

Standen



Can-Bus Operating Instructions

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SYSTEM DESCRIPTION

The electro / hydraulic control system used on the Standen Vision, and Vision 'XS' potato harvesters from 2002 is a CAN-Bus system where all the control signals are carried by one pair of wires. The 12 Volt, 30Amp, power supply is taken directly from the tractor battery too the harvester 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.

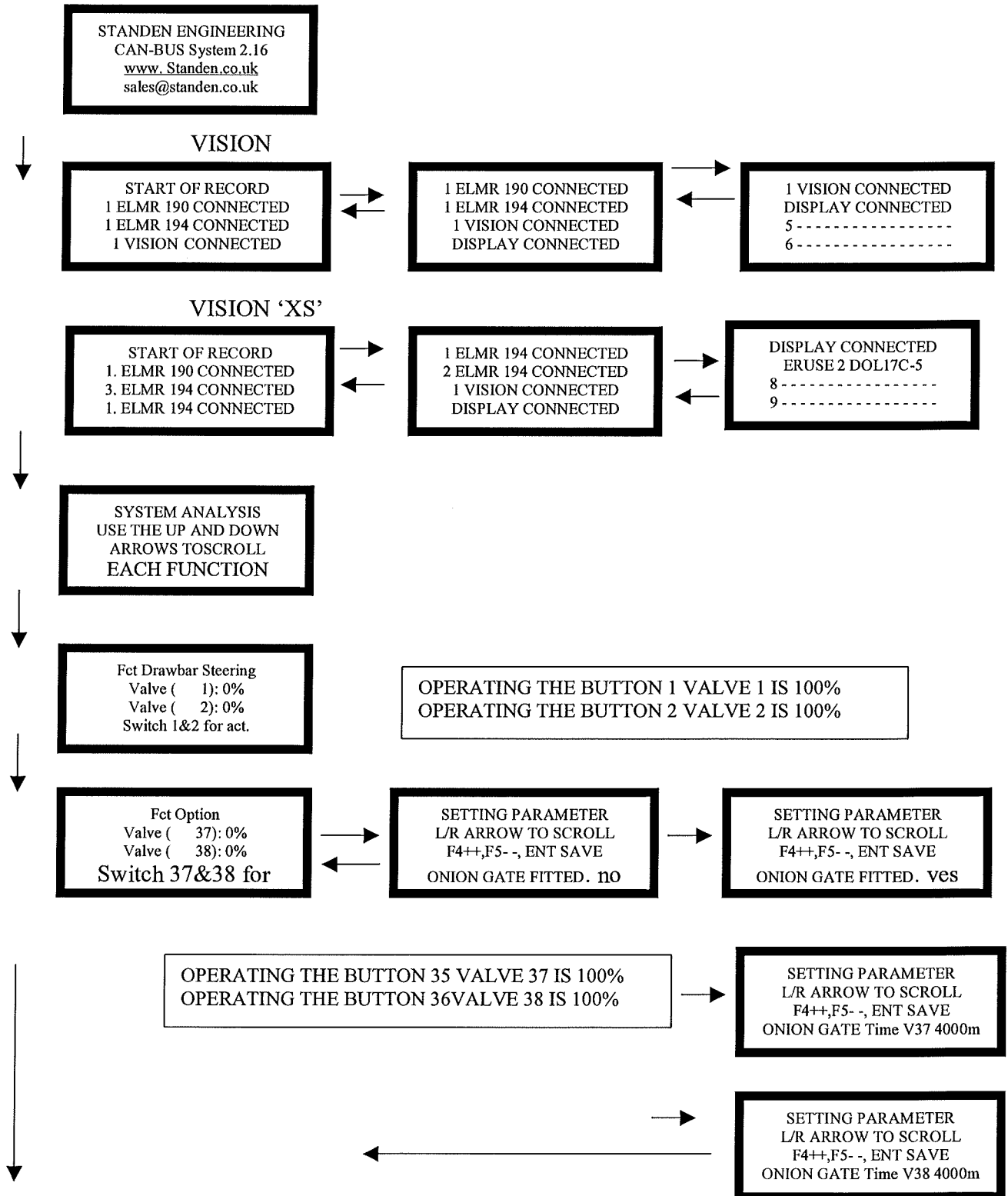
The system comprises of the control fascia, which is connected to the input circuit board. Also in the control box is the service terminal that displays an overall illustration of the system, and allows access to select, and set operating parameters. The terminal display additionally gives access to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

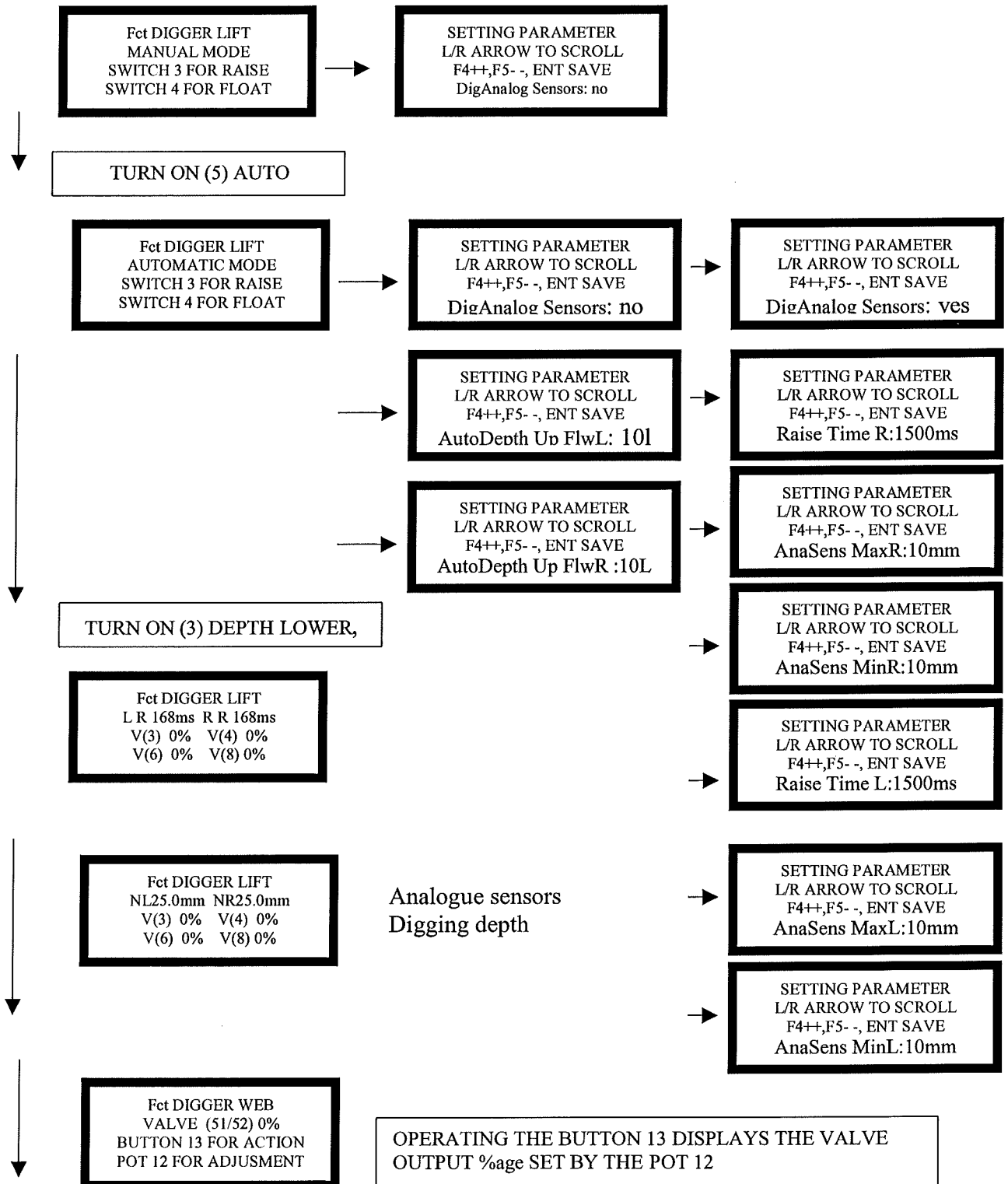
On the harvester the power, and control wires are taken onto a distribution board which allows the connection of the various control sensors, and the fuses which cover all the power outputs. From the distribution board the master processor, and slave modules are connected into the wiring loom which connect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

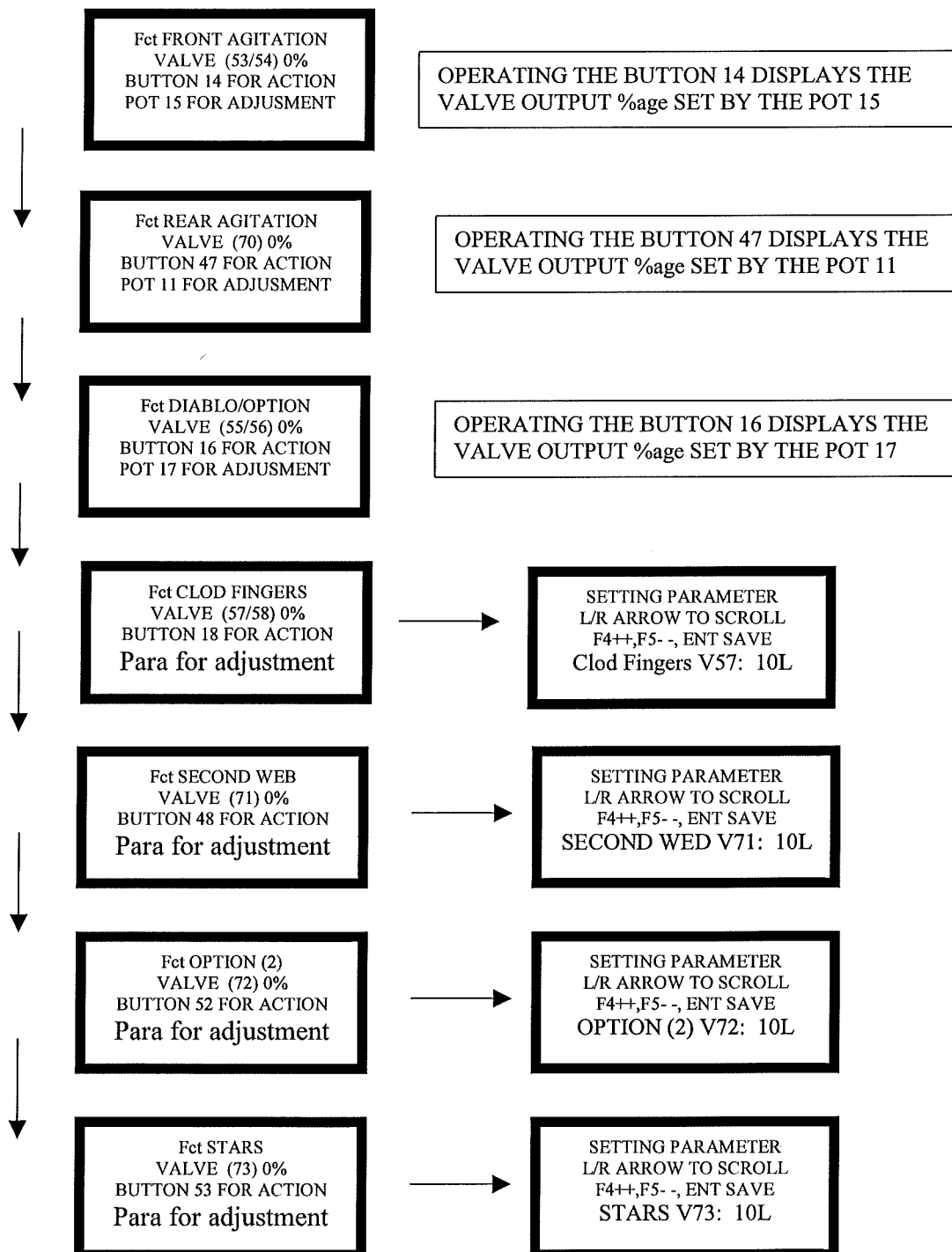
The switching installed on the control panel is designed to cover all build options, and depending on the specification of the machine some functions will not be active.

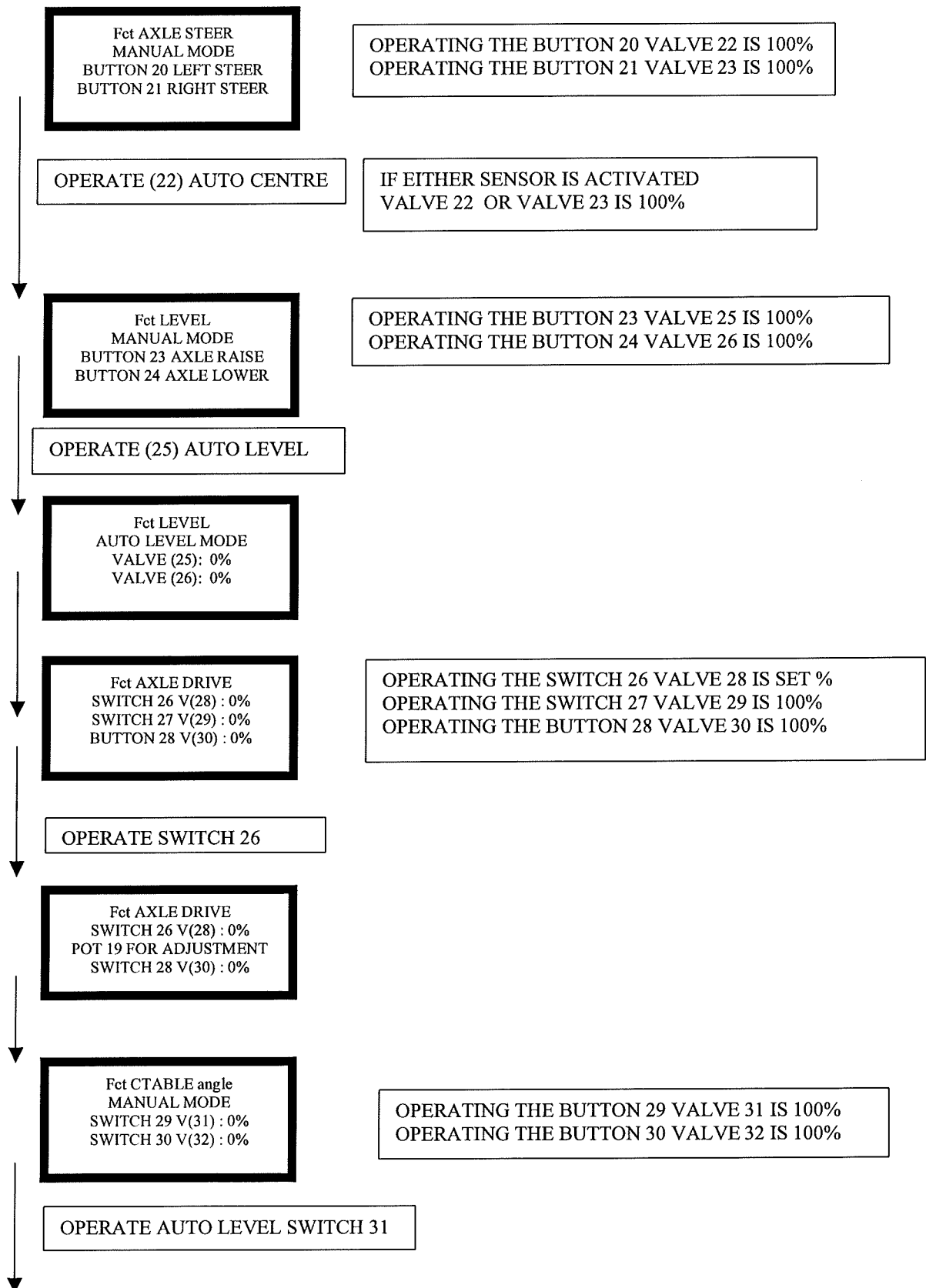
THE MAIN DISPLAY SCREEN

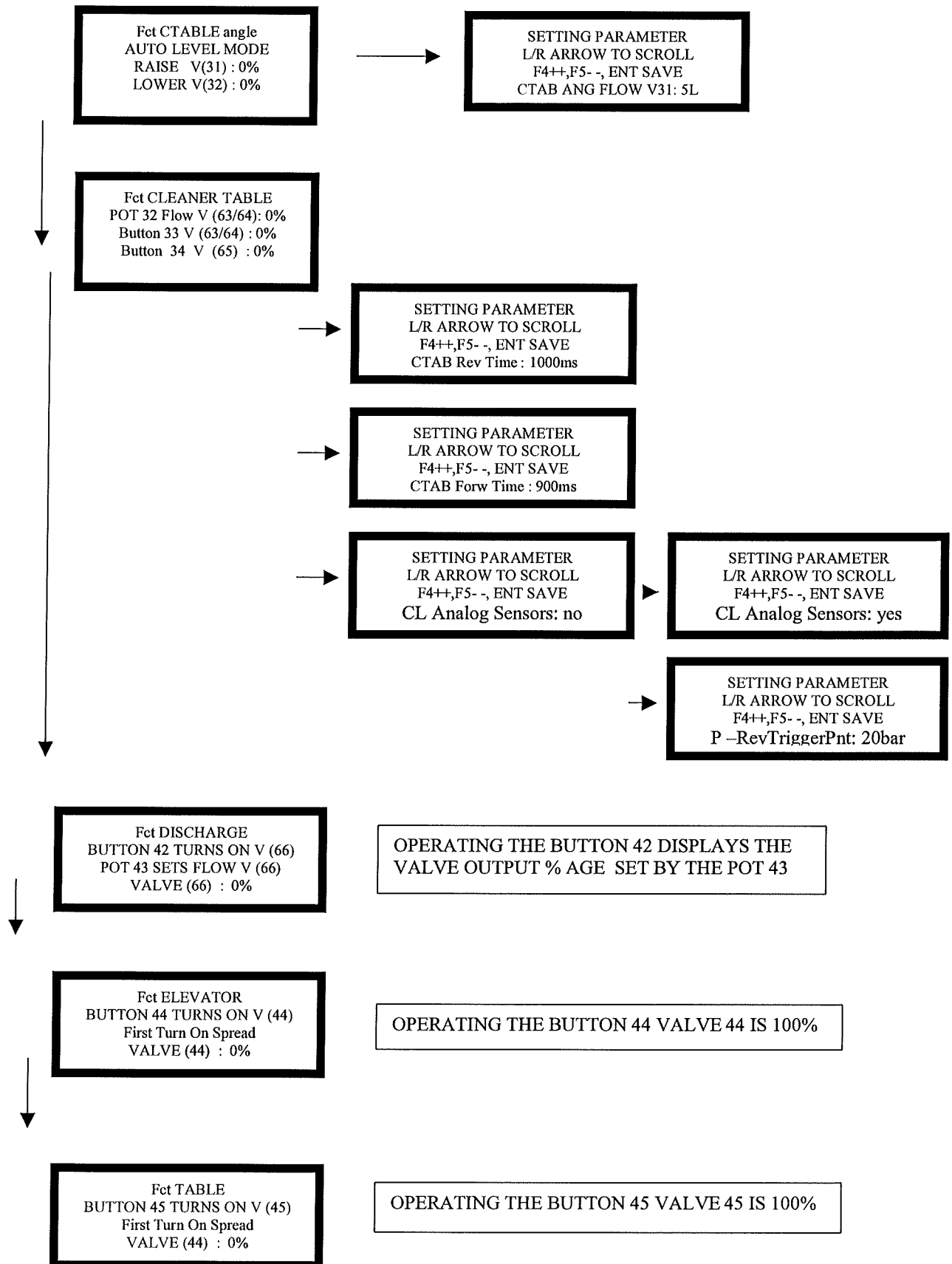
The display screen on the control panel service terminal allows the machine to be set for operating with the possible build options, and to set various parameters to suit the operator.

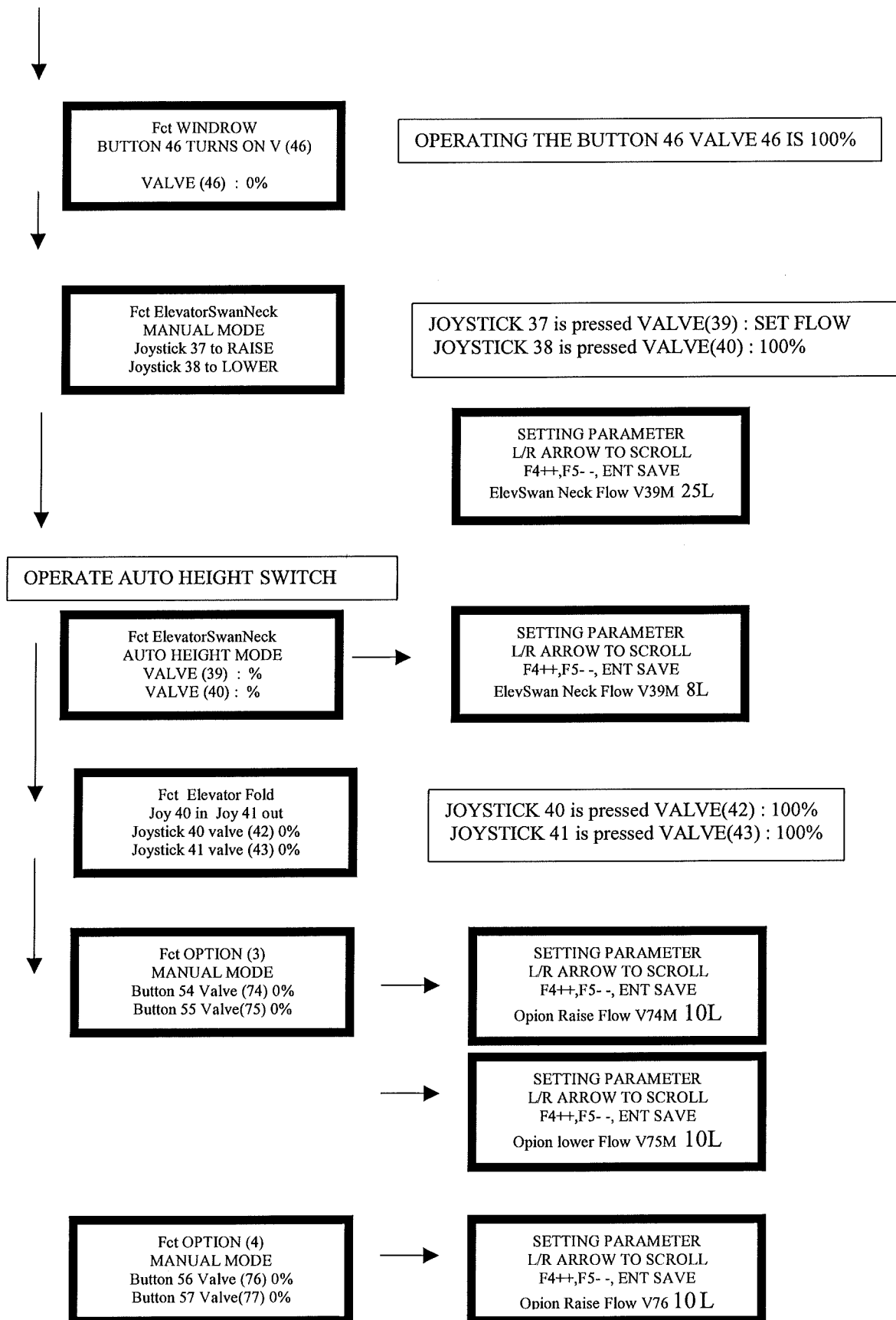


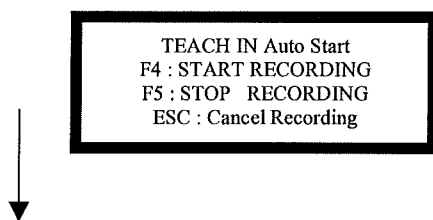
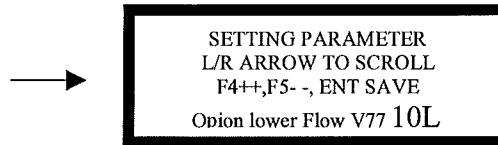




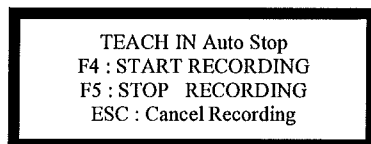








The 'AUTO START' function will remember the sequence of functions carried out between pressing F4, and F5. Pressing 'PROGRAMME START' will repeat this sequence. Pressing 'F4', then directly pressing 'F5' will clear the saved sequence.



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.

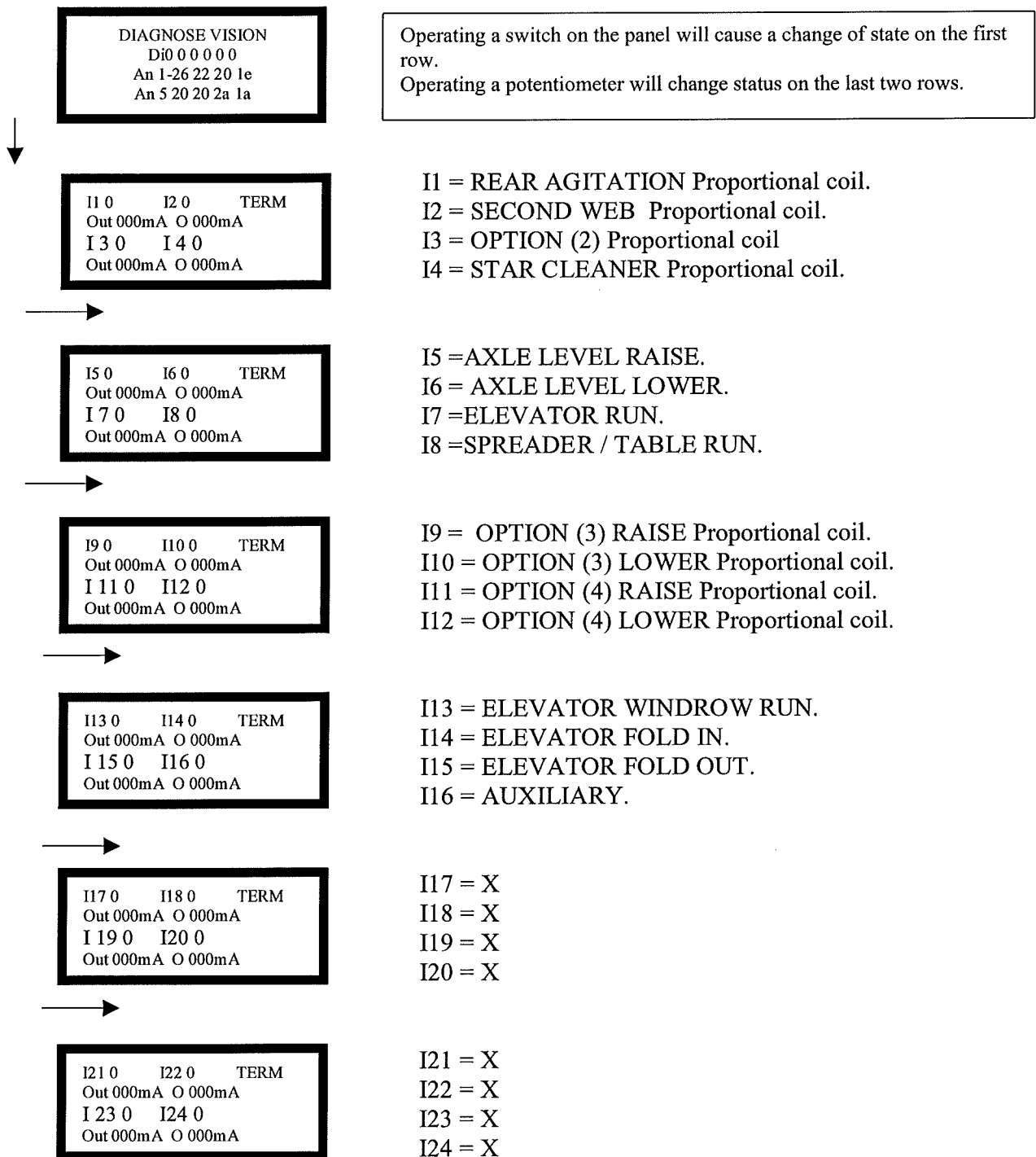


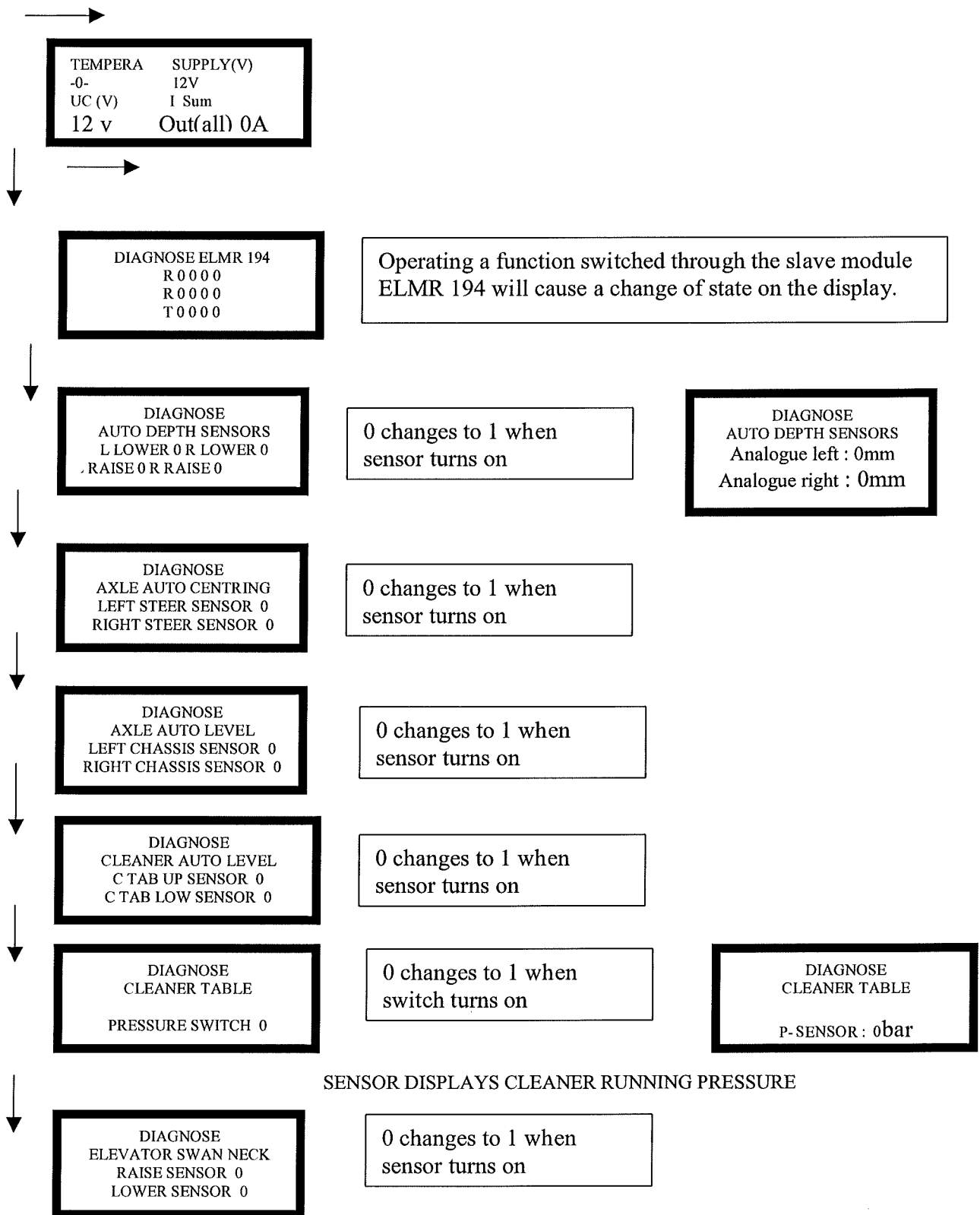
THE SYSTEM DIAGNOSTIC MENU

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.







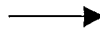
CH1 VALVE=0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH1 = AXLE REVERSE DRIVE.
Operating the channel shows the current flowing in the coil



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

CH2 = AXLE DRIVE Proportional forward
Operating the channel shows the current flowing in the coil



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

CH3 = CLEANER Proportional forward.
Operating the channel shows the current flowing in the coil



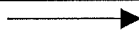
CH4 VALVE=0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH4 = CLEANER Proportional raise.
Operating the channel shows the current flowing in the coil



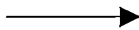
CH5 VALVE=0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH5 = SWAN NECK Proportional raise
Operating the channel shows the current flowing in the coil



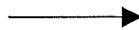
CH6 VALVE=0 ERM
_-----
_-----
OUTPUT V = 0.0V

CH6 = CLEANER LOWER.
Operating the channel shows the voltage flowing in the coil



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

CH7 = CLEANER REVERSE.
Operating the channel shows the voltage flowing in the coil



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

CH8 = SWAN NECK LOWER.
Operating the channel shows the voltage flowing in the coil



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

CH9 = RIGHT DIGGER LOWER.
Operating the channel shows the voltage flowing in the coil

→
CH10VALVE=0 ERM
_-----
_-----
OUTPUT V = 0.0V

CH10 = AXLE STEER LEFT.
Operating the channel shows the voltage flowing in the coil

→
CH11VALVE=0 ERM
_-----
_-----
OUTPUT V = 0.0V

CH11 = AXLE STEER RIGHT.
Operating the channel shows the voltage flowing in the coil

→
CH12VALVE=0 ERM
_-----
_-----
OUTPUT V = 0.0V

CH12 = AXLE HIGH POWER.
Operating the channel shows the voltage flowing in the coil

→
CH13VALVE=0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH13 = LEFT DIGGER Proportional raise.
Operating the channel shows the current flowing in the coil

→
CH14VALVE=0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH14 = RIGHT DIGGER Proportional raise.
Operating the channel shows the current flowing in the coil

→
CH15VALVE=0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH15 = DIGGER WEB Proportional coil.
Operating the channel shows the current flowing in the coil

→
CH16VALVE=0 ERM
_-----
_-----
OUTPUT I = 0.0A

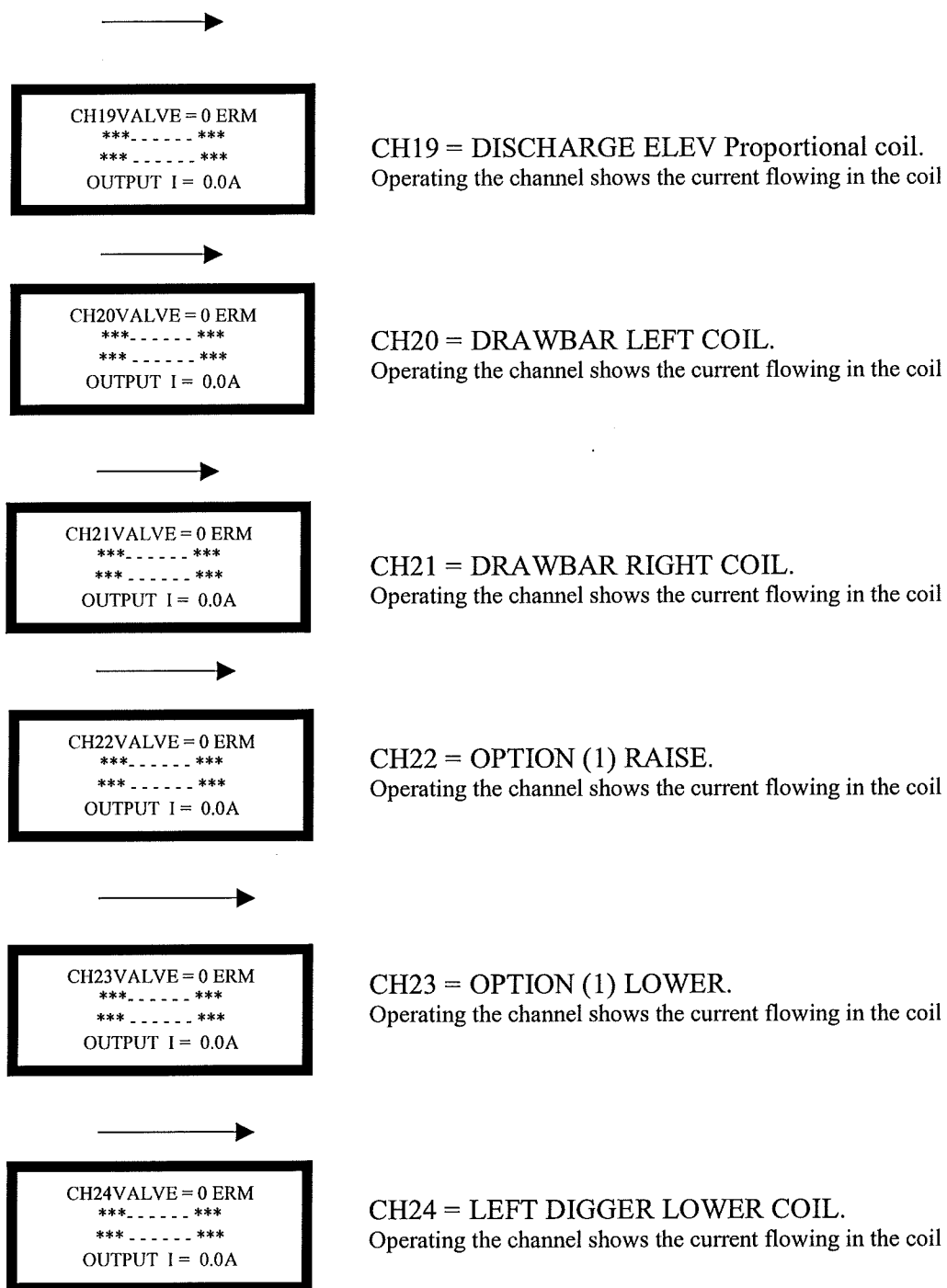
CH16 = AGITATOR Proportional coil.
Operating the channel shows the current flowing in the coil

→
CH17VALVE=0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH17 = DIABLO Proportional coil.
Operating the channel shows the current flowing in the coil

→
CH18VALVE=0 ERM
_-----
_-----
OUTPUT I = 0.0A

CH18 = CLOD FINGER Proportional coil.
Operating the channel shows the current flowing 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.

For a Vision 'XS' which uses the larger ELMR196 slave module the system parameters have to be set as follows.

Turn on the system.

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

Step down through the levels with the Down arrow to 'SETUP LEVEL 2 GENERAL'

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

Step down through the levels with the Down arrow to 'ELMR 194 Number 1'

Change the number '1' for ELMR194 too '3' to identify the ELMR196 on the system 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 SLAVE'

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

Exiting the level with 'F1'+ 'ENTER' pressed together sets the defaults for the ELMR196.

Turn off the system.

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.

PARAMETERS WITH DIRECT ACCESS

1	PAR1	Analg/OnionGat: Digger Analog: Value = 1 Onion Gate: Value = 2 Cleaner Analog: Value = 4
2	PAR2	CTabAngFlowV31: Cleaner Table Angle Flow Valve(31) [ltr]
3	PAR3	CTabRev. Time Cleaner Table Reverse Time [ms]
4	PAR4	CTabForw Time Cleaner Table Forward Time [ms]
5	PAR5	ElevSwanFloV39A Elevator Swan Neck Flow Valve(39) Automatic Mode [ltr]
6	PAR6	OnionGaTimeV37 Onion Gate Time for Valve(37) [ms]
7	PAR7	OnionGaTimeV38 Onion Gate Time for Valve(38) [ms]
8	PAR8	AutoDpthUpFlwL Auto Depth Raise Flow Left Valve(3) [ltr]
9	PAR9	AutoDpthUpFlwR Auto Depth Raise Flow Right Valve(4) [ltr]
10	PAR10	p-RevTrggerPnt Pressure Reverse Trigger Point [bar]
11	PAR11	RaiseTimeR Raise Time Right [ms]
12	PAR12	RaiseTimeL Raise Time Left [ms]
13	PAR13	AnaSensMaxR Analog Sensor Max Band Right [mm] (relative)
14	PAR14	AnaSensMinR Analog Sensor Min Band Right [mm] (relative)
15	PAR15	AnaSensMaxL Analog Sensor Max Band Left [mm] (relative)
16	PAR16	AnaSensMinL Analog Sensor Min Band Left [mm] (relative)
17	PAR17	ClodFingersV57 Clod Fingers Valve 57 [ltr]

18	PAR18	ElevSwanFloV39M Elevator Swan Neck Flow Valve(39) Manual Mode [ltr]
19	PAR19	ScndWebV71 Second Web Valve 71 [ltr]
20	PAR20	Option0V72 Option0 Valve 72 [ltr]
21	PAR21	StarsV73 Stars Valve 73 [ltr]
22	PAR22	Option1 RaiseV74 Option1 Raise Valve 74 [ltr]
23	PAR23	Option1 LowerV75 Option1 Lower Valve 75 [ltr]
24	PAR24	Option2 RaiseV76 Option2 Raise Valve 76 [ltr]
25	PAR25	Option2 LowerV77 Option2 Lower Valve 77 [ltr]

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.

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, & WIRE IDENTIFICATIONS

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.

ELMR 190 MASTER MODULE CONNECTIONS.

ELMR190 PIN No	CABLE COLOUR	CABLE No	FUNCTION	OUTPUT CHANNEL	SENSOR INPUT
1	BLUE	EARTH 1	FUSED EARTH		
2	BLACK	22	AXLE STEER LEFT COIL	CH 10	
3	BLACK	30	AXLE HIGH POWER	CH 12	
4	RED	RX	SERIAL CON		
5	BLUE	TX	SERIAL CON		
6	PURPLE	106	ANALOGUE DEPTH SENSOR LEFT		AIN 1
7	PURPLE	108			
8	PURPLE	161			
9					
10	BLACK	6	LEFT DIGGER LOWER COIL	CH 24	
11	BLACK	1	DRAWBAR LEFT COIL	CH 20	
12	PURPLE	7	DIGITAL LEFT DIGGER LOWER SENSOR		DIN 2
13	PURPLE	9	DIGITAL RIGHT DIGGER LOWER SENSOR		DIN 4
14	PURPLE	23	DIGITAL RIGHT STEER SENSOR		DIN 6
15	PURPLE	32	AUTO CLEANER LOWER SENSOR		DIN 8
16	PURPLE	26	AUTO AXLE LEVEL LOWER SENSOR		DIN 10
17	PURPLE	62	DIGITAL PRESSURE SWITCH		DIN 12
18	PURPLE	40	AUTO HEIGHT RAISE SENSOR		DIN 14
19					
20	RED	4	RIGHT DIGGER PROPORTIONAL RAISE	CH 14	
21	RED	53	AGITATOR PROPORTIONAL COIL	CH 16	
22	RED	57	CLOD FINGER PROPORTIONAL COIL	CH 18	
23	BROWN	84	REFERENCE SUPPLY VOLTAGE 8.5V		
24	BLACK	8	RIGHT DIGGER LOWER COIL	CH 9	
25	BLACK	23	AXLE STEER RIGHT COIL	CH 11	
26	BLUE	CAN LOW	CAN BUS SIGNAL		
27	RED	CAN HIGH	CAN BUS SIGNAL		
28	BROWN	POSITIVE	12VOLT FEED		
29	PURPLE	107	ANALOGUE DIGGER SENSOR RIGHT		AIN 2
30	PURPLE	109			
31	PURPLE	162	PRESSURE TRANSDUCER		AIN 6
32					
33					

34	PURPLE	6	DIGITAL LEFT DIGGER RAISE SENSOR	DIN 1
35	PURPLE	8	DIGITAL RIGHT DIGGER RAISE SENSOR	DIN 3
36	PURPLE	22	DIGITAL LEFT STEER SENSOR	DIN 5
37	PURPLE	31	AUTO CLEANER RAISE SENSOR	DIN 7
38	PURPLE	25	AUTO AXLE LEVEL RAISE SENSOR	DIN 9
39	PURPLE	61	DIGITAL PRESSURE SWITCH	DIN 11
40	PURPLE	39	AUTO HEIGHT LOWER SENSOR	DIN 13
41				
42	RED	3	LEFT DIGGER PROPORTIONAL RAISE	CH 13
43	RED	51	DIGGER WEB PROPORTIONAL COIL	CH 15
44	RED	55	DIABLO PROPORTIONAL COIL	CH 17
45	RED	66	DISCHARGE PROPORTIONAL COIL	CH 19
46	BLACK	29	AXLE DRIVE REVERSE COIL	CH 1
47	BLACK	28	AXLE DRIVE FORWARD COIL	CH 2
48	RED	63	CLEANER FORWARD PROPORTIONAL COIL	CH 3
49	RED	31	CLEANER RAISE COIL	CH 4
50	BLACK	2	DRAWBAR RIGHT COIL	CH 21
51	BLACK	37	OPTION RAISE COIL	CH 22
52	BLACK	38	OPTION LOWER COIL	CH 23
53				
54	BROWN	POSITIVE	12VOLT FEED	
55	BLUE	EARTH	0VOLT (FUSED 1 A)	
56	BROWN	POSITIVE	12VOLT FEED	
57	BROWN	POSITIVE	12VOLT FEED	
58	BROWN	POSITIVE	12VOLT FEED	
59	BROWN	POSITIVE	12VOLT FEED	
60	BROWN	POSITIVE	12VOLT FEED	
61	BLACK	32	CLEANER LOWER COIL	CH 6
62	BLACK	65	CLEANER REVERSE COIL	CH 7
63	BLACK	40	SWAN NECK LOWER COIL	CH 8
64	RED	39	SWAN NECK PROPORTIONAL RAISE COIL	CH 5
65	BLUE	EARTH	0VOLT	
66	BLUE	EARTH	0VOLT	
67	BLUE	EARTH	0VOLT	
68	BLUE	EARTH	0VOLT	

ELMR 194 SLAVE MODULE CONNECTIONS.

ELMR194 PIN No	CABLE COLOUR	CABLE No	FUNCTION
1	RED	CAN HIGH	CAN BUS SIGNAL (IN 88)
2	BLUE	CAN LOW	CAN BUS SIGNAL (OUT 90)
3	BROWN	POSITIVE	12VOLT FEED
4			
5	BLACK	25	AXLE LEVEL RAISE COIL
6	BLACK	26	AXLE LEVEL LOWER COIL
7	BLACK	44	ELEVATOR RUN COIL
8	BLACK	45	SPREADER/TABLE RUN COIL
9	BROWN	POSITIVE	12VOLT FEED
10	BROWN	POSITIVE	12VOLT FEED
11	BLUE	EARTH	0VOLT
12			
13	BLACK	46	ELEVATOR WINDROW COIL
14	BLACK	42	ELEVATOR FOLD IN COIL
15	BLACK	43	ELEVATOR FOLD OUT COIL
16	BLACK	89	SPARE(AUX)

ELMR 196 SLAVE MODULE CONNECTIONS

ELMR196 PIN No	CABLE COLOUR	CABLE No	FUNCTION	OUTPUT CHANNEL
1	BROWN	POSITIVE	12 VOLT FEED	
2	BLACK	25	AXLE LEVEL RAISE COIL	SLAVE CH 5
3	BLACK	26	AXLE LEVEL LOWER COIL	SLAVE CH 6
4	BLACK	44	ELEVATOR RUN COIL	SLAVE CH 7
5	BLACK	45	SPREADER/TABLE RUN COIL	SLAVE CH 8
6				
7				
8				
9				
10	BLACK	46	ELEVATOR WINDROW COIL	SLAVE CH 13
11	BLACK	42	ELEVATOR FOLD IN COIL	SLAVE CH 14
12	BLACK	43	ELEVATOR FOLD OUT COIL	SLAVE CH 15
13	BLACK	89	SPARE (AUX)	SLAVE CH 16
14	BROWN	POSITIVE	12 VOLT FEED	
15	BROWN	POSITIVE	12 VOLT FEED	
16	BLUE	EARTH	0 VOLT	
17	BLUE	EARTH	0 VOLT	
18	RED	71	SECOND WEB PROPORTIONAL COIL	SLAVE CH 2
19	RED	73	STAR CLEANER PROPORTIONAL COIL	SLAVE CH 4
20				
21				
22	RED	74	OPTION VALVE 3 RAISE PROPORTIONAL COIL	SLAVE CH 9
23	RED	75	OPTION VALVE 3 LOWER PROPORTIONAL COIL	SLAVE CH 10
24	RED	76	OPTION VALVE 4 RAISE PROPORTIONAL COIL	SLAVE CH 11
25	RED	77	OPTION VALVE 4 LOWER PROPORTIONAL COIL	SLAVE CH 12
26	BLUE	CAN LOW -	CAN BUS SIGNAL IN	
27	RED	CAN HIGH +	CAN BUS SIGNAL IN	
28	BROWN	POSITIVE	12 VOLT FEED	
29	BROWN	POSITIVE	12 VOLT FEED	
30	BLUE	EARTH	0 VOLT	
31	BLUE	EARTH	0 VOLT	
32	RED	70	REAR AGITATION PROPORTIONAL COIL	SLAVE CH 1
33	RED	72	OPTION VALVE 2 PROPORTIONAL COIL	SLAVE CH 3
34				
35				
36	BROWN	POSITIVE	FUSED 12 VOLT FEED	
37				
38				
39				
40	BLUE	CAN LOW -	CAN BUS SIGNAL OUT	
41	RED	CAN HIGH +	CAN BUS SIGNAL OUT	
42	BROWN	POSITIVE	12VOLT FEED	

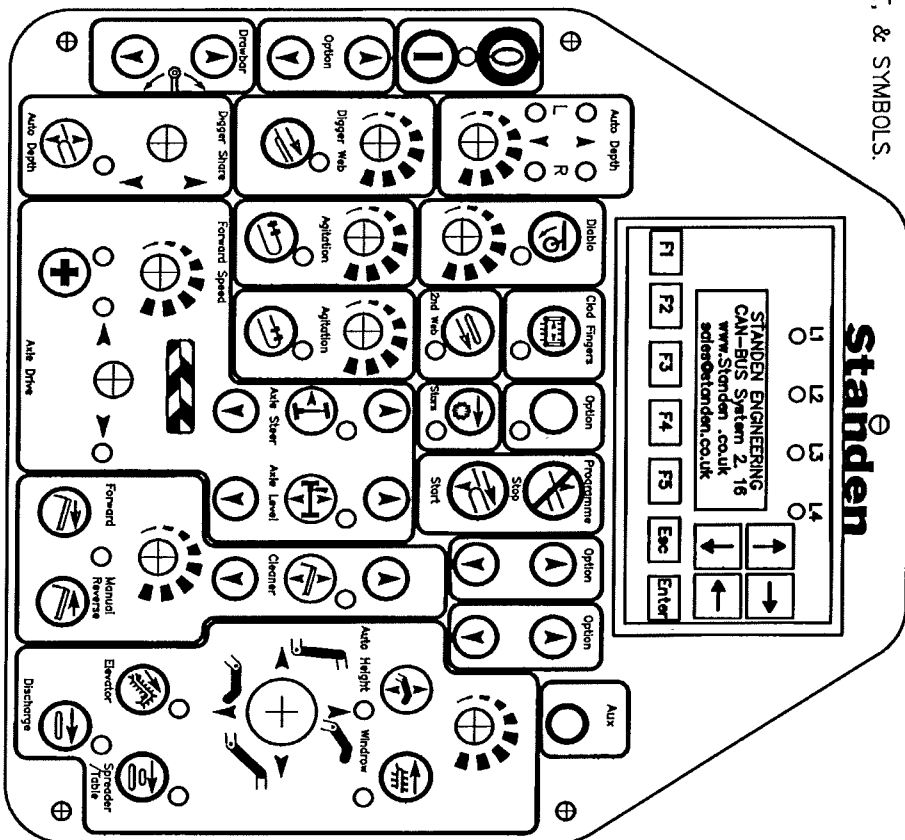
THIRD ANGLE PROJECTION

DO NOT SCALE

IF IN DOUBT ASK

REMOVE ALL SHARP EDGES

FASCIA TEXT, & SYMBOLS.



STANDEN ENGINEERING LTD
HEREFORD WORKS,
STATION ROAD,
ELBAY CAMP,
ELBAY CAMP,
ENGLAND

MACHINE	VISION	CONTROL BOX	DESCRIPTION	FASCIA SWITCHES
ASSEMBLY	CONTROL BOX	DATE	SCALE	N.T.S.
DRAWN	R. CABORN	19 MARCH 2002		

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

COMPONENT FINISH

ISSUE	DATE	CHANGE	REASON	DRAWN	SIGNED
1	03-02				

PART No

DRAWING No

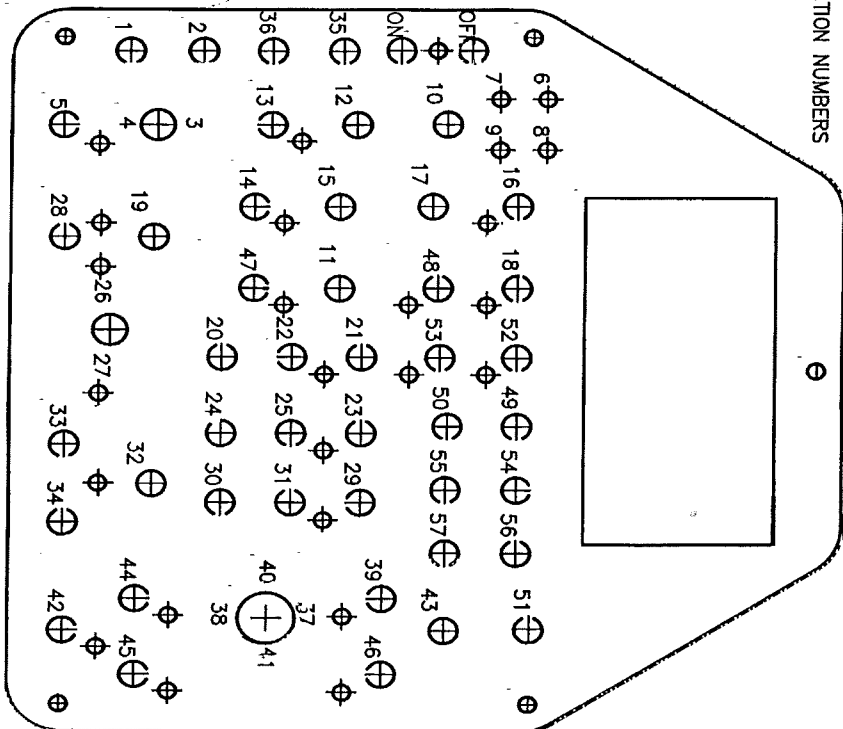
THIRD ANGLE PROJECTION

DO NOT SCALE

IF IN DOUBT ASK

REMOVE ALL SHARP EDGES

SWITCH ALLOCATION NUMBERS



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

MACHINE
VISION
ASSEMBLY
CONTROL BOX
DESCRIPTION
SWITCH NUMBERS

DRAWN
R.CABORN,
DATE
16 JULY 2002
SCALE
N.T.S.

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

COMPONENT FINISH

ISSUE
A
DATE
07-02

CHANGE
MATERIAL
DRAWN
SIGNED
R.C.

PART No

DRAWING No

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)

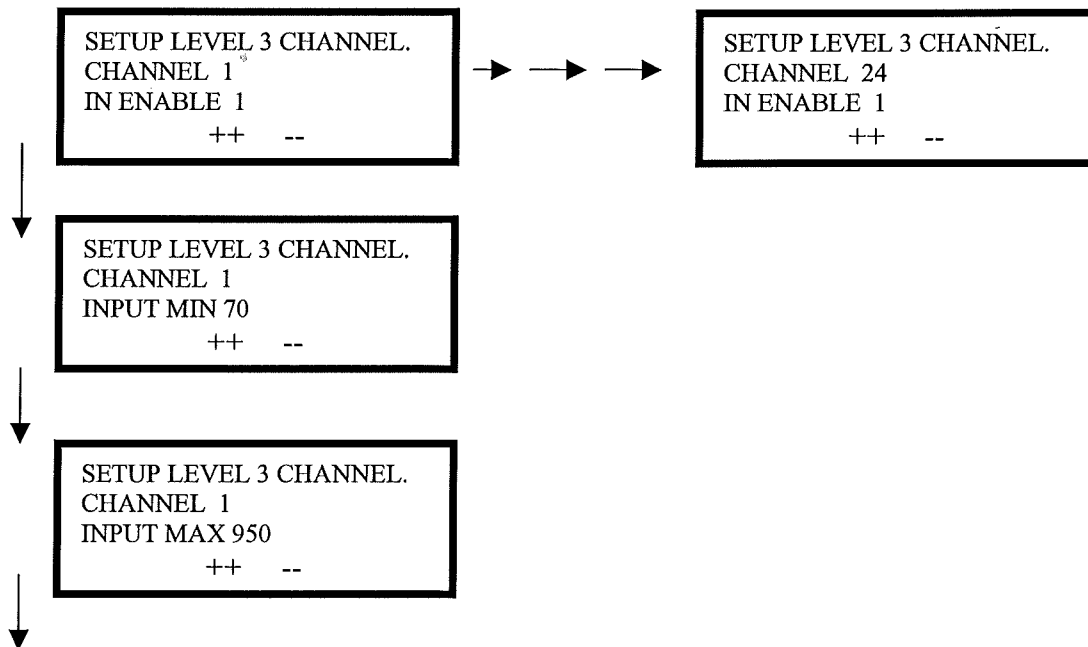
 Imax = 1650Ma (maximum coil current)

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



SETUP LEVEL 3 CHANNEL.
CHANNEL 1
I MIN 750 Ma
++ --



SETUP LEVEL 3 CHANNEL.
CHANNEL 1
I MAX 1650 Ma
++ --

REDUCING 'I MAX' ON A PROPORTIONAL COIL WILL
ALLOW A MAXIMUM SPEED TO BE LIMITED, THIS
CANNOT BE OVERRIDDEN DIRECTLY WITHOUT
ACCESSING THIS LEVEL 3 CHANNEL.

