

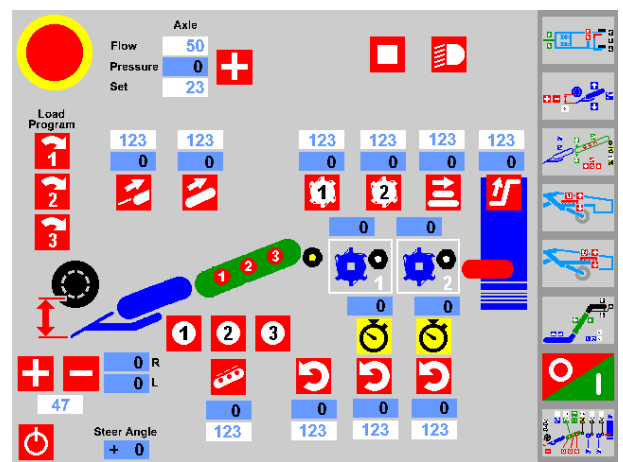



Fig 8

Stopping the Control System


1. Press the stop button  on any screen.
2. Wait for the START screen to display (see fig 7).

Note: The control system is now in stand-by mode and can be restarted again by pressing and holding the start button (item 2, fig 6) for 3 seconds.

3. For full shut-down, set the rocker switch (item 1, fig 6) to the OFF position.
4. The screen will go blank.

Emergency Stop Buttons



An emergency stop button  is present on all screens and mechanical stop buttons (item 1, fig 9) are mounted at the rear of the harvester. When any of the buttons are activated, all harvester functions are stopped.

Screen STOP buttons

When a screen stop button is pressed, all harvester functions stop and the terminal reverts to the 'START' screen. Restart by pressing and holding the start button (item 2, fig 6) for 3 seconds.

Harvester STOP buttons

When a harvester stop button (item 1, fig 9) is pressed, all harvester functions stop and the terminal screen 'freezes'. To restart, reset the emergency stop button and then press and hold the start button (item 2, fig 6) for 3 seconds.

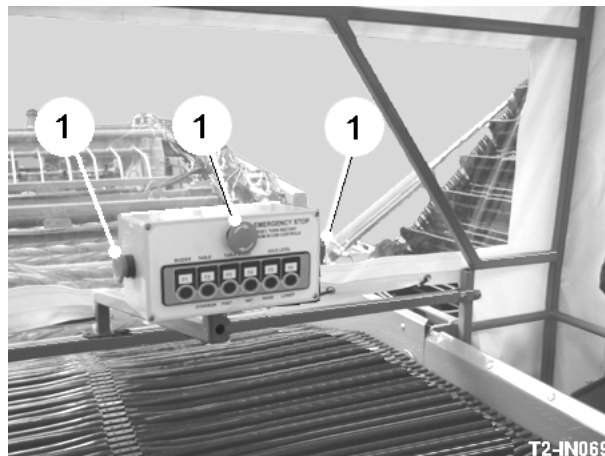














Fig 9

Configuring the Control System to Your Machine

At the MAIN screen:

1. Press the (ESC) button once (item 1, fig 10).
2. The MACHINE CONFIGURATION screen will display (see fig 11).
3. Press the button  to select your machine type (T2 or T3).
4. Select the 1st separator unit fitted to your machine.
Omega scrolls  or starflow  or roller table .
The button turns green when selected.
5. Select the 2nd separator unit fitted to your machine.
Omega scrolls  or galaxy  or roller table .
The button turns green when selected.
6. Select the icons for optional equipment fitted to your machine. When selected these will display on the main screen.
Powered diablo  , clod fingers  , elevator auto-height  ,
axle level  , windrow  .
7. The control system is now configured to your machine.
8. Press (<< 8) to return to the main screen.

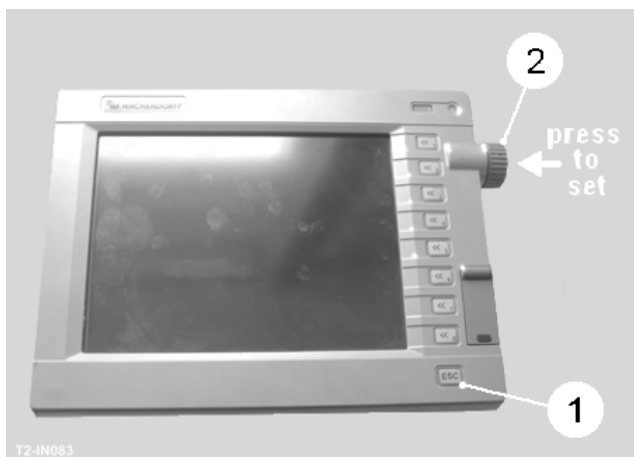


Fig 10

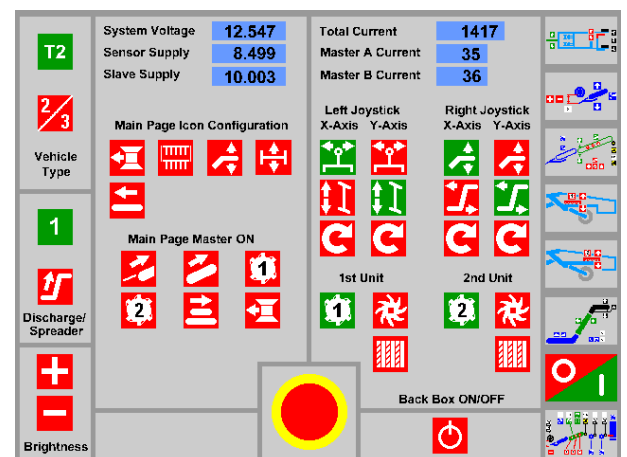
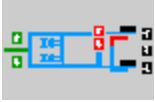


Fig 11

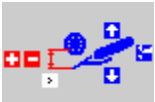
Screen Select Buttons

On the RH side of the terminal screen is a row of buttons which link to individual screens containing the full range of functions available complete with parameter and diagnostic information.



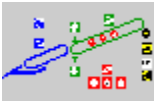
SCREEN 1 (Chassis and Axle Screen)

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



SCREEN 2 (Digger Depth Screen)

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



SCREEN 3 (Webs Screen)

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



SCREEN 4 (1st Separator Screen)

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



SCREEN 5 (2nd Separator Screen)

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



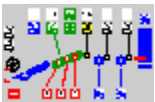
SCREEN 6 (Spreader / Table and Elevator Screen)

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



SCREEN 7 (Programming Screen)

This screen covers save/load speed program, start/stop sequence programming, restore default settings.



SCREEN 8 (Main screen)

This screen covers the commonly used functions and speed adjustments.

ESC (x1) (Machine Configuration screen)

This screen covers machine type (T2 or T3), 1st & 2nd separator type, joystick configuration, additional main page icons, simultaneous start elements, back box ON/OFF, system voltage & current, oil temperature etc..

ESC (x2) (Program information screen)

Program version and date.

SCREEN 8

Main Screen

Screen 8 allows the operator direct access to the most commonly used harvester functions. When selected the function button changes to green.

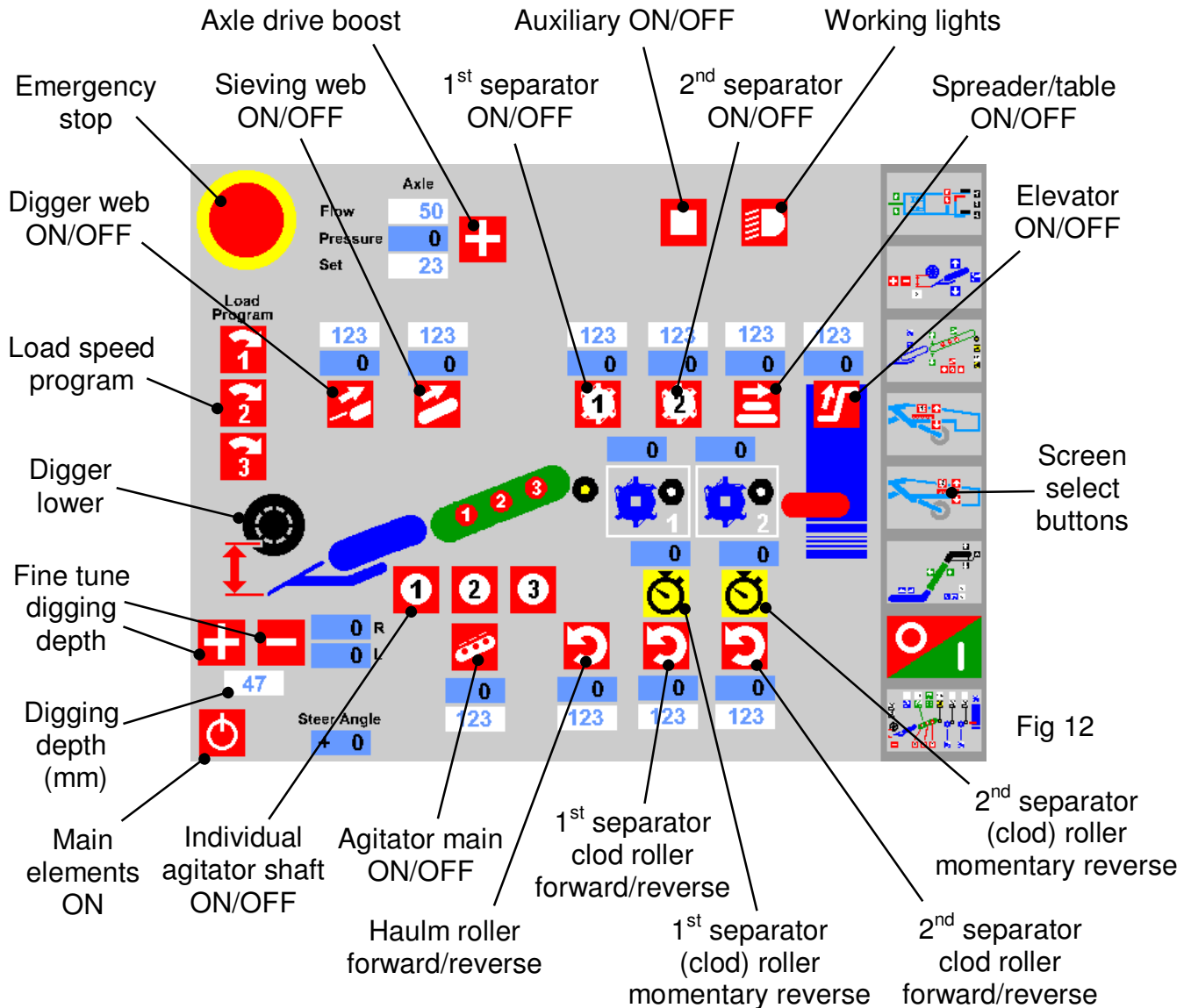


Fig 12

Axle drive boost

Sets the powered axle drive assistance to maximum system pressure for bad conditions.

Auxiliary ON/OFF

Turns on the auxiliary relay on the distribution board to power optional equipment such as a water misting kit etc.

Working lights

Turns on the relay in the lighting distribution box to power optional working lights.

Load speed program

Enables operator to quickly reload different speed set-ups saved during work.

Main elements ON

Simultaneously starts chosen harvester elements (see machine configuration screen).

Motor speed adjustment

Speed adjustment is available on all motor functions. With the machine running, the blue box adjacent to the button displays speed information received from the harvester sensor. The white box allows the operator to change this setting. To change the speed, select the white box (border will highlight red) and rotate the encoder dial (item 2, fig 10). Press the dial to save the setting (border will highlight black). The revised speed is now operational and will remain as the parameter setting until any further change is made.

Note: On motor functions the number in the white box represents an incremental value on the dial (0-255). The actual output (rpm) is displayed in the blue box.

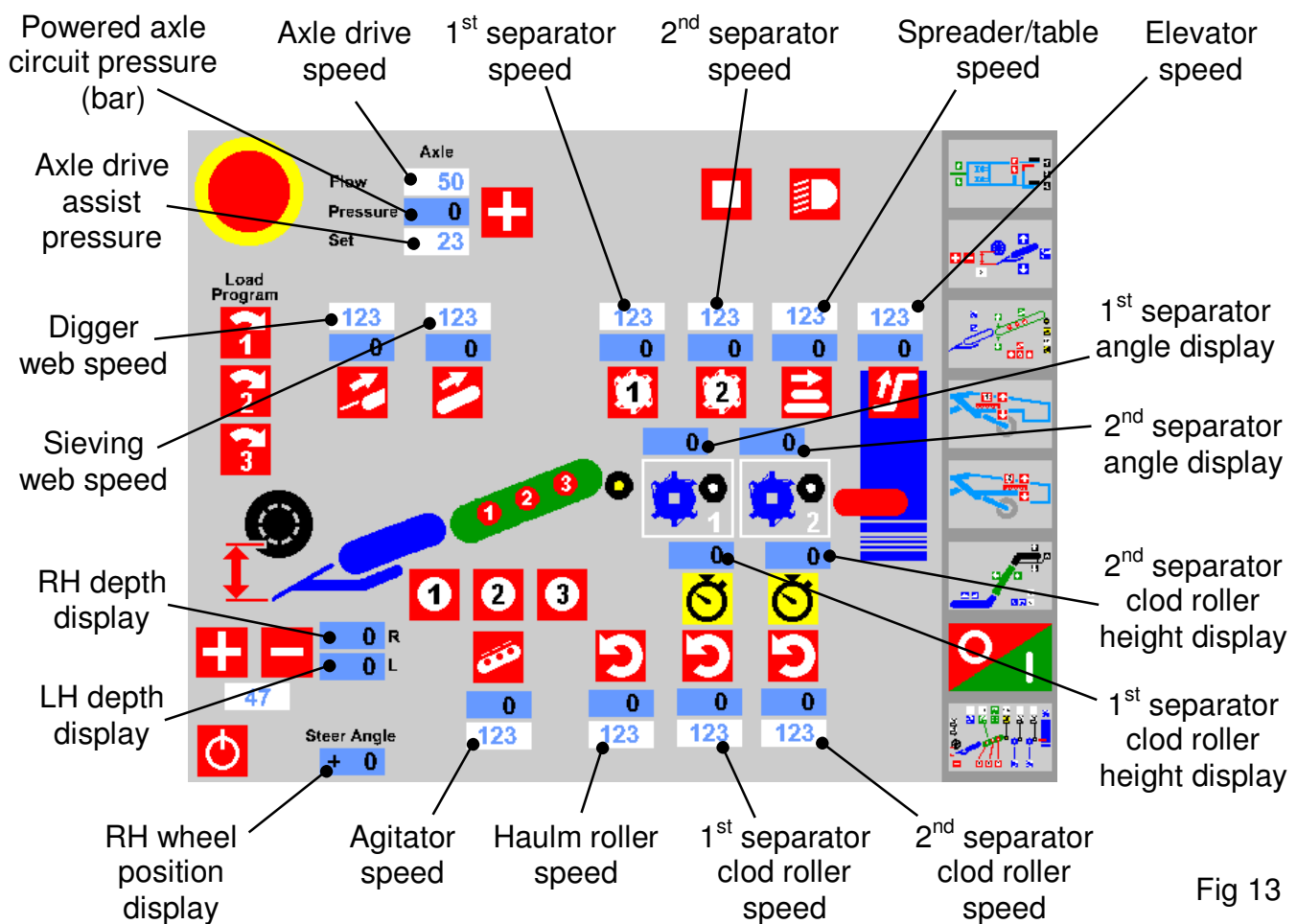


Fig 13

Axle drive speed

Sets the wheel speed to match the forward operating speed of the machine.

Axle drive assist pressure

Sets the pressure to maintain the drive assistance required for normal harvesting. Pressure should be set as low as possible to minimise the power used.

SCREEN 1

Chassis and Axle Screen

Screen 1 covers drawbar steering, axle side shift, axle steering, machine levelling and powered axle.

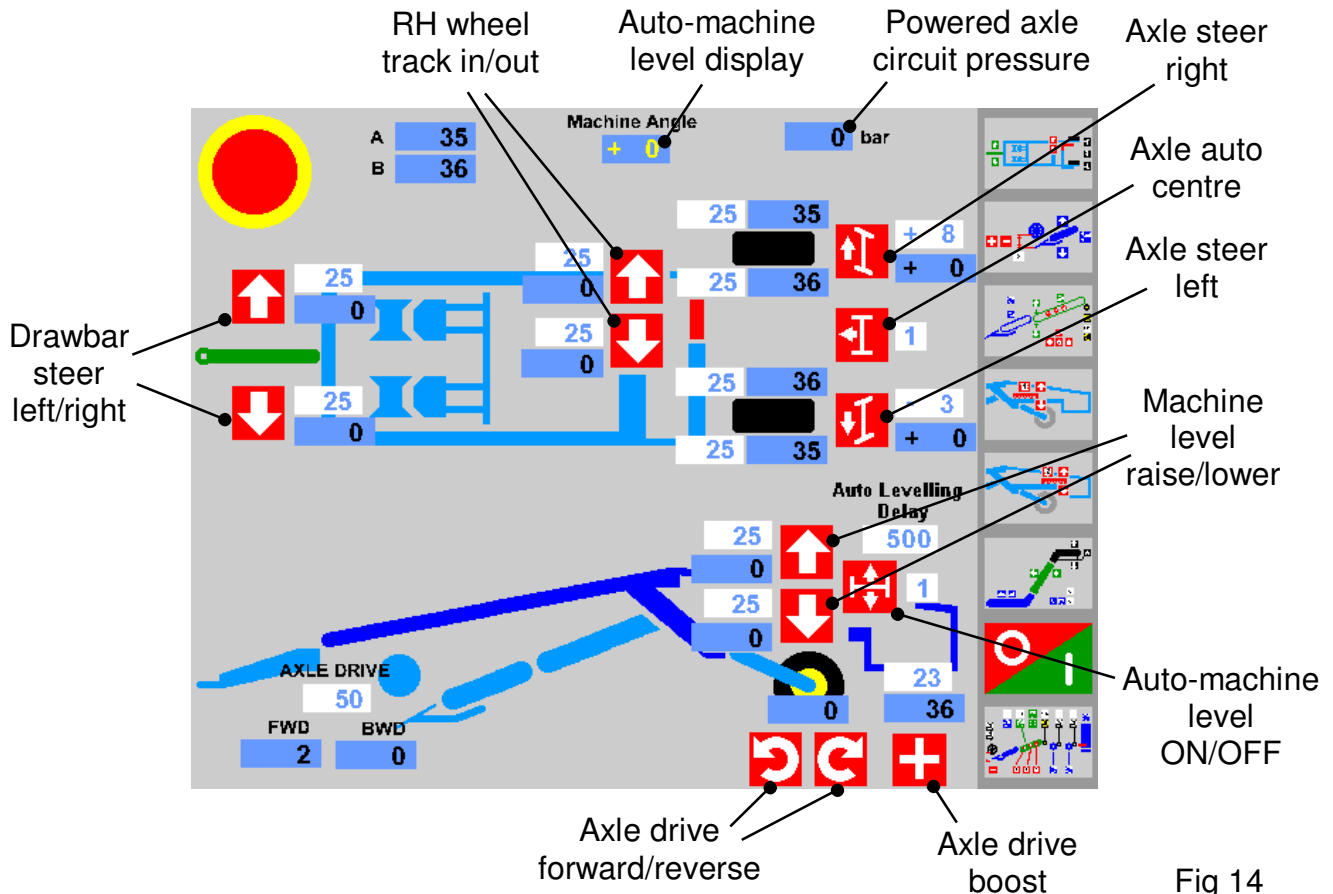


Fig 14

Drawbar steer, axle steer and axle auto-centre

During work, drawbar steer left/right, axle steer left/right and axle auto-centre can also be controlled using the LH joystick.

Axle drive forward/reverse and axle drive boost

During work, powered axle drive forward/off/reverse can also be controlled from the yellow rocker switch on the slave box. Axle drive boost sets the system to maximum pressure for bad conditions.

Manual machine level

During work, machine level raise/lower can also be controlled from the black rocker switch on the slave box.

Note: On T3 a shut-off valve is fitted above the ram which must be closed during transport.

Auto-machine level

The optional auto-machine level function automatically maintains the side to side level of the chassis. If a manual level button is pressed the auto-machine level function is switched off. Set the machine level tolerance box to 1 (sets maximum tolerance to ± 1). Set the auto levelling delay to 500 ms.

Ram speed adjustment

Speed adjustment is available on all ram functions. To change the ram speed, select the white box (border will highlight red) and rotate the encoder dial (item 2, fig 10) between 0-100. Press the dial to save the setting (border will highlight black). The revised speed is now operational and will remain as the parameter setting until any further change is made.

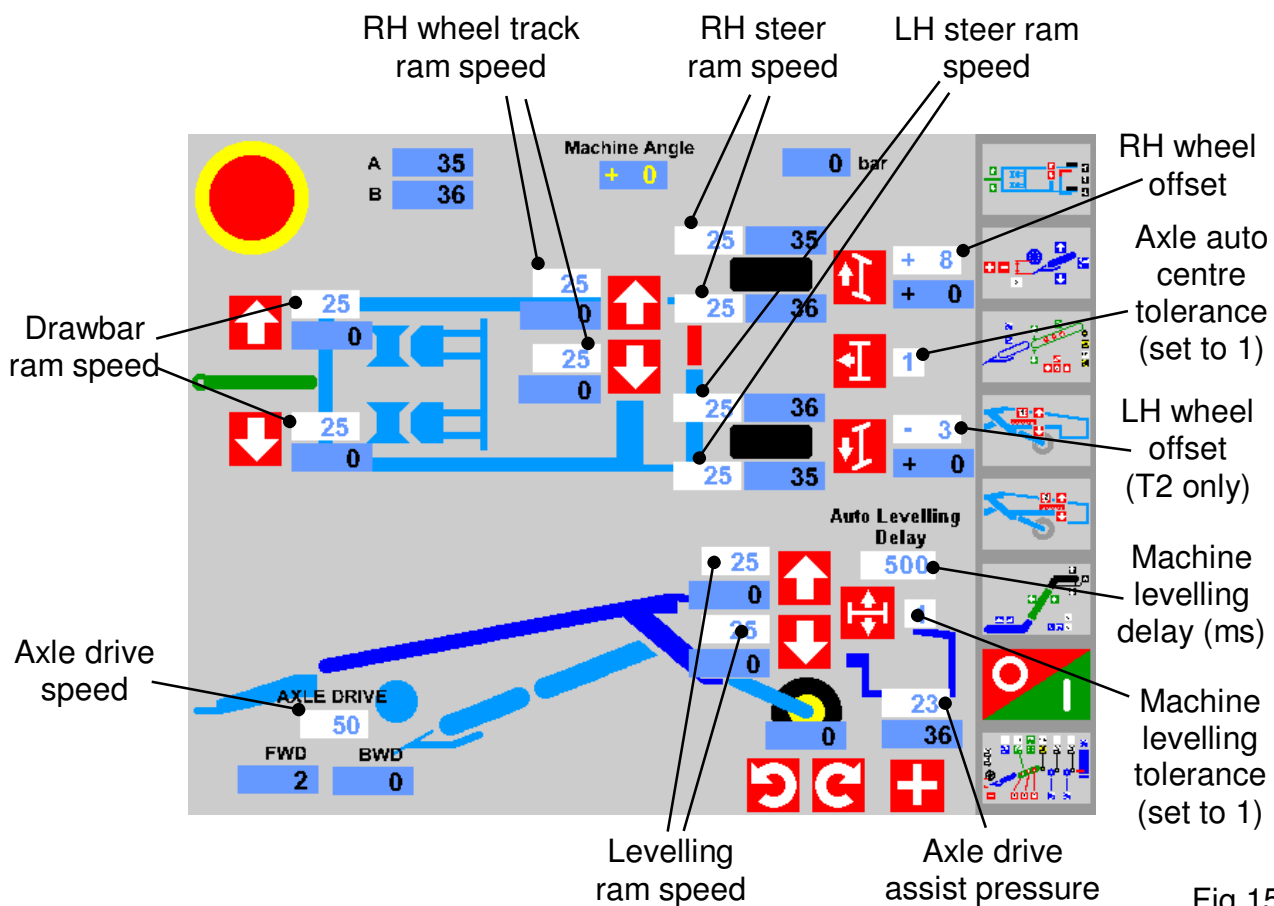


Fig 15

Axle drive speed

Sets the wheel speed to match the forward operating speed of the machine.

Axle drive assist pressure

Sets the pressure to maintain the drive assistance required for normal harvesting. Pressure should be set as low as possible to minimise the power used.

Wheel Centring Parameters

To set the wheel centre position:

1. Set the axle auto-centre tolerance box to 1 (sets maximum tolerance to ± 1).
2. Using the axle steer right/left buttons, set the RH wheel to the straight-ahead position.
3. Select the RH WHEEL OFFSET box. The border will highlight in red.
4. Rotate the encoder dial (item 2, fig 10) until the blue box reads + 0. This sets the centre position on the RH steering sensor.
5. Press the encoder dial to save the revised figure. The border will change to black. The RH wheel centre position is now set.
6. **(T3)** If necessary, set the LH wheel to match the RH wheel as per the instructions in the operator's handbook (see steering ram link circuit).
(T2) Using the axle steer right/left buttons, set the LH wheel to the straight-ahead position.
7. Select the LH WHEEL OFFSET box.
8. Rotate the encoder dial (item 2, fig 10) until the blue box reads + 0. This sets the centre position on the LH steering sensor.
9. Press the encoder dial to save the revised figure. The LH wheel centre position is now set.
10. Check both wheels centre correctly.

If necessary, reset the steering ram speed parameters to ensure the wheels arrive at the centre position at the same time.

SCREEN 2

Digger Depth Control Screen

Screen 2 covers automatic depth control, manual depth control and single side lifting.

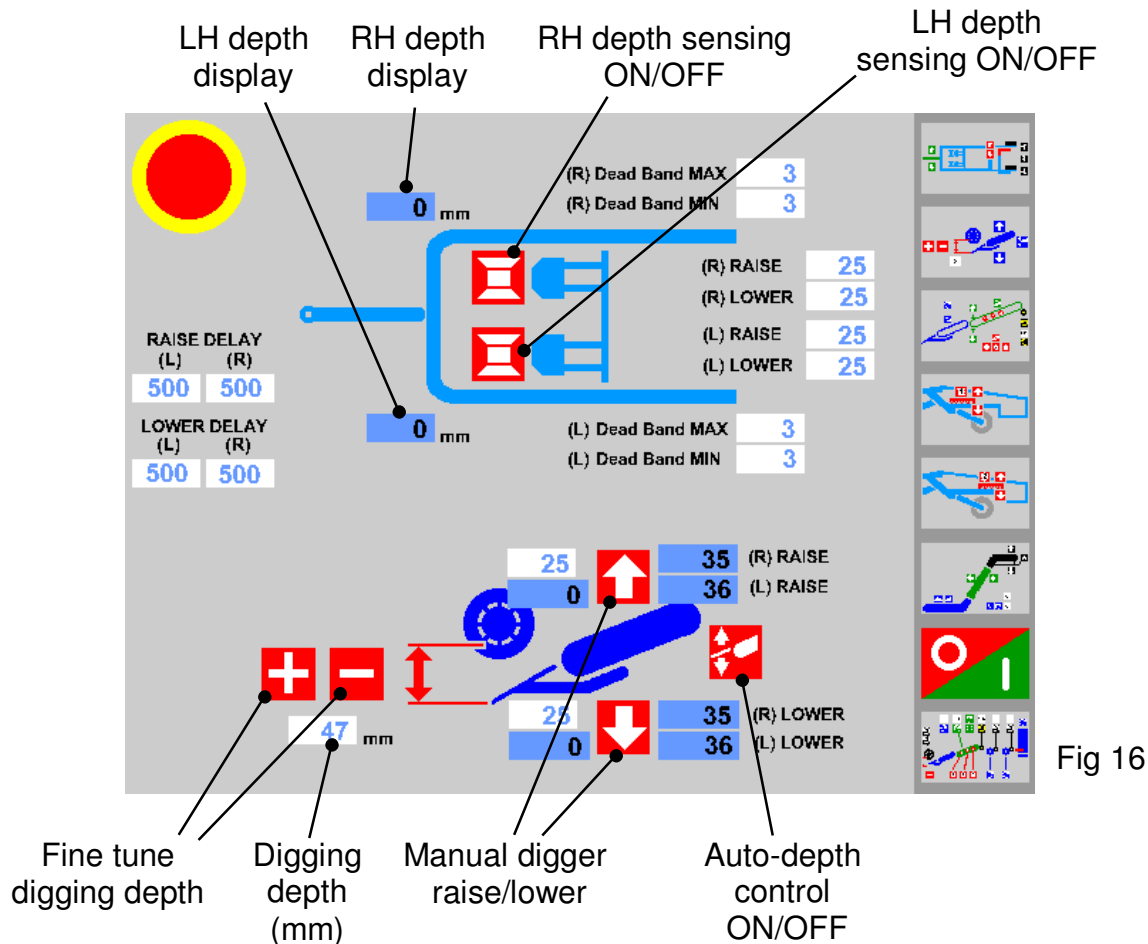


Fig 16

Digger auto-lower/off/manual raise

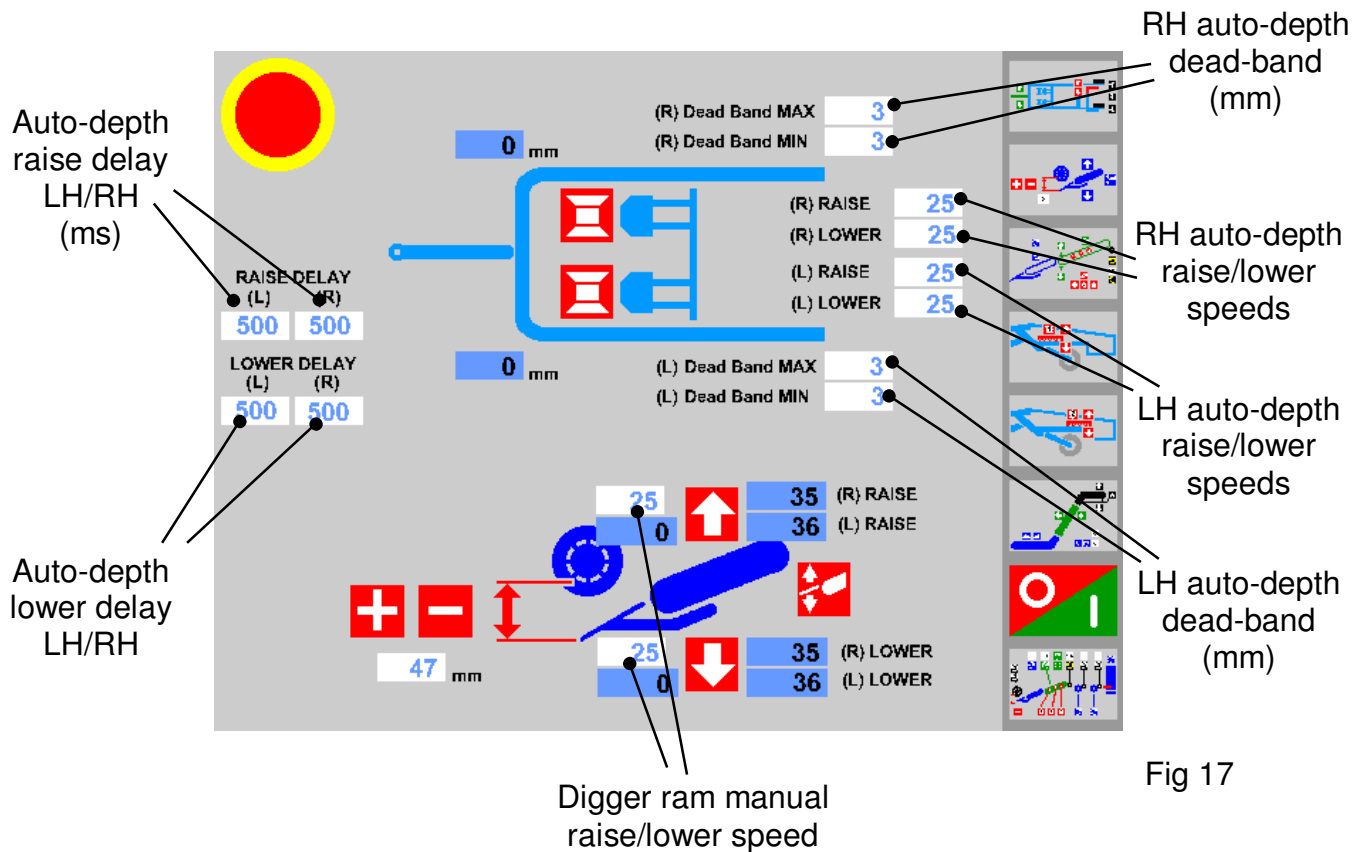
During work, the digger auto-lower/off/manual raise functions can also be controlled from the green rocker switch on the slave box.

Fine tune digging depth

Initial digging depth is manually set as described in the 'automatic depth control' section of the operator's handbook. Fine adjustment can be made using the digging depth + and – buttons on the touch-screen.

LH/RH depth sensing

A depth sensor fitted to each depth wheel (outside wheels only on T3) controls the digger lift ram on that side of the machine. The sensors maintain the correct digging depth across the width of the machine. The working position of the sensors is shown in the RH and LH depth display boxes. If the depth needs to be locked on one side (e.g. because of a bad sprayer wheeling), the LH or RH depth sensing button can be switched off, locking the depth at that position.



Auto-depth raise and lower delay

Sets the digger raise and lower time delays in milliseconds (1000 milliseconds = 1 second). Initially, both sides should be set to the same setting and then adjusted as required.

Auto-depth raise and lower speeds

Sets the raise and lower speeds of the LH and RH digger rams in automatic depth mode.

Auto-depth dead-band

Sets the tolerance in millimetres at which the depth sensors will 'switch'. Initially, set the maximum and minimum figure to 3 on both sides and then adjust as necessary during work. The maximum and minimum figures added together create the total dead-band e.g. 3mm up + 3mm down = 6mm dead-band.

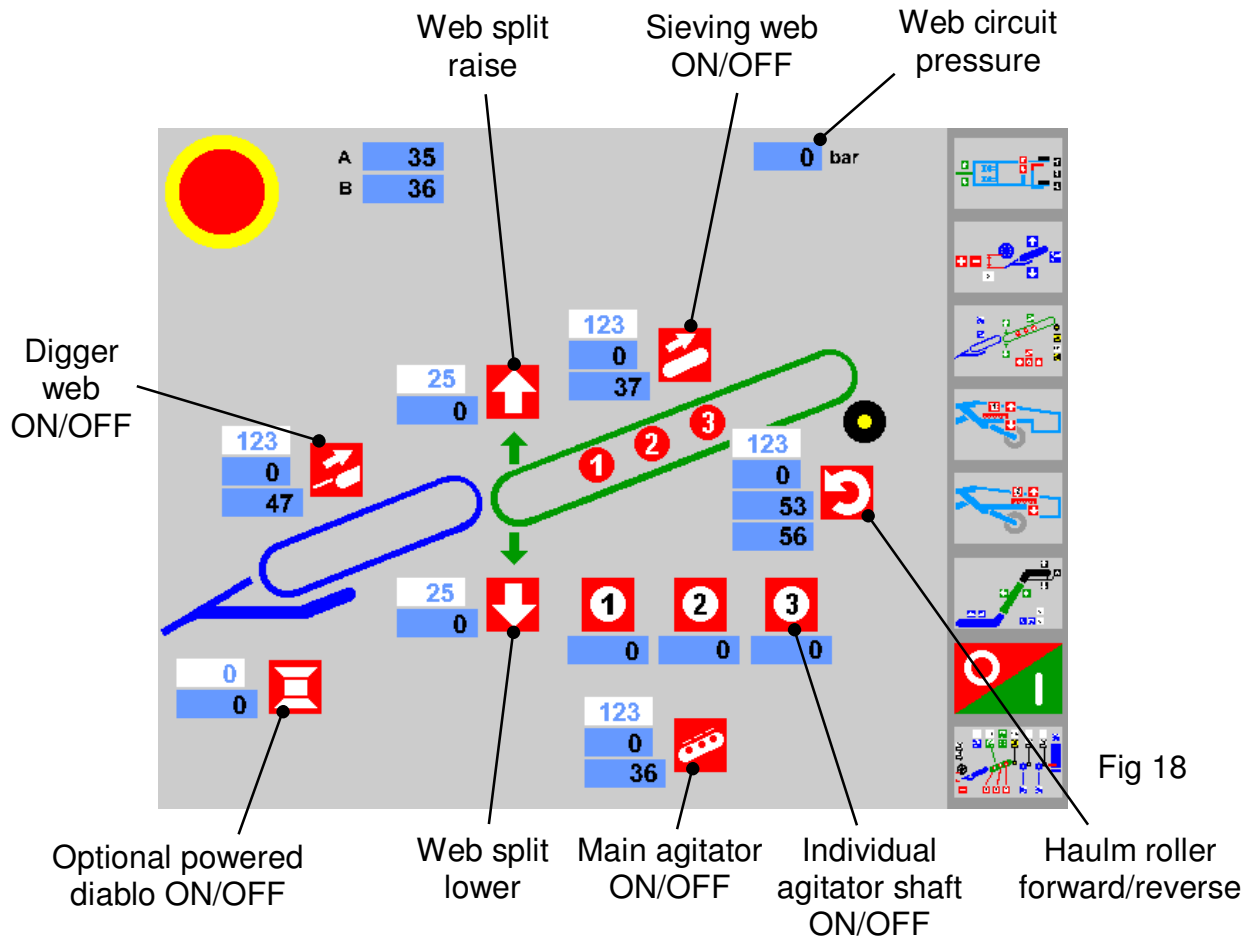
Digger manual raise and lower speed

The raise and lower speed settings apply to both digger rams when operated manually.

SCREEN 3

Webs Screen

Screen 3 covers web functions, optional powered diablo, agitation, web split, haulm roller speed and rotation.

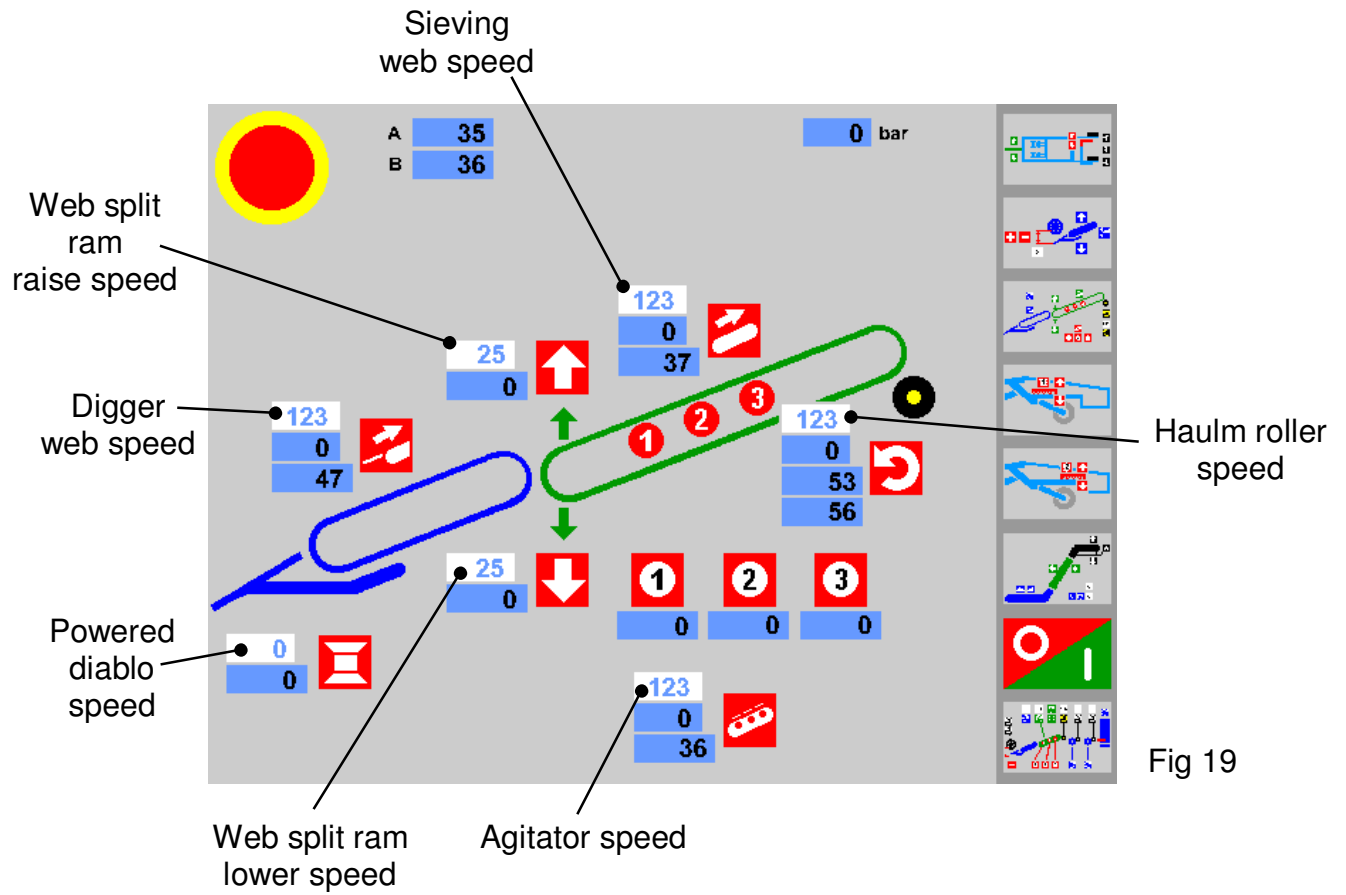


Agitation

During work, main agitator on/off can also be controlled using the orange rocker switch on the slave box.

Web split

During work, web split raise/lower can also be controlled using the grey rocker switch on the slave box.



SCREEN 4

Omega 1st Separator Screen

Screen 4 covers omega 1st separator speed, angle and clod roller height and rotation. During work, angle and clod roller heights can also be controlled using the LH joystick secondary functions.

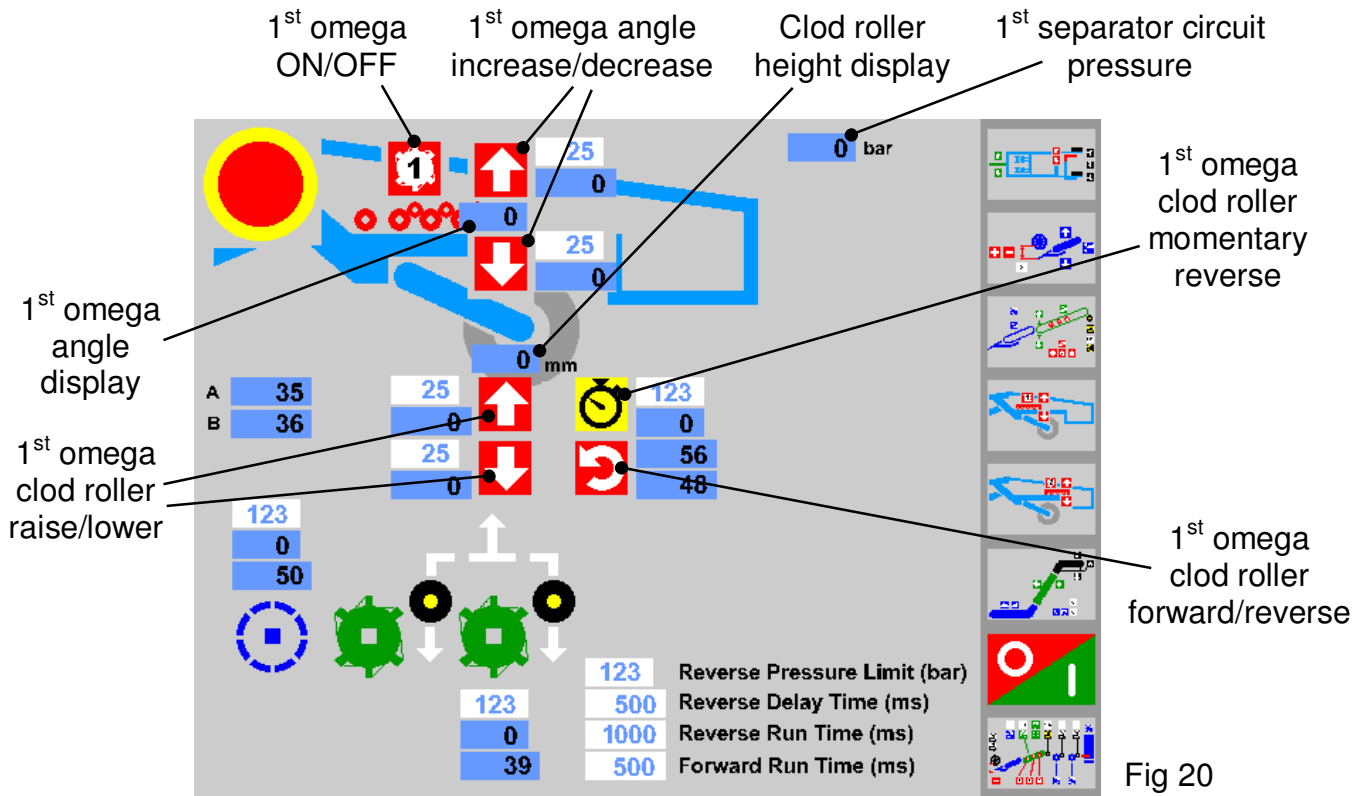


Fig 20

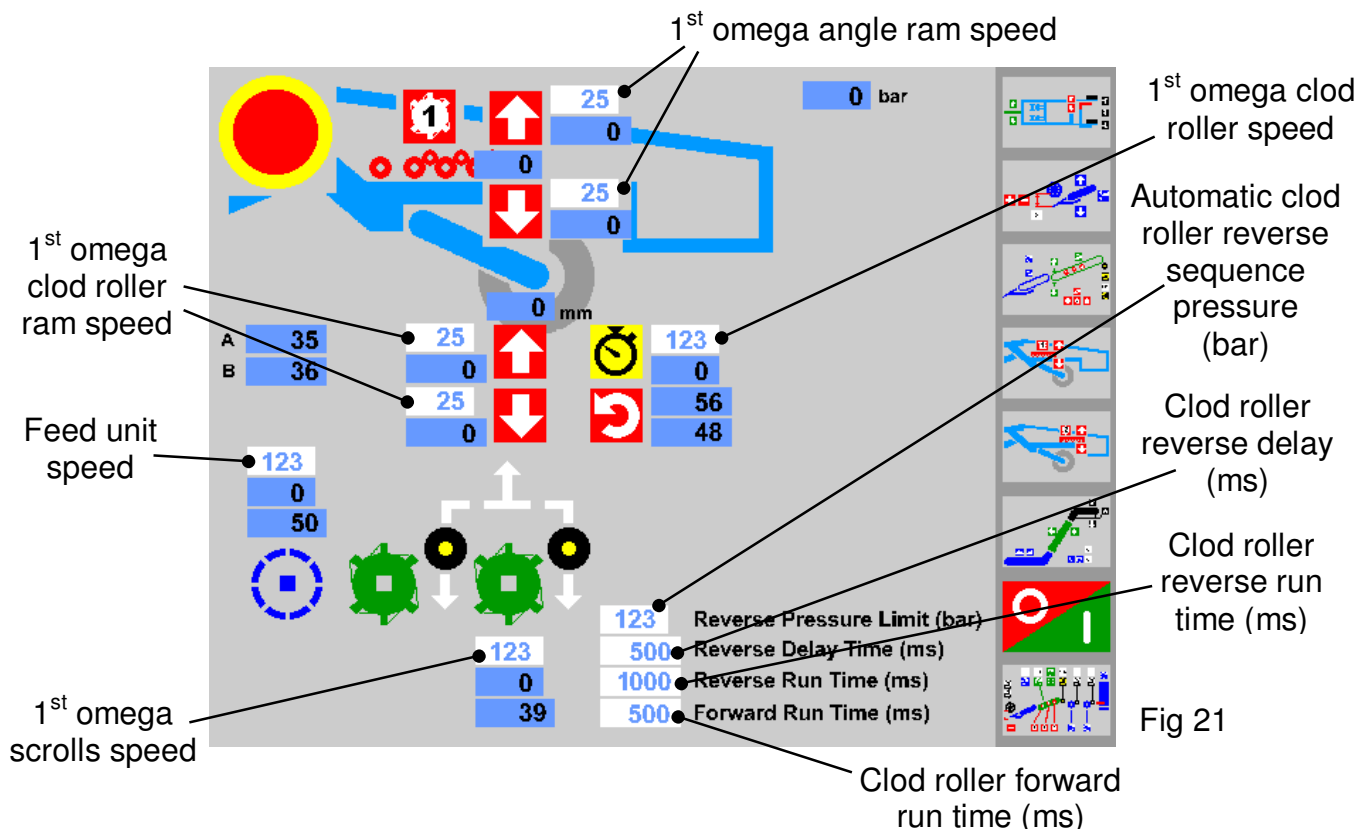


Fig 21

Automatic clod roller reverse pressure

During harvesting it may be necessary to change the pressure at which the rollers reverse. The automatic reverse sequence is triggered by a pressure transducer that senses the operating pressure within the system. Increase or decrease the reverse pressure in small steps until the required operation is achieved.

Roller reverse delay

Sets the time delay in milliseconds before triggering the reverse sequence.
(1000 milliseconds = 1 second).

Roller reverse run time

Sets the length of time in milliseconds that the rollers run in reverse mode when clearing a blockage.

Roller forward run time

Sets the length of time in milliseconds that the rollers run in forward mode before reversing again if the blockage is still present.

Momentary roller reverse

Starts the reverse sequence to allow stones and trash seen by the operator to be ejected before a blockage occurs.

SCREEN 4**Starflow 1st Separator Screen**

Screen 4 covers starflow 1st separator speed and clod roller rotation.

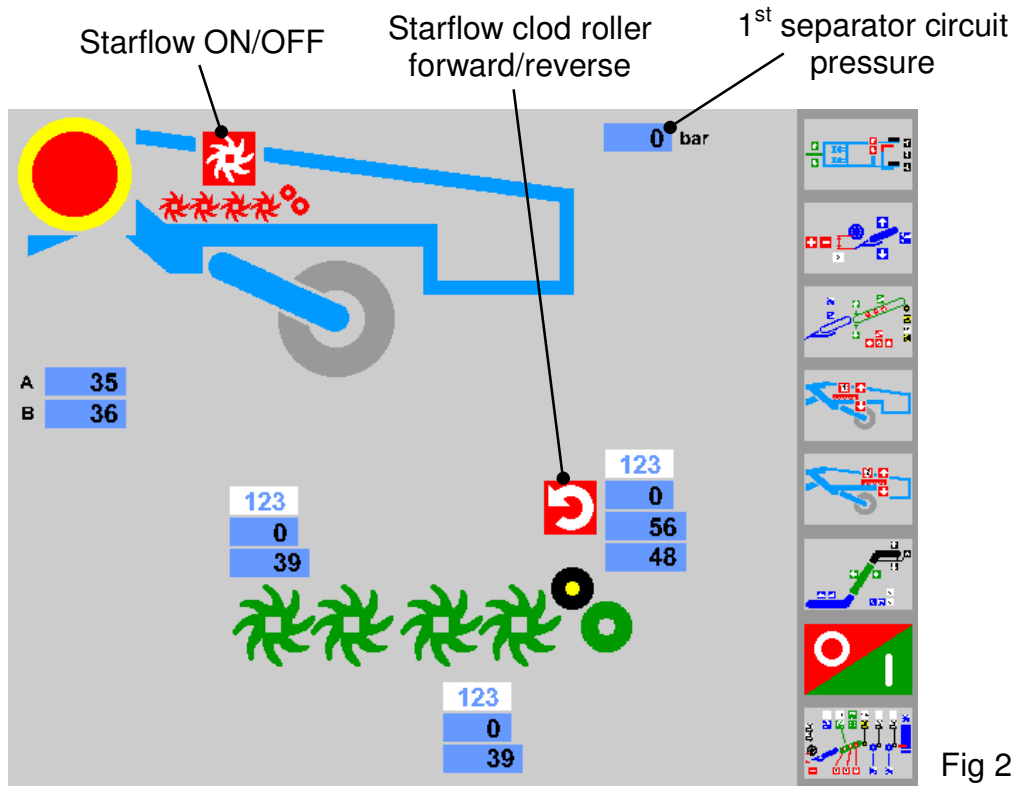


Fig 22

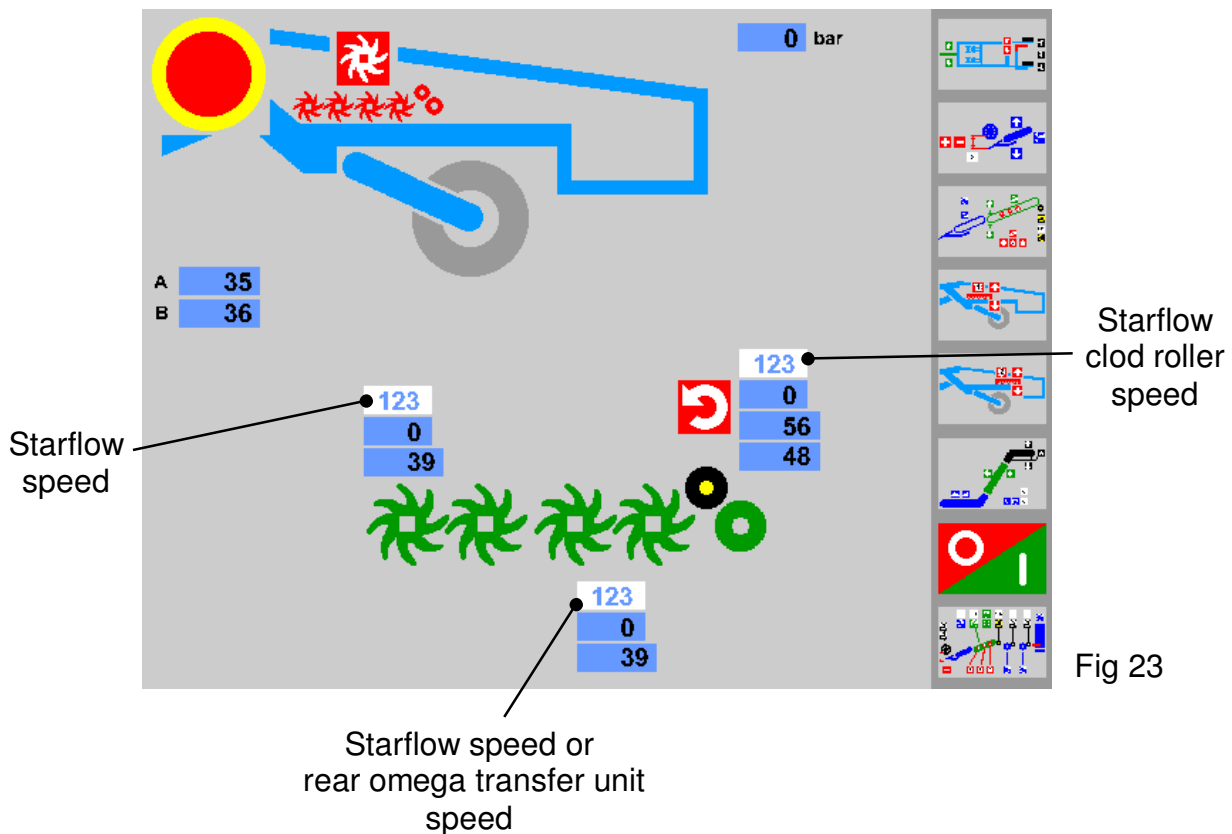


Fig 23

SCREEN 4

Roller Table 1st Separator Screen

Screen 4 covers roller table 1st separator speed, angle and reverse pressure settings. During work, table angle can also be controlled using the LH joystick secondary functions.

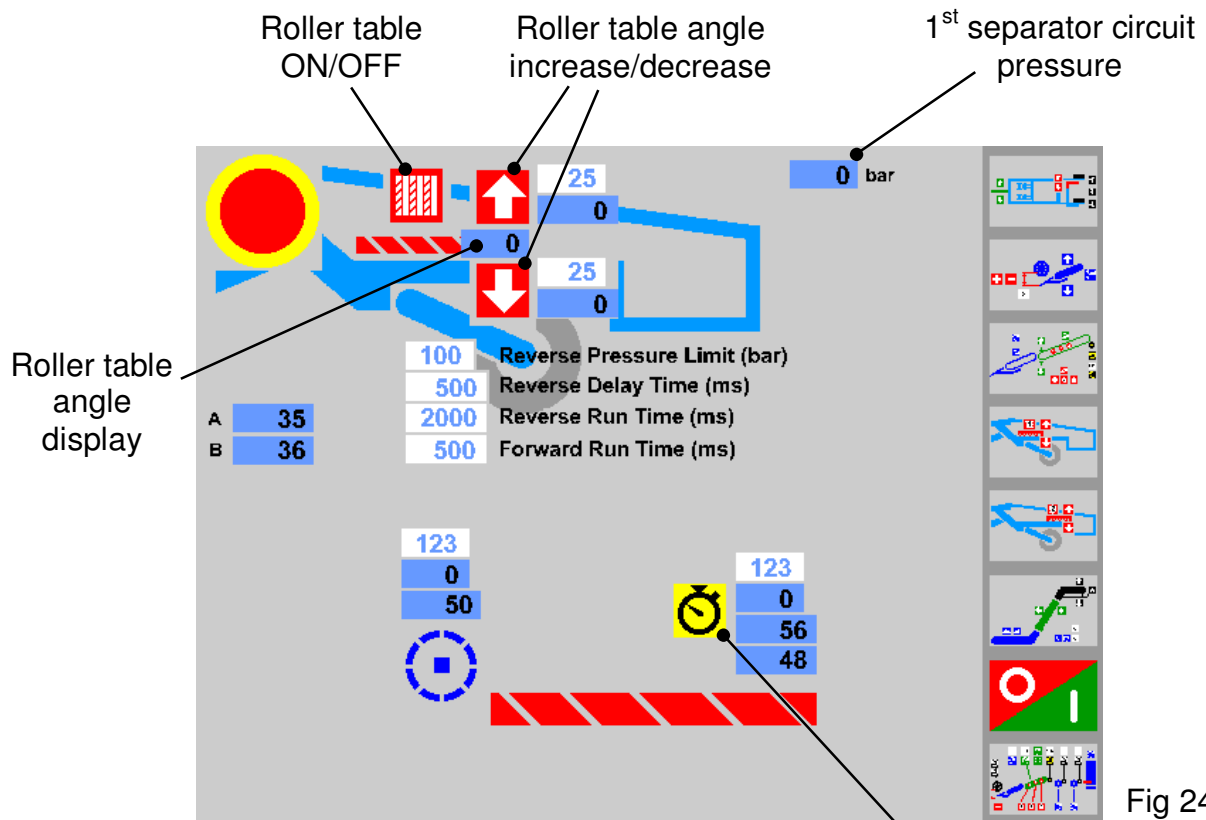


Fig 24

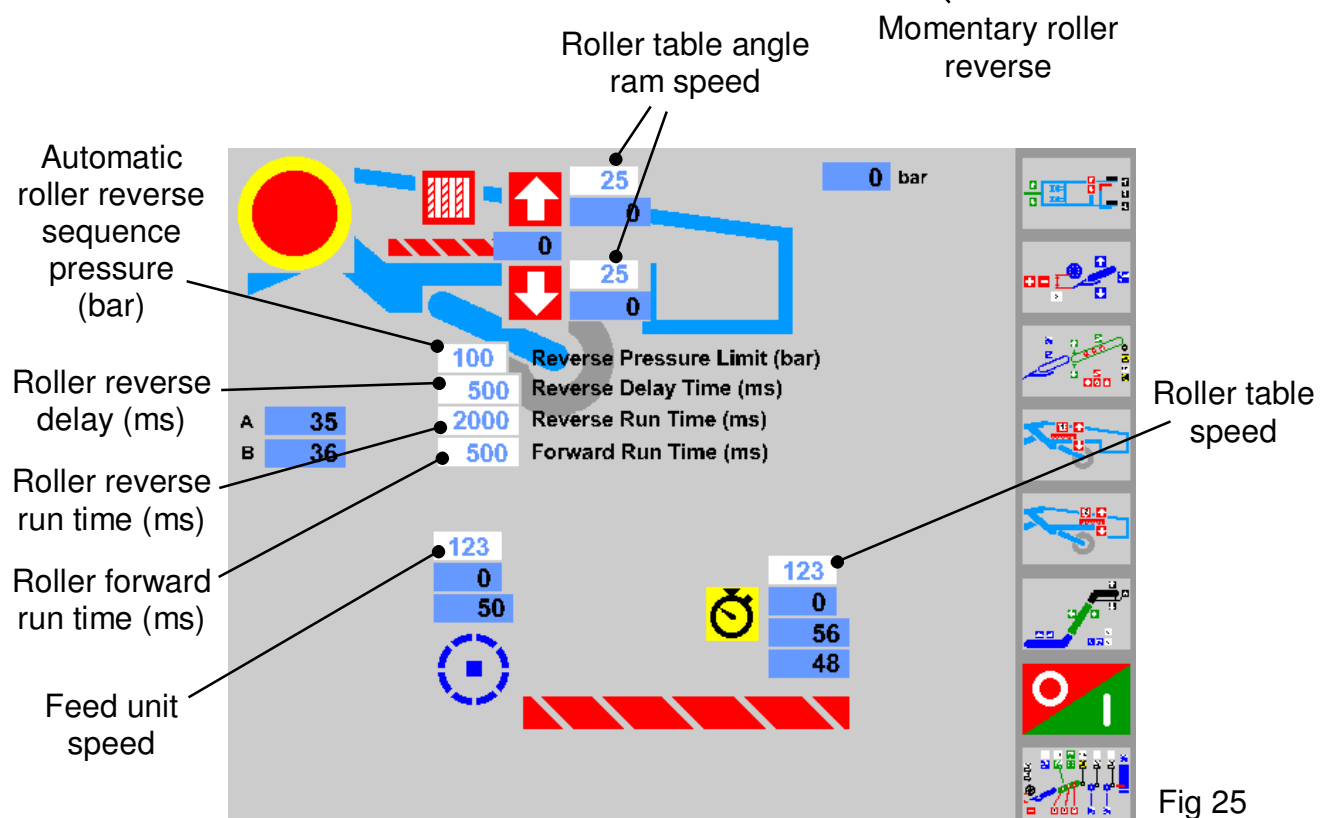


Fig 25

Automatic roller table reverse pressure

During harvesting it may be necessary to change the pressure at which the rollers reverse. The automatic reverse sequence is triggered by a pressure transducer that senses the operating pressure within the system. Increase or decrease the reverse pressure in small steps until the required operation is achieved.

Roller reverse delay

Sets the time delay in milliseconds before triggering the reverse sequence.
(1000 milliseconds = 1 second).

Roller reverse run time

Sets the length of time in milliseconds that the rollers run in reverse mode when clearing a blockage.

Roller forward run time

Sets the length of time in milliseconds that the rollers run in forward mode before reversing again if the blockage is still present.

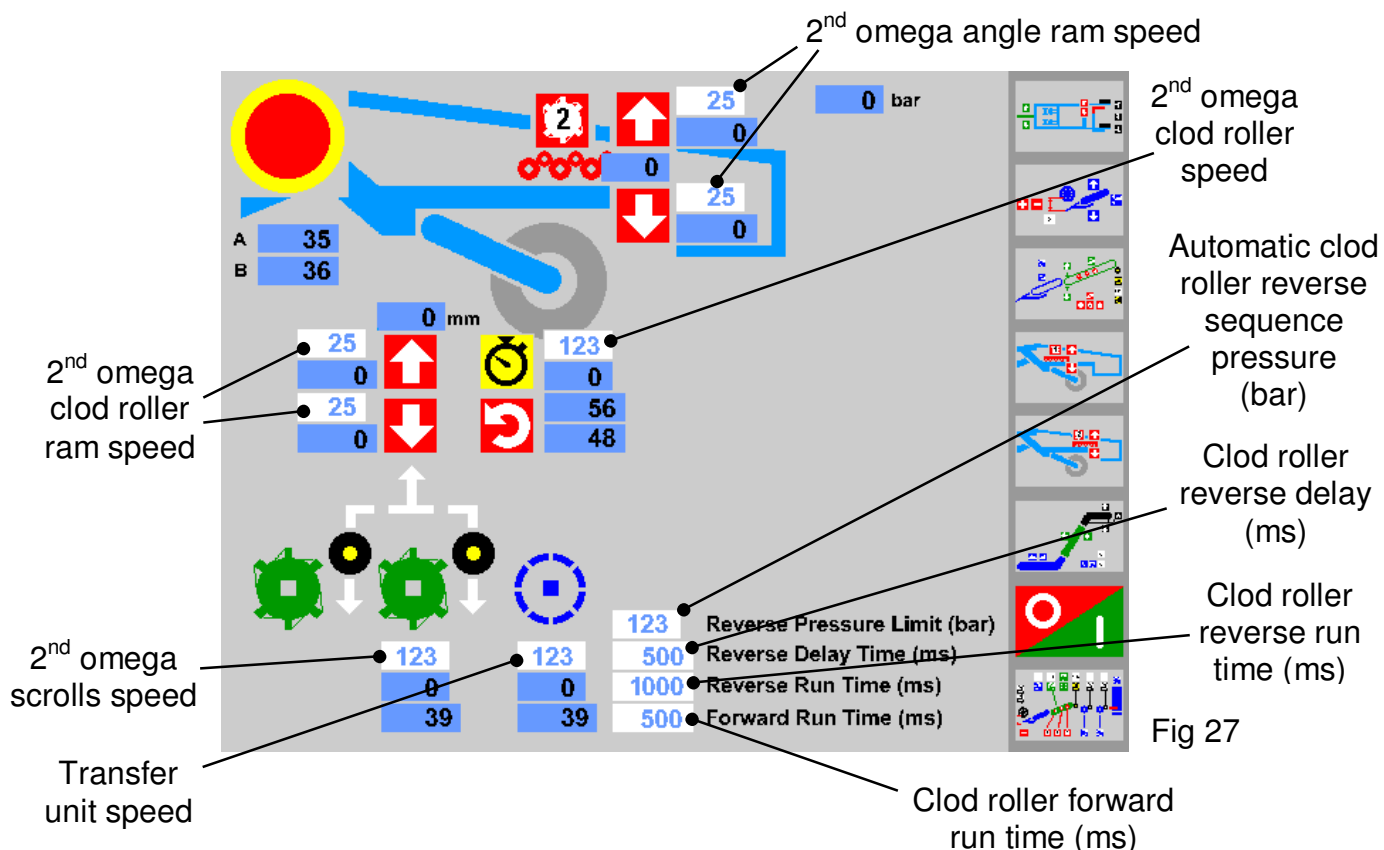
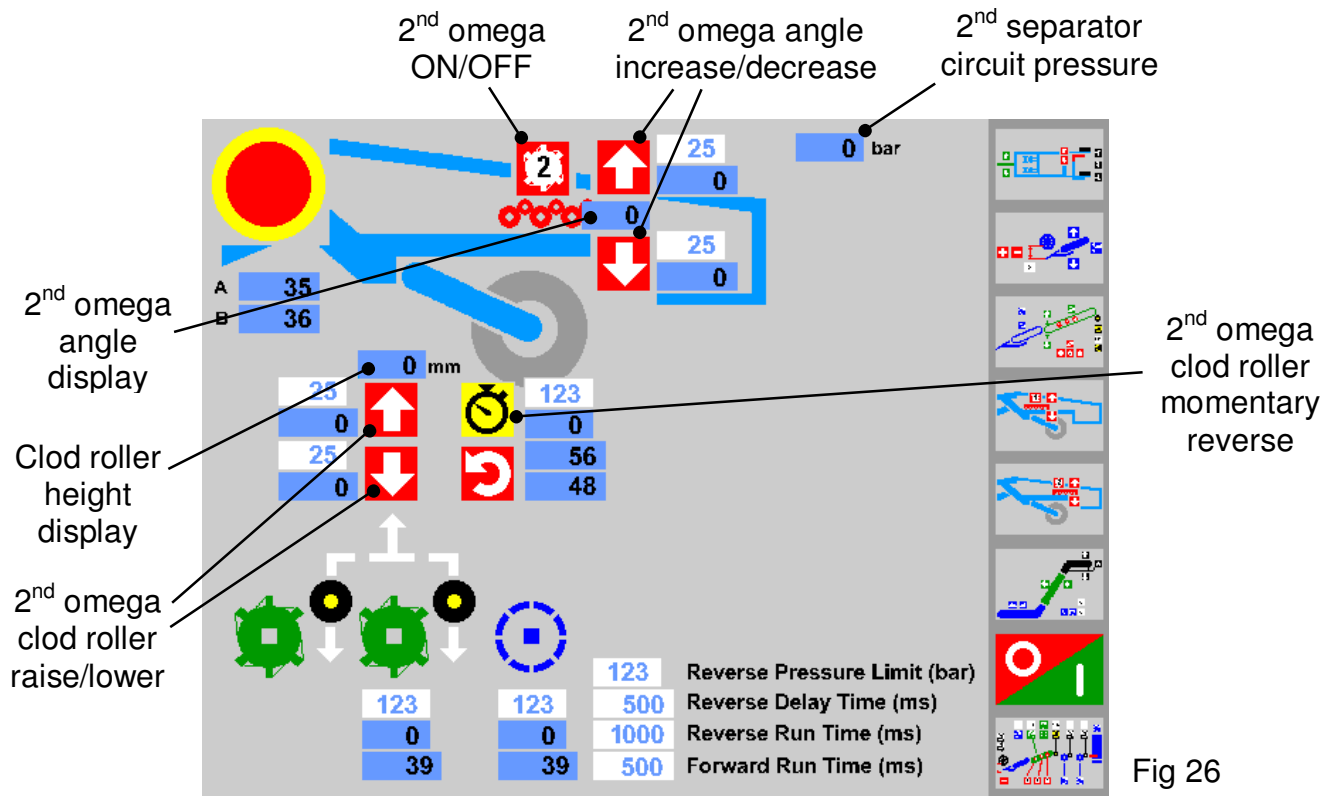
Momentary roller reverse

Starts the reverse sequence to allow stones and trash seen by the operator to be ejected before a blockage occurs.

SCREEN 5

Omega 2nd Separator Screen

Screen 5 covers omega 2nd separator speed, angle and clod roller height and rotation. During work, angle and clod roller heights can also be controlled using the RH joystick secondary functions.



Automatic clod roller reverse pressure

During harvesting it may be necessary to change the pressure at which the rollers reverse. The automatic reverse sequence is triggered by a pressure transducer that senses the operating pressure within the system. Increase or decrease the reverse pressure in small steps until the required operation is achieved.

Roller reverse delay

Sets the time delay in milliseconds before triggering the reverse sequence.
(1000 milliseconds = 1 second).

Roller reverse run time

Sets the length of time in milliseconds that the rollers run in reverse mode when clearing a blockage.

Roller forward run time

Sets the length of time in milliseconds that the rollers run in forward mode before reversing again if the blockage is still present.

Momentary roller reverse

Starts the reverse sequence to allow stones and trash seen by the operator to be ejected before a blockage occurs.

SCREEN 5

Galaxy 2nd Separator Screen

Screen 5 covers galaxy 1st separator speed and clod roller rotation.

Clod roller forward
run time (ms)

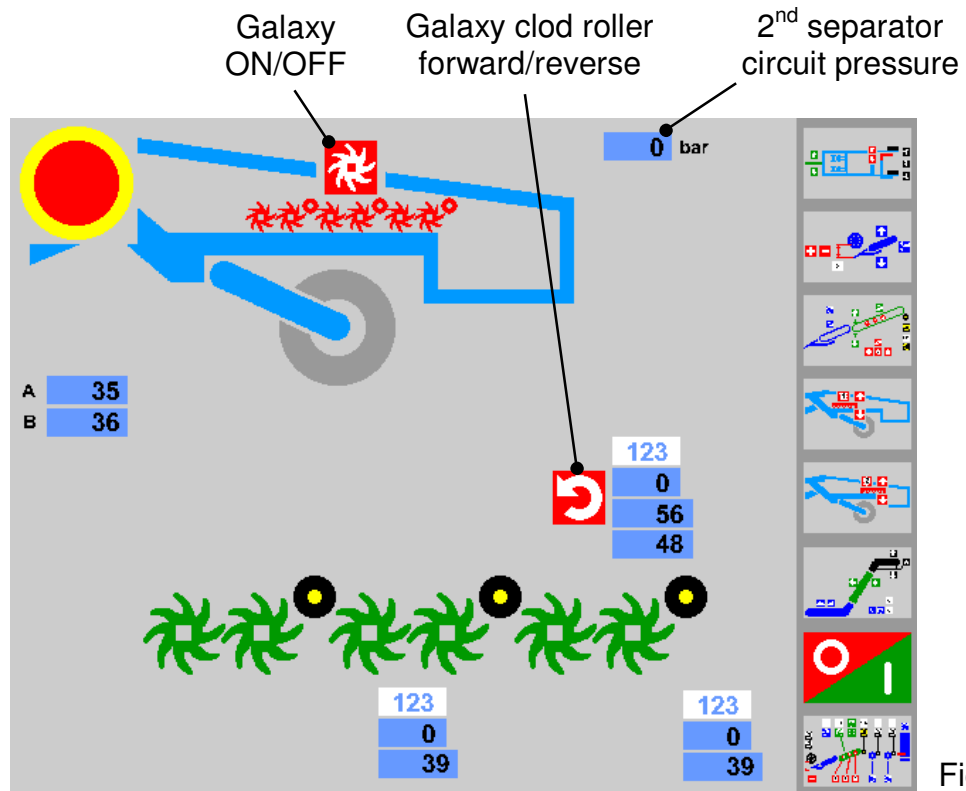


Fig 28

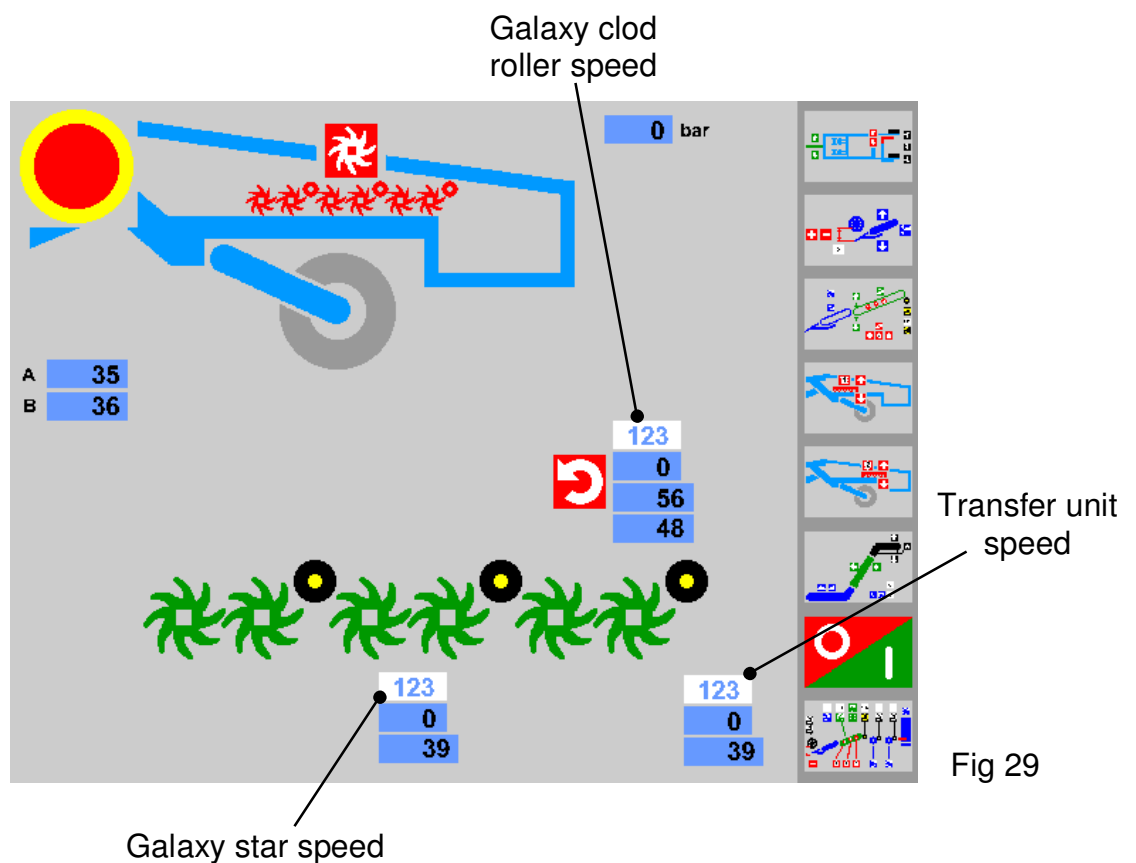
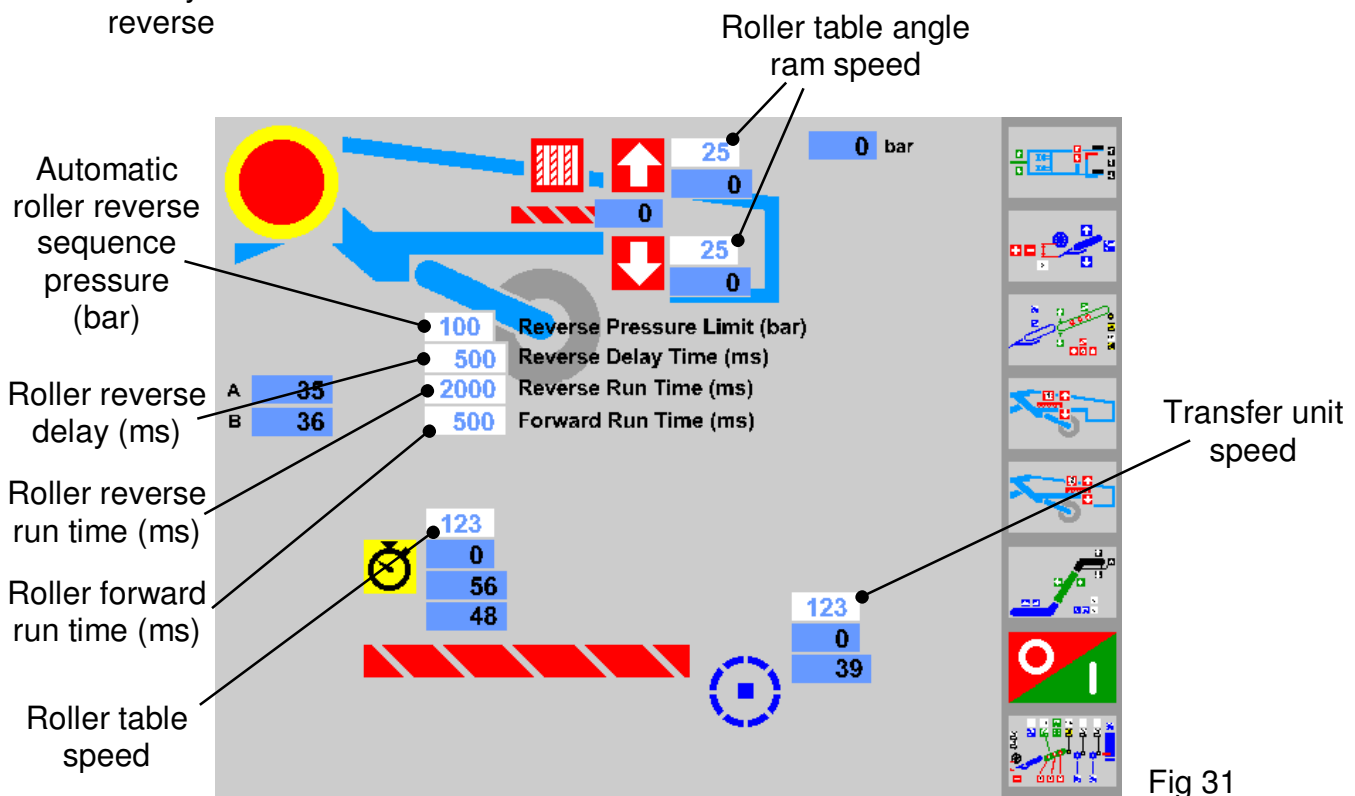
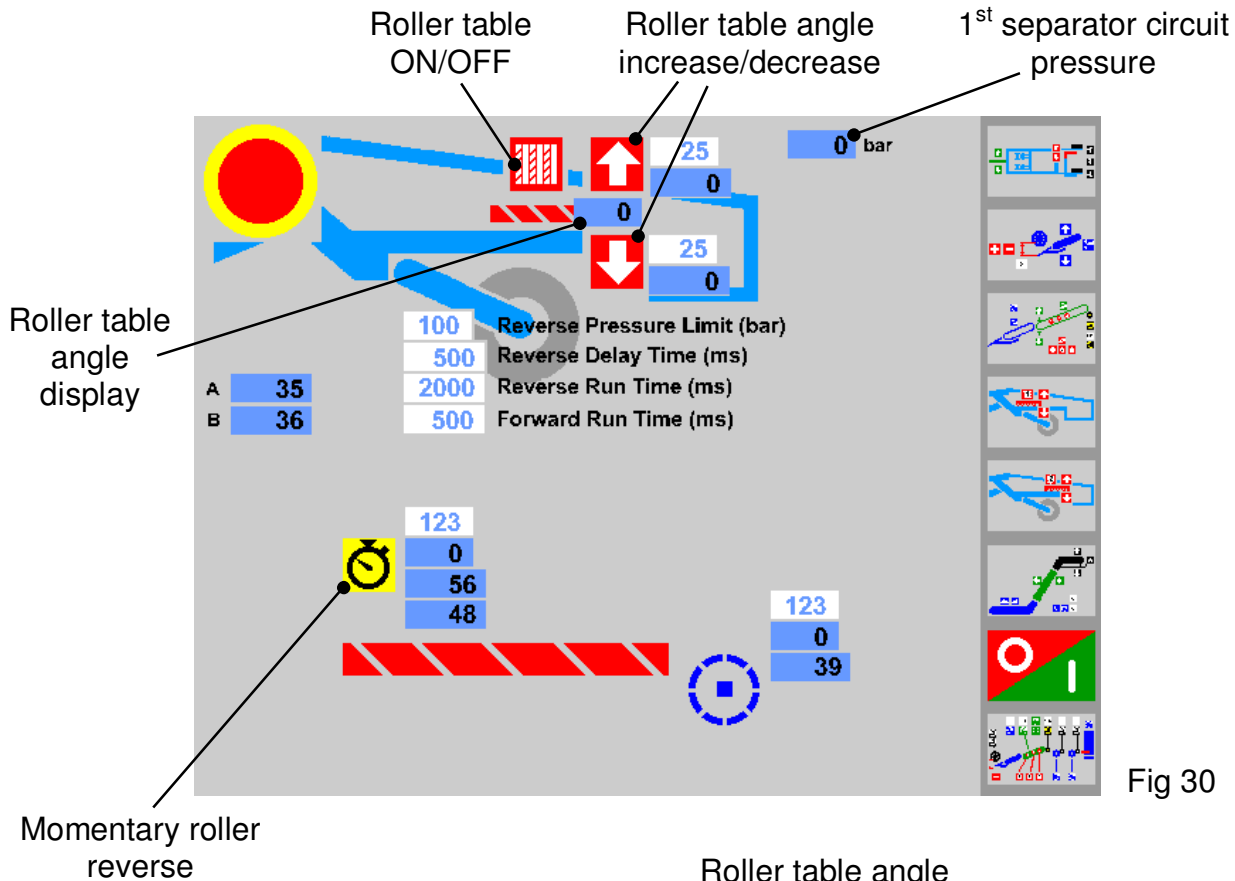


Fig 29

SCREEN 5**Roller Table 2nd Separator Screen**

Screen 5 covers roller table 2nd separator speed, angle and reverse pressure settings. During work, table angle can also be controlled using the LH joystick secondary functions.



Automatic roller table reverse pressure

During harvesting it may be necessary to change the pressure at which the rollers reverse. The automatic reverse sequence is triggered by a pressure transducer that senses the operating pressure within the system. Increase or decrease the reverse pressure in small steps until the required operation is achieved.

Roller reverse delay

Sets the time delay in milliseconds before triggering the reverse sequence.
(1000 milliseconds = 1 second).

Roller reverse run time

Sets the length of time in milliseconds that the rollers run in reverse mode when clearing a blockage.

Roller forward run time

Sets the length of time in milliseconds that the rollers run in forward mode before reversing again if the blockage is still present.

Momentary roller reverse

Starts the reverse sequence to allow stones and trash seen by the operator to be ejected before a blockage occurs.

SCREEN 6**Spreader / Table and Elevator Screen**

During work, elevator fold and swan neck height can be controlled using the RH joystick.

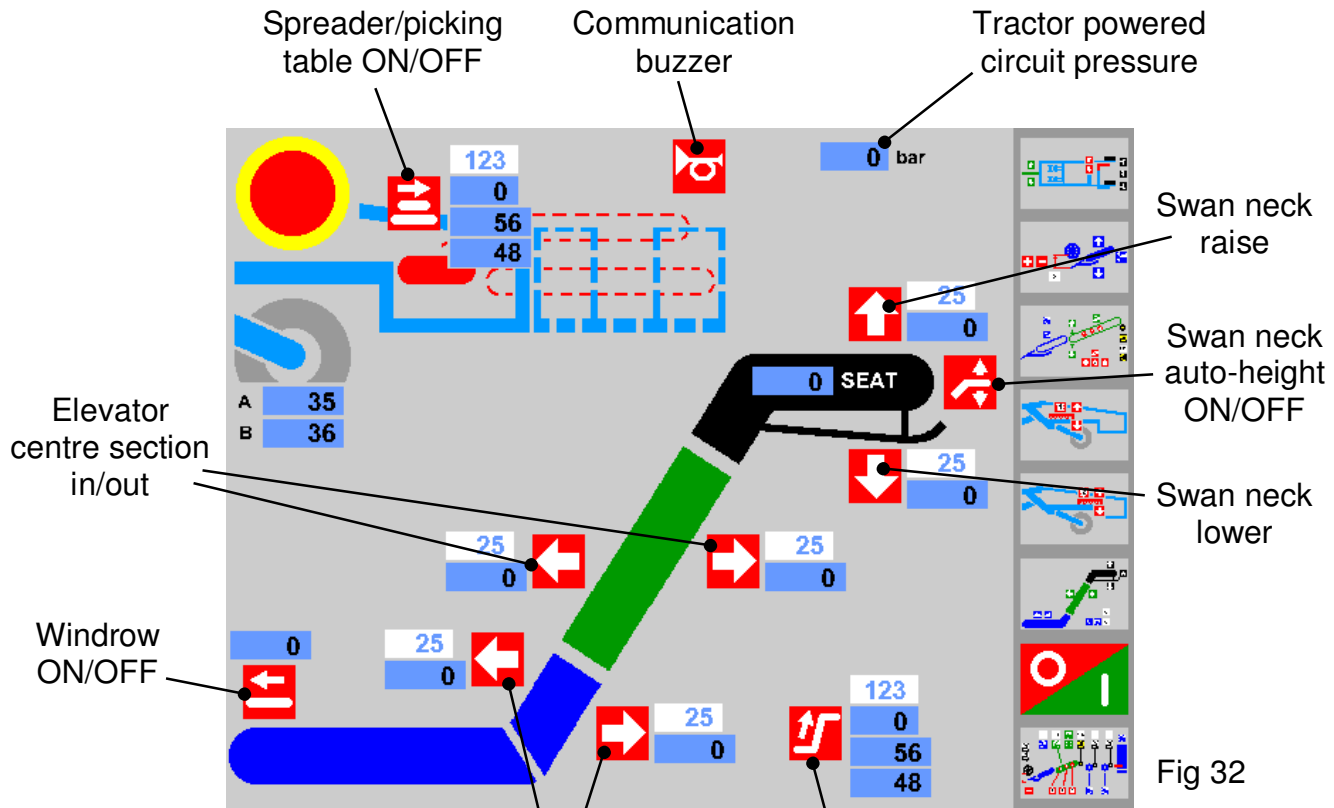


Fig 32

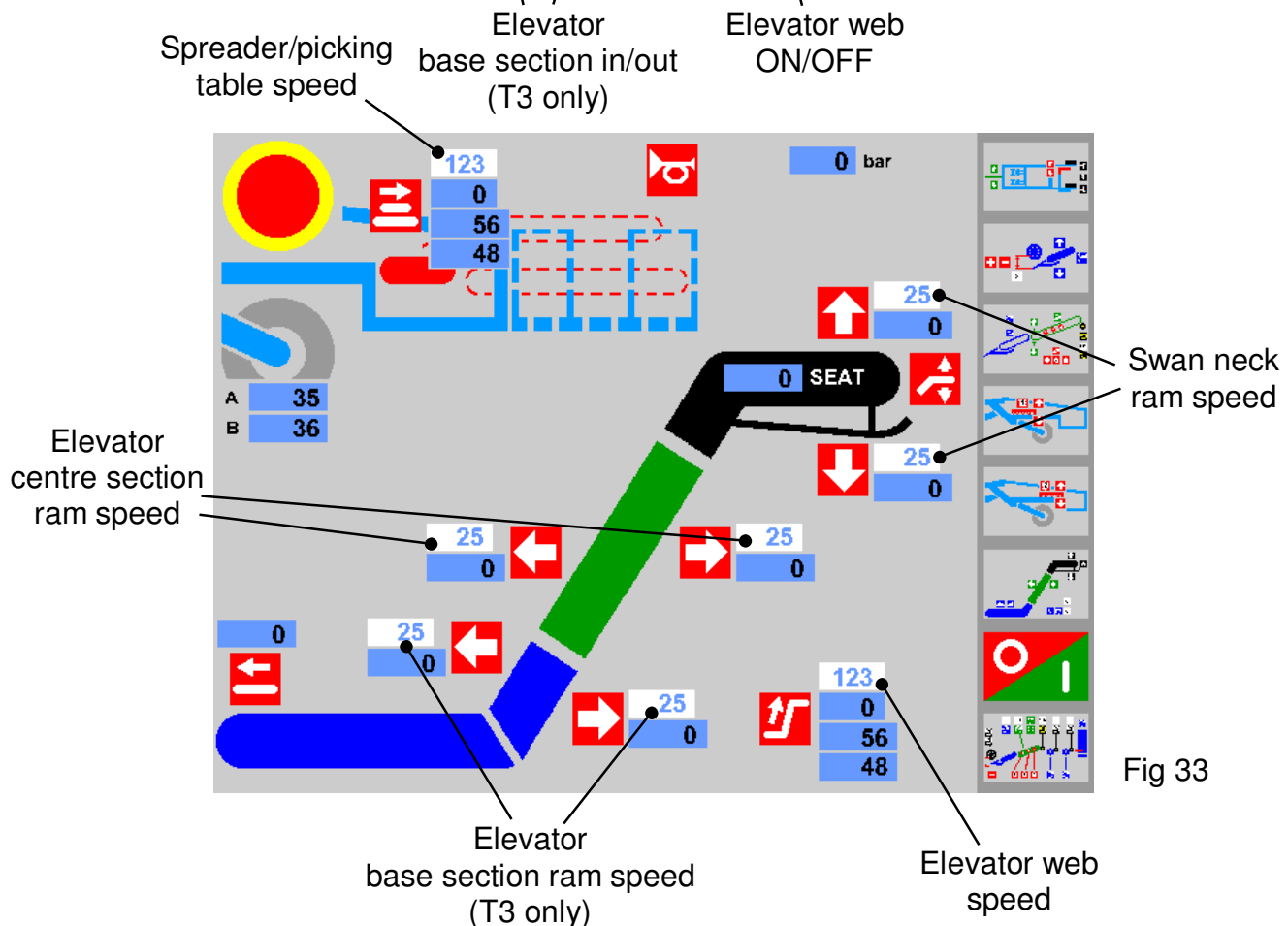


Fig 33

SCREEN 7

Programming Screen

Screen 7 covers save/load speed program, headland start/stop sequence programming and restore system default settings.

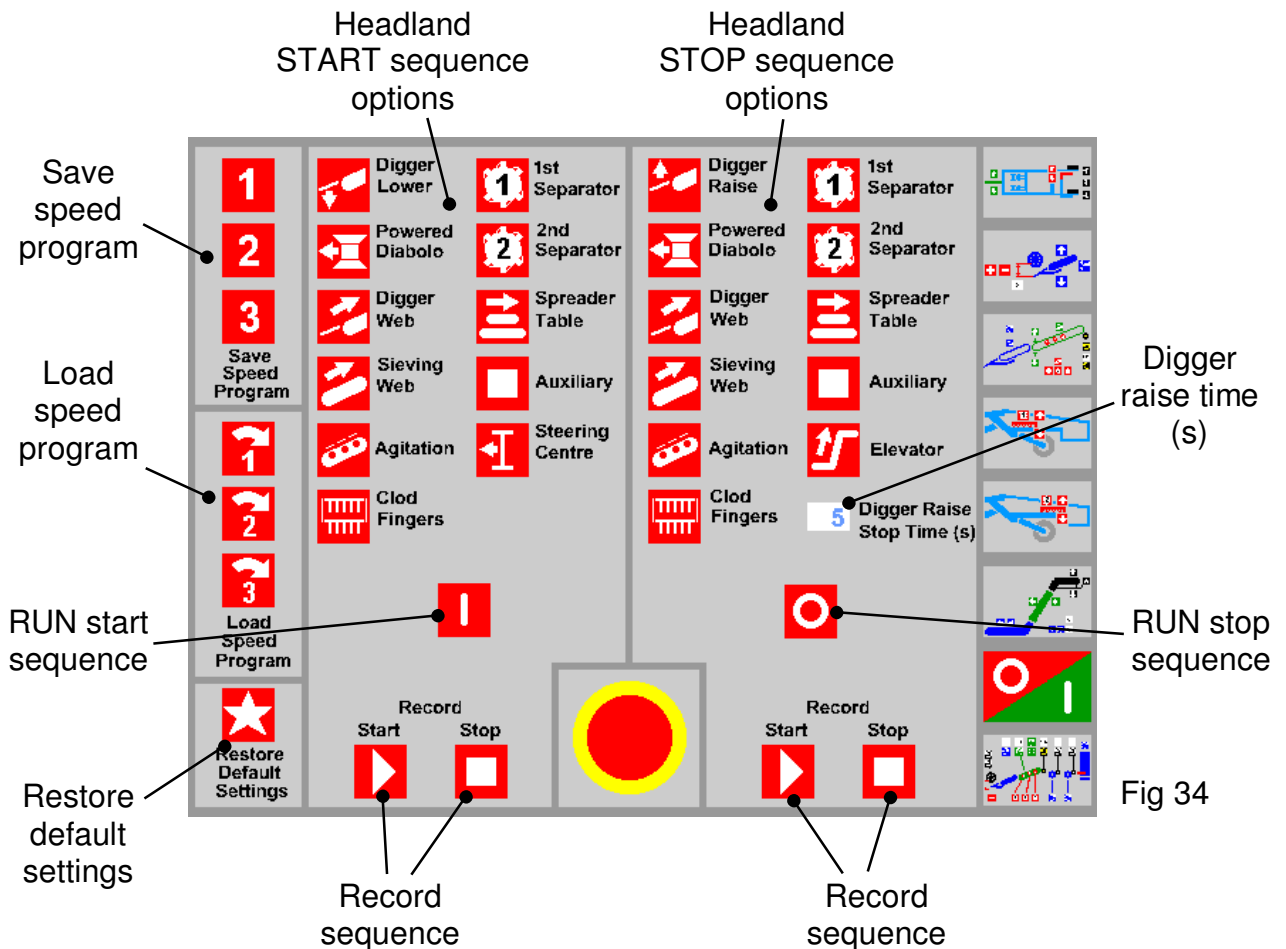




Fig 34

Speed programs

The ideal speed set-up for harvesting conditions in different parts of a field can be saved by the operator using the SAVE SPEED PROGRAM buttons. The speed, angle and height settings of all the harvester elements are saved.

To save the present harvester settings press . Pressing the save button will overwrite any previous settings saved under that button.

To reload the saved settings press .



Three individual speed programs can be set.

Headland START and STOP sequences

A headland start sequence and stop sequence can be recorded into the system to automatically start/stop the elements and lift the digger out of work.



To program the START sequence


In the START options area:


1. Press the start RECORD button .
2. In real time, select the elements in the order you want them to start.
3. Press the record STOP button .
4. The START sequence is recorded into the memory.


To program the STOP sequence

In the STOP options area:

1. Press the record START button .
2. In real time, select the elements in the order you want them to STOP.
3. Press the record STOP button .
4. The STOP sequence is recorded into the memory.

Note: If the digger raise button  has been selected in the STOP sequence, the digger raise time parameter should be set. Usually, 5 seconds in raise is sufficient for the digger to clear the bed.

Press  to run the START sequence.

Press  to run the STOP sequence.

During work, the headland program sequences can be run using the red rocker switch on the slave box.

ESC (x1)

Machine Configuration Screen

Pressing the ESC button once displays the machine configuration screen. This screen covers machine type (T2 or T3), 1st & 2nd separator type and icon selection for optional equipment.

These settings must be configured to your machine for the screens to display and function correctly.

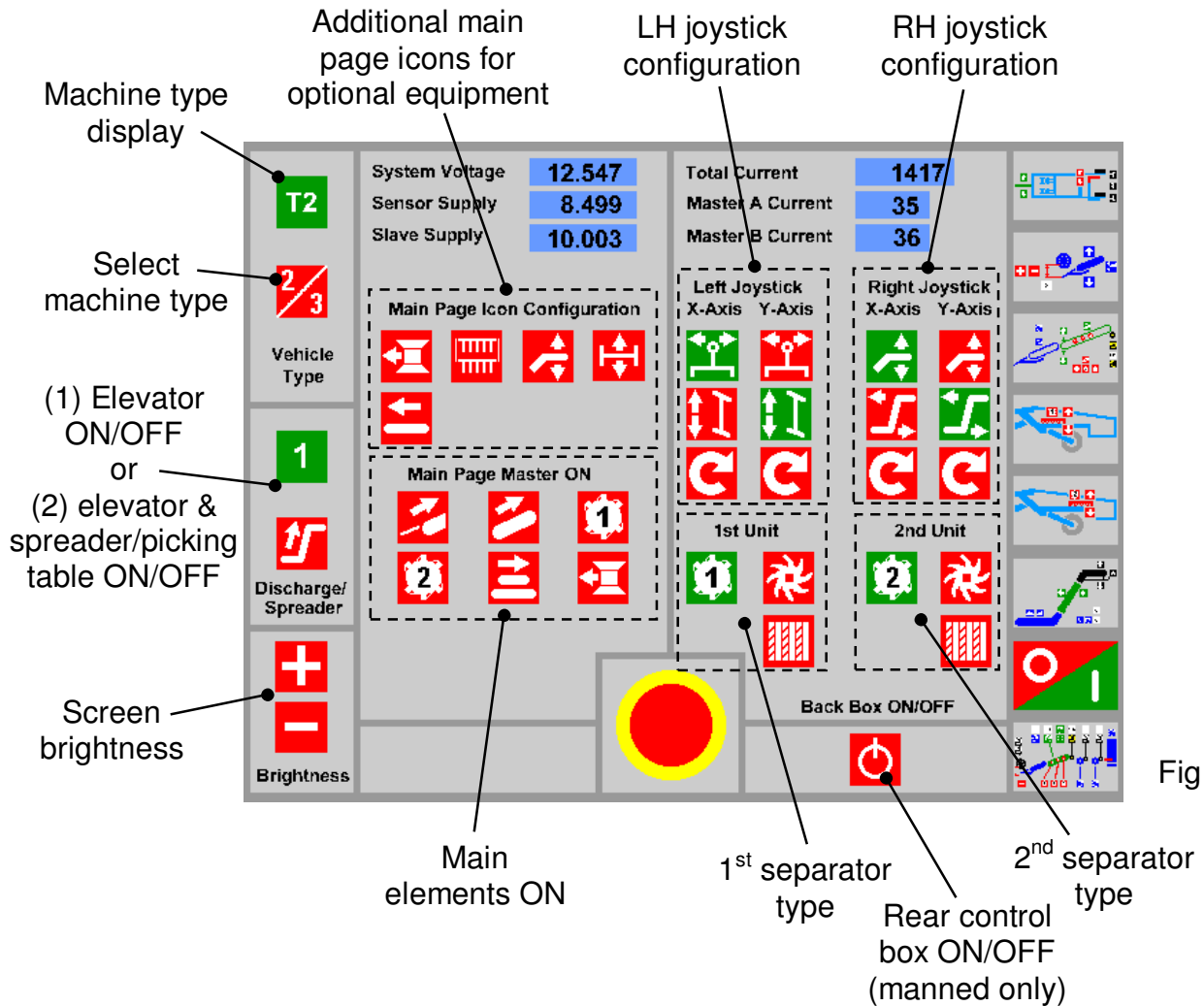







Fig 35

Main Page Icon Configuration


The icons in this area allow the operator to select optional equipment fitted to the machine. When selected they will display on the main screen (<< 8).

Powered diabolo , clod fingers , elevator auto-height ,
auto-machine level , windrow .

Main Page Master ON

The elements in this area can be selected to start simultaneously. Pressing the 'MAIN ELEMENTS ON' button on the main screen (<< 8) will start the selected elements.

Discharge/Spreader Icon Configuration

The elevator ON/OFF icon  can be configured to one of these settings:

Setting (1): Switches the elevator ON/OFF only.

Setting (2): Switches the elevator and spreader/picking table ON/OFF simultaneously.

Left/Right Joystick Configuration

Allows the operator to choose preferred joystick axis settings.

X-axis = left/right. Y-axis = up/down.

Select the function you wish to operate on the LH joystick X-axis,



drawbar steer or



axle steer.

The Y-axis defaults to the other function.

Direction of movement can be reversed by pressing the button .

Select the function you wish to operate on the RH joystick X-axis,



swan neck or



elevator fold.

The Y-axis defaults to the other function.

Direction of movement can be reversed by pressing the button .

1st Unit Configuration

Selects the 1st separator fitted to the machine. Omega, starflow or roller table.

2nd Unit Configuration

Selects the 2nd separator fitted to the machine. Omega, galaxy or roller table.

Back Box ON/OFF

On manned machines, a control box is fitted above the picking table allowing the pickers to adjust the picking table speed and axle level etc. If necessary, the control buttons can be isolated using the back box ON/OFF button. The emergency stop buttons remain active.

ESC (x2)

Program Information Screen

Pressing the ESC button twice displays the program version and date.

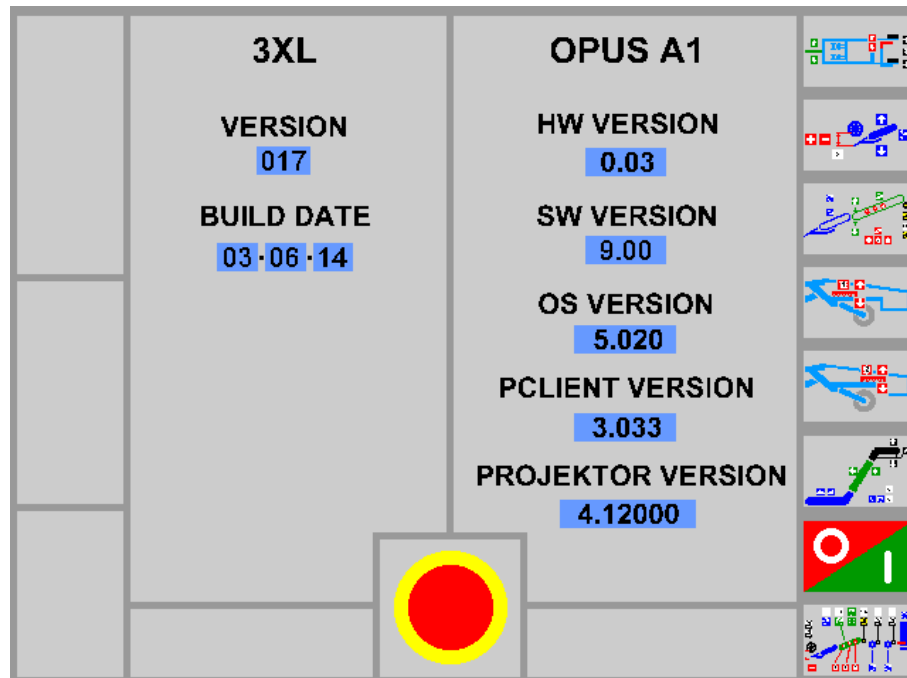


Fig 36

Slave Box Functions

Along with the touch-screen terminal, all commonly used controls are repeated on the slave box.

Slave box switch functions are:

- Item 1 - Touch-screen terminal ON/OFF.
- Item 2 - Start switch for machine control module.
- Item 3 - Headland program start/stop sequence.
- Item 4 - Digger auto-lower/off/manual raise.
- Item 5 - Powered axle drive forward/off/reverse.
- Item 6 - Agitation ON/OFF.
- Item 7 - Web split (VariSep) raise/lower.
- Item 8 - Machine level raise/lower.

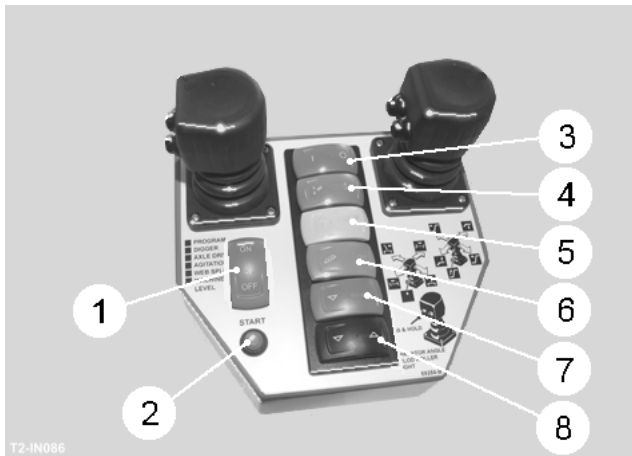


Fig 37

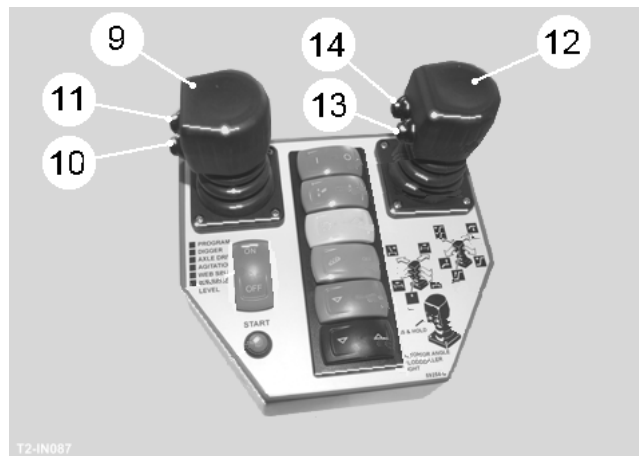


Fig 38

Slave box joystick functions are:

- Item 9 - LH Joystick default functions: Drawbar steer.
Axle steer.
- Item 10 - Axle auto-centre.
- Item 11 - LH Joystick secondary functions: 1st separator clod roller height.
1st separator angle.
- Item 12 - RH Joystick default functions: Elevator fold in/out.
Swan neck raise/lower.
- Item 13 - Elevator ON/OFF.
- Item 14 - RH Joystick secondary functions: 2nd separator clod roller height.
2nd separator angle.

Where slave box functions are duplicates of buttons on the touch-screen terminal, the button on the touch-screen will be highlighted when the slave box switch is operated.

LH joystick functions

LH joystick default functions are drawbar steer and axle steer.

LH joystick secondary functions are 1st separator clod roller height and 1st separator angle. To activate the secondary functions, press and hold the button (item 11, fig 39). Re-centre the joystick before releasing the button.

Note: If the LH joystick fails to operate, centre the joystick and press the secondary function button (item 11, fig 39) once to reactivate it.

RH joystick functions

RH joystick default functions are elevator fold in/out and swan neck raise/lower.

RH joystick secondary functions are 2nd separator clod roller height and 2nd separator angle. To activate the secondary functions, press and hold the button (item 14, fig 39). Re-centre the joystick before releasing the button.

Note: If the RH joystick fails to operate, centre the joystick and press the secondary function button (item 14, fig 39) once to reactivate it.

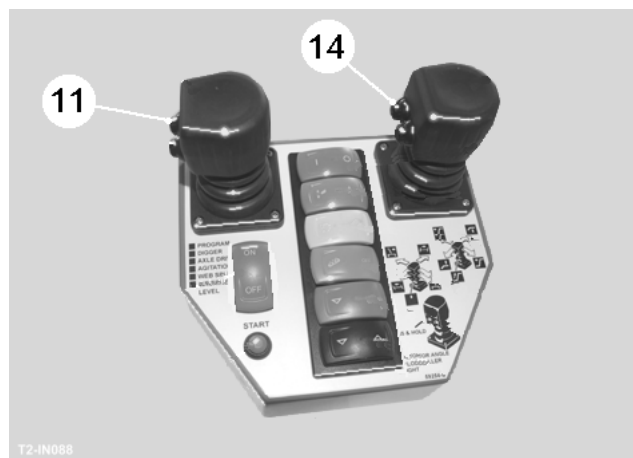
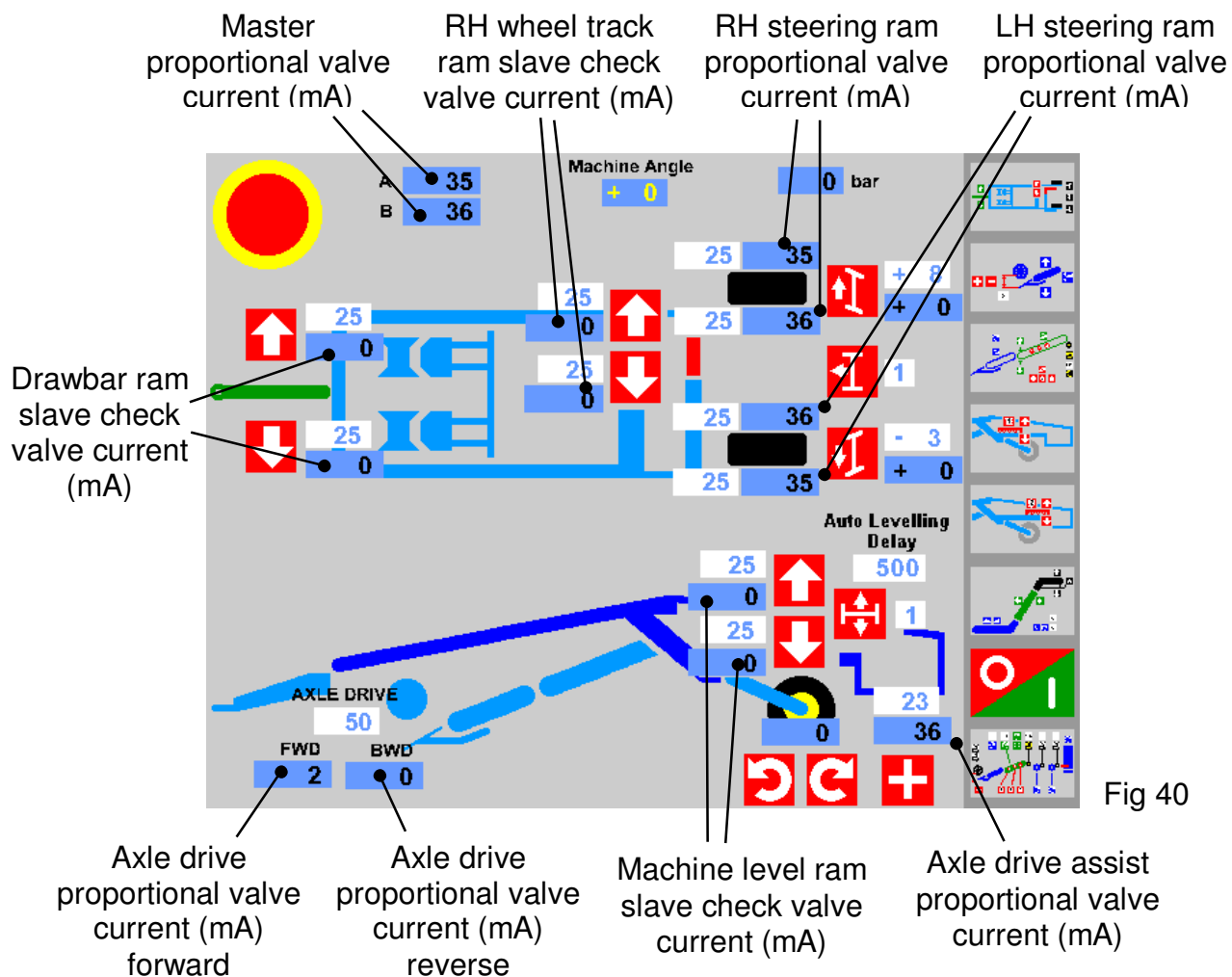


Fig 39

SCREEN 1 Diagnostics

Chassis and Axle



SCREEN 2 Diagnostics Digger Depth Control

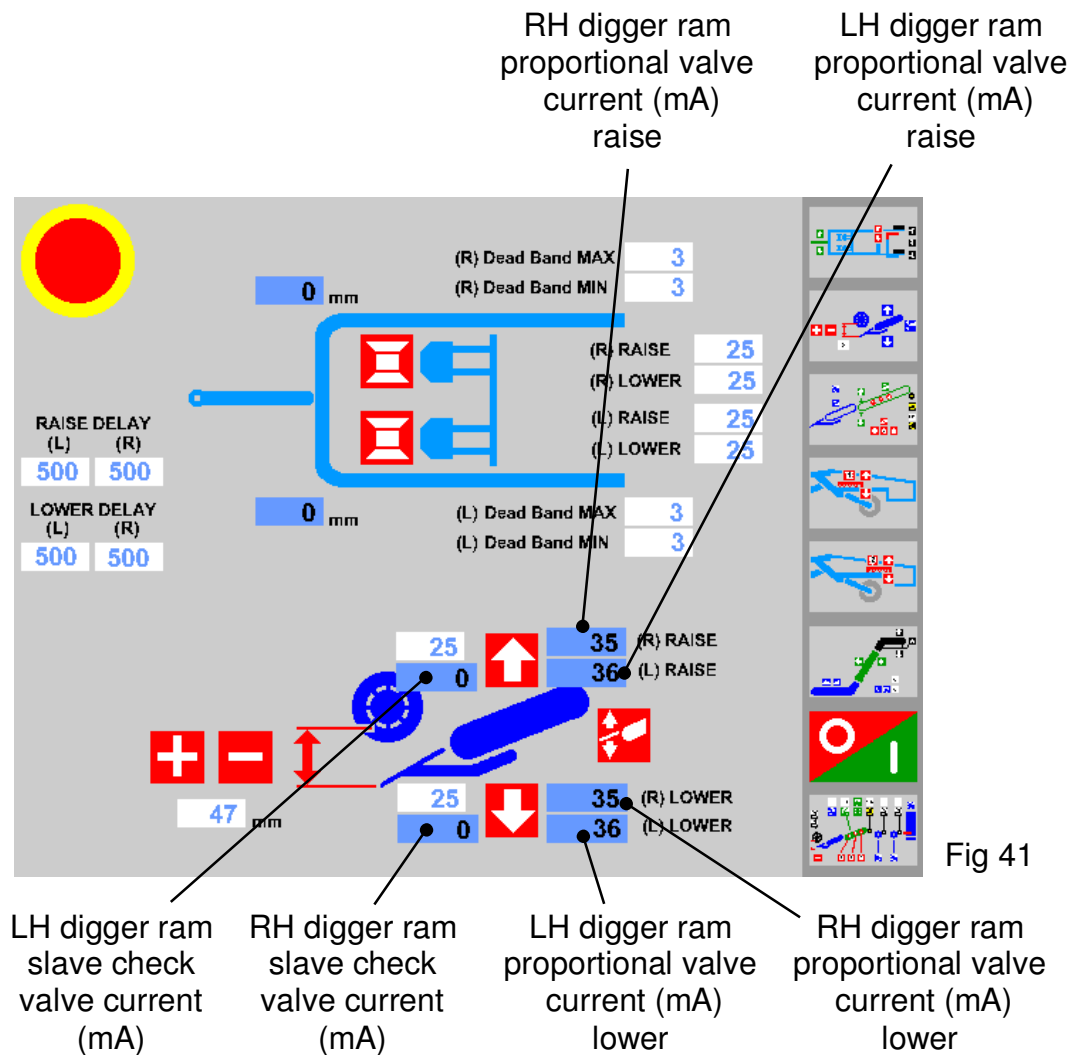


Fig 41

SCREEN 3 Diagnostics

Webs

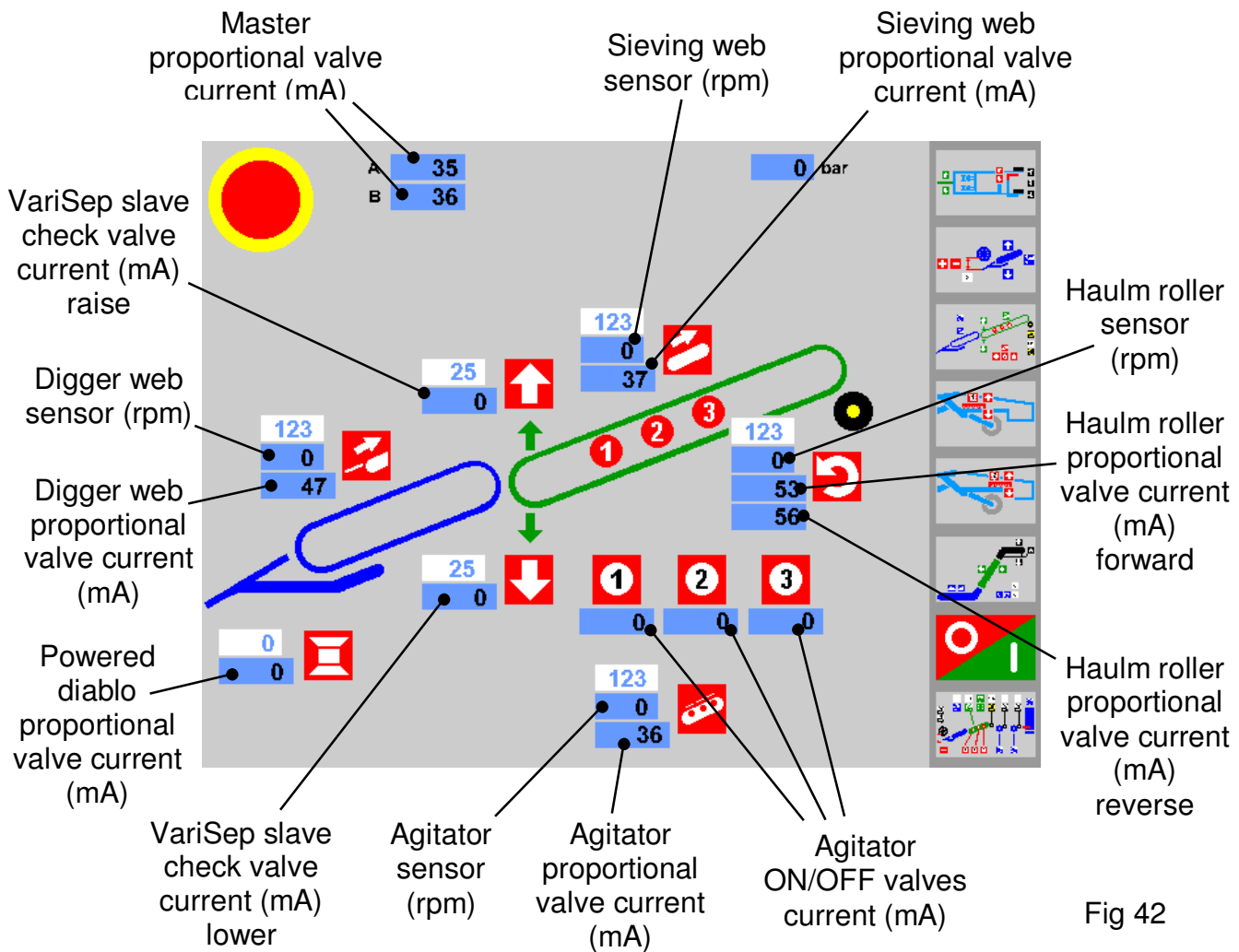


Fig 42

SCREEN 4 Diagnostics

Omega 1st Separator

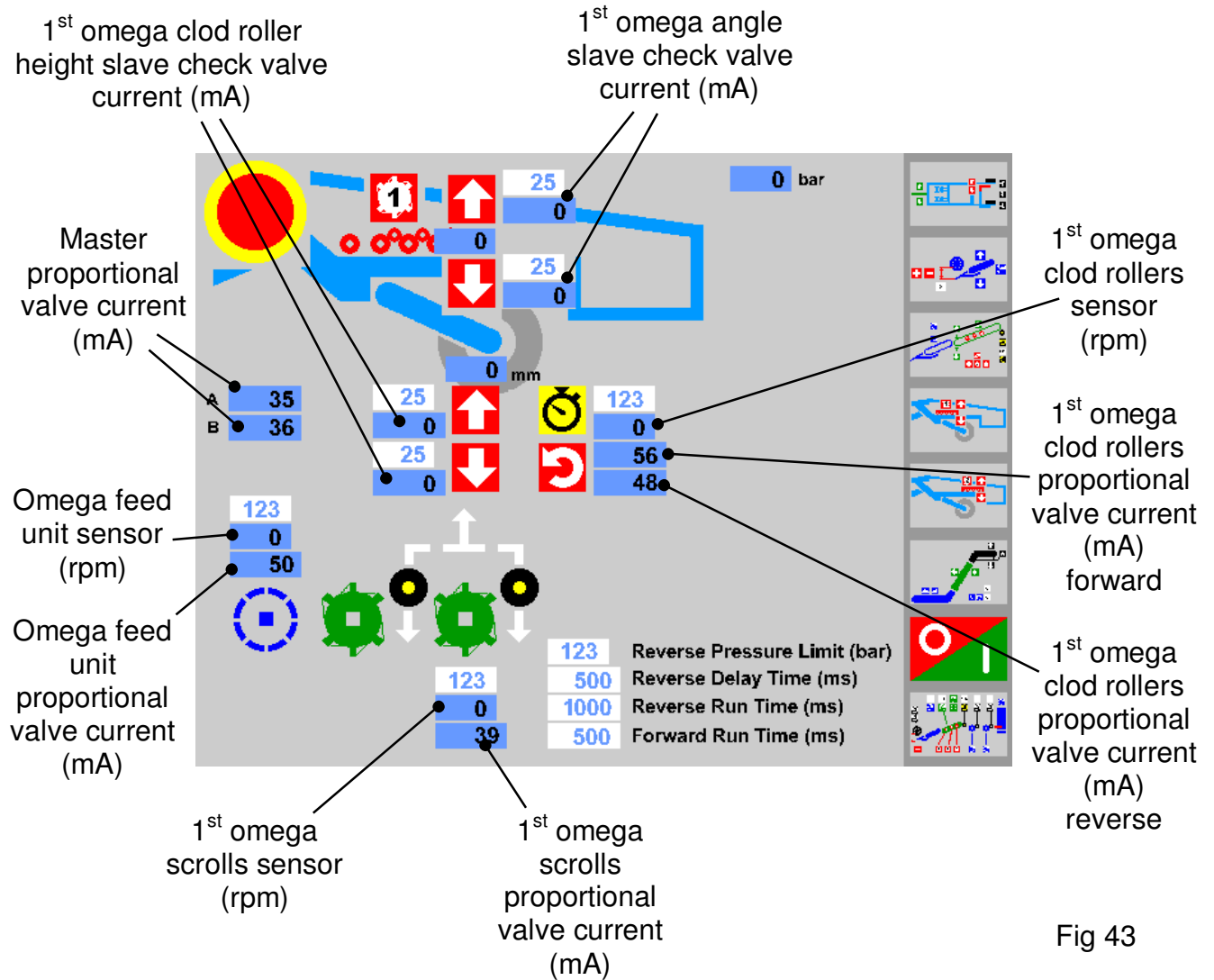


Fig 43

SCREEN 4 Diagnostics

Starflow 1st Separator

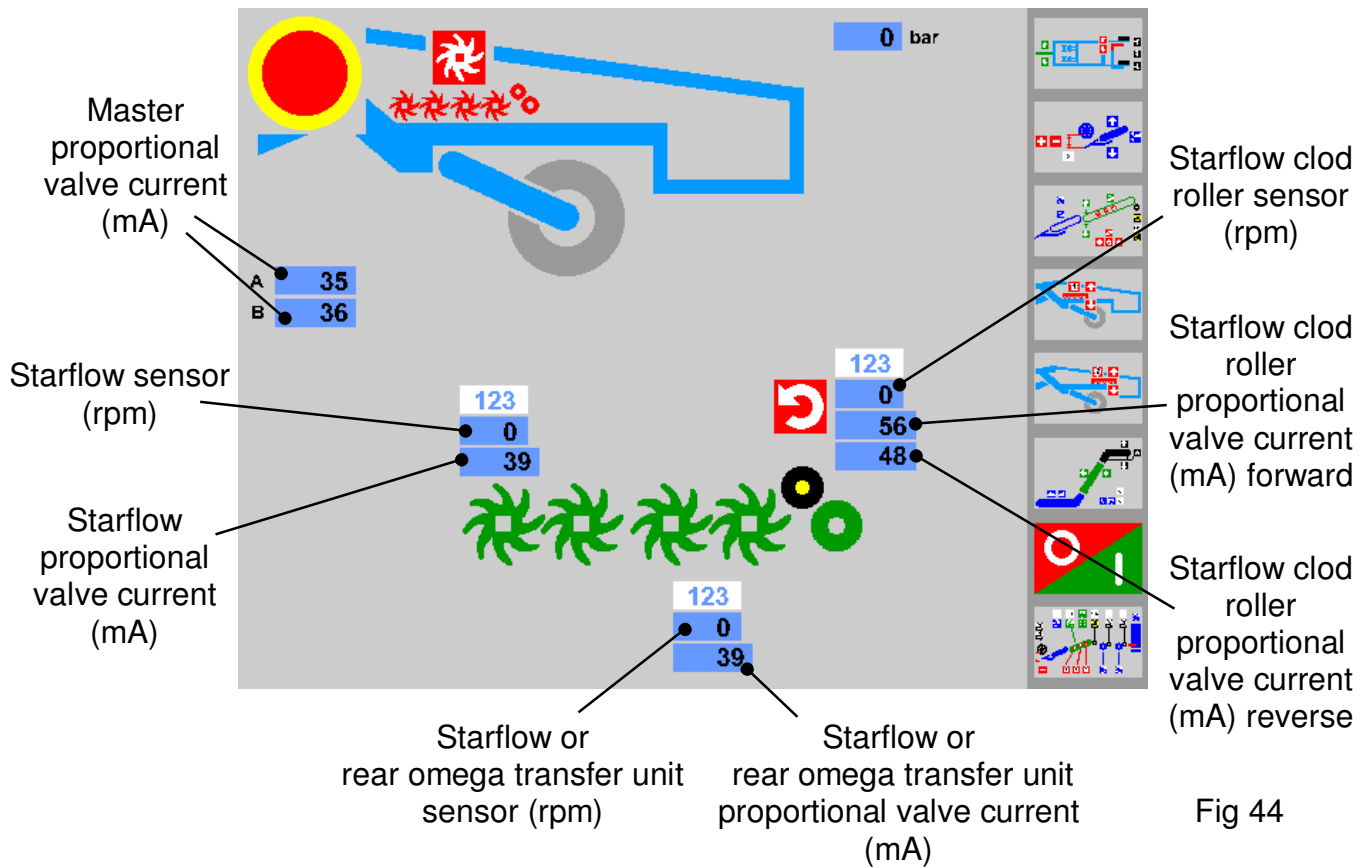


Fig 44

SCREEN 4 Diagnostics

Roller Table 1st Separator

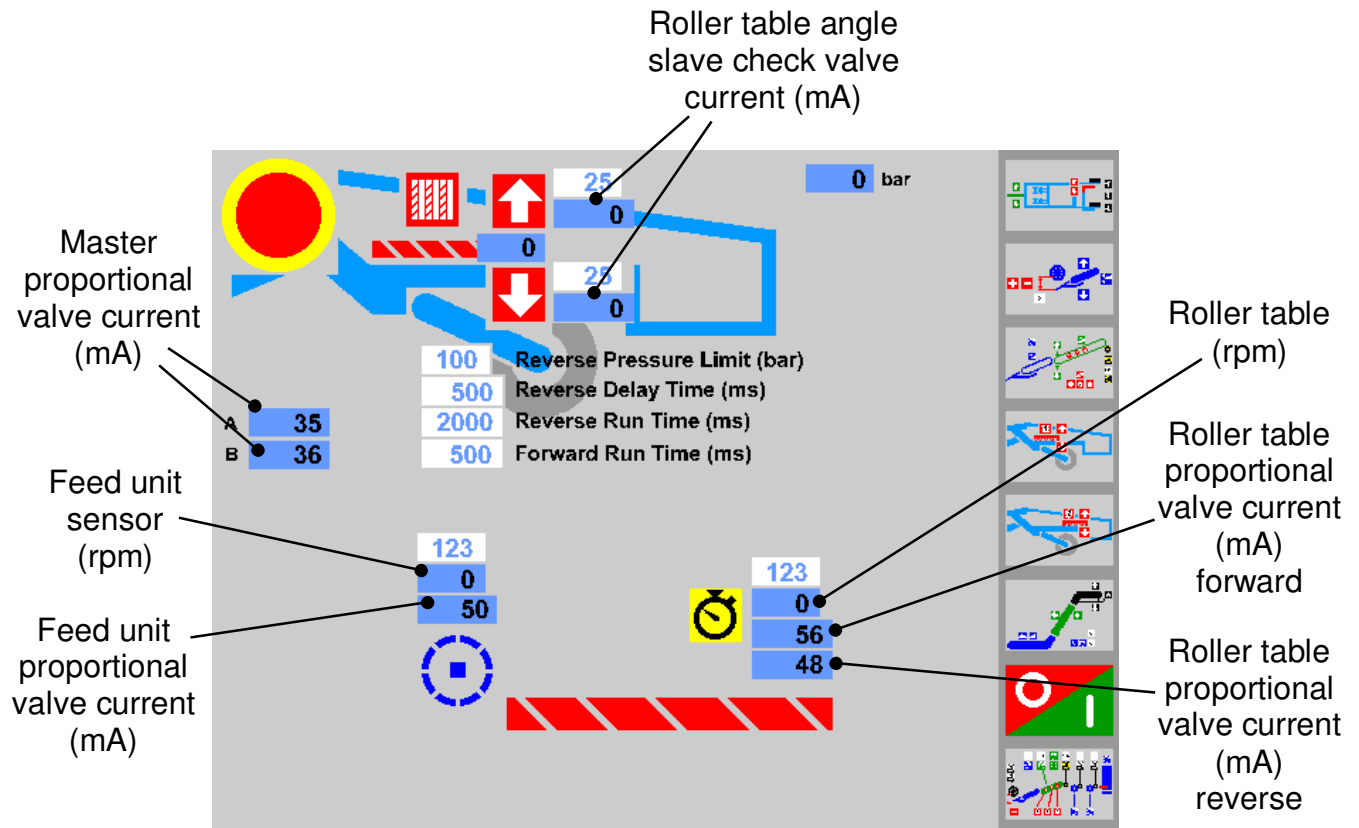


Fig 45

SCREEN 5 Diagnostics

Omega 2nd Separator

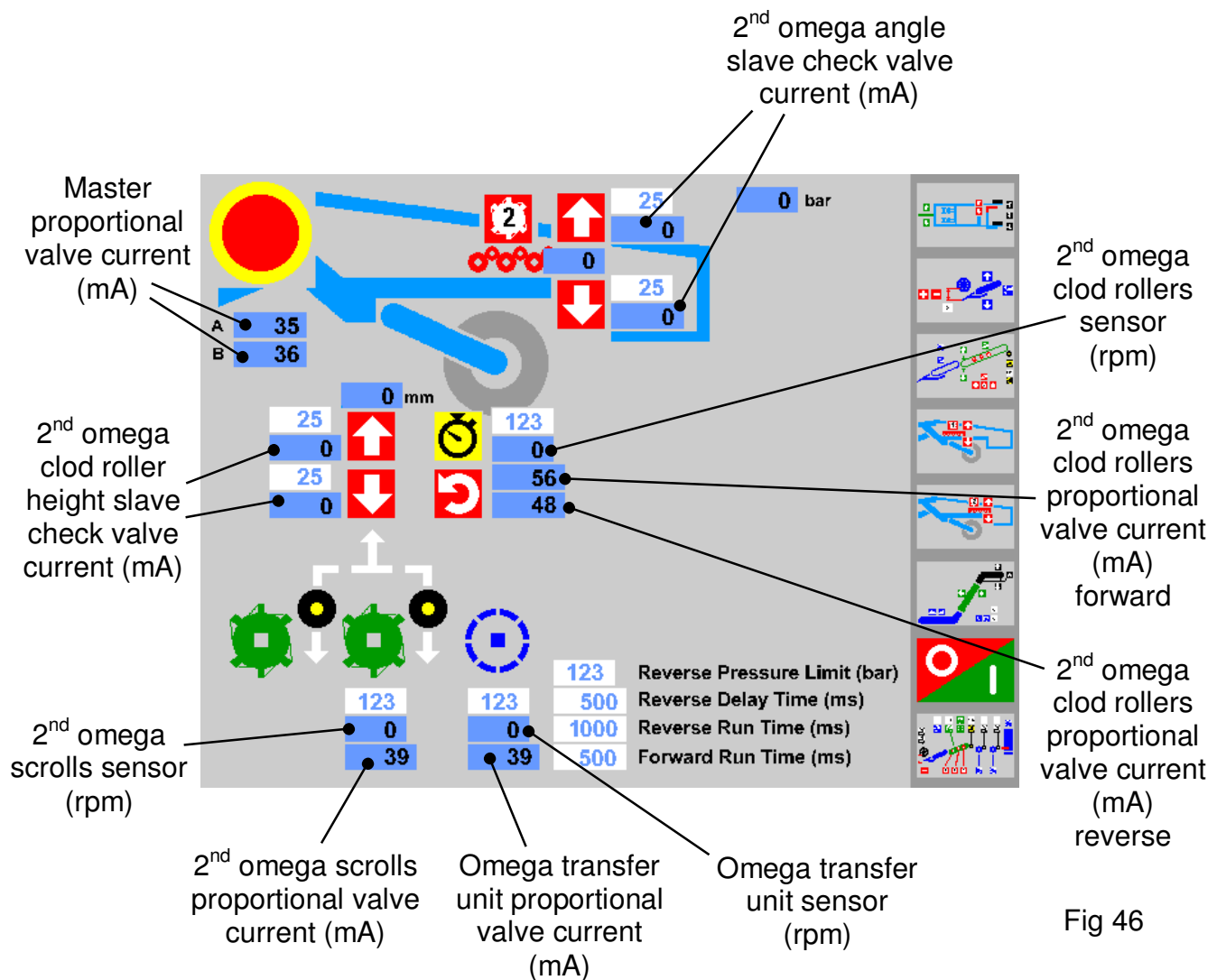


Fig 46

SCREEN 5 Diagnostics

Galaxy 2nd Separator

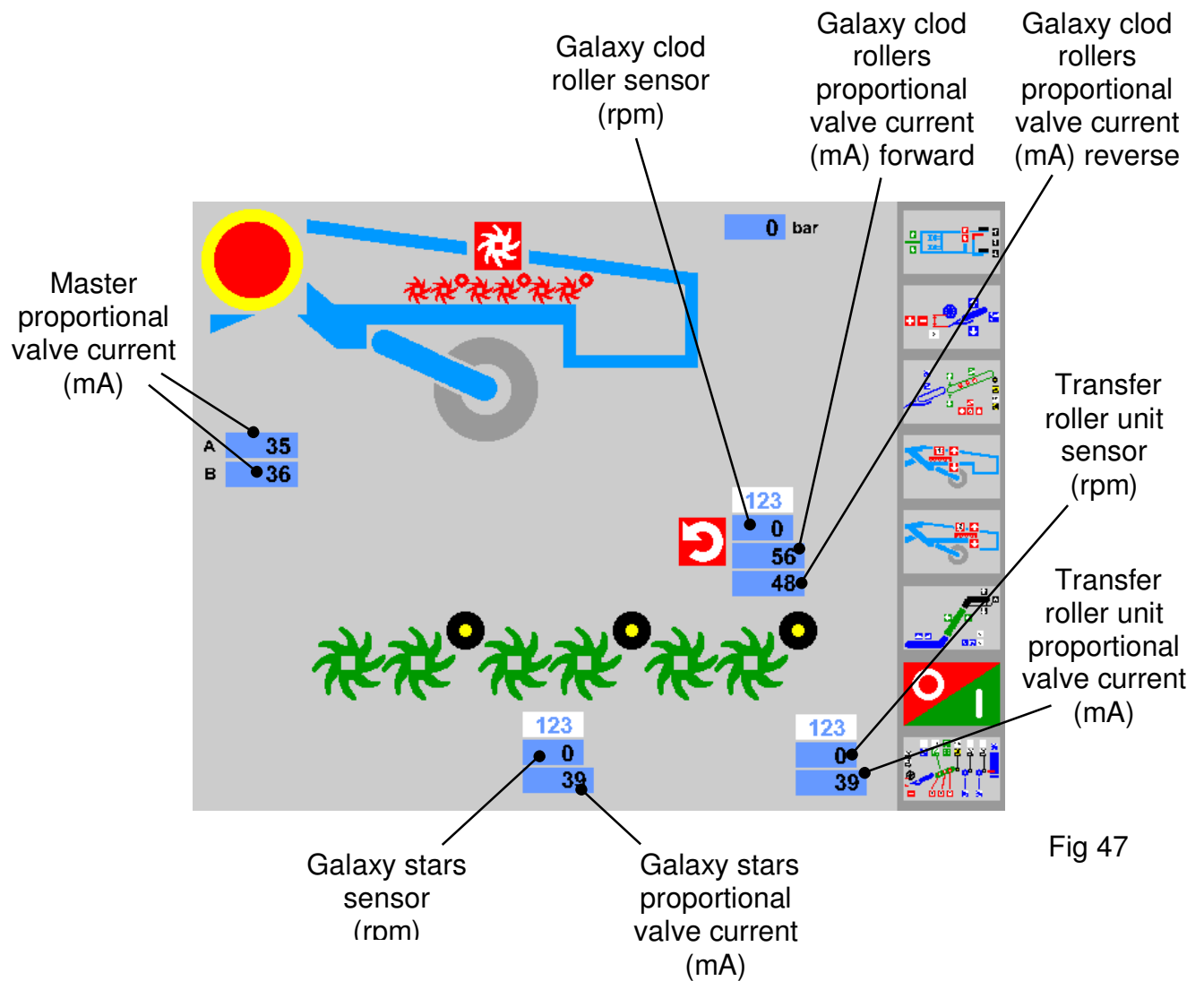


Fig 47

SCREEN 5 Diagnostics

Roller Table 2nd Separator

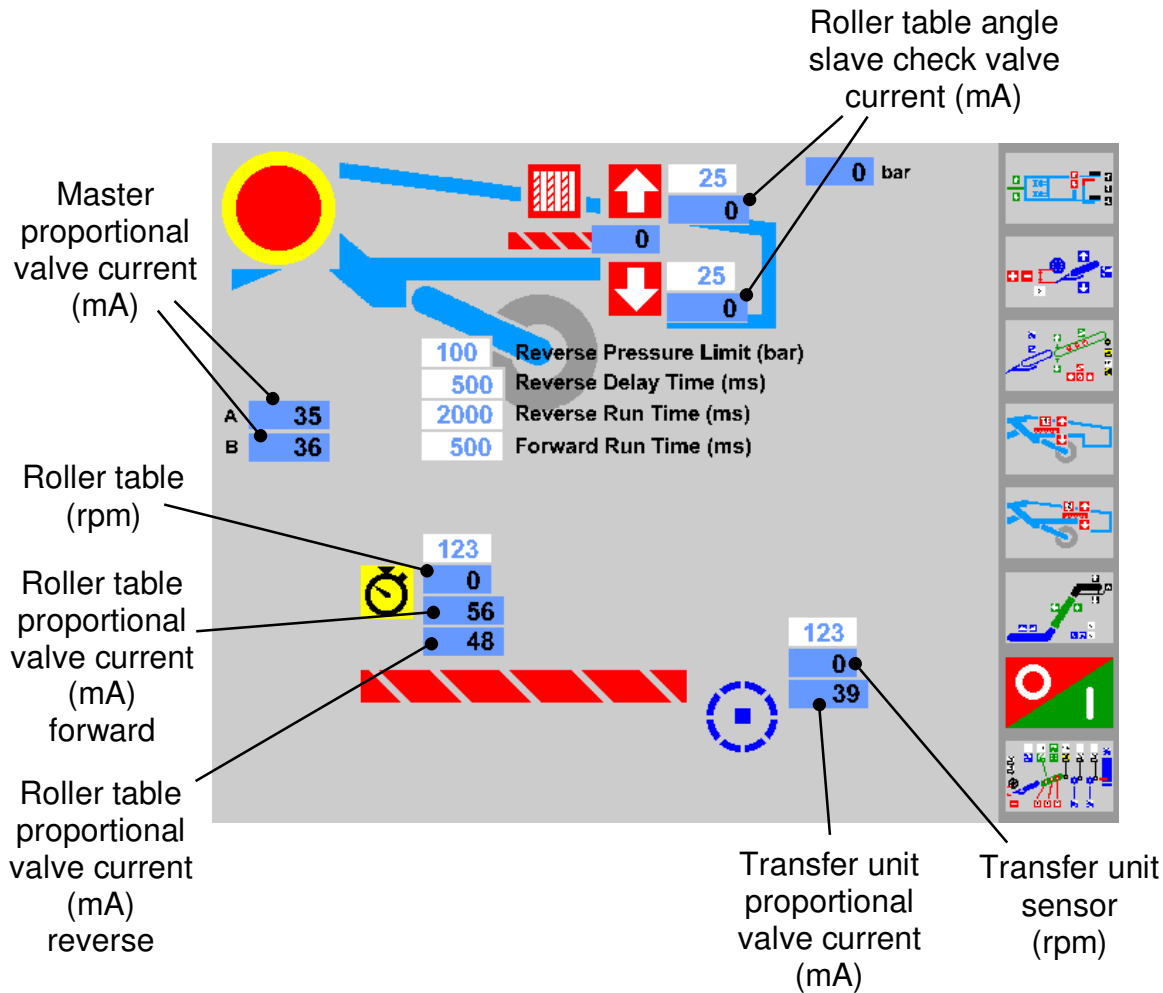


Fig 48

SCREEN 6 Diagnostics

Spreader/Table and Elevator

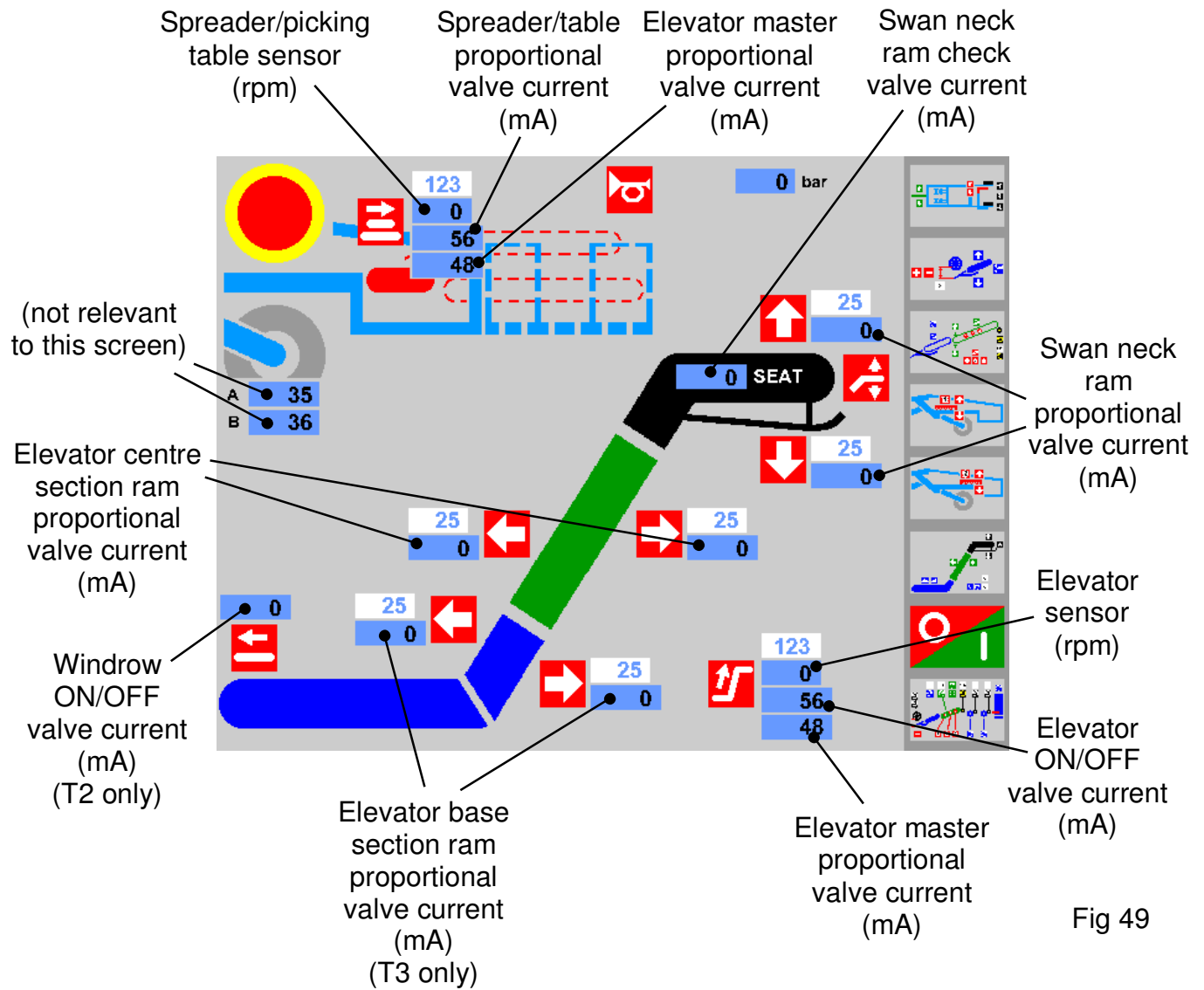


Fig 49

ESC (x1) Diagnostics

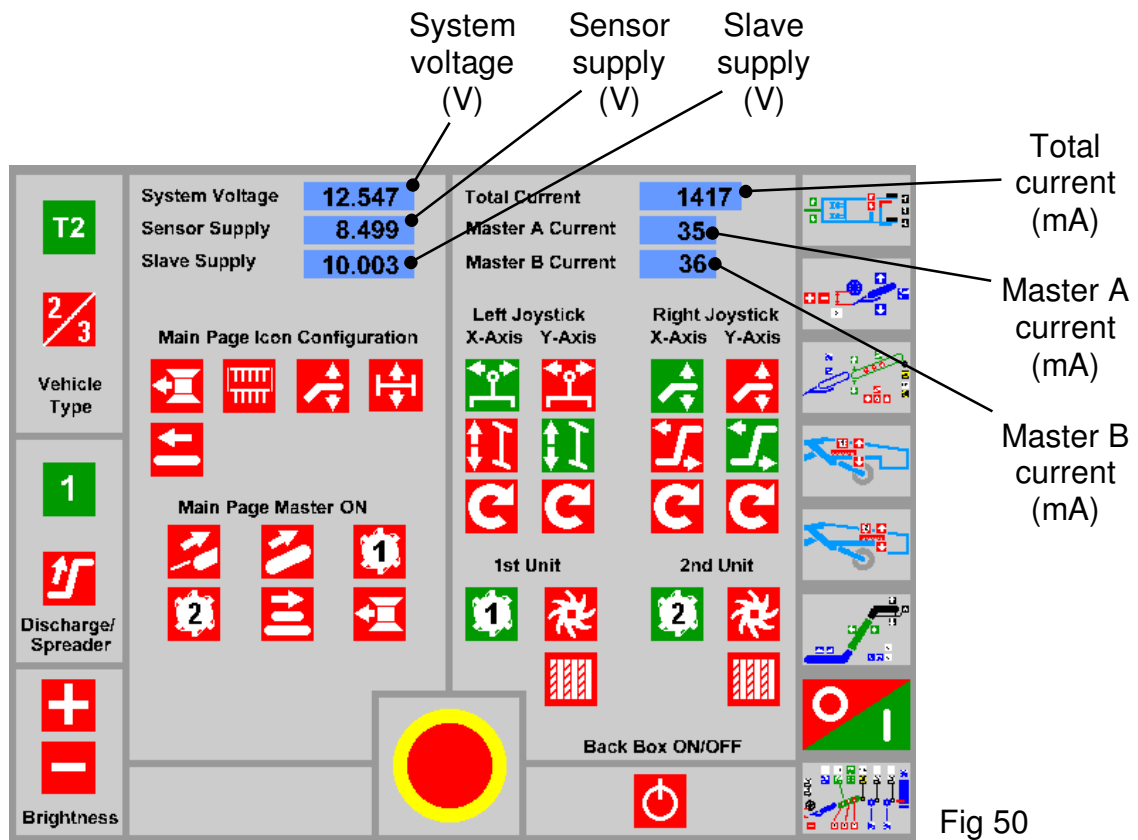


Fig 50

System voltage

Voltage supply to the machine from the tractor.

Sensor supply

Voltage supply to depth and steer sensors (nominal 8.5 volts).

Slave supply

Voltage supply to slave box joysticks (10.0 volts).

Total Current

Total current in milliamps actuating the valves at any one time.

Master A current / Master B current

Master valve operates proportionally in front of the slave check valves. The display shows the current in milliamps feeding the proportional coils.

If the System Fails to Run

Check that there are 3 green LED's (item 1,2 & 3 fig 51) illuminated under the harvester module (one LED flashing).

If a red LED is illuminated there is a system fault. Press the stop button on any screen and restart the system by pressing and holding the slave box start button for at least 3 seconds. If the problem persists contact your Standen dealer.

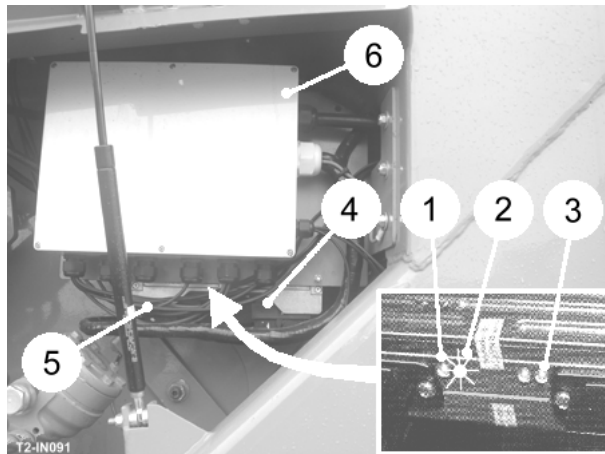


Fig 51

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

Removing / Fitting KS1 & KS2 Plugs

The KS1 and KS2 plugs (item 4 & 5, fig 51) are removed as follows (KS2 plug shown).

Removing a plug:

1. Press and hold the button (item 1, fig 52).
2. Fully rotate the lever (item 2, fig 52) to raise and release the plug.
3. Gently pull the plug from the socket.

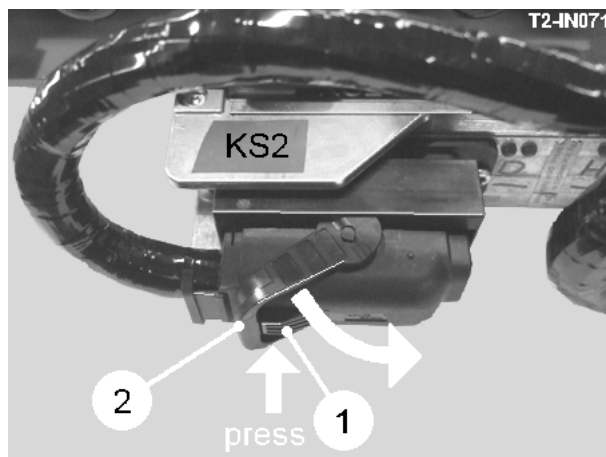


Fig 52

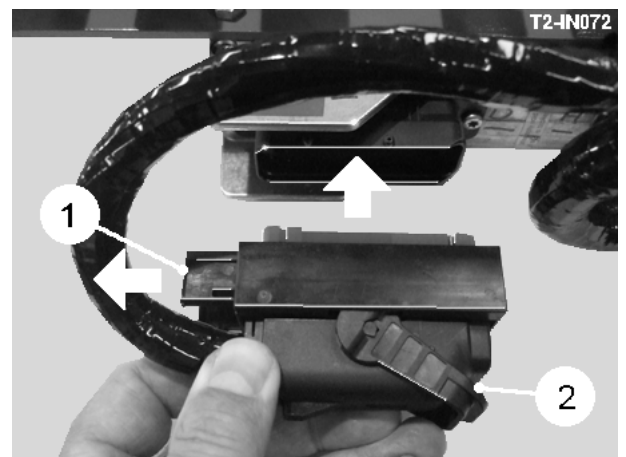


Fig 53

Fitting a plug:

1. Ensure the slider (item 1, fig 53) is fully out by rotating the lever (item 2, fig 52).
2. Gently press the plug home into its socket.
3. Rotate the lever (item 2, fig 53) to lower the plug fully into the socket. Continue until the lever is locked behind the button (item 1, fig 52).

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 53) inside the slave box.

The main distribution box (item 6, fig 51) contains the following fuses:

- 4x 25Amp fuses to protect the module power feeds (item 1, fig 55).
- 1x 25Amp fuse to protect the auxiliary feed (item 2, fig 55).
- 1x 2Amp fuse to protect the 10.0Volts joystick feed (item 3, fig 55).
- 1x 2Amp fuse to protect the 8.5Volts joystick feed (item 4, fig 55).
- 3x 2Amp fuses to protect the sensor power feeds (item 5, fig 55).

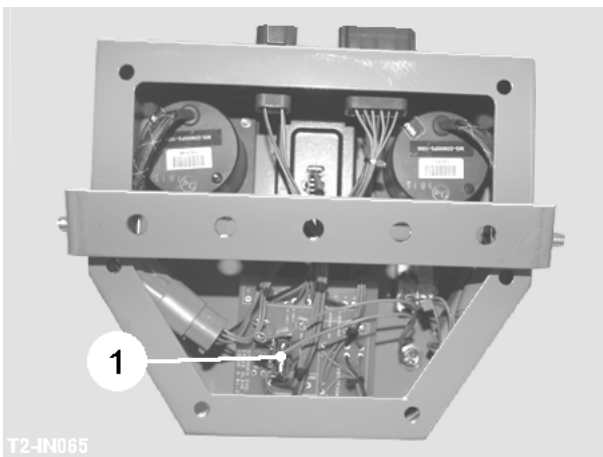


Fig 54

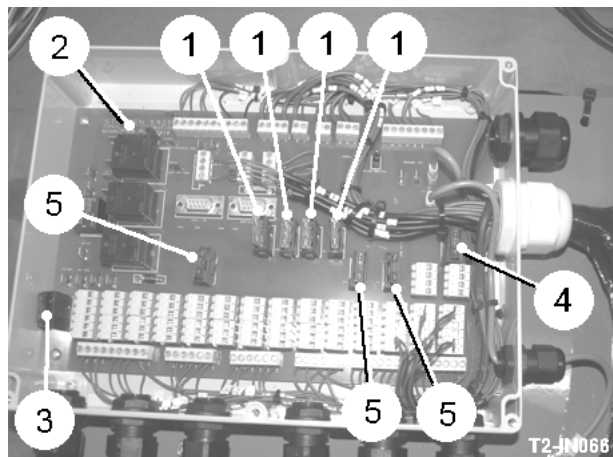


Fig 55



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.

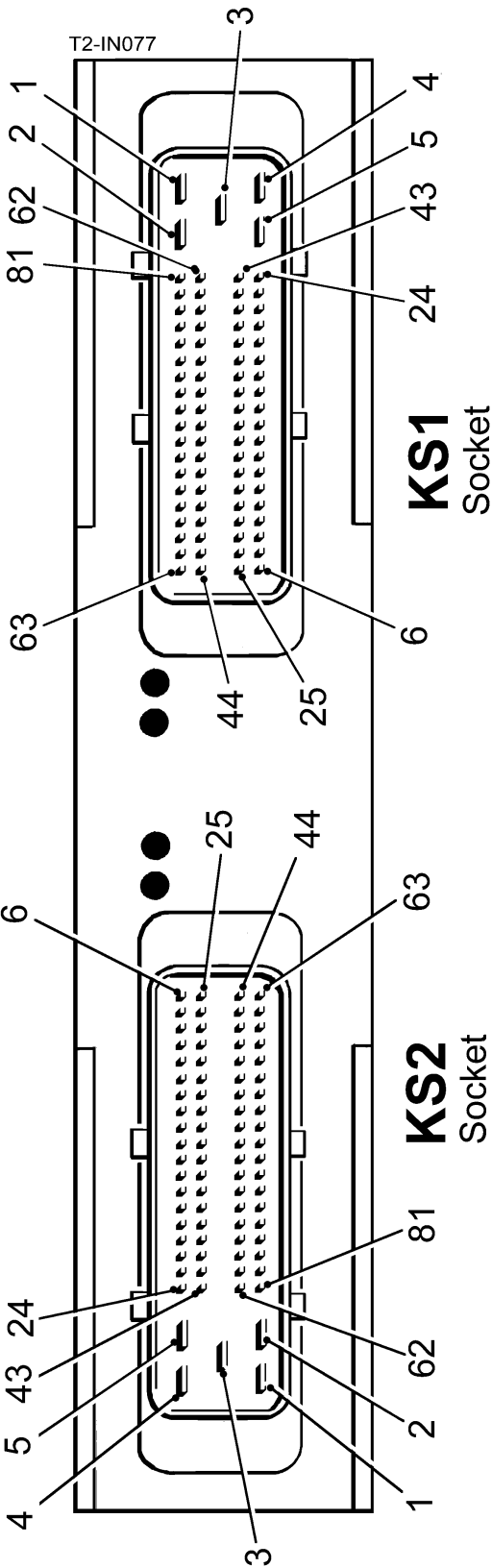
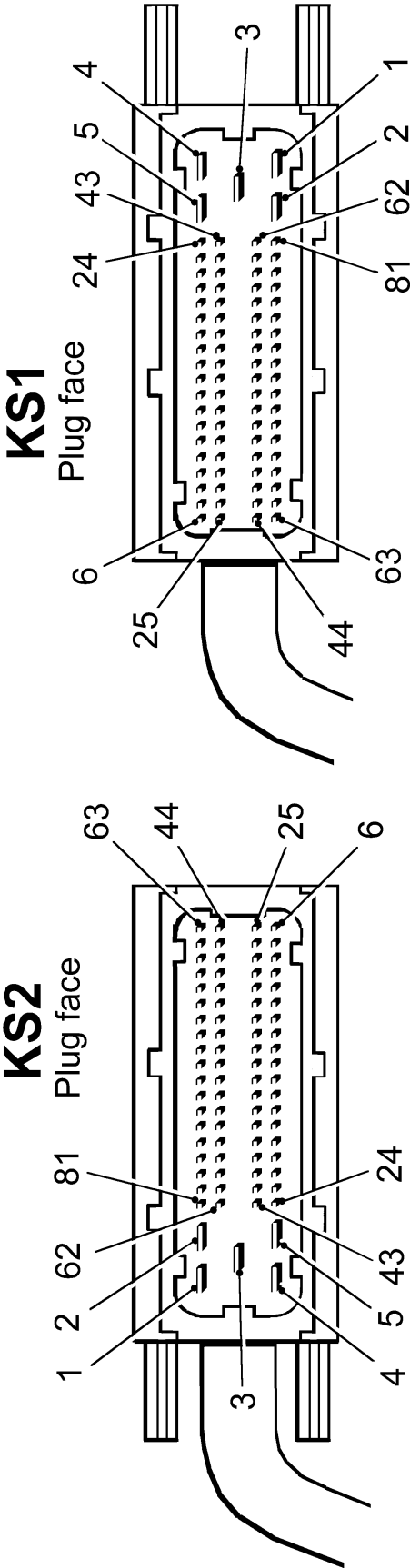
Valve Connections


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

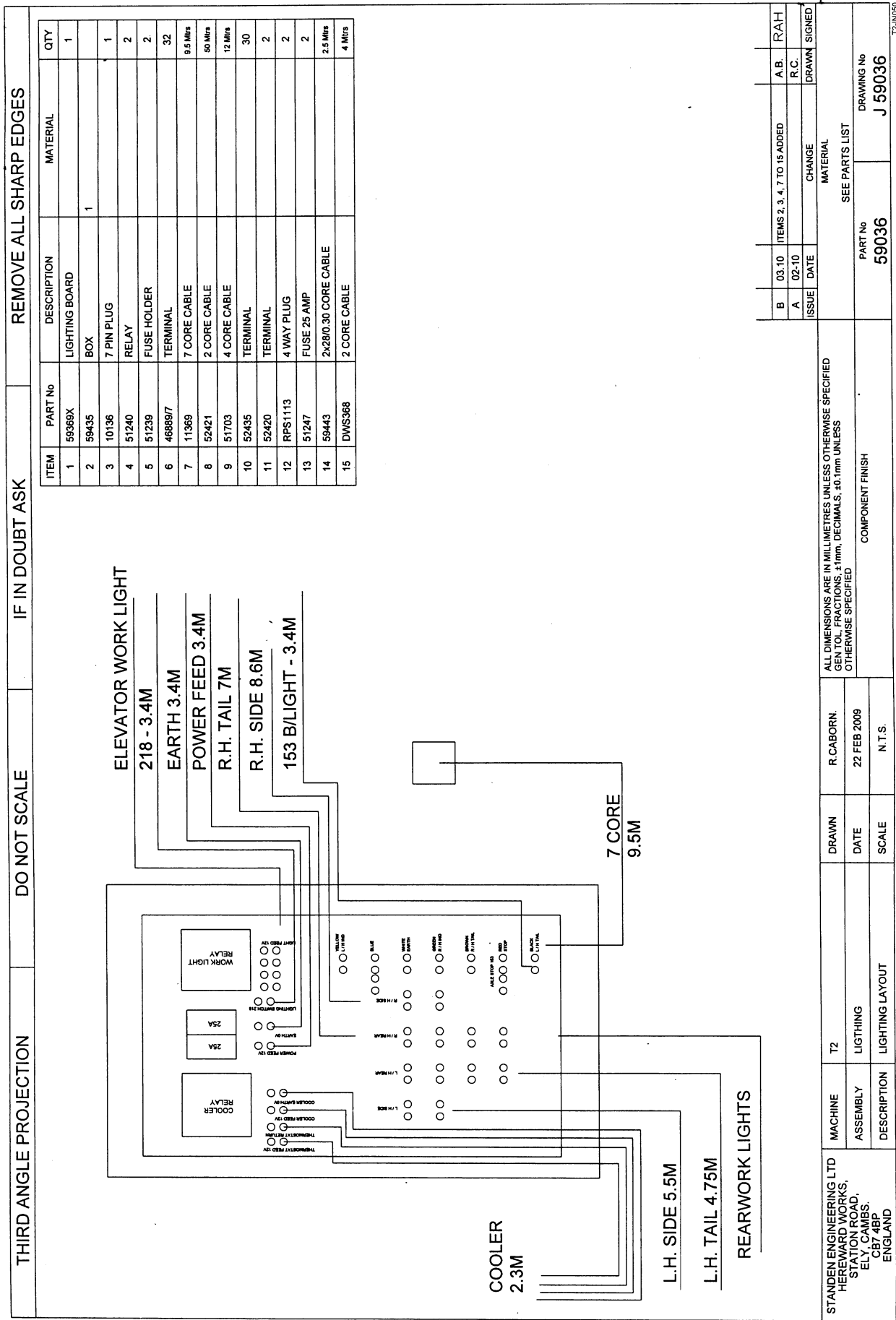
ESX-3XL Controller Plug Pin Allocation	2.1
Machine Lighting Layout	2.3
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Slave Box Board	2.5
CAN-BUS Distribution Board	2.6
Distribution Box Loom	2.7
Left-hand Loom	2.8
Main Valve Loom	2.9
Display Loom	2.10
Cab Loom	2.11

ESX-3XL Controller Plug Pin Allocation



KS1 Cable /Pin		T2 FUNCTION	T2/T3	KS2 Cable /Pin	T2 FUNCTION
101	+ Power sector C			201	B + 12VOLT
102	0 VOLT main earth			202	B + 12VOLT
103	+ Power sector A			203	B + 12VOLT
104	+ Power sector B			204	B + 12VOLT
105	+ Power +UB1			205	B + 12VOLT
106	+ UE Power supply electronic			206	N/A
107	CAN 1 High			207	Uext3 Ground
108	CAN 1 High			208	Sieving Web Speed Sensor (RPM)
109	Elevator Speed Sensor RPM			209	1st Separator Speed Sensor (RPM)
110	T3 Steering Sensor			210	2nd Separator Speed Sensor (RPM)
111	Agitation Pressure Transducer			211	POWERED AXLE PRESSURE VALVE
112	Axle Steer RIGHT Wheel Rotary Pot			212	AGITATION MASTER
113	1st AGITATOR ON/OFF			213	SCROLL SHAFTS
114	2nd AGITATOR ON/OFF			214	RIGHT DIGGER RAISE PROPORTIONAL
115	Swan Neck Auto Height Lower			215	LEFT DIGGER RAISE PROPORTIONAL
116	1st SCROLL SHAFTS			216	2nd SEPARATOR RAISE
117	ELEVATOR ON/OFF			217	T3 ELEVATOR BASE OUT
118	T3 RH Axle reverse sensor signal when rotated			218	LIGHT RELAY
119	PICKING TABLE /SPREADER			219	N/A
120	ELEVATOR FOLD IN			220	N/A
121	1st SEPARATOR LOWER			221	N/A
122	WEB SPLIT RAISE			222	AUX RELAY
123	AXLE LEVEL RAISE			223	N/A
124	B - 0 VOLT			224	N/A
125	D+ Ignition			225	N/A
126	CAN 1 Low			226	Vref (2.5V to 10.5V)
127	CAN 1 Low			227	Digger Web Speed Sensor (RPM)
128	1st separator clod roller height linear sensor			228	1st Separator Speed Sensor (RPM)
129	1st separator angle linear sensor			229	2nd Separator Speed Sensor (RPM)
130	1st separator Pressure Transducer			230	MASTER B (supply for slave valve bank)
131	Axle Drive Pressure Transducer			231	LEFT AXLE STEER LEFT
132	T3 RIGHT AXLE DRIVE FORWARD / T2 AXLE			232	LEFT AXLE STEER RIGHT
133	T3 LEFT AXLE DRIVE FORWARD			233	LEFT DIGGER LOWER PROPORTIONAL
134	Axle Auto Lower (not Used)			234	Earth
135	2nd CLOD ROLLER FORWARD			235	2nd SEPARATOR LOWER
136	1st CLOD ROLLER FORWARD			236	T3 ELEVATOR BASE IN
137				237	SWAN NECK check valve (lower)
138	POWERED DIABLO ON/OFF			238	N/A
139	ELEVATOR FOLD OUT			239	N/A
140	Power opt B			240	N/A
141	1st CLOD ROLLER LOWER			241	SOUNDER
142	AXLE TRACK IN			242	N/A
143	DRAWBAR STEER LEFT			243	N/A
144	Diagnostics RS232 1 (Tx/D)			244	N/A
145	CAN 2 High			245	5V Reference GND
146	CAN 2 High			246	Elevator Speed Sensor (RPM)
147	8.5V Vref GND			247	Agitation Speed Sensor (RPM)
148	2nd Separator clod roller height linear sensor			248	2nd Separator Speed Sensor (RPM)
149	2nd Separator Pressure Transducer			249	MASTER A (supply for slave valve bank)
150	Digger Left Linear Pot			250	RIGHT AXLE STEER LEFT
151	T3 RIGHT AXLE DRIVE REVERSE / T2 AXLE REVERSE			251	RIGHT AXLE STEER RIGHT
152	T3 LEFT AXLE DRIVE REVERSE			252	RIGHT DIGGER LOWER PROPORTIONAL
153	Brake Light Signal ON/OFF			253	2nd CLOD ROLLER LOWER
154	2nd CLOD ROLLER REVERSE			254	DIGGER LOWER LH (electric check)
155	1st CLOD ROLLER REVERSE			255	WINDROW ON
156	B - 0 VOLT			256	N/A
157	SOUNDER IN			257	N/A
158	SWAN NECK LOWER			258	N/A
159	HAULM ROLLER FORWARD			259	N/A
160	1st CLOD ROLLER RAISE			260	E STOP OUTPUT
161	AXLE TRACK OUT			261	N/A
162	DRAWBAR STEER RIGHT			262	N/A
163	Diagnostics RS232 1 (Rx/D)			263	N/A
164	CAN 2 Low			264	5V Reference
165	CAN 2 Low			265	2nd Separator angle linear sensor
166	8.5V Reference			266	Haulm Roller Speed Sensor (RPM)
167	Axle Auto Level			267	1st Separator Speed Sensor (RPM)
168	Elevator Pressure Transducer			268	
169	Digger Right Linear Pot			269	SIEVING WEB
170	Axle Steer LEFT Wheel Rotary Pot			270	CLOD FINGERS ON/OFF
171	3rd AGITATOR ON/OFF			271	DISCHARGE ON/OFF (main valve block)
172	2nd FEED ROLLER			272	2nd CLOD ROLLER RAISE
173	Swan Neck Auto Height Raise			273	DIGGER LOWER RH (electric check)
174	1st FEED ROLLER			274	OPTION 2 RAISE
175	DIGGER WEB			275	OIL TEMPERATURE SENSOR (if fitted)
176	N/A			276	N/A
177	SWAN NECK RAISE			277	N/A
178	HAULM ROLLER REVERSE			278	B - 0 VOLT
179	1st SEPARATOR RAISE			279	N/A
180	WEB SPLIT LOWER			280	N/A
181	AXLE LEVEL LOWER			281	N/A

Machine Lighting Layout



THIRD ANGLE PROJECTION

DO NOT SCALE

IF IN DOUBT ASK

REMOVE ALL SHARP EDGES

12 WAY PLUG

12 WAY PLUG

4 WAY PLUG

SWITCH BANK

JOYSTICKS

SLAVE BOARD ASSY

11

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		8
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	59388	SLAVE BOARD ASSY	SEE DETAIL	1

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

COMPONENT FINISH
SEE PARTS LIST

PART No
59046

DRAWING No
J 59046

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

MACHINE
ASSEMBLY

T2 / T3
SLAVE BOX
GENERAL ASSY

DESCRIPTION

R. CABORN.
18 FEB 2010
NTS

DRAWN
DATE
SCALE

[illegible]

T2-IN089

THIRD ANGLE PROJECTION

DO NOT SCALE

IF IN DOUBT ASK

REMOVE ALL SHARP EDGES

24 WAY PLUG FRONT
FACE PIN NUMBERS

PIN No	WIRE No	FUNCTION	COLOUR
1	132	AXLE FORWARD RIGHT	GREEN
2	133	AXLE FORWARD LEFT	GREEN
3	151	AXLE REVERSE RIGHT	GREEN
4	152	AXLE REVERSE LEFT	GREEN
5	211	AXLE HIGH POWER	GREEN
6	138	DIABLO	GREEN
7	136	1st CLOD ROLLER FWD	RED
8	155	1st CLOD ROLLER REV	RED
9	135	2nd CLOD ROLLER FWD	RED
10	154	2nd CLOD ROLLER REV	RED
11	174	1st FEED ROLLER	RED
12	172	2nd FEED ROLLERS	RED
13	116	1st SCROLL SHAFTS	RED
14	213	2nd SCROLL SHAFTS	RED
15	131	AXLE PRESSURE TRANS	BROWN +ve
16	131	AXLE PRESSURE TRANS	BLACK SIGNAL
17	130	1st SEP PRESS TRANS	BROWN +ve
18	130	1st SEP PRESS TRANS	BLACK SIGNAL
19	149	2nd SEP PRESS TRANS	BROWN +ve
20	149	2nd SEP PRESS TRANS	BLACK SIGNAL
21	153	BRAKE LIGHT SIGNAL	YELLOW
22	218	LIGHT RELAY	ORANGE
23			
24			
CASE	GND	0 volt to VALVES	BLUE

ITEM	PART No	DESCRIPTION	MATERIAL	QTY	ITEM	PART No	DESCRIPTION	MATERIAL	QTY
1	52206	CABLE RED		35M	15	RPS439	HOUSING		1
2	52209	CABLE GREEN		26M	16	RPS437	INSERT		1
3	52208	CABLE BROWN		12M	17	58109	GLAND		1
4	52205	CABLE BLACK		12M	18	52435	SPADE TERMINAL		2
5	56470	CABLE ORANGE		3.2M	19	46489/8	MALE PIN		22
6	56471	CABLE YELLOW		3.2M					
7	27189	HIRSCHMAN PLUG		1					
8	59402	AMP PLUG		13					
9	54220	PLUG		3					
10	52210	HEATSHRINK BRAID		4M					
11	52211	HEATSHRINK BRAID		2.8M					
12	52230	HEAT SHRINK SLEEVE		9M					
13	52204	CABLE BLUE		90M					
14	52419	RING TERMINAL		2					

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

MACHINE T2

ASSEMBLY MACHINE LOOM

DESCRIPTION LEFT HAND LOOM

DRAWN

DATE 22 MARCH 2010

R. CABORN

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

COMPONENT FINISH
AS SLEEVED

PART No
59047/2

DRAWING No
J 59047/2

ISSUE A 03-10 DATE

CHANGE

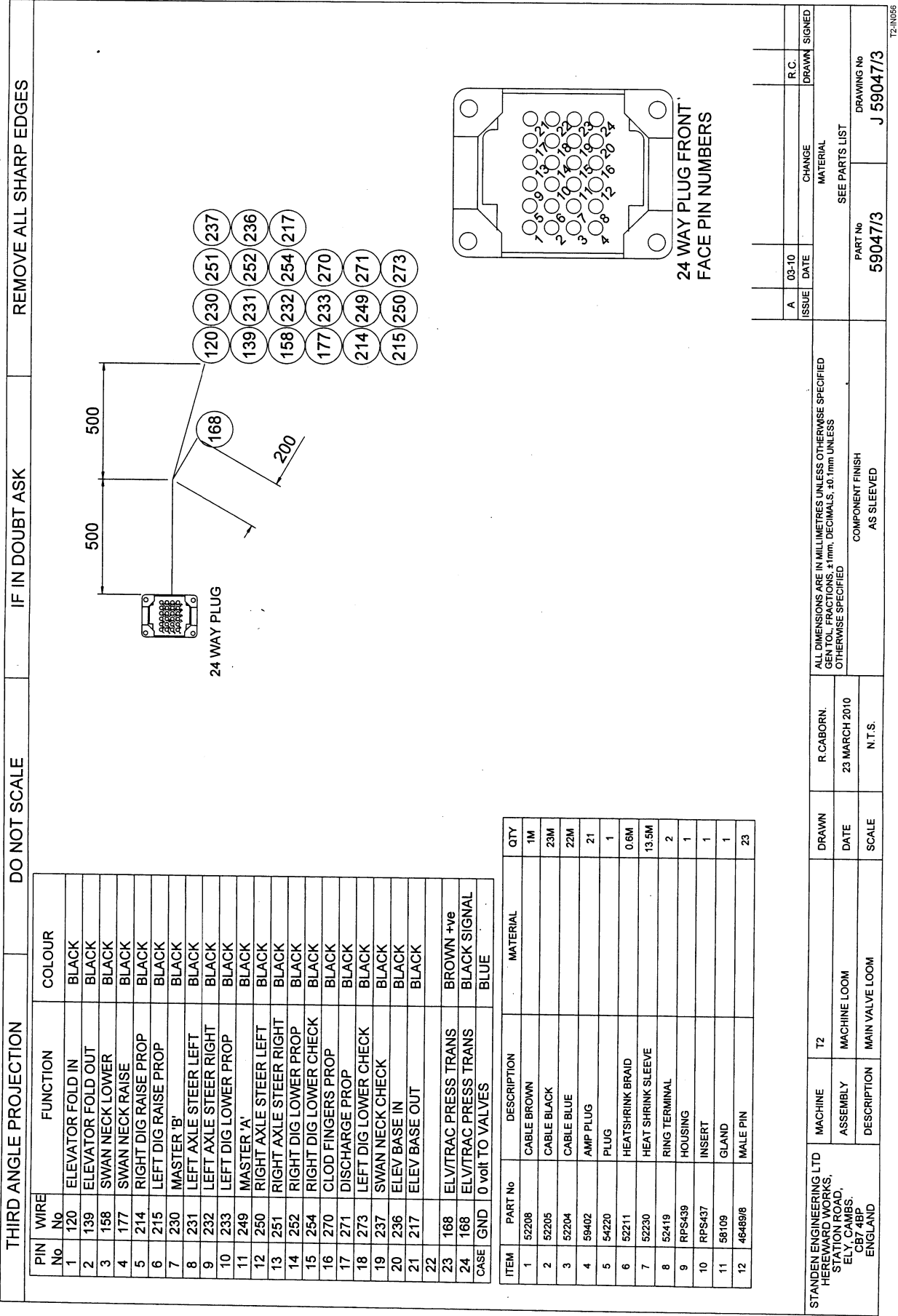
MATERIAL
SEE PARTS LIST

DRAWN

SIGNED

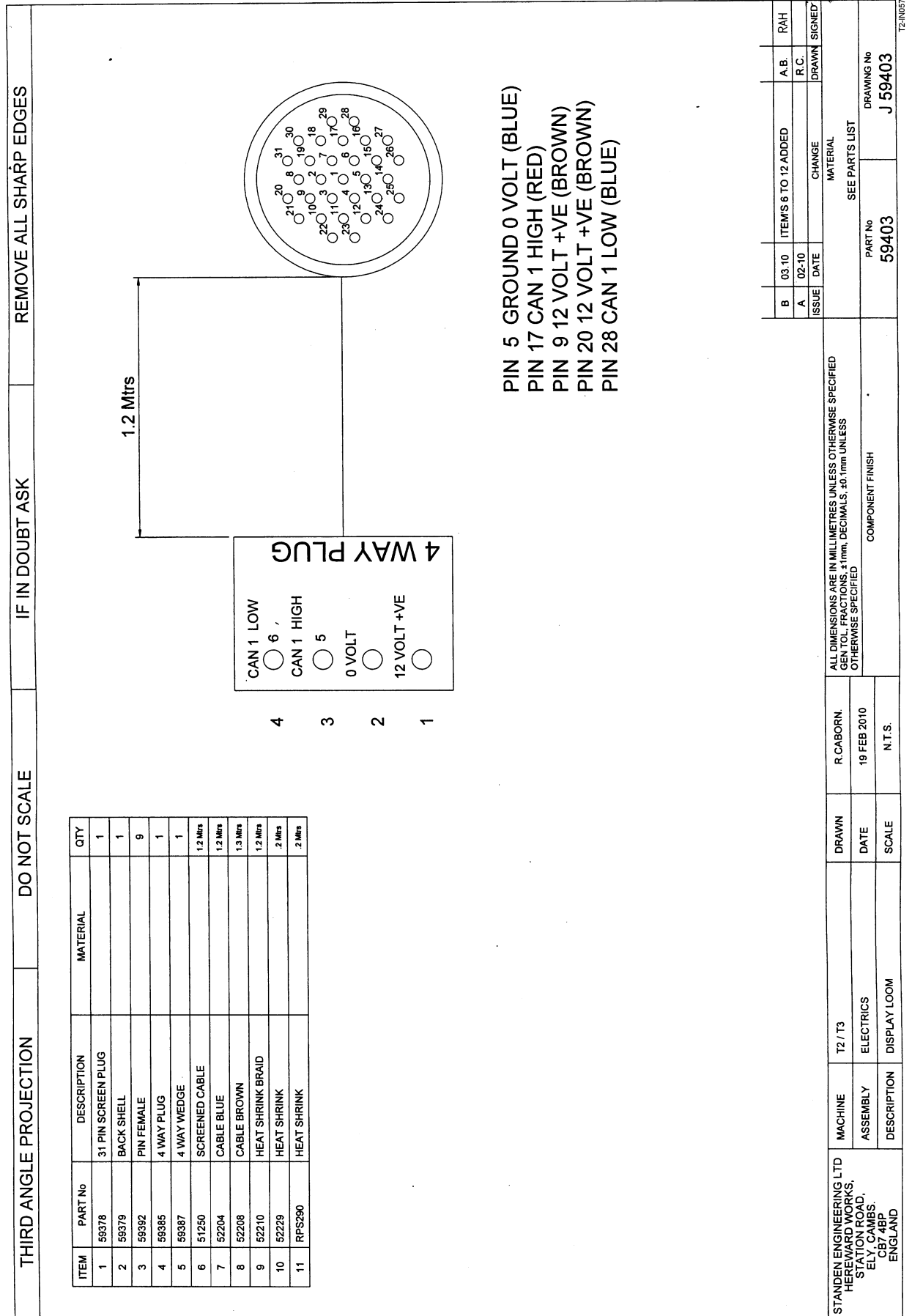
T2:JN055

Main Valve Loom



T2-IN066

Display Loom



Cab Loom

