

CAN-BUS OPERATING INSTRUCTIONS

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SYSTEM DESCRIPTION

The electro / hydraulic control system used on the Standen UNISTAR Soil Separator from 2007 is a CAN-Bus system where all the control signals are carried by one pair of wires. The 12 Volt, 30 Amp, power supply is taken directly from the tractor battery to the machine fuses, as the in cab power plugs on some tractors may not be capable of supplying an adequate amperage. Additional wires are used to power the control box, an auxiliary power supply, and to provide a safety stop circuit.

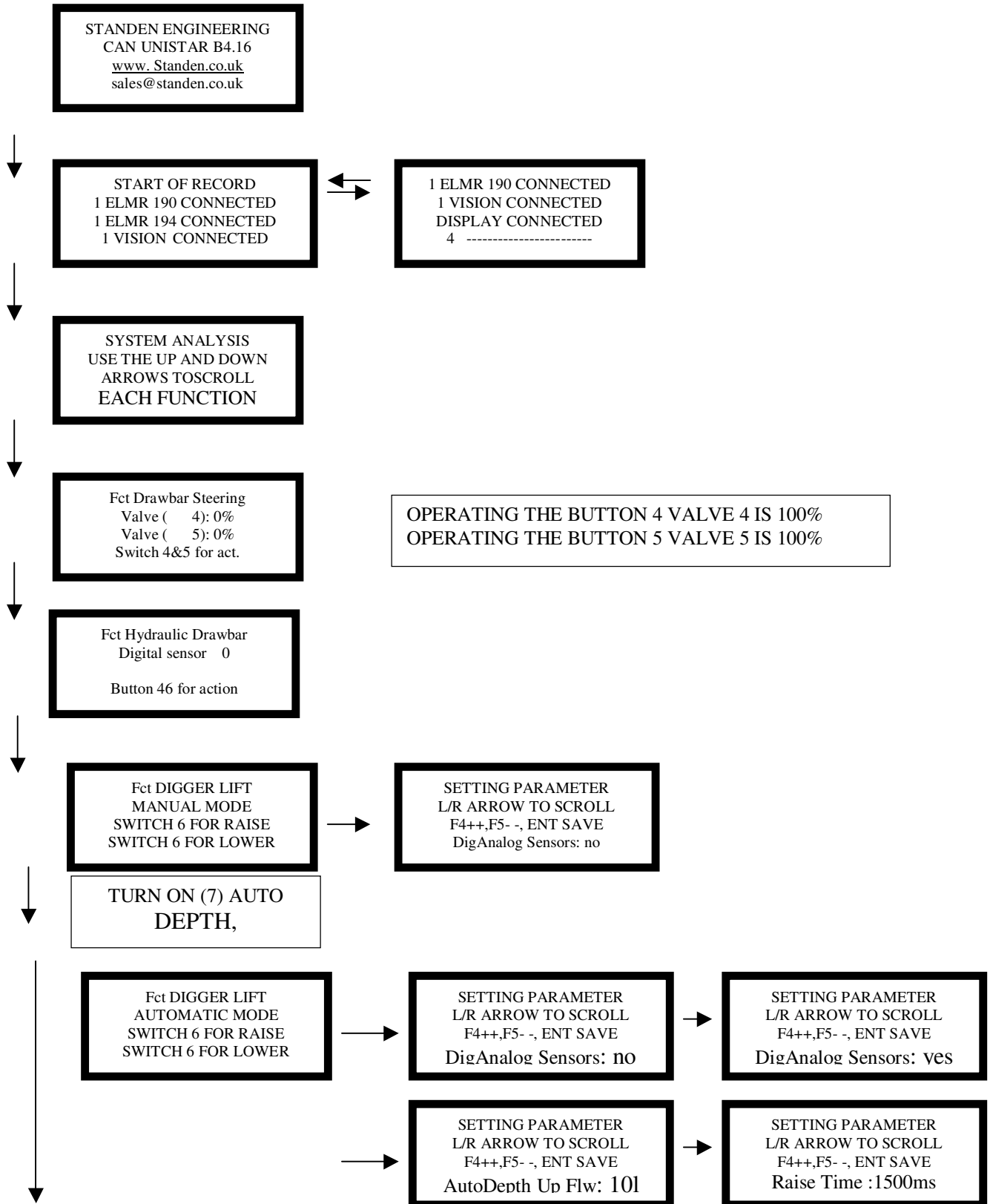
The system comprises of the control fascia, which is connected to the input circuit board. Also in the control box is the service terminal that displays an overall illustration of the system, and allows access to select, and set operating parameters. The terminal display additionally gives access to a system diagnostic menu, which will allow the status of each function to be displayed.

On the machine the power, and control wires are taken onto a distribution board which allows the connection of the various control sensors, and the fuses which cover all the power outputs. From the distribution board the master processor, and slave modules are connected into the wiring loom, which connects all the individual valves.

The switching installed on the control panel is designed to cover all build options, and depending on the specification of the machine some functions will not be active.

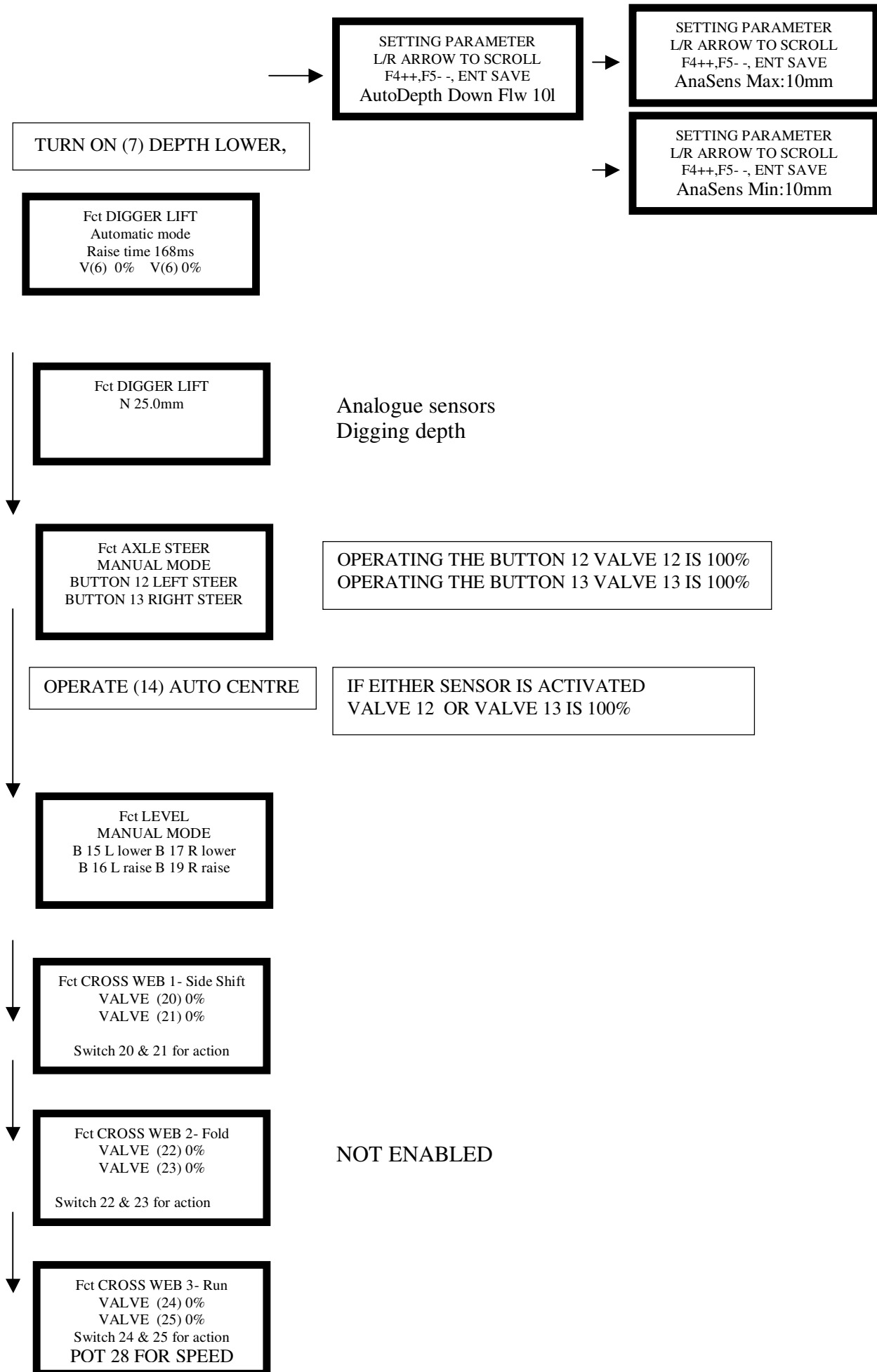
THE MAIN DISPLAY SCREEN

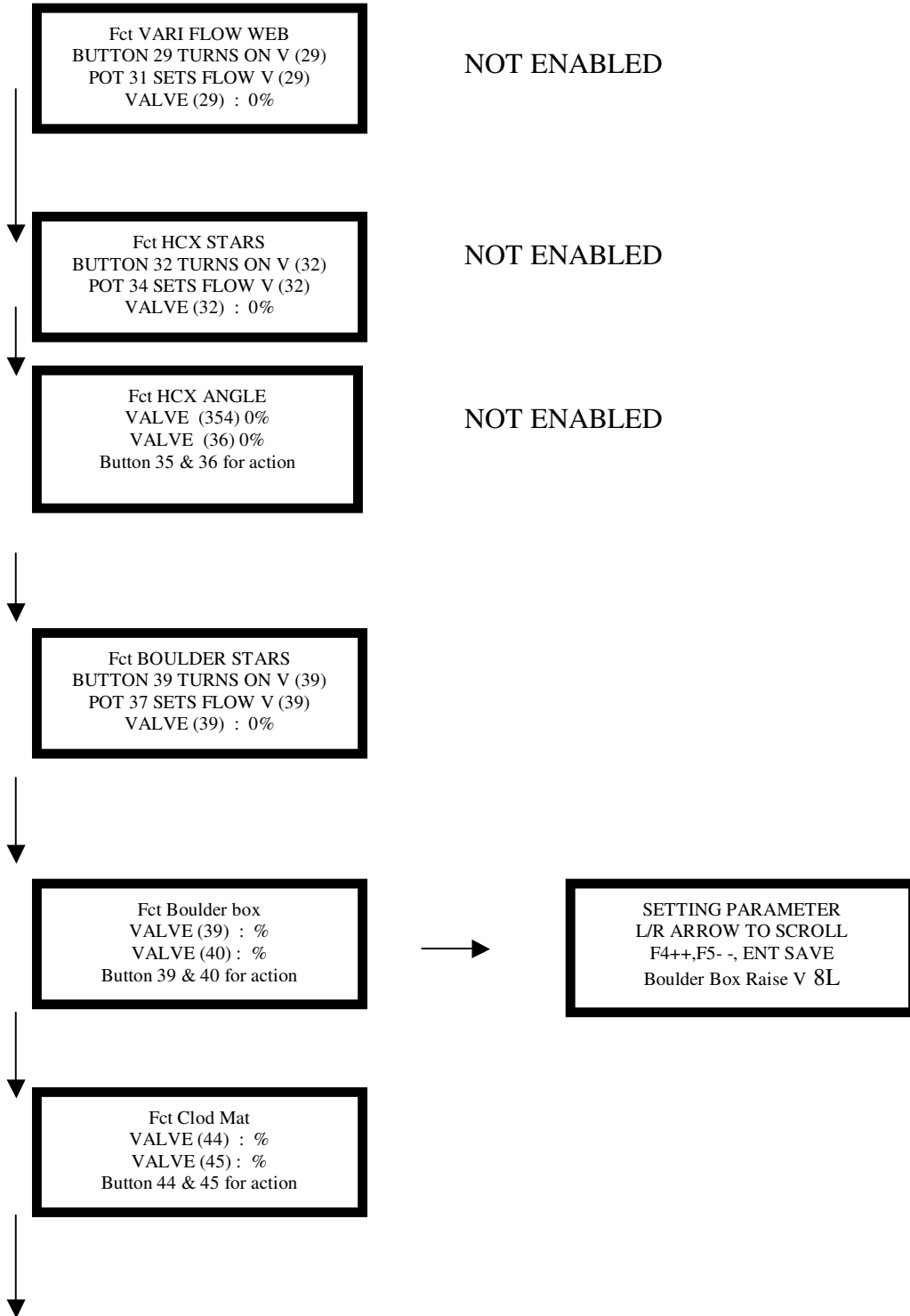
The display screen on the control panel service terminal allows the machine to be set for operating with the possible build options, and to set various parameters to suit the operator.



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CAN-BUS OPERATING INSTRUCTIONS

TEACH IN Auto Start
F4 : START RECORDING
F5 : STOP RECORDING
ESC : Cancel Recording

NOT ENABLED

The 'AUTO START' function will remember the sequence of functions carried out between pressing F4, and F5. Pressing 'PROGRAMME START' will repeat this sequence. Pressing 'F4', then directly pressing 'F5' will clear the saved sequence.

TEACH IN Auto Stop
F4 : START RECORDING
F5 : STOP RECORDING
ESC : Cancel Recording

NOT ENABLED

The 'AUTO STOP' function will remember the sequence of functions carried out between pressing F4, and F5. Pressing 'PROGRAMME STOP' will repeat this sequence. Pressing 'F4', and then pressing 'F5' will clear the saved sequence.



STANDEN ENGINEERING
CAN-BUS System 2.16
www.Standen.co.uk
sales@standen.co.uk

The default screen shows the speed settings of the four adjustable elements when the system is turned on, allowing the operator an easy check on the machine set up.

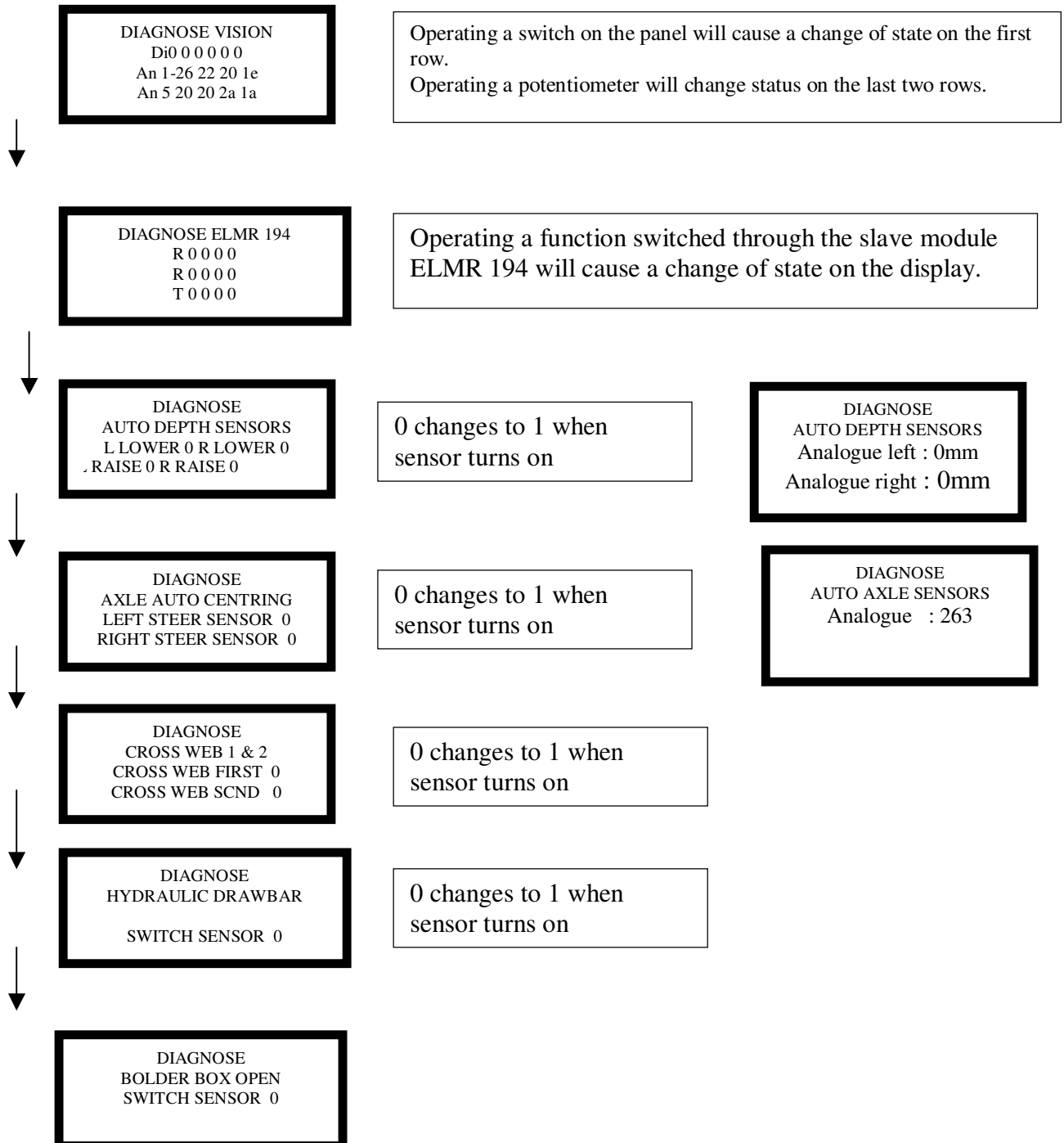
AUTODEPTH SENSORS
ANALOGUE: XMM
ANGLE. :XDEG
←-----L

THE SYSTEM DIAGNOSTIC MENU

The display screen on the control panel service terminal allows you to view, and investigate each input, and output to check for faults in the control system.

To access the diagnostic channel; on the service terminal press 'F3' + 'F2'

The screens displayed are as follows.



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CAN-BUS OPERATING INSTRUCTIONS

CH1 VALVE = 0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH1 = DRAWBAR STEER.

Operating the channel shows the current flowing in the cil

CH2 VALVE = 0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH2 = DRAWBAR STEER

Operating the channel shows the current in the coil

CH3 VALVE = 0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH3 = DIGGER SHARE RAISE

Operating the channel shows the current in the coil

CH4 VALVE = 0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH4 = DIGGER SHARE LOWER

Operating the channel shows the current in the coil

CH5 VALVE = 0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH5 = AXLE STEER

Operating the channel shows the current in the coil

CH6 VALVE = 0 ERM
_-----
_-----
OUTPUT V = 0.0V

CH6 = AXLE STEER.

Operating the channel shows the voltage in the coil

CH7 VALVE = 0 ERM
_-----
_-----
OUTPUT V = 0.0V

CH7 = CROSS WEB SIDE SHIFT LEFT

Operating the channel shows the voltage in the coil

CH8 VALVE = 0 ERM
_-----
_-----
OUTPUT V = 0.0V

CH8 = CROSS WEB SIDE SHIFT RIGHT.

Operating the channel shows the voltage in the coil

CH9 VALVE = 0 ERM
_-----
_-----
OUTPUT V = 0.0V

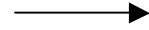
CH9 = DIGGER CHECK.

Operating the channel shows the voltage in the coil

CH10 VALVE = 0 ERM
_-----
_-----
OUTPUT V = 0.0V

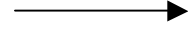
CH10 = AXLE LEVEL LEFT LOWER.

Operating the channel shows the voltage g in the coil



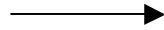
```
CH11VALVE = 0 ERM
***_-----***
***_-----***
OUTPUT V = 0.0V
```

CH11 = AXLE LEVEL RIGHT LOWER.
Operating the channel shows the voltage in the coil



```
CH12VALVE = 0 ERM
***_-----***
***_-----***
OUTPUT V = 0.0V
```

CH12 = BOULDER BOX LOWER.
Operating the channel shows the voltage in the coil



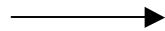
```
CH13VALVE = 0 ERM
***_-----***
***_-----***
OUTPUT I = 0.0A
```

CH13 = CROSS WEB RUN LEFT.
Operating the channel shows the current in the coil



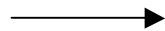
```
CH14VALVE = 0 ERM
***_-----***
***_-----***
OUTPUT I = 0.0A
```

CH14 = CROSS WEB RUN RIGHT
Operating the channel shows the current in the coil



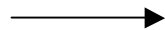
```
CH15VALVE = 0 ERM
***_-----***
***_-----***
OUTPUT I = 0.0A
```

CH15 = VARI FLOW.
Operating the channel shows the current in the coil



```
CH16VALVE = 0 ERM
***_-----***
***_-----***
OUTPUT I = 0.0A
```

CH16 = HCX STARS.
Operating the channel shows the current in the coil



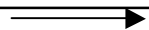
```
CH17VALVE = 0 ERM
***_-----***
***_-----***
OUTPUT I = 0.0A
```

CH17 = BOULDER STARS.
Operating the channel shows the current in the coil



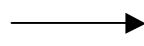
```
CH18VALVE = 0 ERM
***_-----***
***_-----***
OUTPUT I = 0.0A
```

CH18 = BOULDER BOX RAISE.



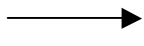
```
CH19VALVE = 0 ERM
***_-----***
*** _----- ***
OUTPUT I = 0.0A
```

CH19 = CROSS WEB LOWER.
Operating the channel shows the current in the coil



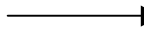
```
CH20VALVE = 0 ERM
***_-----***
*** _----- ***
OUTPUT I = 0.0A
```

CH20 = CROSS WEB RAISE.
Operating the channel shows the current in the coil



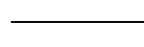
```
CH21VALVE = 0 ERM
***_-----***
*** _----- ***
OUTPUT I = 0.0A
```

CH21 = HCX LOWER.
Operating the channel shows the current in the coil



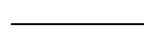
```
CH22VALVE = 0 ERM
***_-----***
*** _----- ***
OUTPUT I = 0.0A
```

CH22 = HCX RAISE.
Operating the channel shows the current in the coil



```
CH23VALVE = 0 ERM
***_-----***
*** _----- ***
OUTPUT I = 0.0A
```

CH23 = AXLE LEVEL LEFT RAISE.
Operating the channel shows the current in the coil



```
CH24VALVE = 0 ERM
***_-----***
*** _----- ***
OUTPUT I = 0.0A
```

CH24 = AXLE LEVEL RIGHT RAISE.
Operating the channel shows the current in the coil

Exit menu display by 'F3' + 'F2'.

SETTING AND OPERATING INSTRUCTIONS

In the event of a fault occurring which requires the main processor module to be replaced, or if the version of the operating software is upgraded, or reloaded then it is necessary to reset the default parameters of the system. After resetting the defaults the parameters can be reset to suit the operating requirements.

TO SET DEFAULT PARAMETERS

Turn on the system.

On the service terminal display enter by pressing F1 + ENTER.

Step down through the levels with the Down arrow to 'STORE DEFAULT GENERAL'

Set the password to '6', then press 'ENTER'

Exiting the level with 'F1'+ 'ENTER' sets the defaults.

Again enter the display with 'F1' + 'ENTER'

Step down through the levels with the Down arrow to 'STORE DEFAULT CHANNEL'

Set the password to '6', then press 'ENTER'

Exiting the level with 'F1'+ 'ENTER' sets the defaults.

Turn off the system.

Turn on the system, check, and reset the system parameters to suit the machine by scrolling through the display screen on the control box using the down arrow, and the left/right arrows to select options, as shown on the parameter list.

The default parameters set above will configure the system for a standard vision machine, which uses the ELMR194 basic slave module, and fitted with 'analogue depth sensors.

SET DEFAULT VALUES

These values are all adjustable from the main display screens. Follow the instructions on the screen using 'F4' to increase values, and 'F5' to decrease values. Revised values must saved with the 'ENTER' key to be effective.

When the 'ENTER' button is pressed, and the 4 green lights above the display screen flash on the revised parameter value shown on the screen is saved as the working value.

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PARAMETERS WITH DIRECT ACCESS

The preset values will need to be varied to suit the operation of each machine; before revising programmes, or resetting defaults, note any variations to allow them to be re-entered.

1	PAR1	AnalogDigger Digger Analog: Value = 1 Onion Gate: Value = 2 Cleaner Analog: Value = 4
2	PAR2	AutoDpthUpFlw: Auto Depth Raise Flow Valve [ltr]
3	PAR3	AutoDpthDwFlw Auto Depth Lower Flow Valve [ltr]
4	PAR4	RaiseTime Raise Time [ms]
5	PAR5	AnaSensMax Analog Sensor Max Band [mm]
6	PAR6	AnaSensMin Analog Sensor Min Band [mm]
7	PAR7	BoulderBoxFlw Boulder Box Flow Valve [ltr]

TO FLASH (LOAD) THE PROGRAMME

With the control system connected together, turn of the system at the control box.

Remove the cover from the junction box, and connect the P.C. to the CAN – CPC port on the distribution board.

Turn off the ‘Flash switch’ on the distribution board.

Turn on the system at the control box.

Select ‘Flash with local ID on the P.C. screen.

When prompted on the screen turn on the ‘Flash switch’

Wait for the programme to reload.

Turn off the system, disconnect the P.C., and replace the distribution box cover.

After loading the programme it is necessary to set the ‘Default Parameters’.

MODULE CONNECTIONS AND WIRE IDENTIFICATION

The wiring connections and channel allocations for the system are listed in following tables.

The pin numbers refer to the multi-plug connections on the modules.

The cable numbers refer to the continuity numbers on the cables in the loom.

The output channel numbers for the 190 module relate to the identification numbers displayed on the Diagnostic screens.

Summary Table ELMR190

Pos	Channel.	Standen No & Function	Pin 190	Meaning	div
1	CH1	4; Drawbar Steer	46	ON/OFF1 (4A)	1
2	CH2	5; Drawbar Steer	47	ON/OFF2 (4A)	1
3	CH3	Digger Share Raise	48	PROP 3 (4A)	3
4	CH4	Digger Share Lower	49	PROP 4 (4A)	3
5	CH5	12; Axle Steer	64	ON/OFF5 (4A)	1
6	CH6	13; Axle Steer	61	ON/OFF6 (4A)	1
7	CH7	20; first cross web left	62	ON/OFF6 (4A)	1
8	CH8	21; first cross web right	63	ON/OFF8 (4A)	1
9	CH9	Digger check	24	ON/OFF9 (2,5A)	1
10	CH10	15; axle level left lower	2	ON/OFF10 (2,5A)	1
11	CH11	17; axle level right lower	25	ON/OFF11 (2,5A)	1
12	CH12	41; boulder box	3	ON/OFF12 (2,5A)	1
13	CH13	24; thrd cross web left	42	PROP BB 1.1	3
14	CH14	25; thrd cross web right	20	PROP BB 1.2	3
15	CH15	29; vari flow web	43	PROP BB 1.3	3
16	CH16	32; hcx stars	21	PROP BB 1.4	3
17	CH17	39; boulder stars	44	PROP BB 1.5	3
18	CH18	40; boulder box	22	PROP BB 1.6	3
19	CH19	22; scnd cross web low	45	ON/OFF BB2.1	1
20	CH20	23; scnd cross web raise	11	ON/OFF BB2.2	1
21	CH21	35; hcx lower	50	ON/OFF BB2.3	1
22	CH22	36; hcx raise	51	ON/OFF BB2.4	1
23	CH23	16; axle level left raise	52	ON/OFF BB2.5	1
24	CH24	18; axle level right raise	10	ON/OFF BB2.6	1
25	DIN1	hydraulic drawbar	34	digital Input 1	
26	DIN2	digger share raise	12	digital Input 2	
27	DIN3	digger share lower	35	digital Input 3	
28	DIN4	axle steer left	13	digital Input 4	
29	DIN5	axle steer right	36	digital Input 5	
30	DIN6	cross web first digital proximity switch	14	digital Input 6	
31	DIN7	cross web scnd digital proximity switch	37	digital Input 7	
32	AIN1	Digger share	6	analogue input 1	

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CAN-BUS OPERATING INSTRUCTIONS

PIN No	CABLE COLOUR	CABLE No	FUNCTION	OUTPUT CHANNEL	SENSOR INPUT	FASCIA SWITCH	DIST. BOARD
1	BLUE	EARTH 1	FUSED EARTH				1
2	BLACK	2	AXLE LEVEL LEFT LOWER	CH 10		15	
3	BLACK	3	BOULDER BOX LOWER	CH 12		41	
4	RED	RX	SERIAL CON				4 RX
5	BLUE	TX	SERIAL CON				5TX
6	PURPLE	6	DIGGER ANALOGUE SENSOR		AIN 1		107 / 29
7	PURPLE	7	STEERING SENSOR				
8							
9							
10	BLACK	10	AXLE LEVEL RIGHT RAISE	CH 24		18	
11	BLACK	11	CROSS WEB RAISE	CH 20		23	
12	PURPLE	12	DIGGER RAISE SENSOR (DIGITAL)		DIN 2		35 / 8
13	PURPLE	13	AXLE STEER LEFT SENSOR		DIN 4		22 / 36
14	PURPLE	14	CROSS WEB SIDE SHIFT / RUN SENSOR		DIN 6		31 / 37
15					DIN 8		
16					DIN 10		
17					DIN 12		
18					DIN 14		
19							
20	RED	20	CROSS WEB RUN RIGHT	CH 14		25	
21	RED	21	HCX STARS RUN	CH 16		32	
22	RED	22	BOULDER BOX RAISE	CH 18		40	
23	BROWN	23	REFERANCE SUPPLY VOLTAGE 8.5V				23
24	BLACK	24	DIGGER CHECK	CH 9			[16]
25	BLACK	25	AXLE LEVEL RIGHT LOWER	CH 11		17	
26	BLUE	CAN LOW	CAN BUS SIGNAL				X1.6 / 2
27	RED	CAN HIGH	CAN BUS SIGNAL				X1.5 / 1
28	BROWN	POSITIVE	12VOLT FEED				28
29					AIN 2		
30							
31					AIN 6		
32							
33							
34	PURPLE	34	HYDRAULIC D.BAR SENSOR		DIN 1		40 / 18
35	PURPLE	35	DIGER LOWER SENSOR (DIGITAL)		DIN 3		13 / 9
36	PURPLE	36	AXLE STEER RIGHT SENSOR		DIN 5		23 / 14
37	PURPLE	37	CROSS WEB FOLD SENSOR		DIN 7		25 / 30
38					DIN 9		
39					DIN 11		
40					DIN 13		
41					DIN 15		
42	RED	42	CROSS WEB RUN LEFT	CH 13		24	

CAN-BUS OPERATING INSTRUCTIONS

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45	BLACK	45	CROSS WEB LOWER	CH 19		22	
46	BLACK	46	DRAWBAR RIGHT	CH 1		4	

47	BLACK	47	DRAWBAR LEFT	CH 2		5	
48	RED	48	DIGGER RAISE	CH 3		48	
49	RED	49	DIGGER LOWER	CH 4		49	
50	BLACK	50	HCX LOWER	CH 21		35	
51	BLACK	51	HCX RAISE	CH 22		36	
52	BLACK	52	AXLE LEVEL LEFT RAISE	CH 23		16	
53							
54	BROWN	POSITIVE	12VOLT FEED				54
55	BLUE	EARTH	0VOLT				55
56	BROWN	POSITIVE	12VOLT FEED				56
57	BROWN	POSITIVE	12VOLT FEED				57
58	BROWN	POSITIVE	12VOLT FEED				58
59	BROWN	POSITIVE	12VOLT FEED				59
60	BROWN	POSITIVE	12VOLT FEED				60
61	BLACK	61	AXLE STEER RIGHT	CH 6		13	
62	BLACK	62	CROSS WEB LEFT	CH 7		20	
63	BLACK	63	CROSS WEB RIGHT	CH 8		21	
64	BLACK	64	AXLE STEER LEFT	CH 5		12	
65	BLUE	EARTH	0VOLT				65
66	BLUE	EARTH	0VOLT				66
67	BLUE	EARTH	0VOLT				67
68	BLUE	EARTH	0VOLT				68

LIMITING AND OVERIDING DEFAULT VALUES

During operation it may be necessary to vary defaulted parameters for example to limit the maximum speed of a motor circuit. To be able to select the relevant channel it is necessary to refer to the list of functions to find the allocated channel number.

On the service terminal display enter by pressing F1 + ENTER.

Step down through the levels with the Down arrow to level '3',

Set the password to '6', then press 'ENTER'

Select the required channel with the left/right arrows;

Scroll to the parameter with the up/down arrows

e.g.(the maximum, and minimum coil current limits are shown as follows;

Imin = 750Ma (minimum coil current)

Imax = 1650Ma (maximum coil current)

If these values are altered press 'ENTER' to save the revised value.

Pressing 'ESC' exits without saving changes.

Exiting the level with 'F1'+ 'ENTER' sets the defaults.

CHANNEL '3' DEFAULT SCREENS