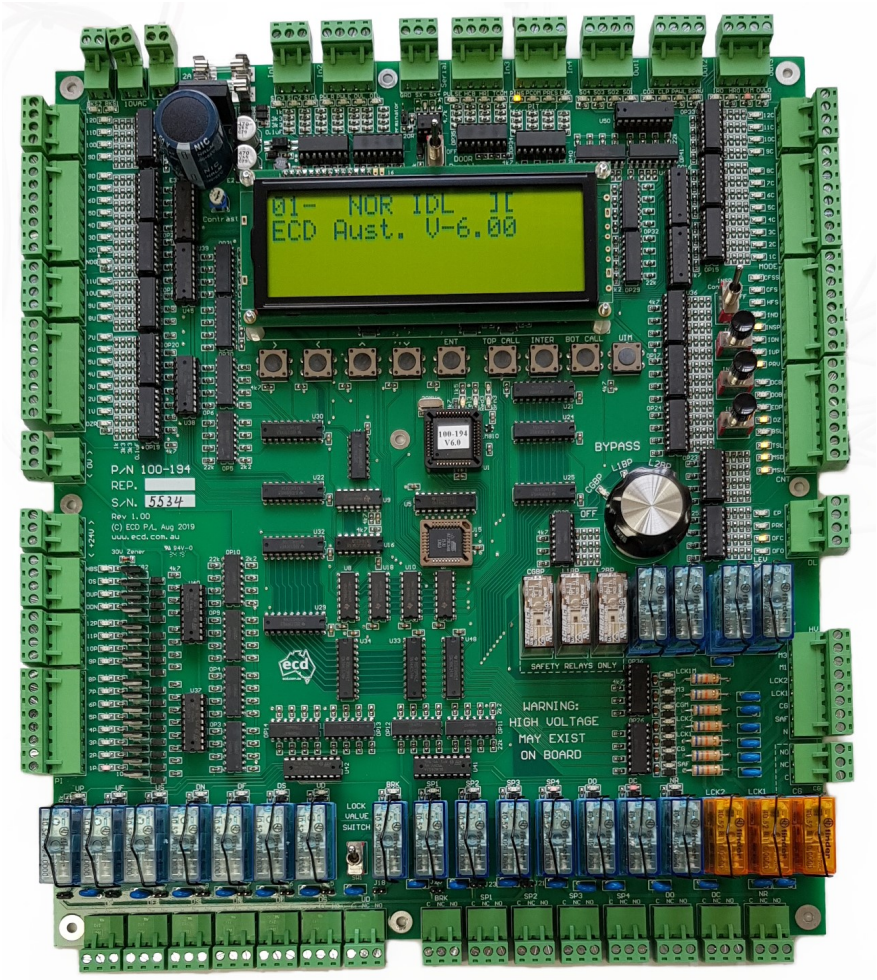
100-194 EN81 Controller Manual



Revision Date: Jan 23, 2023

ECD System Manual

ELECTRONIC CIRCUIT DESIGNS PTY. LTD.

Operation Guide

This manual is for controller 100-194 to comply with the Lift Standard EN81-20/50

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Section 1

Section 1: Safety Regulations & Introduction

Section 1.1 Safety Regulations

Elevator controllers and other electrical components can cause serious harm or death if installation guides are not met. It is the responsibility of the installer of our equipment to ensure that once installed, the equipment does not pose any threat, danger or hazard.

Installation of this equipment shall be done in accordance with AS1735 for Australia and with all applicable local codes.

Section 1.2 Obligations and Liability

1.2.1 Following operating instructions.

- In order to ensure safe handling and problem free operation of this equipment, it is absolutely essential for the relevant personal to be fully acquainted with the relevant safety regulations.
- These operating instructions contain the most important information for operating the machine correctly and safely.
- These operating instructions, in particular the safety regulations, must be observed by all those persons who work on the equipment.
- Furthermore, all locally applicable rules and regulations relating to accident prevention and installation must be observed.

1.2.2 Obligations of operator.

The operator undertakes to allow only those persons to work on the equipment who

- Are fully acquainted with the basic regulations relating to safety in the workplace and accident prevention and to have been trained in handling the equipment.
- Have read the safety regulations and the warning notices contained in these the operating instructions.
- Regular checks are conducted to ensure that personnel perform their duties with safety considerations foremost in their minds.

1.2.3 Obligations of personnel.

All personnel charged with working on the machine undertake prior to starting work to

- Observe the basic regulations relating to safety in the workplace and accident prevention.
- Read the operating instructions, in particular the safety regulations, and confirm by way of their signature that they have understood them.

1.2.4 Hazards associated with the equipment.

The equipment is built with state-of-the-art technology and recognized safety regulations. Nevertheless, use of the equipment can result in dangers to life and limb for the installer, user or a third party and in impairments to the equipment or to other material property. The equipment must only be used

- For its intended purpose.
- In perfect condition in terms of safety requirements.

Operate the equipment in technically perfect condition and for its intended use only while bearing in mind all safety and hazard considerations and following the operating instructions. In particular, faults which restrict safety must be rectified immediately after they have been identified and at the latest before the equipment is started up.

Compliance Testing for AS/NZS CISPR 22:2002 Class A

WARNING !

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

1.2.5 Warranty and liability.

Our "Sales terms and conditions" apply. These terms and conditions will have been available to the purchaser at time of sale. Warranty and liability shall be limited to repairs and replacement to the equipment purchased from us. Warranty and liability claims shall not be entertained if they can be traced back to one or more of the following causes.

- Equipment not used for its intended purpose.
- Improper installation, startup, operation and maintenance of the equipment.
- Operation of the equipment with faulty safety devices or improperly installed or non-operational safety and protective equipment.
- Failure to observe the information, instructions and notices contained in the operating instructions relating to transportation, storage, installation, startup, operation, maintenance and setting up of the equipment.
- Inadequate monitoring of the equipment parts which are subject to wear.
- Improperly conducted repairs.
- Catastrophes caused by the influence of foreign bodies and force majeure.

1.2.6 Organizational measures.

- The installer and or maintainer shall provide the necessary protective equipment for the personnel
- All existing safety equipment must be checked at regular intervals.

1.2.7 Protective equipment.

- At all times, prior to putting the machine into operation, all protective equipment must be correctly installed and in proper working condition.
- Protective equipment may only be removed
    - after the machine has come to a complete stop and the machine has been disabled to ensure it cannot be started up again.

- if subcomponents are delivered, the operator must install the protective equipment in accordance with regulations

1.2.8 Informal safety measures.

- Keep the operating instructions and circuit diagrams permanently at the site where the equipment is installed.
- In addition to the operating instructions, the generally valid and local regulations relating to accident prevention and environmental protection must be provided and observed.
- Maintain all safety and danger notices on/next to the machine in legible condition and comply with them.
- If the equipment is sold or transferred, the operating instructions must be included with the equipment.

1.2.9 Training of personnel.

- Only personnel who have been trained and instructed are allowed to work on the machine.
- The responsibilities of the personnel must be clearly defined for the machine/controller installation, start up, operation, setting-up, maintenance and repairs.
- Personnel still in the process of being trained are only permitted to work at the machine under the supervision of an experienced person.

1.2.10 Machine controls.

- Under no circumstances carry out any program modifications to the software!
- Only properly instructed personnel are permitted to operate the controls.
- The machine must not be operated if potential electromagnetic interference sources are acting on the machine. Interference sources are e.g. welding equipment, portable phones.

1.2.11 Safety measures during normal operation.

- Only operate the machine when all protective equipment is fully operational.
- Prior to switching on the machine, ensure that the start up can cause no harm to personnel.
- Regularly maintain and check machine for externally identifiable damage and check that all the safety devices are operational.

1.2.12 Hazards caused by electric power.

- **Ensure 0v and +24V are free from other voltages. High voltages may be superimposed on 0V and +24V lines as no reference to ground exists. See Warning 1.2.14**
- Work on the electric power supply may only be carried out by a qualified electrician.
- Check the electrical equipment of the machine at regular intervals.
  Repair loose connections and scorched cables immediately.
- Keep the control cabinet locked at all times. Access is only permitted to authorized personnel with a key or tool.

- If work has to be carried out on live parts, do this only in the presence of a second person who can switch off the master switch in an emergency.

- The machine causes electromagnetic interference sources. For this reason, do not use any sensitive equipment in its vicinity.
- For EMC reasons, the controller must not be modified.

1.2.13 Hazards caused by hydraulic power.

- Only personnel with special knowledge and experience in the field of hydraulics may work on hydraulic equipment.
- Before beginning repairs, depressurize system sections and pressure lines which are to be opened.

1.2.14 Special danger areas (examples).

- When on inspection, always ensure either of the common or direction control buttons stops the lift.
- The common button shall break the safety line and the 0V up/down direction input.
- Never place yourself or any party in a position of danger where relying on any single safety measure.
- Automatic machines start without warning. Care must be taken at all times.

WARNING!
Always treat terminals and conductors as dangerous. High voltages may be superimposed on 0v and 24VDC lines as no reference to ground exists. Always meter these points to ensure correct voltage exists.

1.2.15 Controller Installation Environmental Requirements

Controller cabinet must be installed in a location free from;

- Dust and dirt.
- Excessive heat and humidity. Ambient temperature should not exceed 40°C /104°F.
- Excessive vibrations.
- Mist or water

When mounting controller cabinet, ensure it is suitably supported.

1.2.16 Introduction

The 100-194 lift controller is a 12 stop, simplex or duplex (up to 6 car group), fully collective controller that has been manufactured to comply with the EN81-20/50 standard.

Processor

Under normal operation;

- The red Red3 LED blinks to confirm that the microprocessor is running.
- The yellow Yel3 LED comes on to confirm outputs are enabled.
- The green Grn3 LED comes on during power up and turns off during normal operation. It will also flash once when a new value has been written in to EEPROM.

When re-powering; ensure the lift is off for 10 seconds before turning back on.
On power up, a delay of approximately 2 seconds is given on start up to ensure voltages are stable prior to reading and writing outputs.

Testing RCD / RCBO on 110vac Safety circuit.

To test the trip operation of an RCD / RCBO supplied with a 110VAC safety circuit, place a 1.2K ohm resistor between the load side of the RCD / RCBO and earth.

Section 2

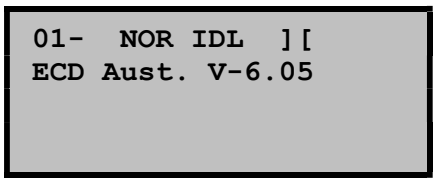
Section 2: EEPROM (Lift Parameter) Settings

EEPROM: How to read LCD and modify settings

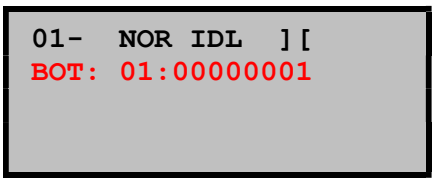
The lift Parameters such as number of floors, door, drive and input settings are adjustable using the on-board LCD and buttons. Parameters are stored in the EEPROM. Each setting has a definition followed by its value in hex followed by its value in bit format. To adjust see below. For parameter definitions and examples see the proceeding EEPROM Parameter Summary.

See also: "Section 5. Liquid Crystal Display" for more LCD information

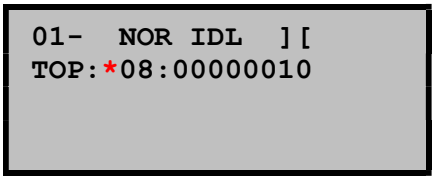
LCD information from the power up state.



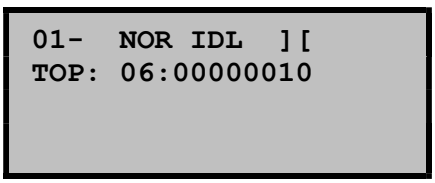
To inspect the settings from the power up state, press the forward ">" button located to the left below the LCD until the EEPROM setting appears.



Use the up "∧" and down "∨" buttons to scroll through the settings. If you want to change a setting value, press the enter "ENT" button. * shall appear on the screen to indicate you are in edit mode.



Now use the up "∧" and down "∨" buttons to change the setting value. When you are at the required value, press the enter "ENT" button again and the * shall disappear and new value shall be stored.



EEPROM Version 6.05 Parameter Summary

Note: Refer to EEPROM Definitions (Full description) for more information.

BOT Bottom floor number
Setting example: BOT 01: 00000001 (Level 1)

TOP Top floor number.
Setting example: TOP 08: 00001000 (Level 8)

BCC Bottom floor car call for "BOT CALL" button on the circuit board
Setting example: BCC 80: 10000000 (Level 1)

TCC Top floor car call for "TOP CALL" button on the circuit board
Setting example: TCC 01: 00000001 (Level 8)

TC1 Top floor car call extension. Ext. of TCC
Setting example: TC1 00: 00000000

CCM Car call mask. Floors allowed.
Setting example: CCM FF: 11111111 (Levels 1-8)

CC1 Car call mask extension. Ext. of CCM. Floors allowed ext.
Setting example: CC1 00: 00000000

UCM Up call mask. Floors allowed.
Setting example: UCM FF: 11111111 (Levels 1U-8U)

UC1 Up call mask extension. Ext. of UCM. Floors allowed ext.
Setting example: UC1 00: 00000000

DCM Down call mask. Floors allowed.
Setting example: DCM 7F: 01111111 (Levels 2D-8D)

DC1 Down call mask extension. Ext. of DCM. Floors allowed ext.
Setting example: DC1 00: 00000000

LOB Lobby floor.
Setting example: LOB 40: 01000000 (Level 2 master floor)

LO1 Lobby floor mask extension. Ext. of LOB
Setting example: LOB 00: 00000000

ZON Zone floor.
Setting example: ZON 10: 00010000 (Zone to Level 4)

ZO1 Zone floor mask extension. Ext. of ZON
Setting example: ZO1 00: 00000000

ZTM Zoning time.
Setting example: ZTM 06: 00000110 (= 60seconds)

HFS Hall fire service floor.
Setting example: HFS 80: 10000000 (Level 1)

HF1 Hall fire service floor mask extension. Ext. of HFS
Setting example: HF1 00: 00000000

SFR Short Floor Run
Setting example: SFR 9F: 10011111 (Short floor between 2&3)

SF1 Short Floor Run mask extension. Ext. of SFR
Setting example: SFR CF: 00111111 (Short floor between 9&10)

L.# Lift Number
Setting example: L.# 02: 00000010 (Lift #2)

#.L Number of Lifts in the group
Setting example: #.L 03: 00000011 (3 Lifts in group)

MOD Mode inputs

Setting example: MOD 02: 00000010 (CFS input inverted)

CNT CNT inputs
Setting example: CNT 02: 00000010 (DOB input inverted)

CIM Intermediate floor car call for "INTER" button on the circuit board
Setting example: CIM 23: 00100011 (Set to Levels 3, 7 and 8)

CI1 Intermediate floor car call extension. Ext. of CIM
Setting example: CI1 40: 01000000 (Set to Level 10)

LOK Single or Dual Lock circuit.
Setting example: LOK 01: 00000001 (Single door locks)
Setting example: LOK 02: 00000001 (Dual door locks)

RPT Run protection timer
Setting example: RPT 14: 00010100 (20s). Min 14, Max 2D

DRV Drive control type.
Setting example: DRV 02: 00000010 (3010/2CH/S block)

ST2 Star Delta time
Setting example: ST2 08: 00001000 (= 800ms)

SDX Star Delta Exchange time.
Setting example: SDX 01: 00000001 (= 100ms)

MSL Magnet slowing type.
Setting example: MSL 00: 00000000 (MSU/MSD slowing)
MSL 01: 00000001 (Pulse slowing)

RTM Extend run time. If slowing is obtained less than this time, then add the value of XTM on before dropping high speed.
Setting example: RTM A5: 10100101

XTM Extend run time. If a short floor is determined by RTM then add XTM time on before dropping high speed.
Setting example: XTM 20: 00100000 (extended fast speed run time by 20)

StF Start Fast. Number of pulses it takes to reach fast speed.

StM Start Medium. Number of pulses it takes to reach medium speed.

SlF Slow Fast. Number of pulses it takes to slow from fast speed.

SlM Slow Medium. Number of pulses it takes to slow from medium speed.

BST Brake Switch Time. Time for BKS1 and BKS2 inputs to be initiated
Setting example: BST 13: 0001001 (3s)

DPT Door Protection Time. Maximum time allowed for doors to reach fully open
Setting example: DPT FF: 11111111 (25s)

UIM UnIntended Movement testing
Setting example: UIM 01: 00000001 UIM Test enabled

BSW Brake Switch Polarity
Setting example: BSW 01: 00000001 (normally open brake contact)

DLM Door limit mask.
Setting example: DLM 00: 00000000 (Single doors)

DLI Door limit invert.
Setting example: DLI 00: 00000000 (Limits not inverted)

NR Nudging Relay for door nudging/Passing tone
Setting example: NR 00: 00000000 (Nudging off.)

ADO Advanced Door Opening.
Setting example: ADO 00: 00000000 (off)

DTC Door time car call. Time doors stay fully open after answering a car call
Setting example: DTC 32: 00110010 (5000ms, "5 seconds")

DTH Door time hall call. Time doors stay fully open after answering a hall call
Setting example: DTH 32: 00110010 (5000ms, "5 seconds")

DTL Door time lobby. Time doors stay fully open after answering a "LOB" call
Setting example: DTL 32: 00110010 (5000ms, "5 seconds")

ANS Anti Nuisance EDP.

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Set to the number of times a car call is answered without EDP activation before calls are cancelled.

SSD Soft Starter Drive setting
Setting example: SSD 01: 00000001. Hydraulic lift with Soft Starter motor starting

FD1 Front doors 1-8 mask.
Setting example: FD1 F0: 11110000 (Front doors 1-4)

FD2 Front doors 8-16 mask.
Setting example: FD2 00: 00000000

RD1 Rear doors 1-8 mask.
Setting example: RD1 08: 00001000 (Rear doors 5)

RD2 Rear doors 8-16 mask.
Setting example: RD2 00: 00000000

SD1 Selective rear doors 1-8 mask.
First floor of selective front/rear doors.
Setting example: SD1 10: 00010000 (Levels 4 & 5 selective)

SD2 Selective rear doors 9-16 mask.
First floor of selective front/rear doors.
Setting example: SD2 10: 00010000 (Levels 12 & 13 selective)

DTR Once the lift arrives at the HR floor, the doors shall remain open for the time set as per DTR
Setting example: DTC 32: 00110010 (5000ms, "5 seconds")

HRF Hospital/Hall Recall Floor
Setting example: HRF 40: 01000000 (Set to Level 2)

HR1 Hospital/Hall Recall Floor extension. Ext. of HRF
Setting example: TC1 40: 01000000 (Set to Level 10)

PRK Park/Zone with doors closed/open. Set to 00 – doors closed.

ALP Auxiliary Leveling Pump. Turns on Auxiliary Leveling Pump, for Up Re Level operation.
Setting example:- ALP FF:11111111 (No Auxiliary pump Re-level.)
ALP 01: 00000001 (Re-leveling with Auxiliary pump)

--- Spare

--- Spare

PI Position Indication
Setting example: PI 00: 00000000 (Decimal outputs.)

DT Door Time Close Setup (Enable "DTC/DTH cancelling function")
Setting example: DT 01: 00000001 (DTC/DTH cancelling activated)

LCK EEPROM Lock (unlock default 67)

COD Lock Code (unlock default 89)

--- Spare

--- Spare

EEPROM Definitions (Full description)

ADO - Advanced Door Opening setup

When ADO is set to on, the doors open whilst traveling into the floor. The doors shall commence opening when the lift is within the door zone and the MSU or MSD vane pending direction.
00: 00000000 - Off
01: 00000001 - On

ALP – Auxiliary Leveling Pump operation setup

For hydraulic lifts, ALP can be set to control S01 output to allow Up Re-Leveling using the Auxiliary Pump motor. For "S01" output to energise when performing an Up Re level set ALP to "01" and DRV to "00", "02" or "05".
ALP EEPROM Auxiliary Leveling Pump.
FF: 11111111 "Off"
01: 00000001 "On – operates SP3 for Up Re-Level or inspection"

ANS – Anti Nuisance setup

Set to the number of times a car call is answered without EDP activation before calls are cancelled. Counter is reset to zero if EDP is activated. If a hall call is present as well as a car call, the counter will not increment.
00: 00000000 "Off"
03: 00000011 "On – operates after 3 car calls of no EDP in a row."
1e: 00011110 "On – operates after 30 car calls of no EDP in a row - Default"

BCC Bottom Car Call setup

The controller shall enter a car call to this setting when the "BOT CALL' button on the circuit board is pressed.
Eg;
80: 10000000 (Level 1)
40: 01000000 (Level 2)
20: 00100000 (Level 3)

BOT - Bottom floor setup

Set value to lowest floor served. (01 to 07 valid values)
Lift resets to "BOT" value when BSL limit is activated.
01: 00000001 (Level 1)
02: 00000010 (Level 2)
03: 00000011 (Level 3)
04: 00000100 (Level 4)
05: 00000101 (Level 5)
06: 00000110 (Level 6)
07: 00000111 (Level 7)

BST – Brake Switch Time

For Traction Lifts only
To prove the machine brakes have lifted, brake monitoring switches mounted on each machine brake in conjunction with BST and BSW setting, must be used.
The brake monitoring switches are wired to BKS1 and BKS2 inputs.
BST sets the time for BKS1 and BKS2 input to be initiated, once the brake command (BRK relay pulled in) has been given.
Setting example 01-05: 01: 00000001 = 1s
(Immediate stop) 02: 00000010 = 2s

03: 00000011 = 3s
04: 00000100 = 4s
05: 00000101 = 5s

If the input is not detected within the specified time (setting 01-05) the lift shall stop immediately and display BST in LCD Lift Status.

Setting example 11-15: **(stop next floor)**
11: 00010001 = 1s
12: 00010010 = 2s
13: 00010011 = 3s
14: 00010100 = 4s
15: 00010101 = 5s

If the input is not detected within the specified time (setting 11-15) the lift shall stop at the next available floor, open and close the doors and display "BST" - BRK Lifting Timeout, in the LCD Lift Status. Door open button will still operate.
BST is a fatal error. Reset is only via a processor POR. BST error shall be disabled when the lift is on inspection

Nb: Default BST setting shall be "13" (stop at next floor). Any other setting than above will default to setting "01"
BSD and BST errors shall be disabled when the lift is on inspection
See also Input - Output, BKS1, BKS2
See also LCD lift status BSD, BST.
See also EEPROM setting BSW

BSW – Brake SWitch Polarity

Used to set brake switch inputs to normally open or closed:
00: 00000000 Normally closed brake contact. Brake not energised, BKS1 and BKS2 inputs must be on
01: 00000001 Normally open brake contact. Brake not energised, BKS1 and BKS2 inputs must be off
Nb: Default BSW setting shall be "01" (Normally open contact)
See also Input - Output, BKS1, BKS2

CIM - Car call InterMediate setup

The controller shall enter a car call(s) to this setting when the "INTER' button on the circuit board is pressed
40: 01000000 (Level 2)
20: 00100000 (Level 3)
30: 00110000 (Level 3 and 4)
01: 01010101 (Level 2,4, and 8)

CI1 - Car Intermediate 1 setup

Extension of CIM
80: 10000000 (Level 9)
10: 00010000 (Level 12)

CCM - Car Call Mask setup

Floors allowed. (MASK). For this lift only.
This setting lets you define the floors which the lift can serve via car calls.
Set bits to a "1" car call allowed or a "0" for not allowed.
C0: 11000000 (1c,2c)
E0: 11100000 (1c,2c,3c)
F0: 11110000 (1c,2c,3c,4c)
F8: 11111000 (1c,2c,3c,4c,5c)
FC: 11111100 (1c,2c,3c,4c,5c,6c)
FE: 11111110 (1c,2c,3c,4c,5c,6c,7c)
FF: 11111111 (1c,2c,3c,4c,5c,6c,7c,8c)
Note: This feature is not to be used to place a floor on security, as this would also disable the car calls in Fire

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Service and other modes of emergency operation.

CC1 - Car Call 1 setup

Extension of CCM
80: 10000000 (9c)
C0: 11000000 (9c,10c)
E0: 11100000 (9c,10c,11c)
F0: 11110000 (9c,10c,11c,12c)
Note: This feature is not to be used to place a floor on security, as this would also disable the car calls in Fire Service and other modes of emergency operation

CNT – CNT input setup

Enables 3 CNT inputs to be inverted
00: 00000000 No inputs inverted.
01: 00000001 DCB. Door close input inverted
02: 00000010 DOB. Door open input inverted
04: 00000100 EDP. EDP input inverted
06: 00000110 DOB and EDP inputs inverted

COD – parameter lockout function

To stop unauthorised adjustments to the EEPROM parameters and to also disable the "Clear fault log" function (see Section 5 – LCD Fault Log), the COD and LCK parameters are used
COD and LCK must be both set to the default values below to allow other parameters to be adjusted
See also EEPROM setting LCK
COD default. 89: 10001001
LCK default. 67: 01100111

DCM - Down Call Mask setup

Down hall calls allowed for this lift only
This setting lets you define the DOWN floors which the lift can serve via DOWN HALL CALLS
With this setting you may disable DOWN hall calls to floors not allowed
Set bits to a "1" hall call allowed or a "0" for not allowed
40: 01000000 (2d)
60: 01100000 (2d,3d)
70: 01110000 (2d,3d,4d)
78: 01111000 (2d,3d,4d,5d)
7C: 01111100 (2d,3d,4d,5d,6d)
7E: 01111110 (2d,3d,4d,5d,6d,7d)
7F: 01111111 (2d,3d,4d,5d,6d,7d,8d)

DC1 – Down Call 1 setup

Extension of DCM
80: 10000000 (9d)
C0: 11000000 (9d,10d)
E0: 11100000 (9d,10d,11d)
F0: 11110000 (9d,10d,11d,12d)

DLI - Door Limit Invert setup

DLI is only valid when DLM is set to 00, 03 , 04 or 06. See also EEPROM setting DLM.
DLI setting is used to invert the DFO and DFC inputs when normally open (n/o) door limit contacts are used.
DLI: 00 "Limits not inverted."
DLI: 01 "Limits inverted." Any setting other than 00 shall default to inverted limits.

DLI set to 00 - Limits not inverted. Using n/c limits.
Doors fully open – DFC LED will be on. DFO LED will off
Doors fully closed – DFC LED will be off. DFO LED will on
Doors midway – DFC LED will be on. DFO LED will on

DLI set to 01 - Limits inverted. Using n/o limits.
Doors fully open – DFC LED will be off. DFO LED will on
Doors fully closed – DFC LED will be on. DFO LED will off
Doors midway – DFC LED will be off. DFO LED will off

DLM - Door Limit setup

DLM setting is used to configure the DFO and DFC inputs and the DO and DC relay operation.
Generally; if you have a single door operator, set DLM to 00.
For two door operators, set DLM to 01. (DLI setting shall be ignored).
See also EEPROM setting DLI, DFC, DFO.
Door limit mask.

Setting example:

DLM 00: 00000000	The door open and door close limits are wired directly to DFO and DFC inputs. These inputs may be inverted using the DLI setting.
DLM 01: 00000001	(Used for front and rear doors) The door open and door close limits are used to operate open and close relays. Normally open contacts from these relays are wired to DFO and DFC inputs (DLI setting shall be ignored)
DLM 02: 00000010	(Door cam control) DC relay output used to control Cam operation. Nb: 2 sec delay from DO picking up after DC has dropped. (to allow time for cam to drop and locks to break, to avoid lock "snagging"). See also Input - Output, DFC.
DLM 03: 00000011	As per DLM setting "00", except DO and DC are held up
DLM 04: 00000100	(Used to hold door closed when running) As per DLM setting "00", except DC relay picks up whilst running
DLM 05: 00000101	Used for Goods lifts with Peele door operators that automatically Open but are manual close.
DLM 06: 00000110	(Used to hold door closed when running) As per DLM setting "00", except DO has a 400 millisecond drop delay after DFO changes state and DC relay picks up whilst running and door locks may be opened whilst no demand i.e the door spear has relaxed.
DLM 07: 00000111	(Manual doors with cam control) DC relay output used to control Cam operation.DO relay not used. DOP and DCP Faults disabled Nb: 2 sec delay from DO picking up after DC has dropped. (to allow time for cam to drop and locks to break, to avoid lock "snagging").

DPT - Door Protection Time

Sets the amount of time (20 or 50 secs) for doors to reach fully open or fully closed, before DOP or DCP failure.
01: 00000001 = 25 seconds. Default
02: 00000010 = 50 seconds.
All other remaining settings will default to the value of 25s.

DRV - DRiVe type setup

This sets the drive output type. Relay output configurations are changed to suit equipment installed.
Refer to operation section for motion outputs.
00: 00000000. Hydraulic. "Standard hyd. block valve. 3010EN"
01: 00000001. Hydraulic."DA DynaHyd valve."
02: 00000010. Hydraulic."Soft valve. 3010/2CH/S"
03: 00000011. Traction. "VF type 1". Keb, B&F, Gefran, Zetadyn, C.T.
04: 00000100. Traction. "1,2 speed AC"

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05: 00000101. Hydraulic. "GMV 3010/S, Blain EV100", Maxton, Bucher LRV, EECO
06: 00000110. Traction. "VF type 2" C.T.
07: 00000111. Traction. "VF type 3; ABB VF drive"
08: 00001000. Hydraulic. "Bucher VF hydraulic"
09: 00001001. Traction. "CPIK VF drive"
0A: 00001010. Traction. "Same as DRV=03, except with 1.0 sec delay on UD drop (for DB contactor motor short) Keb, B&F, Gefran, Zetadyn, C.T. See also Inputs-Outputs IRO
0D:00001101 Hydraulic. "Blain EV-4"

DT - Door Time close setup

DT 00: 00000000. Pressing the Door Close Button shall not cancel the door open time (DTC/DTH)
DT 01: 00000001. Pressing the Door Close Button shall cancel the door open time (DTC/DTH)
See also EEPROM setting DTC, DTH

DTC - Door Time Car call close setup

Sets the amount of time before the doors close for a car call whilst on normal operation
Set value for door close time
The time is set in 100ms increments.
1e: 00011110 = 3000ms, "3 seconds"
32: 00110010 = 5000ms, "5 seconds"
37: 00110111 = 5500ms, "5.5 seconds"
90: 10010000 = 14400ms, "14.4 seconds"
(01 to FF valid values)

DTH - Door Time Hall call close setup

Sets the amount of time before the doors close for a hall call whilst on normal operation
Lobby time (DTL) overrides this setting when lift is at the lobby floor
Recommend DTH is set equal to or greater than DTC
Set value for door close time
The time is set in 100ms increments.
32: 00110010 = 5000ms, "5 seconds"
37: 00110111 = 5500ms, "5.5 seconds"
90: 10010000 = 14400ms, "14.4 seconds"
(01 to FF valid values)

DTL - Door Time Lobby call close setup

Sets the amount of time before the doors close after a lobby call is answered when on normal operation
DTL value over-rides DTH value when answering a hall call at the lobby floor
Recommend DTL is set equal to or greater than DTH and DTC
Set value for door close time
The time is set in 100ms increments.
32: 00110010 = 5000ms, "5 seconds"
37: 00110111 = 5500ms, "5.5 seconds"
90: 10010000 = 14400ms, "14.4 seconds"
(01 to FF valid values)

DTR - Door Time Recall

When on HR mode, DTR sets the amount of time the doors shall remain open once the lift arrives at the designated HRF or HR1 recall floor
Setting example: 32: 00110010 = 5000ms, "5 seconds"
See also EEPROM settings, HRF, HR1
See also Inputs-Outputs HRI

FD1 – Front Doors 1 setup, levels 1-8

This sets the levels for the front doors to operate on levels 1-8
May be used in conjunction with RD1 and SD1 for selective rear door operation
FD1 A0: 10100000 (Level G and level 2 have front doors)
RD1 50: 01010000 (Level 1 and level 3 have rear doors)

FLOOR DESIG.	FRONT DOORS	REAR DOORS
3		3 (rear) 4C, 4D
2	2 (front) 3C, 3U, 3D	
1		1 (rear) 2C, 2U, 2D
G	G (front) 1C, 1U	

See also EEPROM setting RD1, SD1

FD2 – Front Doors 2 setup, levels 9-12

This sets the levels for the front doors to operate on levels 9-12
Setting example: E0: 11100000 (Levels 9-11)
May be used in conjunction with RD2 and SD2 for selective rear door operation
See also EEPROM setting RD2, SD2

HFS - Hall Fire Service return floor setup

This sets the hall fire service return floor when HFS input turns on
80: 10000000 (Level 1)
40: 01000000 (Level 2)
20: 00100000 (Level 3)
10: 00010000 (Level 4)
08: 00001000 (Level 5)
04: 00000100 (Level 6)
02: 00000010 (Level 7)
01: 00000001 (Level 8)
See also Inputs-Outputs HFS

HF1 – Hall Fire 1 setup

Extension of HFS.
80: 10000000 (Level 9)
40: 01000000 (Level 10)
20: 00100000 (Level 11)
10: 00010000 (Level 12)

HRF – Hospital / Hall Recall Floor

This sets the Hospital /Hall Recall Floor when lift is in HR mode
See also Inputs-Outputs HRI
eg. 40: 01000000 (Level 2)

HR1 – Hospital / Hall Recall 1 setup

Extension of HRF
eg. 40: 01000000 (Level 10)
See also Inputs-Outputs HRF

LCK – Parameter lockout function

To stop unauthorised adjustments to the EEPROM parameters and to also disable the "Clear fault log" function (see Section 5 – LCD Fault Log), the COD and LCK parameters are used

E E P R O M S E T T I N G S

LCK and COD must both be set to default values to allow other parameters to be adjusted.
See also EEPROM setting COD
LCK default. 67: 01100111
COD default. 89: 10001001

LOK – number of door LOcKs

For dual door lock installations (primary and secondary locks) set LOK EEPROM setting to "02"
For single door lock installations (primary locks only) place permanent bridge across LOCKS 2
and set LOK EEPROM setting to "01"
See also Inputs-Outputs LCK2

LOB - LOBby floor setup

Master zoning floor.
This signal sets the master zoning floor. After the zone time period as defined by ZTM, a lift shall zone to floor defined by LOB, if unoccupied. If LOB floor is occupied then the lift shall alternatively zone to ZON floor.
A lift shall zone to floor defined by LOB and ignore ZON, when working in simplex.
LOB must be set to the same value in all lifts belong to the group.
00: 00000000 (No zoning). **To disable zoning** set "LOB" and "ZON" to "00".
80: 10000000 (Level 1)
40: 01000000 (Level 2)
20: 00100000 (Level 3)
10: 00010000 (Level 4)
08: 00001000 (Level 5)
04: 00000100 (Level 6)
02: 00000010 (Level 7)
01: 00000001 (Level 8)
See also Input - Output, NDG, NR
See also EEPROM setting PRK, ZON

LO1 - LObby 1 setup

Extension of LOB.
80: 10000000 (Level 9)
40: 01000000 (Level 10)
20: 00100000 (Level 11)
10: 00010000 (Level 12)

L.# - Lift Number setup

Lift number setup.
Example: In a 2 car group, one lift is set to 01 and the other set to 02.
Set value to the lift number. (01 to 06 valid values.)
01: 00000001 (Lift 1)
02: 00000010 (Lift 2)
03: 00000011 (Lift 3)
04: 00000100 (Lift 4)
05: 00000101 (Lift 5)
06: 00000110 (Lift 6)
See also Inputs-Outputs #.L

MOD – MODe Inputs setup

Enables 5 MODE inputs to be inverted
01: 00000010 CFSS. Car Fire Service Start input inverted
02: 00000010 CFS. Car Fire Service input inverted
04: 00000100 HFS. Hall Fire Service input inverted

EEPROM SETTINGS

08: 00001000 IND. Independent operation input inverted
80: 10000000 PRV. Proving input inverted
C0: 00001100 IND & HFS inputs inverted

MSL – Magnet SLowing type

Sets the slowing/counting type.
00: 00000000 MSU/MSD magnet slowing.
01: 00000001 Pulse slowing.
02: 00000001 Pulse slowing. 2 BSL limit switches required.
03: 00000011 Pulse slowing with no position update. Requires circuit to remove DZ input above levelling speed
See also Section 6: Motion – EEPROM MSL setting "00", "01", "02" and "03"

NR - Door Nudging setup

Sets the door nudging feature on or off. (Nudging time is preset)
Sets "NDG" output on or off to control the floor passing tone
00: 00000000 No door nudging or passing tone. Sets EDP/OS time to 30 secs
01: 00000001 Door nudging only
02: 00000010 Door nudging and passing tone
03: 00000011 Passing tone only. Sets EDP/OS time to 30 secs
04: 00000100 Sets EDP/OS time to 180 secs
See also Input - Output, NDG, NR

PI - Position Indication setup

Position Indication output type
This setting changes the PI transistor output sequence to the following values
00: 00000000 "Decimal outputs"
01: 00000001 "Binary outputs"
02: 00000010 "Gray code outputs"

PRK – PaRK / zone with doors open

Sets the doors to stay open or stay closed after zoning
00: 00000000 - Zones to floor and doors remain closed
01: 00000001 - Zones to floor and doors remain open. Eg. train platform
See also EEPROM setting LOB, ZON

RD1 – Rear Doors 1 setup, levels 1-8

This sets the levels for the rear doors to operate via DZR output on levels 1-8
DZR relay is used for the rear door control and is switched by DZR output
RD1 eliminates the need for a rear door/DZR sensor in the shaft
May be used in conjunction with FD1 and SD1 for selective rear door operation
See also EEPROM setting FD1, SD1

Controller switches DZR output to 0V when lift at level 1 or 3 in example below
FD1 A0: 10100000 (Level G and level 2 have front doors)
RD1 50: 01010000 (Level 1 and level 3 have rear doors)

FLOOR DESIG.	FRONT DOORS	REAR DOORS
3		3 (rear) 4C, 4D
2	2 (front) 3C, 3U, 3D	
1		1 (rear) 2C, 2U, 2D
G	G (front) 1C, 1U	

RD2 – Rear Doors 2 setup, levels 9-12

This sets the levels for the rear doors to operate via DZR output on levels 9-12
DZR relay used for rear door control, is switched by DZR output
RD2 eliminates the need for a rear door/DZR sensor in the shaft
May be used in conjunction with FD2 and SD2 for selective rear door operation
Setting example: 40: 01000000 (Level 10)
Controller switches DZR output to 0V when lift at level 10
See also EEPROM setting FD2, SD2

RPT - Run Protection Timer / motor run timer setup

The motor Run Protection Timer shall be set to stop the machine when the lift does not move after run signals from the controller have been issued.
No movement is detected by MSU or MSD inputs not changing state
To set RPT;
Measure the time taken to complete one full travel of the lift shaft and add 10 secs. Enter this time as a HEX value in the RPT parameter. See following table for converting the time in seconds to HEX.

SECS	20	21	22	23	24	25	26	27	28	29	30	31	32
HEX	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	20

SECS	33	34	35	36	37	38	39	40	41	42	43	44	45
HEX	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D

Nb: Minimum RPT is 20 secs (Hex 14) and maximum is 45 secs (Hex 2D), as per EN81 5.9.2.7.2.
Only Hex values 14 to 2D shall be accepted as an RPT value

Nb: For safety, the default value for RPT, shall be set to the minimum setting of "14", as this parameter must be adjusted on site, to the lift running time characteristics of each individual lift

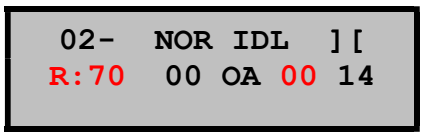
RPT is a fatal error. Reset is only via a processor POR or Inspection on/off sequence
RPT shall NOT operate on;

- Inspection - Top of car, Pit or Onboard. See also Inputs - Outputs, INS / HFA
- Emergency lowering. See also Inputs - Outputs, SP
- DRV setting "01" (DA valve). Run time monitored by valve block

RTM – Run TiMe short floor run setup

Nb: DRV must be set to a traction lift setting

If a short floor exists where the lift starts slowing prior to reaching full speed, a long creep into floor may occur. RTM setting, in conjunction with XTM setting, reduces this long creep time by holding in the fast speed relay for a defined time (XTM) after the initial slowing point.
Setting RTM. – Look at RAM address R:72. (Motion Timer).



To access R:72 on the LCD see also Section 5: LCD Display Options
R: 72 shown in red at left.

When performing the shortest floor run take note of the highest value R:72 reaches (in hex). Add approx. 5 (in hex) to this value and set RTM to this value.
If slowing is obtained before the value in RTM is reached, the fast speed relay (UF or DF) will be held up for extra time as defined by XTM.

EEPROM SETTINGS

Set XTM to 20. If the lift fails to slow down to levelling speed before reaching the floor, (fast speed relay is being held up too long) reduce XTM value. If there is still too much creep (fast speed relay is being held up not long enough) increase XTM time. Continue until desired result is obtained.

SD1 – Selective rear Doors setup, Levels 1-8

This sets the first floor of the selective front and rear doors.
Used in conjunction with FD1 and RD1

Selective Rear Door floors are treated as two separate floors requiring separate car and landing buttons. See 1(front) and 1(rear) in table below
Setting Example: Refer to table below
SD1 40: 01000000 (Level 1 has selective front and rear doors)
FD1 D0: 11010000 (Level G, level 1(front) and level 2 have front doors)
RD1 40: 00101000 (Level 1(rear) and level 3 have rear doors)

This sets the levels for the rear doors to operate by turning on DZR output to 0V when lift answers call to 3C,3U,3D or 5C,5U,5D. See RD1.

FLOOR DESIG.	FRONT DOORS	REAR DOORS
3		3 (rear) 5C, 5D
2	2 (front) 4C, 4U, 4D	
1	1 (front) 2C, 2U, 2D	1 (rear) 3C, 3U, 3D
G	G (front) 1C, 1U	

SD2 – Selective rear Doors setup, Levels 9-12

This sets the first floor of the selective front and rear doors.
Used in conjunction with FD2 and RD2
Setting example: 80: 10000000 (Level 9 & 10 selective)

SDX - Star Delta eXchange time setup

This sets the amount of time from star dropping out and delta picking up.
Set value for delay between star dropping and delta pulling in.
The time is set in 100ms increments.
08: 00001000 = 800ms
Set between 01 & 08

SDX – VF Drive setting 06,07,08 brake drop time

Traction lifts;
Valid only when EEPROM setting "DRV" is set to "06, 07, 08".
This sets the amount of time after a run for the brake drop in 10ms increments.
SDX value must be less than ST2 value
Set between 01 & ff

SFR - Short Floor Run setup

Note: this setting only works on MSL 00
This signal sets the short floor between 2 levels, so the controller will not set the fast speed relays (UF & DF).
SFR must be FF: 11111111 unless stated.
A setting for a short floor between levels 2 & 3 would be "9F", as follows.
12345678 - floors
10011111 = 9F

EEPROM SETTINGS

SF1 - Short Floor 1 setup

Note: this setting only works on MSL 00

Extension of SFR

This signal sets the short floor between 2 levels, so the controller will not set the fast speed relays (UF & DF).

SF1…EEPROM Must be FF: 11111111 unless stated.

A setting for a short floor between levels 10 & 11 would be as follows.

9,10,11,12,0000

1 0 0 1 1111. 10011111=AF

StF – Start Fast

Number of pulses (in hex) it takes to reach fast speed

Eg. 30: 00110000 (30 pulses in hex or 48 in decimal)

See also Section 6: Motion – EEPROM MSL setting "01", "02" & "03"

StM – Start Medium

Number of pulses (in hex) it takes to reach medium speed.

Eg. 20: 00100000 (20 pulses in hex or 32 in decimal)

See also Section 6: Motion – EEPROM MSL setting "01", "02" & "03"

SIF – Slow Fast

Number of pulses (in hex) it takes to slow from fast speed.

Eg. 30: 00110000 (30 pulses in hex or 48 in decimal)

See also Section 6: Motion – EEPROM MSL setting "01", "02" & "03"

SIM – Slow Medium

Number of pulses (in hex) it takes to slow from medium speed.

Eg. 20: 00100000 (20 pulses in hex or 32 in decimal)

See also Section 6: Motion – EEPROM MSL setting "01", "02" & "03"

SSD – Soft Start Drive

Hydraulic lifts only. V6.04 software onwards.

Set SSD to 01: 00000001 when hydraulic lift with Soft Starter motor starting

When SSD = 01, SP2 relay operates as per UP relay. SP2 C and N/O contacts are used to issue the run command to the Soft Starter. This ensures 2 forms of motor disconnection.

FF: 11111111 (Hydraulic lift with Star Delta motor starting)

ST2 - STar delta 2 setup

Star connected motor running time.

The amount of time the motor runs in Star, before changing to Delta.

The time is set in 100ms increments.

08: 00001000 = 800ms

0a: 00001010 = 1000ms, "1 second"

12: 00010010 = 1800ms, "1.8 seconds"

ST2 – VF Drive setting 06,07,08 end run time

Valid only when EEPROM setting "DRV" is set to "06, 07, 08".

This sets the amount of time after a run for the Up/Dn relays to drop in 10ms increments.

Set between 01 & ff .

ST2 value must be greater than SDX value

TCC - Top Car Call setup

The controller shall enter a car call to this setting when the "TOP CALL' button on the circuit board is pressed

EEPROM SETTINGS
40: 01000000 (Level 2)
20: 00100000 (Level 3)
08: 00001000 (Level 5)
01: 00000001 (Level 8)

TC1 – Top Call 1 setup

Extension of TCC
80: 10000000 (Level 9)
40: 01000000 (Level 10)
20: 00100000 (Level 11)
10: 00010000 (Level 12)

TOP - Top floor setup

Set value to number floors served. (02 to 0c valid values).
Lift resets to "TOP" value when TSL limit is activated.
02: 00000010 (Level 2)
03: 00000011 (Level 3)
04: 00000100 (Level 4)
05: 00000101 (Level 5)
06: 00000110 (Level 6)
07: 00000111 (Level 7)
08: 00001000 (Level 8)
09: 00001001 (Level 9)
0a: 00001010 (Level 10)
0b: 00001011 (Level 11)
0c: 00001100 (Level 12)

UCM - Up Call Mask setup

This setting lets you define the UP call floors which the lift can serve.
With this setting you may disable UP hall calls to floors not allowed.
Up calls allowed for this lift only.
80: 10000000 (Level 1u)
C0: 11000000 (Level 1u,2u)
E0: 11100000 (Level 1u,2u,3u)
F0: 11110000 (Level 1u,2u,3u,4u)
F8: 11111000 (Level 1u,2u,3u,4u,5u)
FC: 11111100 (Level 1u,2u,3u,4u,5u.6u)
FE: 11111110 (Level 1u,2u,3u,4u,5u,6u,7u)
FF: 11111111 (Level 1u,2u,3u,4u,5u,6u,7u,8u)

UC1 – Up Call 1 setup

Extension of UCM
80: 10000000 (Level 9u)
C0: 11000000 (Level 9u,10u)
E0: 11100000 (Level 9u,10u,11u)

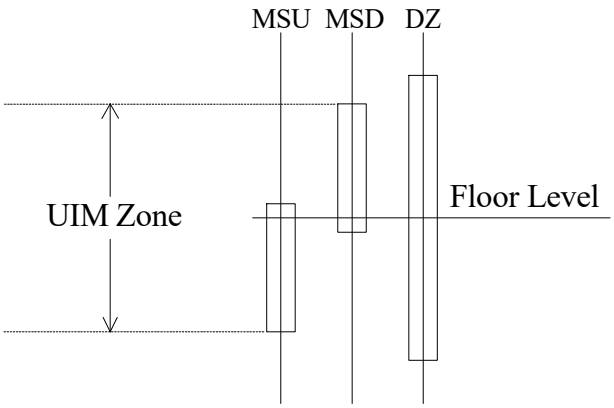
UIM – UnIntended Movement testing

For Hydraulic lifts only
The EN81:20 UIM requirements for hydraulic lifts, are met in the design of this controller when an external door lock valve is fitted and tested as per the UIM 100-194 hydraulic testing below.

UIM 100-194 hydraulic testing.

UIM shall stop car movement away from UIM zone below with the doors not closed as a result of any single failure

EEPROM SETTINGS
of the control system.



DOOR LOCK VALVE TEST:
Before testing of the UIM function is commenced, the door lock valve must be tested using the Lock Valve Switch on the 100-194 control board. With the lift travelling down, switch the Lock Valve Switch from the down position (on) to the up position (off). Confirm visually that the lift stops moving down.

UIM TEST:
To commence the UIM test, place lift at floor level. Do not test at bottom floor due to extended MSU/DZ magnets.
Place the lift on On-Board Inspection with the doors closed, by switching "INSP controller" to ON.
Nb: The UIM Test procedure simulates the lift with the doors not in the closed position.

Proceed to Eeprom setting UIM on the LCD

```
??-  INS IDL  --
UIM ff  : 11111111

On-Board Insp
```

Using ENT and ^ button, set to UIM to 01
Press ENT to confirm the change
UIM Test shall be displayed

```
??-  INS IDL  --
UIM 01   : 00000001
    UIM Test
On-Board Insp
```

Press and hold the BOT CALL button.
The lift shall now move down at leveling speed.
UIM Testing shall be displayed

```
??d INS RDN  --
UIM 01   : 00000001
    UIM Testing...
On-Board Insp
```

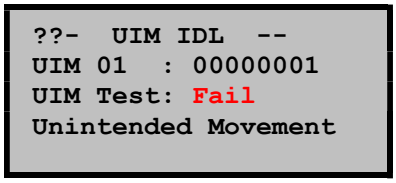
Once the lift moves beyond the UIM zone (MSU and MSD OFF, DZ ON), BRK relay shall de-energise, dropping the door lock valve and stopping lift movement. Confirm lift has stopped visually.

Keep BOT CALL pressed until **UIM Test: Pass** shows on screen.

```
??- INS IDL  --
UIM 01   : 00000001
UIM Test: Pass
On-Board Insp
```

This confirms the lift has stopped moving down by checking DZ input has stayed on.
Nb: If BOT CALL is released before UIM Test is completed, **UIM Test: Incomplete** shall be displayed.
Upon successful completion of the UIM test, press the UIM button to return the lift to **UIM Test**.
To re test, move the lift back to floor level using the On-Board Inspection buttons and press BOT CALL.

UIM FAIL:
If, while performing a UIM TEST, the lift continues to travel beyond the UIM zone and travels beyond DZ, the controller will shut down and **UIM Test: Fail** shall be displayed on the screen.
Investigate as to why the lift did not stop within the UIM zone.
Press the UIM button to return the lift to **UIM Test**.
To re test, move the lift back to floor level using the On-Board Inspection buttons and press BOT CALL.

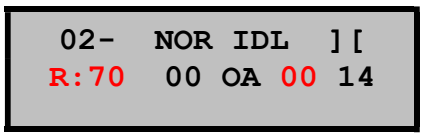


When UIM Testing is completed, press the UIM button to return the lift to **UIM Test**.
Change Eeprom setting UIM back to FF
Turn off controller inspection and return lift to service.

XTM – Extend run time short floor run

Nb: DRV must be set to a traction lift setting.

If a short floor exists where the lift starts slowing prior to reaching full speed, a long creep into floor may occur. RTM setting, in conjunction with XTM setting, reduces this long creep time by holding in the fast speed relay for a defined time (XTM) after the initial slowing point.
Setting RTM. – Look at RAM address R:72. (Motion Timer).



To access R:72 on the LCD see also Section 5: LCD Display Options
R: 72 shown in red at left.

When performing the shortest floor run take note of the highest value R:72 reaches (in hex). Add approx. 5 (in hex) to this value and set RTM to this value.
If slowing is obtained before the value in RTM is reached, the fast speed relay (UF or DF) will be held up for extra time as defined by XTM.
Set XTM to 20. If the lift fails to slow down to levelling speed before reaching the floor, (fast speed relay is being held up too long) reduce XTM value. If there is still too much creep (fast speed relay is being held up not long enough) increase XTM time. Continue until desired result is obtained.

ZON - Zoning floor setup

ZON is only used in duplex configurations
After the zone time period as defined by ZTM, a lift shall zone to floor defined by LOB. If LOB floor is occupied then the lift shall alternatively zone to ZON floor
Recommend to set ZON to the same value for all lifts in the group
A lift shall zone to the floor defined by LOB and ignore ZON, when working in simplex
See also EEPROM setting LOB, PRK

00: 00000000 (No zoning). **To disable zoning** set "LOB" and "ZON" to "00".
80: 10000000 (Level 1)
40: 01000000 (Level 2)
20: 00100000 (Level 3)
10: 00010000 (Level 4)
08: 00001000 (Level 5)
04: 00000100 (Level 6)
02: 00000010 (Level 7)

EEPROM SETTINGS
01: 00000001 (Level 8)

ZO1 – Zoning 1 setup

Extension of ZON
80: 10000000 (Level 9)
40: 01000000 (Level 10)
20: 00100000 (Level 11)
10: 00010000 (Level 12)

ZTM - Zoning time setup

This sets the amount of time prior to zoning to the "LOB" or "ZON" setting
To disable zoning set "LOB" and "ZON" to "00"
Zone timer starts after doors close with no further demand
The time is set in 10s increments
06: 00001000 = 60s
0a: 00001010 = 100s, "1 minute 40 seconds"
12: 00010010 = 180s, "3 minutes"

#.L - Number of Lifts setup

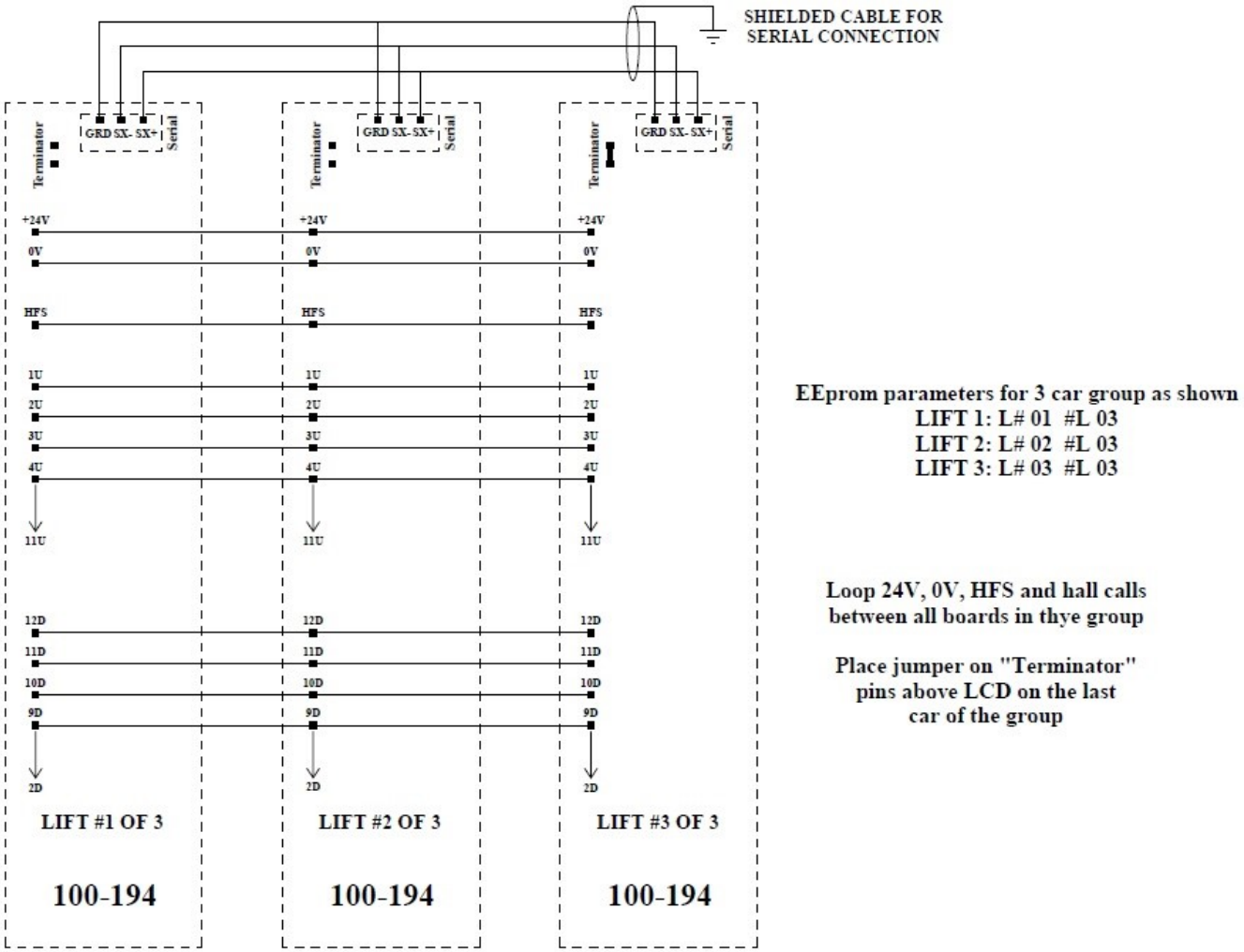
This sets the number of lifts in the group
All lifts within the group must be set to the same value
01: 00000001 (1 Lift)
02: 00000010 (2 Lifts)
03: 00000011 (3 Lifts)
04: 00000100 (4 Lifts)
05: 00000101 (5 Lifts)
06: 00000110 (6 Lifts)
Set value to number of lifts. (01 to 06 valid values)
See also Inputs-Outputs L.#

Section 3

Section 3. Group

Group Connections and Communication

- 24Vdc and 0Vdc, up and down hall calls and HFS inputs MUST be looped between all elevators in the group
- Group serial communication uses RS485 3-wire system
- Controllers in the group are linked at the Serial TX terminals, SX+, SX- and GND, using shielded 3 wire serial cable
- Install "Terminator" jumper link (above the LCD) on the last lift of the group only
- **The same version software (build date) must be used in all grouped controllers**
- See connection diagram below



G R O U P

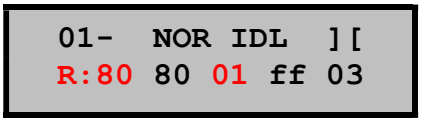
Group Checks

To ensure all the lifts in the group are communicating with each other, check the RAM address which shows the position of each lift.

Each lift has its position shown at the following RAM addresses.

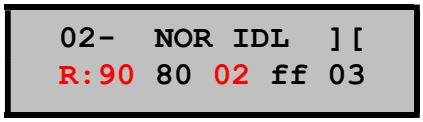
- Lift 1. - RAM location 81
- Lift 2. - RAM location 91
- Lift 3. - RAM location a1
- Lift 4. - RAM location b1
- Lift 5. - RAM location c1
- Lift 6. - RAM location d1

To obtain RAM (R) address see Section 5, LCD Controller Status Options.



80 **81** 82 83

LIFT 1



90 **91** 92 93

LIFT 2

e.g. For a 2 car group. Lift 1 is on level 1. Lift 2 is on level 2.

From lift 1 controller look at RAM address 91. (lift 2 position). This should read a value of 02.
From lift 2 controller look at RAM address 81. (lift 1 position). This should read a value of 01.

This proves each controller knows the position of the other lift in the group, therefore indicating serial communication established.
If controllers are not communicating correctly, a value of 00 will be shown.

Group / Duplex faults

If group system is faulty check all wiring and connections as per Section 3.
Also, ensure EEPROM settings L# and #L have been set correctly. See section 2.

NB: Due to looping of 24V and 0V between all boards in the group, 24VDC shall still exist on any board, even though it may have been turned off at the main Circuit Breaker.

DO NOT remove the 0V or 24V from such boards as back feeding shall occur which can false fire inputs.

Alternatively, it is ok to remove ALL plugs from the board. (ie removal for repair)

Section 4

Section 4. Inputs – Outputs, onboard switches, push buttons, terminals

Inputs;

- High Voltage AC inputs: Inputs SAF, CG, LCK1, LCK2, M1 and M3 are high voltage input terminals or monitoring points and switch to 110VAC or 240VAC with respect to M4/N
- Low Voltage DC inputs: Theses inputs switch low to 0 Volts with respect to 24VDC. The input shall draw approximately 12mA. All inputs are OPTO isolated to avoid noise-related problems

Outputs;

- Transistor outputs: Outputs 1P-12, DDN, DUP, OS, HBS, switch high to 24V with respect to 0VDC
  Transistor outputs can switch a maximum of 1.5A.
- Darlington outputs: These outputs switch low to 0V with respect to 24VDC
  Darlington outputs can switch a maximum of 500mA and are OPTO isolated to avoid noise-related problems

Nb: For the 9 buttons below the LCD see Section 5 – LCD Control Buttons

BKS1 - BraKe Switch 1 input

BKS1 input turns on to indicate Brake 1 has lifted fully
Brake lift is monitored via a brake switch on the hoist machine, which inputs 0V to BKS1 input for Brake 1 when fully lifted. If 2 brakes are used, BKS2 input monitors Brake 2. If only 1 brake used, connect brake switch to both BKS1 and BKS2 inputs
Malfunctioning brake shall cause either of 2 fatal errors – BSD or BST. Reset is only via a processor POR.
BSD and BST errors shall be disabled when the lift is on inspection

BSD – BRK Drop Timeout error - When the brake does not drop 1 second from when lift stops.
Note: BSD error shall only set when the doors are closed to enable lift to re-level with the doors open

BST – BRK Lifting Timeout error – When the brake has not lifted after a run has been initiated
The door open button shall remain operative to allow passengers to exit the lift. Re-levelling is inhibited
BST error can be selected as an "immediate stop" or "stop next floor" error. See EEPROM settings, BST

See also LCD lift status BSD, BST
See also Inputs – Outputs BKS2
See also EEPROM setting BST, BSW

BKS2 - BraKe Switch 2 input

BKS2 input turns on to indicate Brake 2 has lifted fully. Operation as per BKS1
See also Inputs – Outputs BKS1

BRK - BRaKe relay output

Brake relay output contacts used to control the brake on traction jobs and the door lock valve on hydraulic jobs
See also Section 6: Motion, for more on the relay operation

BSL - Bottom Slowing Limit input

Bottom floor position correction limit and forced slowdown limit for terminal floor
BSL input turns off as the lift approaches the bottom floor and activates the BSL limit switch
BSL input must remain off when lift is on the buffer
Ensure the MSD input turns on just before the Bottom Slowing Limit (BSL) at the bottom floor
See also Inputs – Outputs MSD

BYPASS onboard switch

Onboard lock BYPASS rotary selector switch
The BYPASS switch can be used to bypass the electrical safety contacts of either (only one at a time) the;
Car Gate – Switch in position CGBP. Doors must be closed (DFC input off)
Locks 1 – Switch in position L1BP
Locks 2 – Switch in position L2BP
When switched to a bypass position, the lift shall automatically be placed on inspection.
See also Inputs – Outputs BPAV, CGBP relay, L1BP relay, L2BP relay

BPAV - Bypass Switch Audio Visual alert output

Darlington Output
BPAV output turns on when the Lock BYPASS switch on the board is switched to CGBP, L1BP or L2BP
Used for driving an external relay, to control an audible signal at the car and a flashing light under the car

CFS - Car Fire Service input

CFS turns on when the lift is keyed to CFS, unless inverted with MOD setting
"Car Fire Service" shall be shown on the LCD screen
CFS allows only one car call to be entered at a time and shall toggle to the most recent call
When the doors are closed the lift shall run to the car call selected and stop with the doors closed
To open the doors on CFS, DOB input must turn off, and remain off, until the doors are fully closed
To close the doors on CFS, CFSS input must turn on, and remain on, until the doors are fully closed
CFS over rides hall fire service and independent service
See also Inputs – Outputs CFSS, DOB, HFS

CFSS - Car Fire Service Start input

CFSS input turns on when the door close button is pressed
CFSS input turns on to close the doors on Car Fire Service
To close the doors, CFSS input must turn on, and remain on, until the doors are fully closed
DOB and EDP shall be ignored when doors are closing on CFS
See also Inputs – Outputs CFS, DCB

CG – Car Gate input

High Voltage AC input
CG input turns on when the Car Gate contacts are made
CG input turns on CG LED
CG input pulls up CG relay
See also Inputs – Outputs CG Relay

CG relay – Car Gate relay

Onboard Relay Output
CG relay pulls up when CG input turns on
CG internal safety circuit relay contacts are monitored by CGM input
CG external relay contacts (CG - C, NO, NC) are used to provide the doors open signal to other devices (eg. voice board TRIG input)

I N P U T S – O U T P U T S
See also Inputs – Outputs CG, CGM

CGBP relay
Onboard Car Gate Bypass relay
CGBP relay pulls up when BYPASS is switched to CGBP
No external relay contacts available – internal use only
Must be a safety relay with FGR contacts. No relay socket provided as only serviceable by ECD

CGM LED – Car Gate Monitoring LED
CG relay and CGBP relay contact internal monitoring point
There is no input terminal connection on the board for CGM
CGM LED turns on when either the internal contacts of CG relay or CGBP relay in the safety circuit are closed
See also Inputs – Outputs CG relay, CGBP relay
See also LCD status – "CGC"

CLP – Car Light and Power output
Darlington Output
CLP output turns on to switch off the car lights after 10 minutes of no demand
Used for driving an external light control relay
As soon as demand for lift returns, CLP output shall turn off
Only applicable when lift is in "NOR" normal mode

COR – COrrection Run output
Darlington Output
COR output turns on when the lift is performing a correction run, to limit the correction run speed
"CORrection run" shall be shown on the LCD screen
Used for driving an external relay, where the contacts may be required for a correction speed input to the drive

DC - Door Close relay output
Door Close relay output contacts used to control door closing operation.
See also Inputs – Outputs DFC

DCB - Door Close Button input
DCB input turns on when the door close button is pressed unless inverted with CNT setting
DCB input turns on to close the doors on Independent Service
DCB cancels door timing on normal operation if DT is set to "01"
Both the door detector EDP and door open button DOB override the DCB inputs
See also Inputs – Outputs CFSS

DDN - Direction DowN output
Transistor Output
Direction down output switches for indication of lift advanced down direction

DF - Down Fast relay output
DF relay output contacts are used to control down fast speed operation
See also Section 6: Motion, for more on the relay operation

DFC - Door Fully Closed input
DFC input must change state when the doors reach the fully closed limit/position

Single Doors:
Input state can be inverted with DLI setting. See DLI in EEPROM settings

INPUTS – OUTPUTS

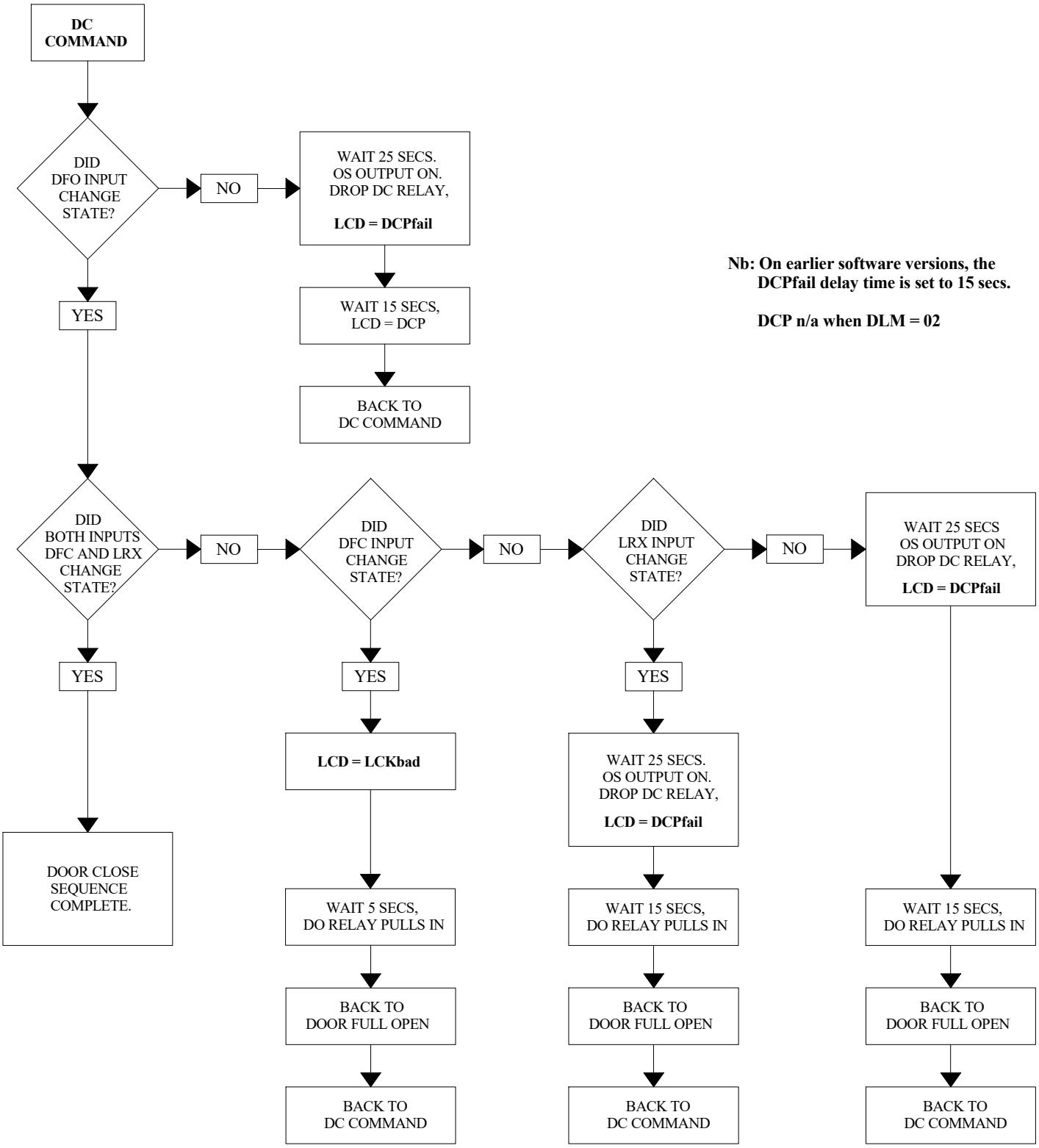
To close the lift doors, DC relay shall pull up and stay up until the DFC input is switched and the locks are made. If DFC input does NOT switch, "DCPfail" – "Door Close Protect." shall appear on the LCD after a period of 25 seconds and drop DC relay. After a further period of 15 seconds, the doors will re-open and display "DCP" on the LCD. This process is repeated until the fault has been cleared and the DFC input switches.
While in DCPfail/DCP mode, the controller switches on the OS output. See Inputs - Outputs, OS
When DLM = 02, DCPfail does not apply
When on Fire Service, DCP does not apply

If DFC input is switched and the Car Gate /Locks do not make, CG-bad or LCK-bad shall appear on the LCD. DC shall stay active for a period of 5 seconds to try to push the doors closed. If the door locks still fail to make then the doors shall then re-open. This process will be repeated until the fault has been cleared and the locks make.
Nb: When DLM = 02, LCK-bad does not apply, due to locks not making until a call is registered and cam lifting.

DFC must be switched to move lift, even on inspection

Dual Doors:
DLM EEPROM setting must be set to 01 for dual doors when DFC input is switched via door close relays.
DLI EEPROM setting shall be ignored. See DLI in EEPROM settings.
DFC input is switched via the external front or rear door close relay n/o contacts
The door close relays drop out via the door fully closed limit switches
When the external front or rear door close relay is in DFC LED will be on

See the following DC-DCPfail flow chart for more detail.


DC COMMAND
DID DFO INPUT CHANGE STATE?
NO
WAIT 25 SECS. OS OUTPUT ON. DROP DC RELAY,
LCD = DCPfail
WAIT 15 SECS, LCD = DCP
BACK TO DC COMMAND
YES
Nb: On earlier software versions, the DCPfail delay time is set to 15 secs.
DCP n/a when DLM = 02
DID BOTH INPUTS DFC AND LRX CHANGE STATE?
NO
DID DFC INPUT CHANGE STATE?
NO
DID LRX INPUT CHANGE STATE?
NO
WAIT 25 SECS OS OUTPUT ON DROP DC RELAY,
LCD = DCPfail
YES
YES
YES
DOOR CLOSE SEQUENCE COMPLETE.
LCD = LCKbad
WAIT 25 SECS. OS OUTPUT ON. DROP DC RELAY,
LCD = DCPfail
WAIT 5 SECS, DO RELAY PULLS IN
WAIT 15 SECS, DO RELAY PULLS IN
WAIT 15 SECS, DO RELAY PULLS IN
BACK TO DOOR FULL OPEN
BACK TO DOOR FULL OPEN
BACK TO DOOR FULL OPEN
BACK TO DC COMMAND
BACK TO DC COMMAND
BACK TO DC COMMAND

DFO - Door Fully Open input

DFO input must change state when the doors reach the fully open limit/position

Single Doors:

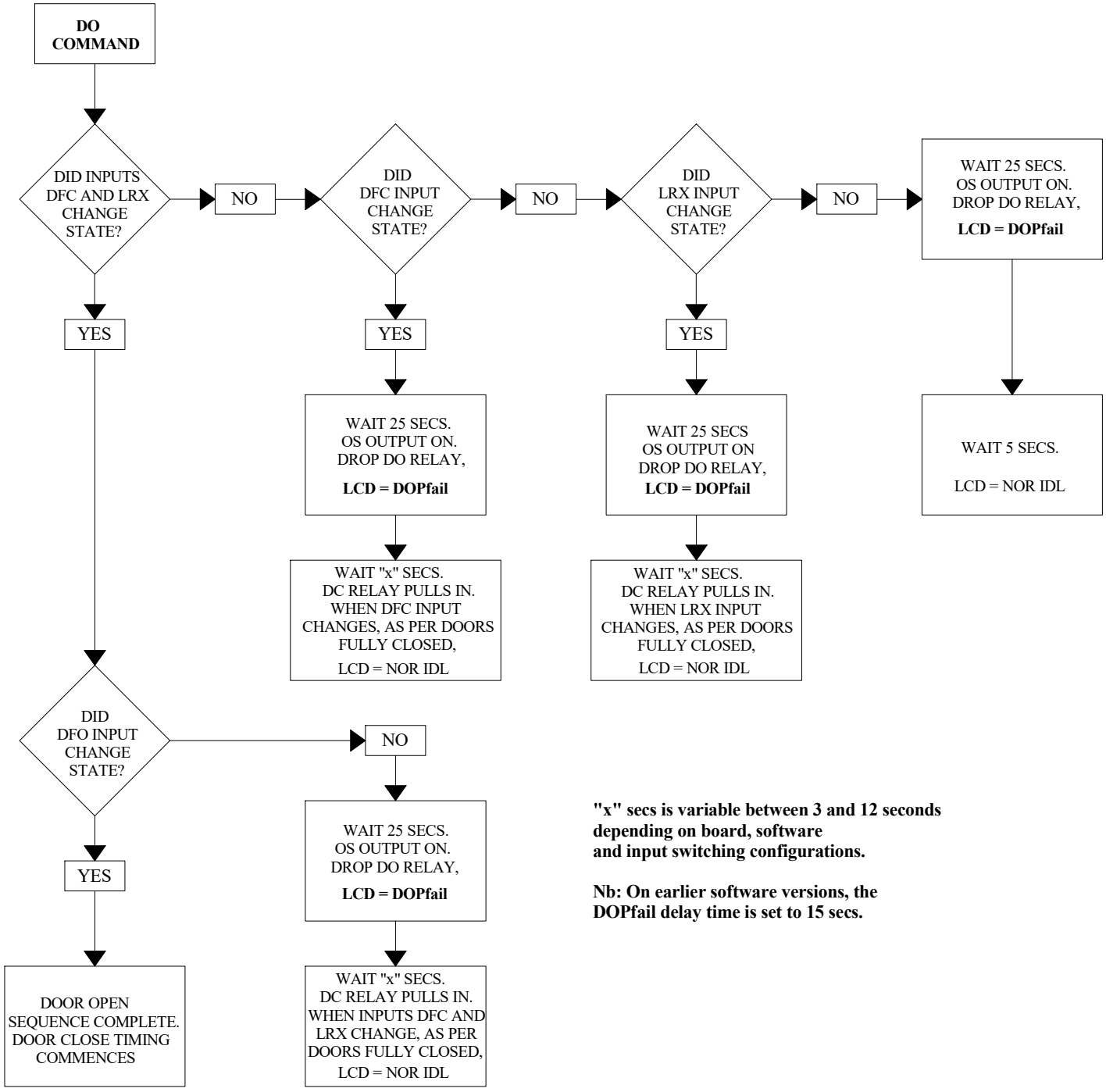
Input state can be inverted with DLI setting. See DLI in EEPROM settings
To open the doors, DO relay shall pull up and stay up until the DFO input is switched. If DFO input does NOT switch, "DOPfail" – "Door Open Protect." shall appear on the LCD after a period of 25 seconds and drop DO relay. After 3-5 seconds (depending on the state of locks and DFC) DC will then pull in and display DOP (Door Open Protection) on the LCD and close the doors. If a demand to open still exists, the doors will try to re-open.
While in DOP/DOPfail mode, the controller switches the OS output on. See Input - Output, OS
When on Fire Service, DOP does not apply

If DFO input is switched, indicating the doors are fully open, and the car gate/locks are still made the lift will remain out of service with the doors open until the bridge has been removed from the locks, therefore ensuring the lift cannot run with the doors open and the car gate/locks bridged.
One of the following faults will appear on the LCD;
"BCG" - "Bridged Car Gate", "BL1" - "Bridged door Lock1" or "BL2" - "Bridged door Lock2".

Dual Doors:

DLM EEPROM setting must be set to 01 for dual doors
DLI EEPROM setting shall be ignored. See DLI in EEPROM settings
DFO input is switched via the external front or rear door open relay n/o contacts
The door open relays drop out via the door fully open limit switches
When the external front or rear door open relay is in DFO LED will be on

See the following DO-DOPfail flow chart for more detail.



"x" secs is variable between 3 and 12 seconds depending on board, software and input switching configurations.

Nb: On earlier software versions, the DOPfail delay time is set to 15 secs.

DN - DowN relay output

DN relay output contacts used to control down direction operation.
See also Section 6: Motion, for more on the relay operation

DO - Door Open relay output

Door Open relay output contacts used to control door opening operation
See also DFO Input.

DOB - Door Open Button input

DOB input turns off when the door open button is pressed unless inverted with CNT setting..
The door open button is used to open the doors at floor level. (DZ on)
When DOB input is off for extended periods (doors being held open on normal operation) and there is demand

(car or hall calls latched), OS output shall turn on after 30 seconds and cancel the hall calls until the doors close.
See also Inputs – Outputs, CFS, OS

DOOR Disable onboard toggle switch

When the Door Disable switch is ON, the doors are disabled from opening
DDO mode, "Door Disable Open" shall be shown on the LCD screen
OS output turns on and hall calls are disabled. Door disable allows the lift to be sent to floors via car calls without the doors opening. Useful for testing/adjusting etc
Door open button, Independent Service and Fire Service override DDO
See also Inputs – Outputs, OS

DS - Down Slow relay output

DS relay output contacts are used to control down slow speed operation
See also Section 6: Motion, for more on the relay operation

DUP - Direction UP output

Transistor Output
Direction up output switches for indication of lift advanced up direction.

DZ - Door Zone input

DZ input turns on when the lift is in the Door Zone.
DZ input controls DZ relay.

DZR – Door Zone Rear output

Darlington Output
Used to control DZR relay for rear door operation
See also EEprom settings, FD2
See also Inputs – Outputs, EP, for rear door operation with emergency power

DZ relay

Onboard Door Zone relay
DZ relay pulls up when DZ input turns on
No external relay contacts available – internal use only

EDP - Electronic Door Protection input

EDP input turns off when the light ray is obstructed, unless inverted with CNT setting.
The loss of EDP input shall reopen the doors when on normal or independent modes. The doors shall remain open until the obstruction is removed and EDP input turns back on.

EDP operation with Eeprom setting NR = 00 or 03;
After 30 secs with EDP off and demand exists for the lift via latched hall or car calls, the lift shall be determined Out of Service. OS output will turn on, cancelling all hall calls. Lift will remain in OS state until EDP turns back on and doors are allowed to close.

EDP operation with Eeprom setting NR = 04;
After 180 secs with EDP off and demand exists for the lift via latched hall or car calls, the lift shall be determined Out of Service. OS output will turn on, cancelling all hall calls
Lift shall remain in OS state for 10 secs. OS then turns off and lift goes back into service and hall calls can be latched again. Sequence repeats if EDP remains off. This setting is used for nursing homes to allow for longer door open times.
See also Inputs – Outputs, OS.
See also EEprom settings, NR

EP - Emergency Power input

EP LED shall be on when emergency power is activated
Lift shall remain out of service (OS output will activate) while EP is on
"Emergency Power" shall be shown on the LCD screen
There is no Eeprom setting for EP, as "Hydraulic Operation" or "Traction Operation" below, are selected automatically via the DRV setting

Hydraulic Operation

When EP input is on, following a power failure, the lift shall return to the lowest level and open its doors. The doors will then close and shall remain closed until EP turns off or the door open button is pressed
Lift shall remain out of service (OS output turns on) while EP is on

Traction Operation

- If the lift stops out of floor level following a power failure;

With EP input on, following a power failure, the lift shall travel in the down direction at levelling speed and stop at the next available floor (MSU, MSD, DZ on) and open its doors. The doors will then close and shall remain closed until EP turns off or the door open button is pressed

- If the lift is stopped at floor level following a power failure;

With EP input on, following a power failure the doors shall open. The doors will then close and shall remain closed until EP turns off or the door open button is pressed

Nb: A rear door zone sensor (EDZR) shall be required, instead of DZR output, to operate DZR relay if rear doors are required to be opened in EP mode

EQK – EarthQuaKe detection input. (Siesmic or Counterweight displacement switch)

EQK input turns on when an earthquake is detected
"EarthQuaKe detected" shall be shown on the LCD screen
a: If the lift is in motion and EQK is activated, the lift shall stop at the next possible floor and remain stopped with the doors open
b: If the lift stops between floors due to a power failure and power is restored with EQK input on, the lift shall remain stopped
c: If the lift is stopped at a floor and EQK is activated, the lift shall remain stopped with the doors open.
d: If a power failure occurs while at the floor, then is restored with EQK activated, the lift shall remain stopped at that floor and re open the doors
EQK mode, once activated, shall not reset if the EQK input turns off
EQK mode once activated, shall not reset if a power off/on cycle occurs as EQK mode is stored in EEPROM
EQK mode shall reset by an inspection on/off cycle with EQK input off
Re levelling shall be disabled when EQK input is on
Lifts with rear doors shall require a DZR relay, operated by an inductor, rather than by the DZR output;
This will ensure the correct front or rear door opens when power is restored (as per "d" above) as the controller will not know the current lift position unless at a terminal floor

HBS - Hall Button Stop

Transistor Output
Hall button stop output. HBS turns on to activate hall gong/lantern only at the floor to which the lift is answering a hall call

HCB – Hall Call Bypass

HCB input turns on when lift is on Hall Call Bypass
"Hall Call Bypass" shall be shown on the LCD screen
Used in conjunction with a load weighing switch. Eg. when car is full, input is turned on.
Lift will ignore (but not cancel) hall calls while HCB input is on

HFS - Hall Fire Service input

HFS input turns on when the HFS recall switch at the HFS floor is turned on
"Hall Fire Service" shall be shown on the LCD screen
If the lift is on normal operation mode and HFS input is turned on, the lift shall return to the HFS floor
See also EEPROM settings HFS – Hall Fire Service

HRI – Hospital / Hall Recall Input

HRI input turns on to initiate HR mode.
HR mode is used to return the lift to a particular floor in an emergency
"Hall call Return" shall be shown on the LCD screen. When in HR mode, OS output turns on and HRO output turns on for indication
When HRI switches to 0V (HRI does not have to be held on as input shall latch), the lift cancels all calls (car and hall if simplex, car if duplex), stops at the next available landing without opening its doors and returns to the designated floor set at parameter HRF or HR1
Once the lift arrives at the HRF floor, it is then switched to IND or CFS
If the lift is not switched to IND or CFS the doors shall remain open for the time set as per DTR. After the time set at DTR, it shall return to normal operation
If HRI input is held on the lift shall remain at the HR floor with the doors open. DTR shall not operate
See also EEPROM settings HRF, HR1, DTR
See also Inputs – Outputs HRO, IND, CFS

HRO – Hall (Hospital) Recall Output

Darlington output
HRO output turns on when the lift is in HR mode
Used for driving an external relay, to provide audible/visual indication
See also Inputs – Outputs HRI

IDN - Inspection DowN input

IDN input turns on when the top of car down button or onboard INSP DN button is pressed
Onboard INSP DN button shall be inoperative if lift is already on PIT or top of car inspection
See also Inputs – Outputs INSP DN onboard switch

IND - INDependent service input

IND input turns on when keyed to IND unless inverted with MOD setting
"INDependent service" shall be shown on the LCD screen
If the lift is on normal operation mode and the lift is keyed to independent service the operation shall be as follows.
The car doors shall remain open
When a car call is entered the doors shall close only whilst the Door Close Button is being pressed
If the door close button is released before the doors are fully closed, the doors shall re open
IND allows only one car call to be entered at a time and shall toggle to the most recent call
To change the desired destination floor, press the new car call button to toggle the call
Car Fire Service, Hall Fire Service, Inspection and Emergency lowering operation shall over-ride Independent Service
See also Inputs – Outputs DCB

INSP - INSPection control input

INSP input turns on for normal operation
INSP input turns off when the lift is switched to Top of Car and/or onboard inspection. The LCD shall display "TOP Insp" or "On-Board Insp"
INSP input shall still be on when lift is on PIT inspection
If the lift is switched to Pit Insp and Top of Car Insp, the LCD shall display "TOP & PIT Insp"
See also Inputs – Outputs PINS, SIn1

INSP Controller onboard switch

Switch the INSP Controller onboard switch to ON for onboard inspection operation
"On-board Insp" shall be shown on the LCD screen
Top of Car Insp and PIT Insp must be off for on board inspection switch/buttons to operate
If the lift is switched to Pit Insp and Top of Car Insp, the LCD shall display "TOP & PIT inspection"
See also Inputs – Outputs INSP COM, INSP DN, INSP UP onboard push button

INSP COM onboard push button

Press INSP COM push button and INSP UP or INSP DN push button to move the lift on onboard inspection
Top of Car Insp and PIT Insp must be off for on board inspection switch/button to operate

INSP DN onboard push button

Press INSP DN push button and INSP COM push button to move the lift down on onboard inspection
Top of Car Insp and PIT Insp must be off for on board inspection switch/button to operate

INSP UP onboard push button

Press INSP UP push button and INSP COM push button to move the lift up on onboard inspection
Top of Car Insp and PIT Insp must be off for on board inspection switch/button to operate

IRO – Inspection Relay Output

Darlington output
IRO output turns on when the lift is on inspection.
Used for driving an external inspection relay, where extra inspection contacts may be required.
Eg: Inspection contact in series with up fast speed valve, so lift travels on slow speed when on inspection.

IUP - Inspection UP input

IUP input turns on when the top of car up button or onboard INSP UP button is pressed
Onboard INSP UP button shall be inoperative if lift is already on PIT or top of car inspection
See Inputs – Outputs INSP UP onboard switch

LCK1 – LoCK 1 input

High Voltage AC input
LCK1 input turns on when the primary door locks (LOCKS 1) are made
"LCK" shall be shown on the LCD screen when LCK1 input is off
If LCK1 input is on with the car door open, BL1 (Bridged Lock1) fault status will be displayed
LCK1 input pulls up LCK1 relay
See also Inputs – Outputs LCK1 Relay

LCK1M LED – LCK1 Monitoring LED

LCK1 relay and L1BP relay contact internal monitoring point
There is no input terminal connection on the board for LCK1M
LCK1M LED turns on when either the internal contacts of LCK1 relay or L1BP relay in the safety circuit are closed
See also Inputs – Outputs LCK1 relay, L1BP relay
See also LCD status – "L1C"

LCK1 relay

Onboard LCK1 relay
LCK1 relay pulls up when LCK1 input turns on
LCK1 relay contacts are monitored by LCK1M input
No external relay contacts available – internal use only

See also Inputs – Outputs LCK1, LCK1M

LCK2 – LoCK 2 input

High Voltage AC input
LCK2 input turns on when the secondary door locks (LOCKS 2) are made
"LCK" shall be shown on the LCD screen when LCK2 input is off
If LCK2 input is on with the car door open, BL2 (Bridged Lock2) fault status will be displayed
LCK2 input pulls up LCK2 relay.
For single door lock installations (primary locks only), place a permanent bridge across LOCKS 2 and set LOK EEPROM setting to "01"
See also EEPROM settings, LOK

LCK2 relay

Onboard LCK2 relay
LCK2 relay pulls up when LCK2 input turns on
LCK2 relay contacts are monitored by M3 input
No external relay contacts available – internal use only
See also Inputs – Outputs M3

LEV relay

Onboard Levelling relay
LEV relay pulls up when lift is levelling into the floor or re-levelling
No external relay contacts available – internal use only

LOCK VALVE SWITCH onboard toggle switch

Used for testing hydraulic lift door lock valve
When the switch is up the lock valve shall be off
When the switch is down the lock valve shall be on
Not applicable for traction lifts – switch will be either sorted with a link or be in the down position

L1BP relay

Onboard Lock1 Bypass Relay
L1BP relay pulls up when BYPASS is switched to L1BP
No external relay contacts available – internal use only
Must be a safety relay with FGR contacts. No relay socket provided as only serviceable by ECD
See also Inputs – Outputs BYPASS onboard switch

L2BP relay

Onboard Lock2 Bypass Relay
L2BP relay pulls up when BYPASS is switched to L2BP
No external relay contacts available – internal use only
Must be a safety relay with FGR contacts. No relay socket provided as only serviceable by ECD
See also Inputs – Outputs BYPASS onboard switch

MSD – Magnetic Switch Down input

MSD input turns on via the MSD sensor in the shaft
MSD input controls MSD relay
MSD input is used for counting the lift position (MSL = 00) and for the floor level masking/re-levelling circuit

Counting Operation (MSL=00) – When the lift is running down between floors, it shall advance the position count when the MSD input is received. The outputs 1P to 12P shall change accordingly. The LCD position shall remain

the same until the lift passes through DZ. At floor level the MSD input zone must be within the DZ input zone or a dual advance count may occur
Counting Operation (MSL=01) – MSD input is not required between floors. Only used at floor level

Re-levelling Operation – If the lift is stationary at a floor and MSD input turns off (DZ and MSU on), then the lift shall re-level up. LUP status is displayed on LCD (when doors closed). A 10 seconds on, 3 seconds off re-level cycle shall continue whilst the lift is on an appropriate mode with the doors fully closed or fully open, until MSD input turns back on
If lift is re-levelling and the doors start to close, re-levelling shall continue. However, if another re-level cycle is required, it shall not initiate unless the doors return to the fully open or closed position

When MSU and MSD inputs turn off within the door zone with the doors not in the closed position, UIM (unintended movement) output shall turn off.

Ensure the MSD input activates just before the Bottom Slowing Limit (BSL) at the bottom floor
See also Inputs – Outputs MSU, UIM

MSD relay
Onboard Magnetic Switch Down relay
MSD relay pulls up when MSD input turns on
No external relay contacts available – internal use only

MSU – Magnetic Switch Up input
MSU input turns on via the MSU sensor in the shaft
MSU input controls MSU relay
MSU input is used for counting the lift position (MSL = 00) and for the floor level masking/re-levelling circuit

Counting Operation (MSL=00) – When the lift is running up between floors, it shall advance the position count when the MSU input is received. The outputs 1P to 12P shall change accordingly. The LCD position shall remain the same until the lift passes through DZ. At floor level the MSU input zone must be within the DZ input zone or a dual advance count may occur
Counting Operation (MSL=01) – MSU input is not required between floors. Only used at floor level

Re-levelling Operation – If the lift is stationary at a floor and MSU input turns off (DZ and MSD on), then the lift shall re-level down. LDN displayed on LCD (when doors closed). A 10 seconds on, 3 seconds off re-level cycle shall continue whilst the lift is on an appropriate mode with the doors fully closed or fully open, until MSU input turns back on
If lift is re-levelling and the doors start to close, re-levelling shall continue. However, if another re-level cycle is required, it shall not initiate unless the doors return to the fully open or closed position.

When MSU and MSD inputs turn off within the door zone with the doors not in the closed position, UIM (unintended movement) output shall turn off.

Ensure the MSU input activates just before the Top Slowing Limit (TSL) at the top floor
See also Inputs – Outputs MSD, UIM

MSU relay
Onboard Magnetic Switch Up relay
MSU relay pulls up when MSU input turns on
No external relay contacts available – internal use only

M1 – M1 output terminal
High Voltage AC board terminal only. Not monitored by processor. No LED

M1 terminal is provided for testing purposes and for the Door Open relay supply for dual door circuits.

M3 – M3 Input

Re-levelling circuit, CG relay and CGBP relay contact internal monitoring point
M3 input turns on when either the internal contacts of LCK2 relay or L2BP relay in the safety circuit are closed or when the re-levelling circuit in the safety circuit is closed
M3 input turns on M3 LED
See also Inputs – Outputs LCK2 relay, L2BP relay
See also LCD status – "L2C"

M4 – M4 terminal

M4 terminal is provided for wiring and testing purposes and connects the neutral side of circuits to controller terminal 44
Connect M4 terminal to N terminal
For Rev 1.02 boards onwards, M4 to N link not required (done internally)

N – Neutral terminal

Safety Circuit AC return line
Connect N terminal to M4 terminal

NDG - NuDGing buzzer output

Darlington output
NDG output turns on to operate a door nudging buzzer to indicate doors are closing on nudging speed
NDG output turns on to activate an audible signal when lift on HFS recall
NDG output turns on to operate an audible floor passing tone device
See also Inputs – Outputs, NR
See also EEPROM settings, NR

NR - Nudging Relay output

NR relay pulls up when the lift is on door nudging mode
In door nudging mode, the doors will close regardless of "EDP" input state. The NR relay contacts are used to signal the door operator to close the doors at a reduced speed and torque to avoid injury
Nudging mode occurs when doors are held open via EDP for more than 20 seconds after door timing (DTC, DTH, DTL) has expired
Lift must be in NOR mode (normal operation) for nudging to operate
See also Inputs – Outputs, NDG
See also EEPROM settings, NR

OIL – OIL overheat input

Hydraulic lifts only
OIL input turns on when the hydraulic motor and/or oil design temperature is exceeded
"Hyd. OIL overheat" shall be shown on the LCD screen
Car shall stop directly and return to the bottom landing and open the doors to evacuate passengers. Doors will then close and lift shall remain out of service until OIL turns off. Door open button shall remain operative
Re-levelling shall be disabled with OIL input on.
OS output shall turn on
See also Inputs - Outputs, OS

OS - Out of Service output

Transistor Output
OS output turns on whenever the lift is out of the group. Hall calls shall be cancelled
Used for driving an external relay, or as an input for displays notifying the lift is Out Of Service
There are numerous conditions which shall turn OS output on, for example, when safeties are lost, lift is not in

normal mode, door protection failures.
Nb: If EEprom setting DRV = 0A, CFS and IND do not turn on OS output

OVL – OVerLoad input

OVL input turns on when an external load weighing device detects rated load has been exceeded by 10% with a minimum of 75kg
"Lift OVerLoaded" shall be shown on the LCD screen.
While OVL input is on;
The lift shall stop with the doors open
Only hydraulic lifts shall re-level
OVLO output turns on to provide an audible and visual signal in the car
OS output shall turn on
Lift shall return to normal operation when OVL input turns off
See also Inputs - Outputs OS
See also Inputs - Outputs OVLO

OVLO – OVerLOad output

Darlington output
OVLO output turns on to provide an audible and visual signal in the car when car is overloaded.
See also Inputs – Outputs OVL

PAWL – PAWL device output

Nb: Currently PAWL control is unavailable
Darlington output
Hydraulic lifts only
PAWL output turns on to extend and retract the PAWL device under the car
See also Inputs - Outputs, PWLE, PWLR

PCOM – Pit Inspection COMmon Input

PCOM input turns on when the PCOM common inspection button is pressed
Connect the pit inspection common button to PCOM input
PCOM input, with either IUP or IDN input, is used to move the car with the pit inspection buttons
To move the car with pit inspection and top of car inspection both switched on, TCOM input and PCOM input must be both on
See also Inputs – Outputs TCOM
See also Inputs – Outputs INSP

PINS – Pit INSpection input

PINS input turns on for normal operation
PINS input turns off when the lift is switched to PIT Inspection
"PIT Insp" shall be shown on the LCD screen
If the lift is switched to Pit Insp and Top of Car Insp, the LCD shall display "TOP & PIT Insp"
To turn the lift off PIT Inspection, PINS input must be on and PRES input turned on for 3 seconds, using the electrical reset device outside the lift shaft
If PINS input is turned back on (to take lift off PIT Insp) while controller power is off, on restoration of power, PRES input must still be seen on for > 3 secs to take lift off PIT Inspection, as the PIT Insp status is stored in EEPROM
Nb: Moving a lift with a VF drive on Pit Inspection;
Turning the lift to Pit Inspection opens the Lift Pit "inspection 1" contact in the safety circuit, which drops C1 contactor. This ensures power is removed from the drive for safety.
To move the lift on Pit Inspection, press the Lift Pit Common button for 3 seconds and hold, to power the drive back up and then press the Up or Down button to move the lift
To stop the lift, release the Up or Down button and , then release the common button

See also Inputs – Outputs PRES
See also Inputs – Outputs INSP

PRES – Pit inspection RESet input

PRES input turns on to reset PIT Inspection
To turn lift off PIT Insp, PINS input must be turned back on and PRES input turned on for 3 seconds, using the electrical reset device outside the lift shaft
When PINS is turned back on, PRES input is monitored and must be off before being turned on for 3 seconds
This is to ensure the PRES electrical reset device cannot be accidentally left on in the reset position
See Inputs – Outputs PINS

PRK – PaRKing input

PRK input turns on when lift is on park
"lift on PaRK" shall be shown on the LCD screen
When PRK input is active, the lift shall remain at the floor with the doors open, when on normal or independent operation
All car calls and door close buttons shall be ignored
OS output shall turn on
See also Inputs - Outputs OS

PRV - PRoVing circuit input

PRV input turns on to ensure the drive contactor is opened whilst stationary, thereby checking the stopped condition.
All DRV settings shall require the PRV input to be ON, prior to a run (see Section 6: Motion)

PULSE – PULSE counting input

PULSE input turns on with the pulse from the encoder
The controller uses this input only when EEPROM MSL is set to "01" or "02". See section 6: Motion – EEPROM MSL setting "01", "02" and "03"
0V input pulse recommended every 20mm of car travel

PWLE – PaWL device Extended input

Nb: Currently PAWL control is unavailable
Hydraulic lifts only
PWLE input turns on to confirm the PAWL device under the car has fully extended (lifted)
See also Inputs - Outputs, PAWL, PWLR

PWLR – PaWL device Retracted input

Nb: Currently PAWL control is unavailable
Hydraulic lifts only
PWLR input turns on to confirm the PAWL device under the car has fully retracted (dropped)
See also Inputs - Outputs, PAWL, PWLE

SAF - SAFety circuit input

High Voltage AC input. Monitored by processor.
SAF input turns on SAF LED
"SAFety circuit fail" shall be shown on the LCD screen when SAF input is off
SAF input is in the safety circuit and used for testing and is connected to controller terminal 16

SIn1 - Input

SIn1 input turns off when on Top of car Inspection

INPUTS – OUTPUTS

SIn2 - Input
Spare Input 2

SIn3 - Input
Spare Input 3

SO1 - Output
Spare Output 1

SO2 - Output
Spare Output 2

SO3 - Output
Spare Output 3

SO4 - Output
Spare Output 4

SP1 – SPare relay output 1
Star contactor output
See Section 6: Motion, for more on the relay operation
See also EEPROM settings ST2 - Star/Delta changeover time and SDX - Star Delta Exchange time

SP2 - SPare relay output 2
Delta contactor output
See Section 6: Motion, for more on the relay operation
See also EEPROM settings ST2 - Star/Delta changeover time and SDX - Star Delta Exchange time
See also EEPROM settings SSD - When SSD = 01, SP2 relay operates as per UP relay. SP2 C and N/O contacts are used to issue the run command to the Soft Starter. This ensures 2 forms of motor disconnection.

SP3 - SPare relay output 3
SP3 may be used for an inspection speed input, depending on DRV setting
See also Section 6: Motion, for more on SP3 relay operation

SP4 - SPare relay output 4
SP4 relay pulls in when SAF input is active
On loss of safety circuit (and SAF input), SP4 relay drops out
SP4 relay contacts may be used to disconnect the door operator from the supply on loss of the safety circuit.

SX- Serial communication input
RS485 connection for connecting lifts in groups. Use shielded 3 wire serial cable
Connect shield to GRD terminal
See also Section 3: Group

SX+ Serial communication input
RS485 connection for connecting lifts in groups. Use shielded 3 wire serial cable
Connect shield to GRD terminal
See also Section 3: Group

TCOM – Top of car Inspection COMmon input
TCOM input turns on when the TCOM common inspection button is pressed
Connect the top of car inspection common button to TCOM input
TCOM input, with either IUP or IDN input, is used to move the car with the top of car inspection buttons
To move the car with PIT Inspection and TOP of car Inspection both switched on, TCOM input and PCOM input must be both on

I N P U T S – O U T P U T S
See also Inputs – Outputs PCOM
See also Inputs – Outputs INSP

TSL – Top Slowing Limit input

Top floor position correction limit and forced slowdown limit for terminal floor
TSL input turns off as the lift approaches the top floor and activates the TSL limit switch
TSL input must remain off when lift is at the highest point in the shaft (counterweight landed / ram fully extended)
Ensure the MSU input activates just before the Top Slowing Limit (TSL) at the top floor
See also Inputs – Outputs MSU

UD – Up Dn relay output

UD relay output contacts are used to control up/down operation
See also Section 6: Motion, for more on the relay operation

UF - Up Fast relay output

UF relay output contacts are used to control up fast speed operation
See also Section 6: Motion, for more on the relay operation

UIM – UnIntended Movement output

Darlington output
UIM output is on when the lift is in normal operation
UIM output turns off to stop non-commanded movement of the lift within the door zone, when the doors are not in the closed position
"UnIntended Movement" shall be shown on the LCD screen

When MSU and MSD inputs turn off within the door zone with the doors not in the closed position, UIM output shall turn off.

UIM output is used for driving a UIM external relay.
The UIM contacts shall interrupt the electrical circuits for the brake(s) and rope gripper, where utilised
To turn the lift off UIM mode, the UIM button on the board, under the LCD must be pressed
UIM mode once activated, shall not reset if a power off/on cycle occurs as UIM mode is stored in EEPROM
See also Inputs – Outputs, MSU, MSD

UP – UP relay output

UP relay output contacts are used to control up direction operation
See also Section 6: Motion, for more on the relay operation

US - Up Slow relay output

US relay output contacts are used to control up slow speed operation
See also Section 6: Motion, for more on the relay operation

1C/12C - Car Call input / output

input/darlington output
1C - 12C input turns on when the car call at that floor is entered
1C – 12C output turns on for the car call entered indication (tell-tale light).

2D/12D - Down Hall Call input / output

input/darlington output
2D – 12D input turns on when the down hall call at that floor is entered
2D – 12D output turns on for the down hall call entered indication (tell-tale light)

1P/12P - PosItion output

Transistor outputs 1P-12P
Position outputs are used for indication of lift position.
This signal is the advanced lift position count
Note: The LCD displays the actual and not the advanced position (PI) count.
The PI output may be in decimal, binary or grey code depending on the PI Setting
See also EEPROM settings, PI

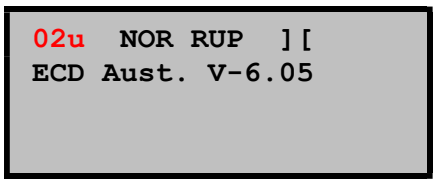
1U/11U – Up Hall Call input / output

input/darlington output
1U – 11U inputs turn on when the up hall call at that floor is entered
1U – 11U output turns on for up the hall call entered indication (tell-tale light)

Section 5. Liquid Crystal Display (LCD)

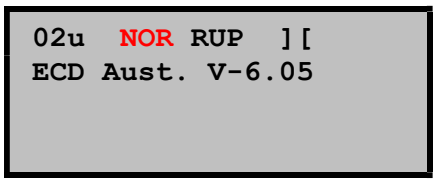
LCD Info, Modes, Status, buttons and navigation, Fault Log
LCD contrast is set via "Contrast" POT located to the upper left of LCD

LCD Position & Direction



The lift position is shown in the top left of the LCD display, followed by the current demand direction.
The above example shows the lift on the 2nd floor with an up direction

LCD Lift Mode

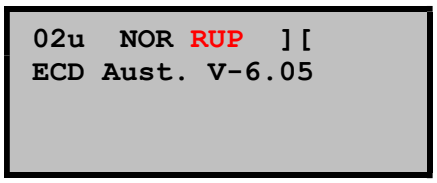


The lift mode is shown in the top left centre of the LCD display.
The above example shows the lift on Normal

List of Lift Modes;

- CFS Lift on Car Fire Service
- COR Lift performing a CORrection run due to loss of position
- DDO Door Disable Open. Toggle switch provided on board
- EP Lift on Emergency Power
- EQK EarthQuaKe detected. See EQK input
- HCB Hall Call Bypass
- HFS Lift on Hall Fire Service
- HR Lift on Hospital / Hall Recall
- IND Lift on INDependent service
- INS Lift on INSpection
- LRN LeaRNing floor operation in progress
- NOR Lift on NORmal operation
- NPT No Pulse Time out. Fatal error. See Section 6, counting method 01, NPT
- OIL Hydraulic OIL overheat. See OIL input
- OVL Lift OVerLoad sensor triggered. See OVL input
- PIT Lift on PIT inspection
- PRK Lift on Park
- UIM UnIntended Movement. Non-commanded movement of the lift. See UIM input
- ZON Lift ZONed/zoning to floor

LCD Lift Status



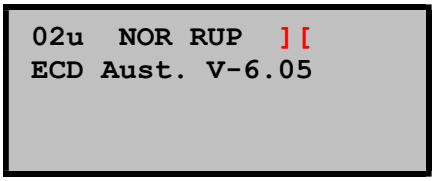
The lift Status is shown in the top right centre of the LCD display.
The above example shows the lift Running Up

List of Lift Status;

- BCG "Bridged Car Gate" fault. CG input is on with doors open. Doors shall remain open until bridge is removed. See CG, DFO input
- BL1 "Bridged door Lock1" fault. LCK1 input is on with doors open Doors shall remain open until bridge is removed. See LCK1, DFO input
- BL2 "Bridged door Lock2" fault. LCK2 input is on with doors open Doors shall remain open until bridge is removed. See LCK2, DFO input
- BSD "BRK Drop Timeout". Brake did not drop. Fatal error. See BKS1, BKS2 input
- BST "BRK Lifting Timeout". Brake did not lift. Fatal error. See BKS1, BKS2 input
- CG Car Gate not made. See CG input
- CGC "Car Gate relay Close" fault. CG relay contact closed when should be open. Fatal error requires inspection on/off to reset. See also Inputs - Outputs CGM LED
  CG fault is displayed and logged when;
  1. Doors are opening
  2. CG input turns off, dropping CG relay
  3. CG relay contact in the safety circuit stays closed (CGM LED on)
- CGO "Car Gate relay Open" fault. CG relay contact open when should be closed. Lift returns to normal when fault clears. See also Inputs - Outputs CGM LED
- DCP "Door Close Protect." Doors failed to close. See DFC input
- DOP "Door Open Protect." Doors failed to open. See DFO input
- IDL Lift idle
- L1O "Lock #1 relay Open" fault. LCK1 relay contact open when should be closed. Lift returns to normal when fault clears. See also Inputs - Outputs LCK1 LED
- L2O "Lock #2 relay Open" fault. LCK2 relay contact open when should be closed. Lift returns to normal when fault clears. See also Inputs - Outputs M3
- LCK Door lock(s) not made. See LCK1, LCK2 input
- LDN Levelling down, displays with doors closed, on re-level down. See MSU input
- LUP Levelling up, displays with doors closed, on re-level up. See MSD input
- L1C "Lock1 relay Close" fault. LCK1 relay contact closed when should be open. Fatal error requires inspection on/off to reset. See also Inputs - Outputs LCK1M LED
  L1C fault is displayed and logged when;
  1. Doors are opening
  2. LCK1 input turns off (dropping LCK1 relay) before CG input turns off
  3. LCK1 relay contact in the safety circuit stays closed (LCK1M LED on)
- L2C "Lock2 relay Close" fault. LCK2 relay contact closed when should be open. Fatal error requires inspection on/off to reset. See also Inputs - Outputs M3
  L2C fault is displayed and logged when;
  1. Doors are opening
  2. LCK2 input turns off (dropping LCK2 relay) before CG and LCK1 input turns off
  3. LCK2 relay contact in the safety circuit stays closed (M3 LED on)
- PRV Waiting PRV input to run. See PRV input
- RDN Running down
- RPT "Run Protection Timer". Run time exceeded. Fatal error. See EEPROM settings - RPT

- RUP Running up
- SAF Lost safety circuit. See SAF input

LCD Door Modes

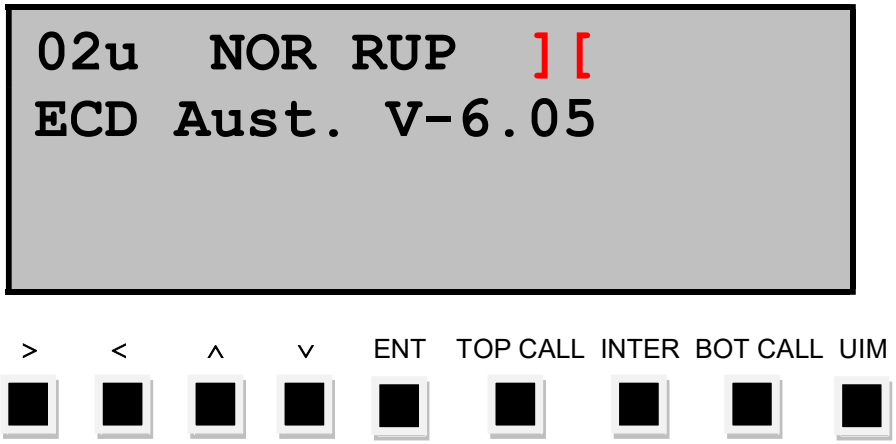


The Door Mode is shown at the top right of the LCD display. The above example shows the doors closed

- <> Doors opening
- [ ] Doors open
- >< Doors closing
-] [Doors closed
- -bad Doors fully closed but car door/door locks not made. See DFC input
- -fail Doors failed on DOP or DCP. See DFC/DFO input
- - - Doors on other control. ie – Inspection.

LCD Control Buttons

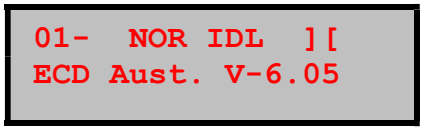
There are 9 push buttons beneath the LCD screen;



- > Forward
- < Backward
- ^ Up
- v Down
- **ENT** Enter. Enter a changed parameter value
- **TOP CALL** enters a car call to Eeprom TCC setting
- **INTER** enters a car call to Eeprom CIM setting
- **BOT CALL** enters a car call to Eeprom BCC setting
- **UIM** is the reset button when lift fails on Unintended Movement

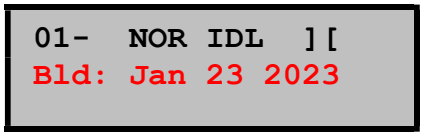
LCD Display Options

Use the Forward, Backward, Up and Down buttons to cycle through the available options



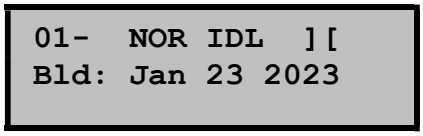
Home screen. Position, direction, mode, status, door state and software version displayed

∧ Up



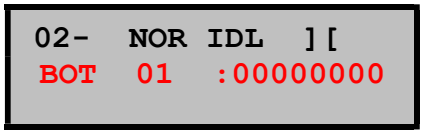
Software build date

∨ Down



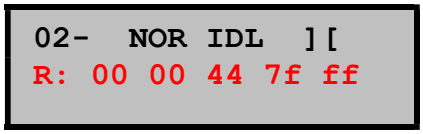
Back to home screen

> Forward



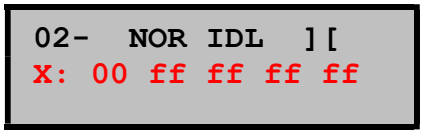
Eeprom settings. Press ∧ and ∨ to scroll through the adjustable EEPROM settings.
See Section 2, EEPROM settings

> Forward



R – internal RAM addresses and values

> Forward



X – external RAM addresses and values

> Forward

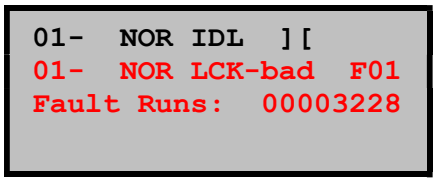
Floor Positioning. See Section 6, Motion, Pulse Counting method 01

> Forward

Number of Runs / Number of Doors Operations.
Cycle ∧ Up button for number of lift runs and door operations and the fault log

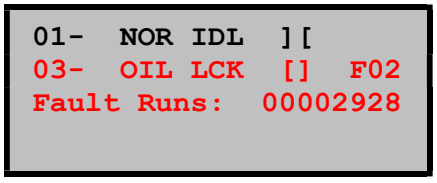
LCD Fault Log

From the Log Run/Doors Ops screen, press the Up button 3 times to reach the Fault Log
There are 10 faults recorded, with F01 being the most recent and F10 the oldest fault recorded
As a new fault is recorded at F01, the oldest fault at F10 shall be deleted



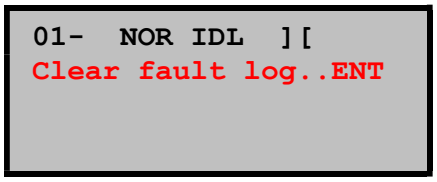
The LCD shown displays the most recent recorded fault (F01), as a door lock fault (LCK-bad) on level 01 on run # 3228

Press the Up button to display older recorded faults



The LCD shown displays the 2nd most recent fault (F02) as an oil overheat fault (OIL) on level 03 on run # 2928

Press the Up button to reach the next 8 recorded faults, until the "Clear fault log" screen appears.
Press the Enter button to reset/clear the fault log. All faults shall be cleared from the fault log
Nb: To disable the "Clear fault log" function the COD and LCK EEprom parameters can be adjusted



List of logged faults. See LCD modes/status for definitions;

- BCG
- BL1
- BL2
- BSD
- BST
- CG
- CGC
- CGO
- DCP
- DOP
- EQK
- L1C
- L1O
- L2C
- L2O
- LCK
- NPT
- OIL

- OVL
- RPT
- UIM

Section

6

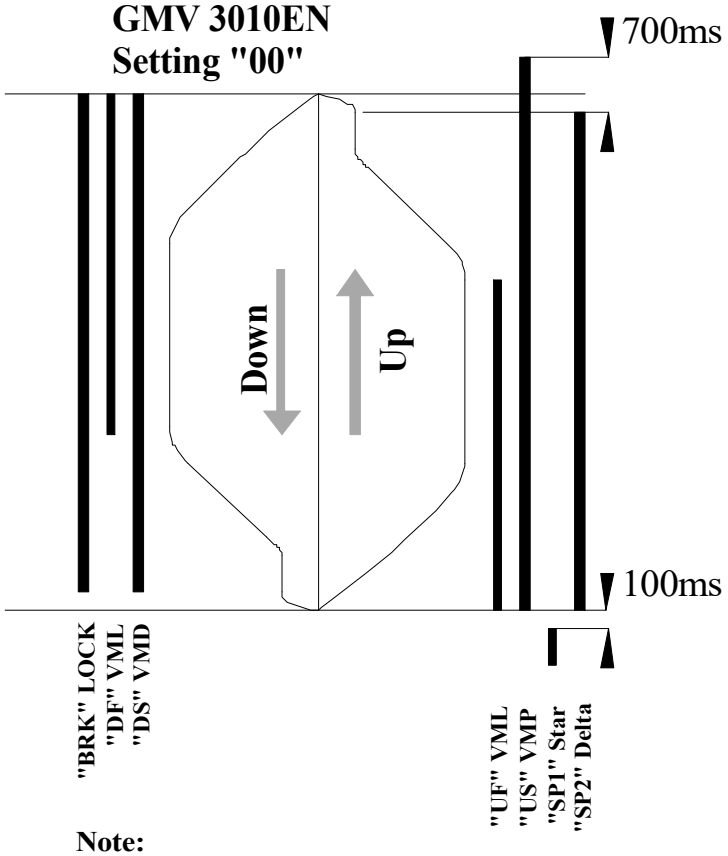
Section 6. Motion

Motion Control Outputs

Drive settings and their output status.

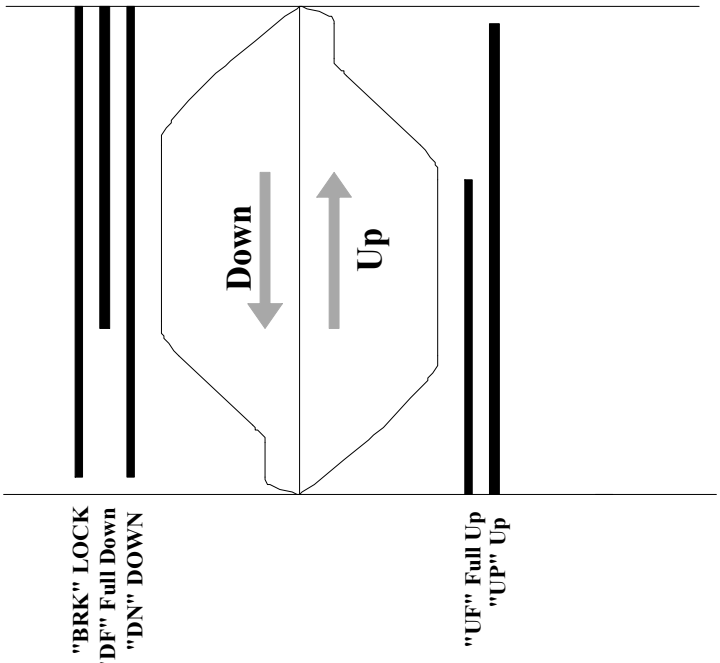
The controller may output to various different drives as per the list below depending on the DRV EEPROM setting.
The following diagrams only indicate the drive outputs but do not show re-levelling functions and timing.

DRV…EEPROM…Drive control type.



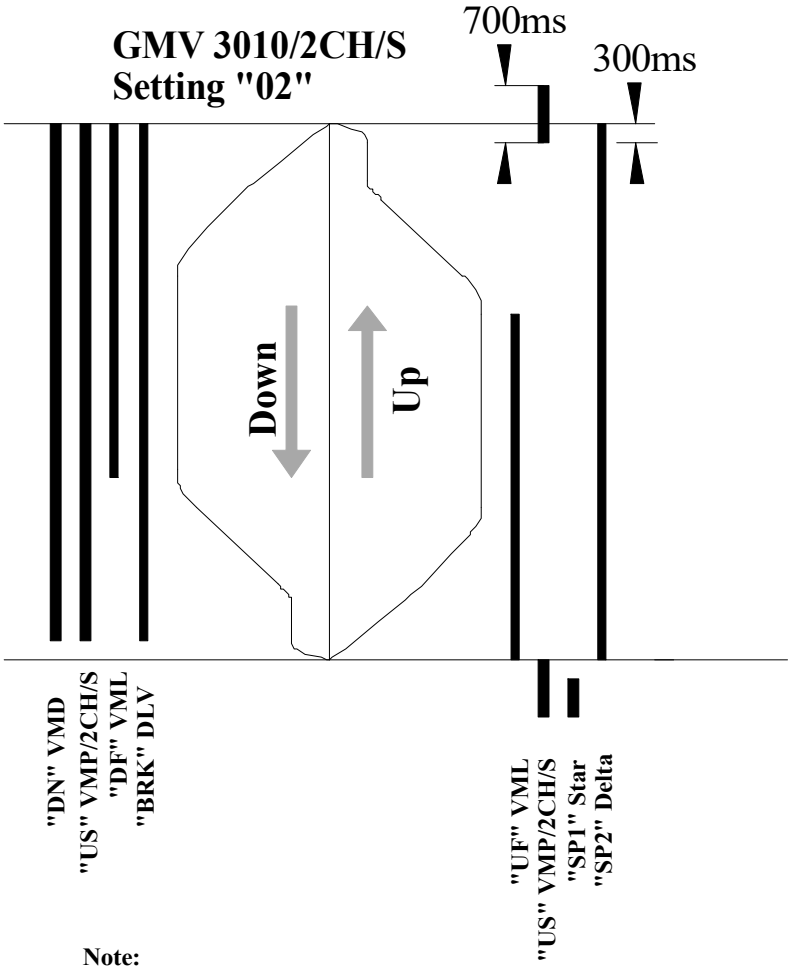
Note:
1. On inspection, SP3 turns on for inspection speed.
2. PRV input must be ON, prior to a run.

DYNAHYD "DA VALVE"
Setting "01"



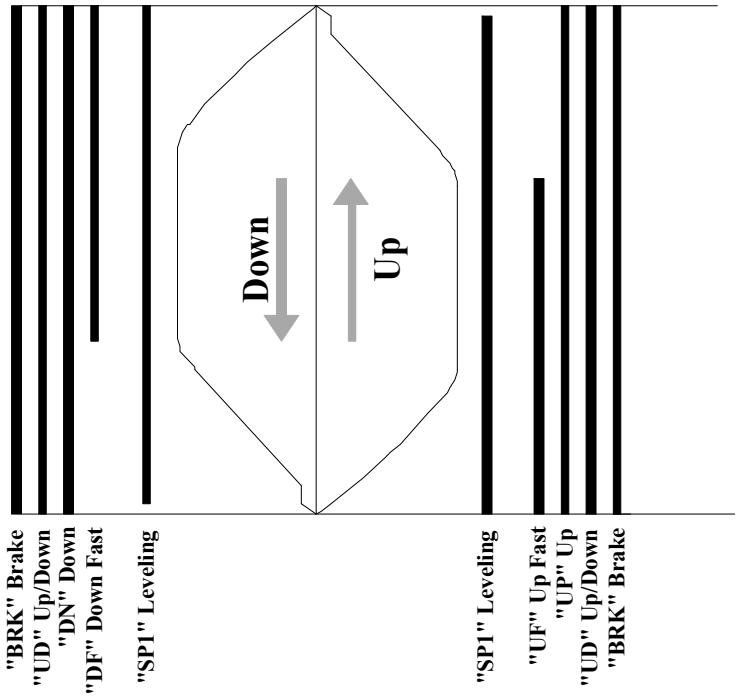
1. On inspection, SP3 turns on for inspection speed.
2. PRV input must be ON, prior to a run.

GMV 3010/2CH/S
Setting "02"



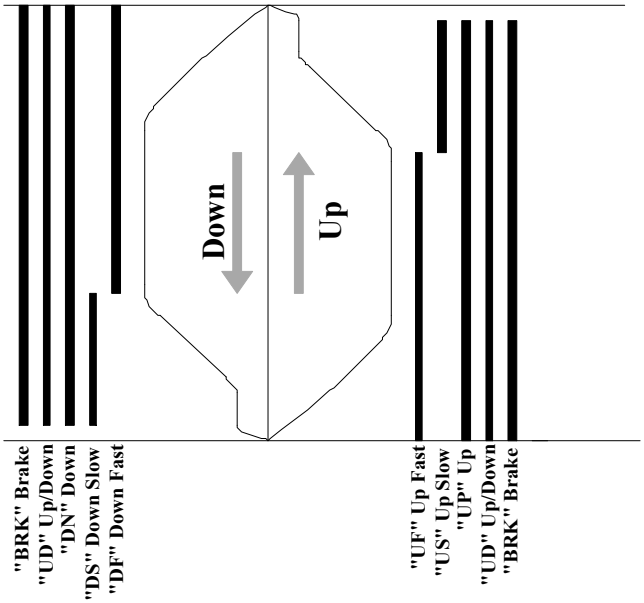
Note:
1. On inspection, SP3 turns on for inspection speed.
2. PRV input must be ON, prior to a run.

VF Drive Type 1. KEB, B&F, Zetadyn, C.T.
Setting "03"



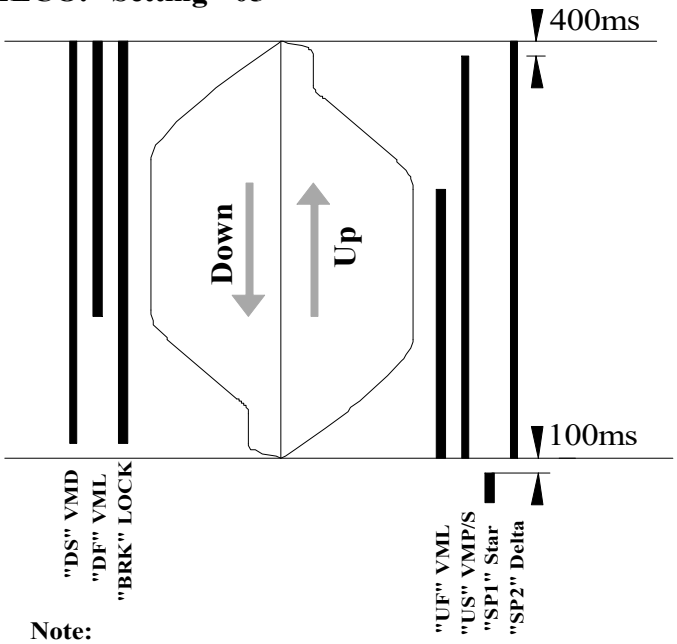
Note:
1. On inspection, SP3 turns on for inspection speed.
2. PRV input must be ON, prior to a run.
3."PRV" turns off during entire run and
   becomes active to complete the run.
4. On inspection UF and DF turn off.
5. SP2 turns on for intermiediate speed (MSL=01 only)
6. US/ DS used for terminal speed check on lifts above 1m/s

2 Speed AC
Setting "04"



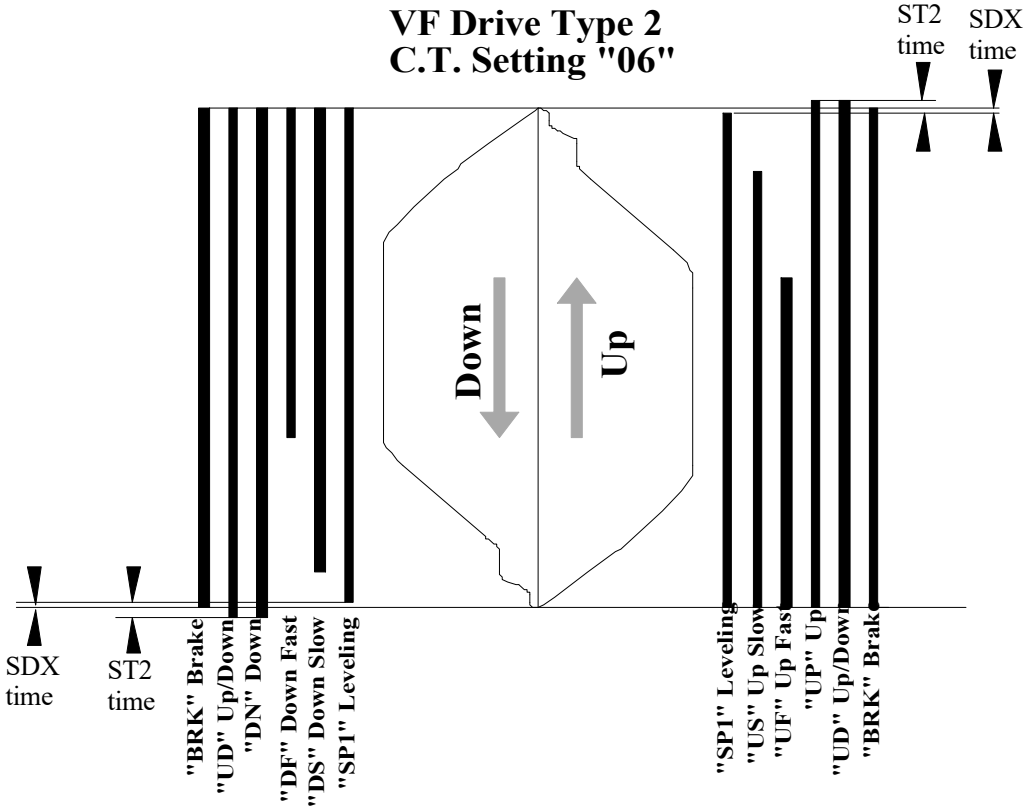
Note:
1. On inspection, SP3 turns on for inspection speed.
2. PRV input must be ON, prior to a run.

GMV 3010/S, Blain EV100, Maxton, Bucher LRV, EECO. Setting "05"



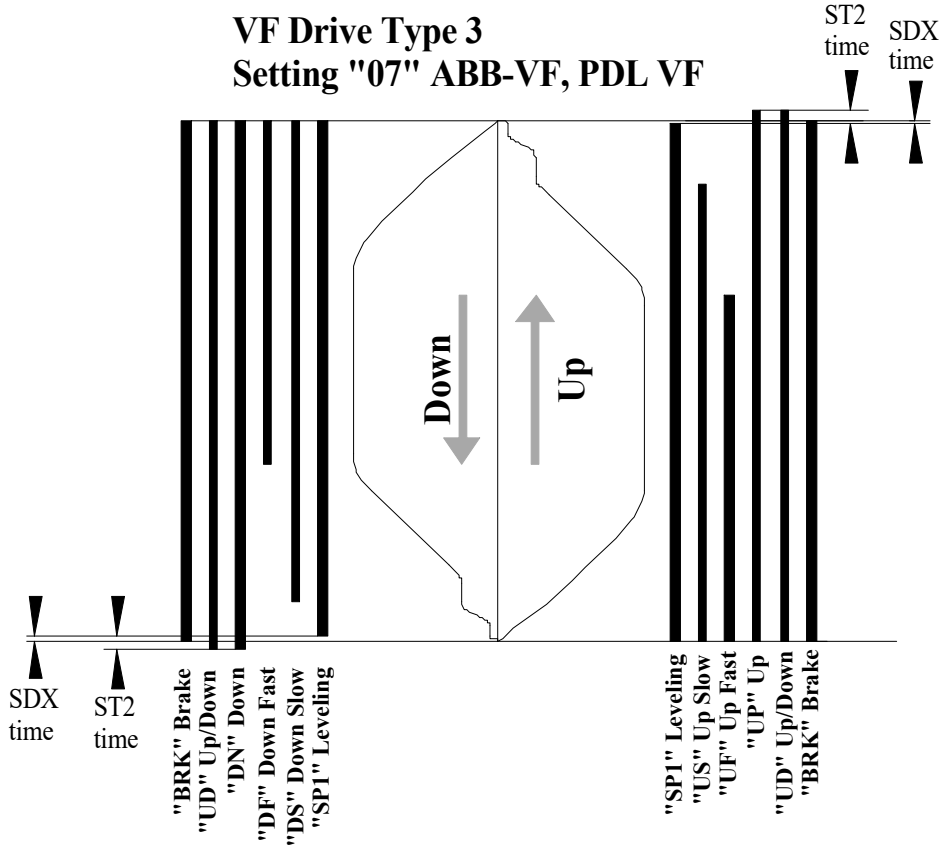
Note:
1. On inspection, SP3 turns on for inspection speed.
2. PRV input must be ON, prior to a run.

VF Drive Type 2
C.T. Setting "06"



Note:
1. On inspection, SP3 turns on for inspection speed.
2. PRV input must be ON, prior to a run.
3. The end of the run is initiated by loss of leveling. BRK then holds up for SDX time and then UD,U/D is held up for ST2 time in 10ms increments. SDX time must be less than ST2 time
4. On inspection UF and DF turn off.

VF Drive Type 3
Setting "07" ABB-VF, PDL VF



Note:

1. **On inspection, SP3 turns on for inspection speed.**
2. **PRV input must be ON, prior to a run.**
3. **The end of the run is initiated by loss of leveling. BRK then holds up for SDX time and then UD,U/D is held up for ST2 time in 10ms increments. SDX time must be less than ST2 time**
4. **On inspection SP1 turns off.**

ABB VF

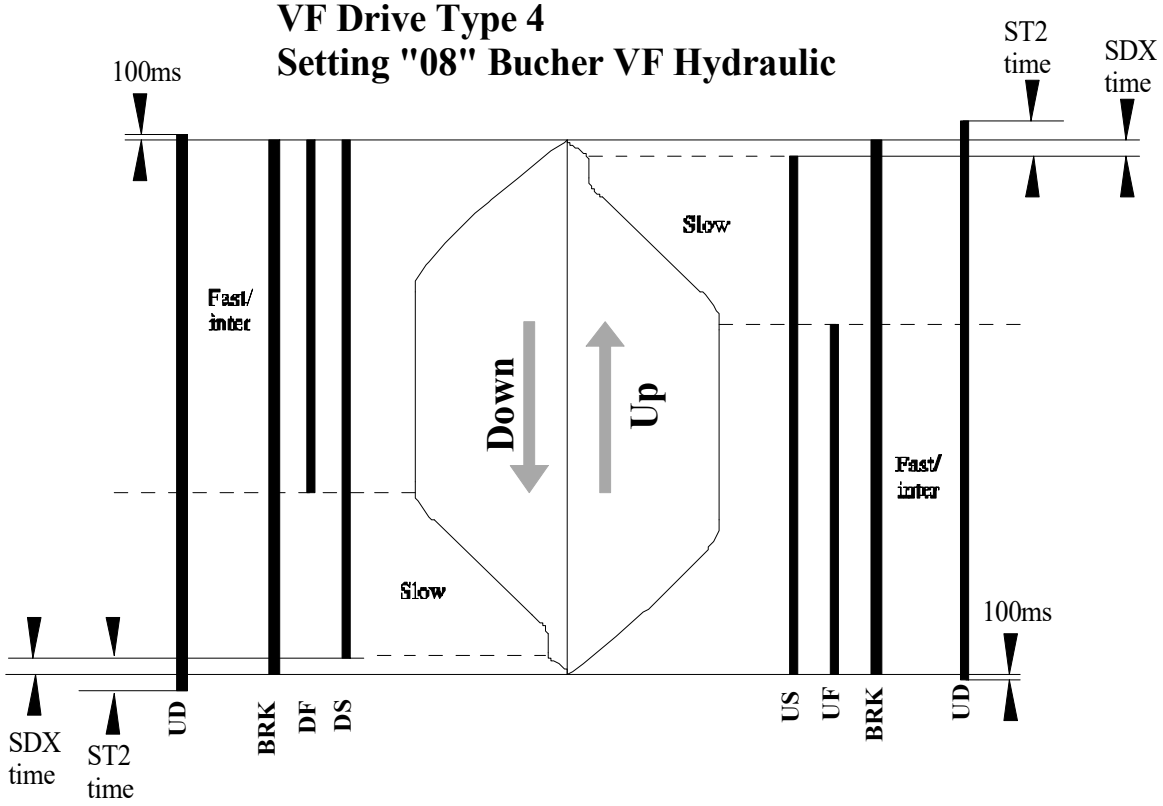
SPEED	DS/US	UF/DF	SP1	FUNCTION
N/A	1	0	0	N/A 0 rpm
INSP SLOW	0	1	0	RPM / Contract fpm x 10 = set for 10fpm
INSP FAST	1	1	0	RPM / Contract fpm x 50 = set for 50fpm
LEV	0	0	1	RPM / Contract fpm x 10 = set for 10fpm
SLOW	1	0	1	RPM / Contract fpm x 25 = set for 25fpm
INTER	0	1	1	RPM / 0.75 = set for 75% Cont Spd
FAST	1	1	1	Set as per motor rpm sync spd (RPM)

PDL VF. MULTI REF. 3 WIRE CONTROL

MF14 MF15 MF16

SPEED	DS/US	UF/DF	SP1	MULTI REF. FUNCTIONS
N/A	1	0	0	N/A 0 rpm
INSP SLOW -M2	0	1	0	Set for 10fpm
INSP FAST -M6	1	1	0	Set for 50fpm
LEV -M1	0	0	1	Set for 10fpm
SLOW -M5	1	0	1	Set for 25fpm
INTER -M3	0	1	1	Set for 75% Cont Spd
FAST -M7	1	1	1	Contract Speed (as a %)

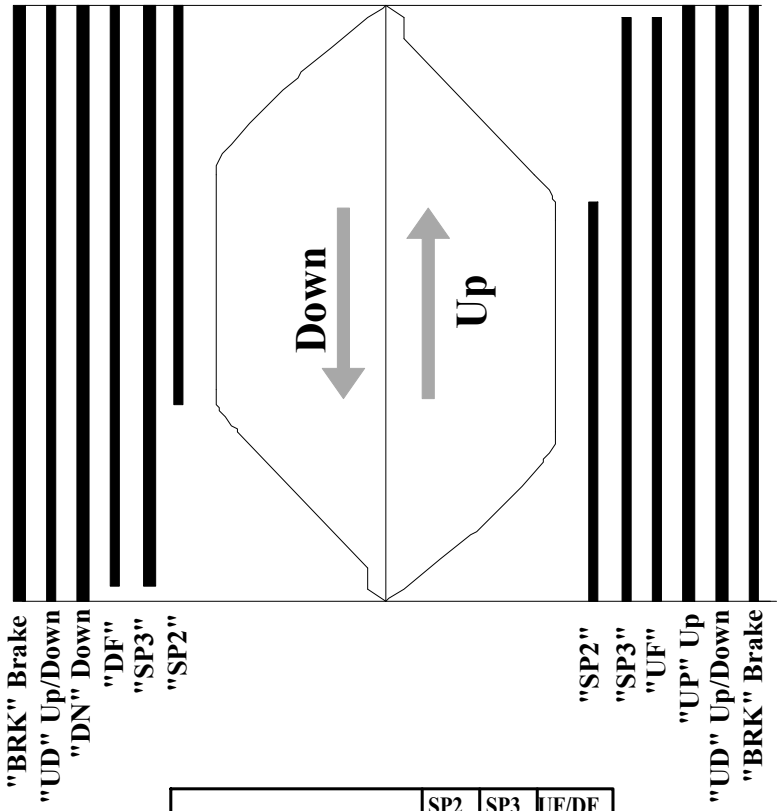
VF Drive Type 4
Setting "08" Bucher VF Hydraulic



Note:

1. **On inspection, SP3 turns on for inspection speed.**
2. **PRV input must be ON, prior to a run.**
3. **The end of the run is initiated by loss of leveling.**
   BRK then holds up for SDX time and then UD is held up for ST2 time in 10ms increments.
   SDX time must be less than ST2 time.
   Default SDX=32, ST2=33.
4. **SP2 will energise between the door zones if short floor (SFR) is active**

VF Drive Type 5. THY CPIK-VF.
Setting "09"

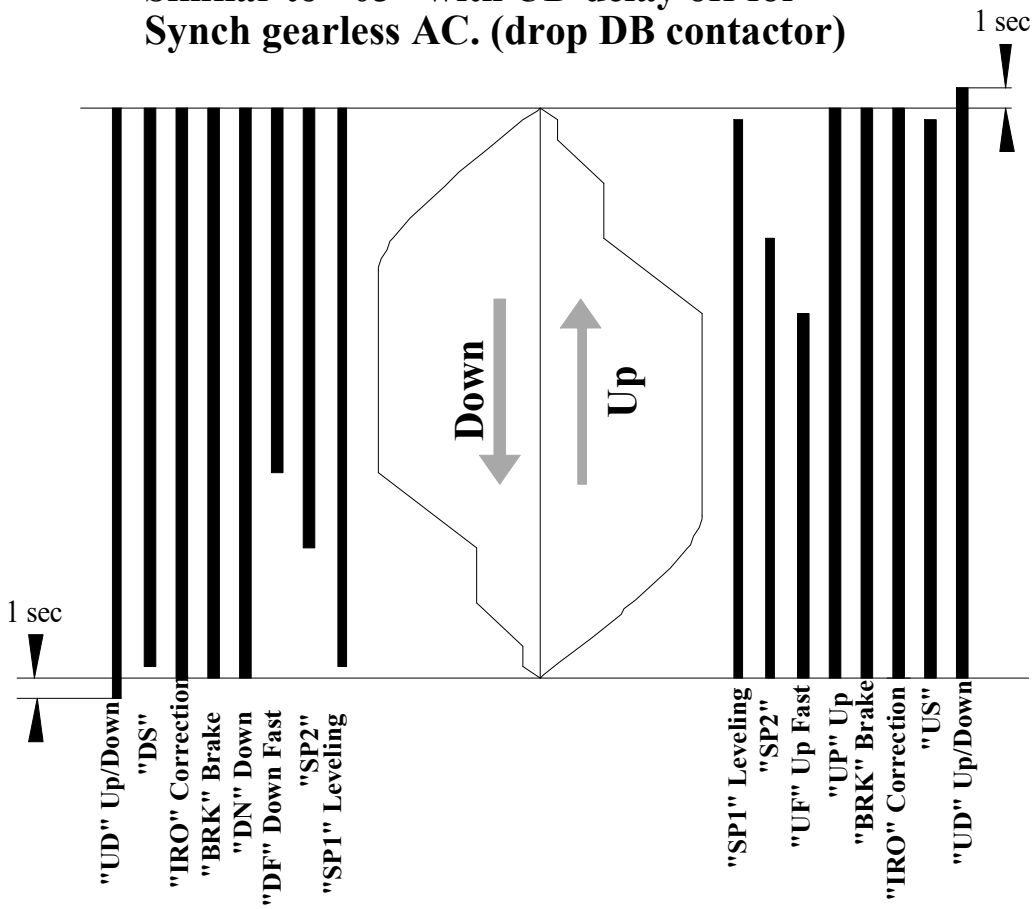


	SP2	SP3	UF/DF
CREEP SPEED	0	1	1
INSPECTION SPEED	0	1	0
MIDDLE1 SPEED	1	1	0
HIGH SPEED	1	1	1

Note:

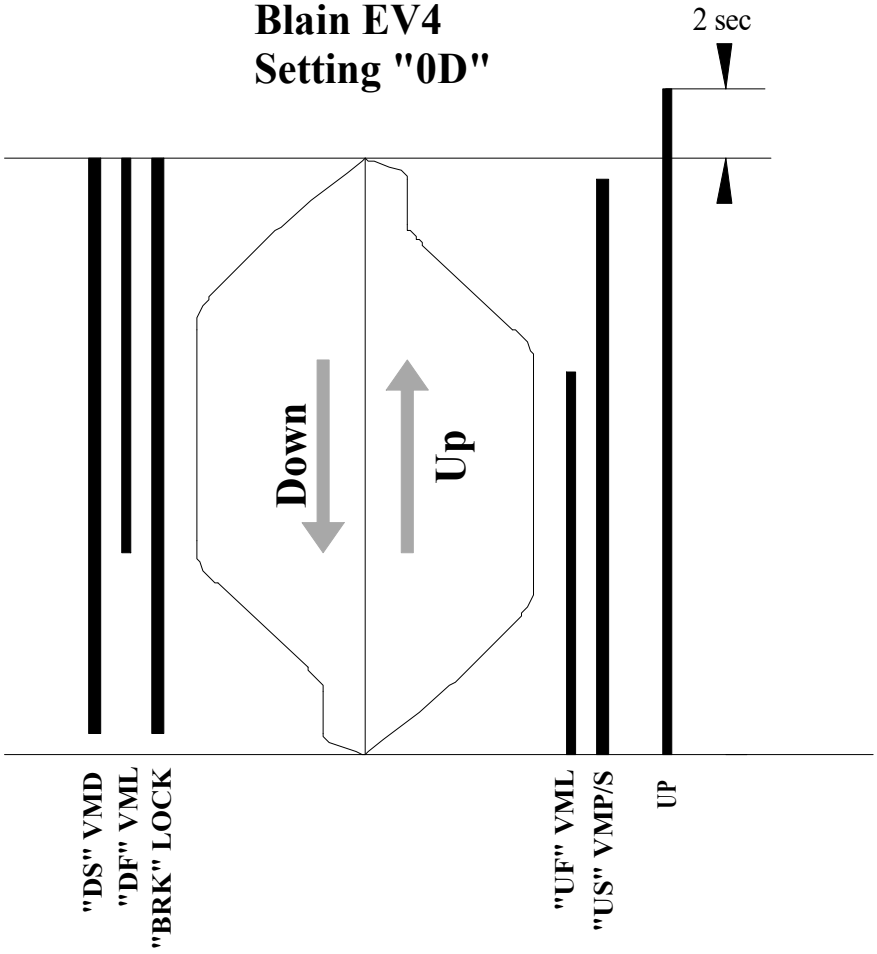
1. On inspection, SP3 turns on for inspection speed.
2. PRV input must be ON, prior to a run.
3. "PRV" turns off during entire run and becomes active to complete the run.

VF Drive Type 6
Setting "0A" KEB, Gefran with DB
Similar to "03" with UD delay off for
Synch gearless AC. (drop DB contactor)



Note:

1. **On inspection, SP3 turns on for inspection speed.**
2. **PRV input must be ON, prior to a run.**
3. **PRV turns off during entire run and becomes active to complete the run.**
4. **On inspection UF and DF turn off.**
5. **SP2 turns on for intermiediate speed (MSL=01 only)**
6. **UD relay has 1.0 sec delay off after completion of run**
7. **US/ DS used for terminal speed check on lifts above 1m/s**
8. **CFS and IND do not turn on OS output**



Note:
1. On inspection, SP3 turns on for inspection speed.
2. PRV input must be ON, prior to a run.

Counting Method "00" - Magnet Counting.

EEPROM MSL setting "00"

The controller counts its position within the lift shaft using the DZ – Door Zone Input, MSU – Magnet Switch Up Input, MSD – Magnet Switch Down Input, TSL – Top Slowing Limit and BSL – Bottom Slowing Limit.

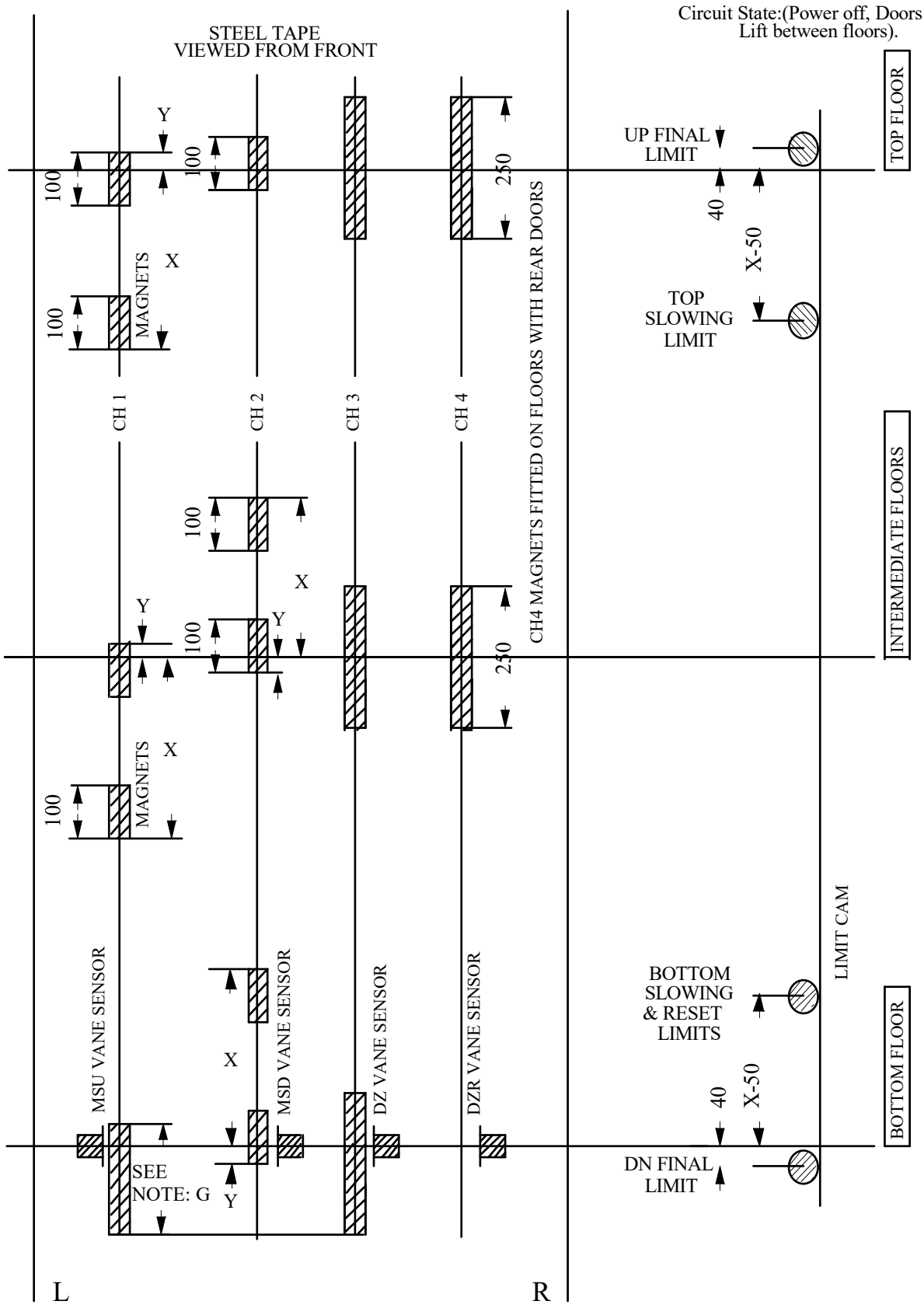
If the lift is stationary or running down and BSL input is removed, the lift shall reset to the bottom floor. If running down in fast speed, the fast speed inputs shall be turned off.

If the lift is stationary or running up and TSL input is removed, the lift shall reset to the top floor. If running up in fast speed, the fast speed inputs shall be turned off.

The shaft information at floor level must be as per the Counting Method "00" Shaft Layout drawing in that the MSD and MSU vanes must be within the door zone. See the diagram; "*Counting Method "00" Shaft Layout" at the end of this section.*

If the lift was to leave the bottom floor in the up direction heading to the third landing it would count as follows.

- While traveling up fast all MSD out of the DZ shall be ignored.
- As the lift travels up fast and passes MSU slowing magnet for level 2, the advance count is shown by transistor outputs 1P-8P.
- As the lift travels up fast and passes the DZ magnet for level 2 (MSU and MSD ignored/masked by DZ) the position count as shown on the LCD shall increment to level 2.
- As the lift travels up fast and passes MSU slowing magnet for level 3, the advance count is shown by transistor outputs 1P-8P. As the lift advance counts, slowing shall be initiated for level 3.
- The lift shall now level into the third floor. The position count shall increment to level 3 when the DZ vane is entered. The lift shall remain running until both MSU and MSD are on. LEV relay output shall turn on when either MSU or MSD is on.



Counting Method "00' Shaft Layout

Counting Method "01" - Pulse Counting.

Also used for short floors that requires an intermediate speed, to avoid long creep times. Long creep times can be caused on a shorter floor where the lift does not reach rated speed before receiving a slowdown signal. As the lift has not reached rated speed, it will decelerate quicker and arrive at levelling speed further away from floor level, than had it been at rated speed. This results in the long creep time into the floor.

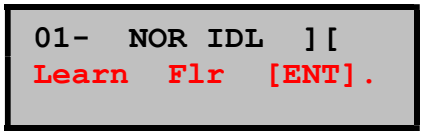
EEPROM MSL setting "01"
The controller counts its position within the lift shaft using the pulse input. See also Inputs-Outputs, PULSE
The number of pulses are counted from the lowest landing.
The number of pulses are converted to a HEX value and stored for each level. (for processor calculations)
(The lowest level is recorded with a HEX value of 40)
Using these values in conjunction with the associated **EEPROM settings Stf, Stm, Slf and Slm,** the processor makes calculations for speed selections and slowing distances.
The 0V input pulse is recommended approximately every 40mm of car travel.
No MSU or MSD inputs are required between the floors for slowing (as per setting 00).
DZ, MSU and MSD inputs are required at floor levels for accurate levelling and position count check/reset and learn floor procedures.
TSL and BSL operate as per setting 00

The shaft information at floor level must be as per the Counting Method "01" Shaft Layout drawing in that the MSD and MSU vanes must be within the door zone. See the diagram; "*Counting Method "01" Shaft Layout" at the end of this section.*

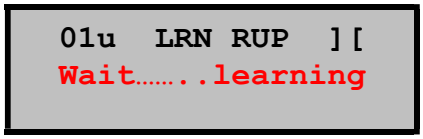
Note: For a learn floor (Learn Run), if the MSU and MSD vanes are not in the correct order – the position shall not be stored at those floors.

Learn Run:
To perform a learn run to store the Hex count for each floor

- **Ensure BSL and TSL operate to slow lift from fast speed.**
- **Set MSL to "01"**
- **Ensure all DZ, MSU and MSD inductors/magnets are accurately placed at each floor level.**
- MSU and MSD magnets between floors are not required (as per setting MSL "00")
- From the "Floor Positioning" display on the LCD, use the "^" button to scroll through to Learn Floor and press [ENT]. Lift is now "out of service" - OS output on.

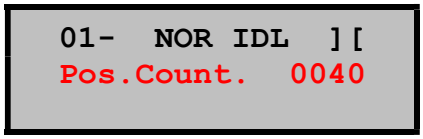


- The cycle shall first run the lift to the bottom floor (if not already there).
- The lift shall then run to the top, counting and saving the floor position data into each floor address while running up. (The position data is calculated by the processor from the DZ, MSU and MSD inputs at each floor level).

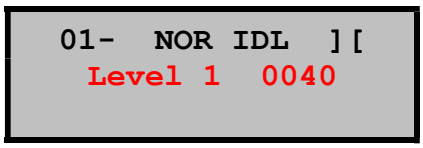


- As the lift passes floors you shall see the green LED beside the watchdog flash to confirm the saving of the floor data.
- Once the lift has reached the top floor the lift shall revert to normal operation.

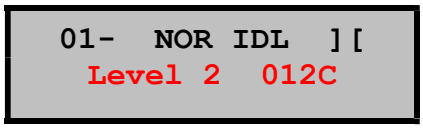
- The HEX value/count of each floor can be viewed by pressing the "^" button to scroll through to the various levels



"Pos Count" displays the **current** lift position in HEX



Level 1 **stored** HEX Position Count



Level 2 **stored** HEX Position Count

The hex count for each floor/level should be recorded in the following Pulse distance table;

Pulse distance table:

Level	Hex Count	Diff. in Hex	Diff. in Decimal	Multiply by pulse distance in mm	= Floor Height in mm	
12. _____						
						(11 to 12)
	>					
11. _____						
						(10 to 11)
	>					
10. _____						
						(9 to 10)
	>					
9. _____						
						(8 to 9)
	>					
8. _____						
						(7 to 8)
	>					
7. _____						
						(6 to 7)
	>					
6. _____						
						(5 to 6)
	>					
5. _____						
						(4 to 5)
	>					
4. _____						
						(3 to 4)
	>					
3. _____						
						(2 to 3)
	>					
2. _____						
						(1 to 2)
	>					
1. _____						

STF	SLF	STF + SLF		STM	SLM	STM + SLM

- No MSU or MSD magnets between floors when MSL = 01, 02 and 03

Variable speed selection:
All values are referred to in HEX.
Before a run, the speed (fast, medium or slow) is selected after calculating the distance to the selected floor.

- Rated (max) speed is selected when (Stf + Slf) **<** the commencing floor run hex value.
- Medium speed is selected when (Stf + Slf) **>** the commencing floor run and (Stm + Slm) **<** the commencing floor run hex value.
- Slow or levelling speed (depending on DRV setting) shall be selected when (Stm + Slf) **>** the commencing floor run hex value.

On EEPROM DRV setting 03;

- Fast speed is selected by DF and UF relay. The relay contacts are used for the max/rated speed input to the drive.
- Medium or intermediate speed is selected by SP2 relay. The relay contacts are used for the intermediate speed input to the drive.

Example:
Speed selection. Nb: HEX calculator recommended

A lift needs to travel from level 1 to level 2.
Level 2 hex count = 12C.
Level 1 hex count = 40.
Distance between level 1 and 2 is 12C – 40 = **EC.** (the commencing floor run hex value)
Assuming equal accel and decel rates and lift slows as soon as the rated speed is reached, the minimum distance required for a fast speed run will be **5A(Stf) + 5A(Slf) = B4**

As shown in Fig 6a, B4 is less than EC, which means the processor will calculate that the full speed relay **can** be picked for a run between level 1 and 2. Ie, rated (max) speed is selected when Stf + Slf (B4) **<** the commencing floor run hex value (EC).
Pulses to get to Fast speed (Stf) + Pulses to slow from Fast speed (Slf) = distance required for a fast speed run.

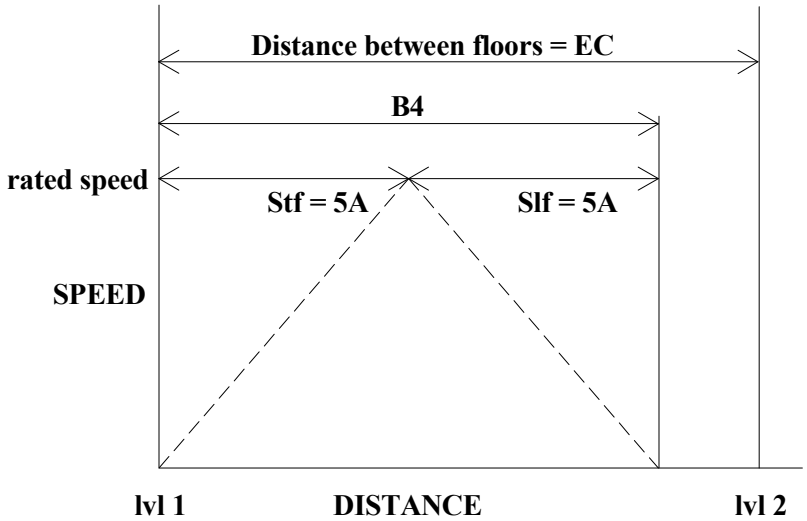


Fig 6a. (Ref. TurboCad – Pulse Graphs)

A run from level 1 to 2 will look like the following graph, Fig 6b;
As explained by Fig 6a, fast speed can be selected.

After Stf distance of 5A hex pulses lift is at full speed.
Lift stays at full speed for distance of 38 hex pulses
At a distance of Slf (5A hex pulses) from level 2, the fast speed relay is dropped to initiate the slowdown
(5A + 38 + 5A = EC)
MSU, MSD and DZ inputs are then used to control the final stop.

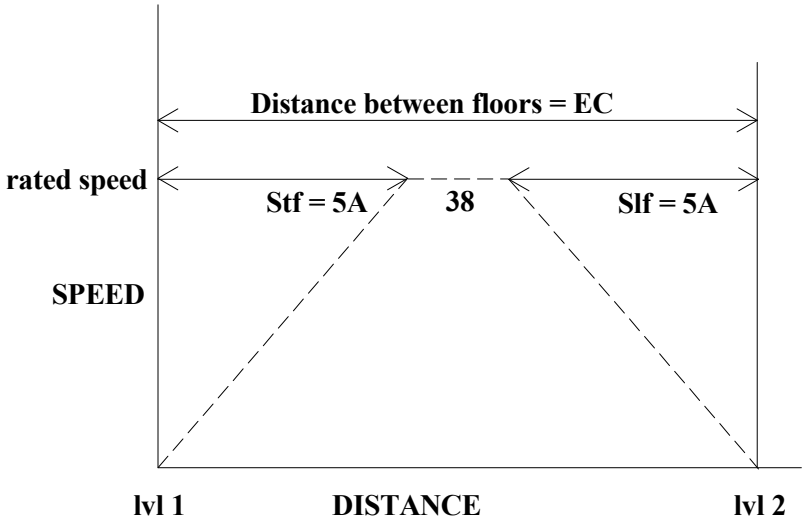


Fig 6b. (Ref. TurboCad – Pulse Graphs)

If, for example, the drive is adjusted for a quicker decel rate, you can decrease Slf. This lower value allows the lift to stay at rated speed longer (now distance of 48 hex pulses) by dropping the fast speed relay later (closer to, or 4A hex pulses from, level 2).
This will mean a faster floor to floor run than Fig 6b.
Nb: If the decel rate is made quicker and Slf is not decreased, the lift will slow down too early, which will result in long "creep time" into the floor

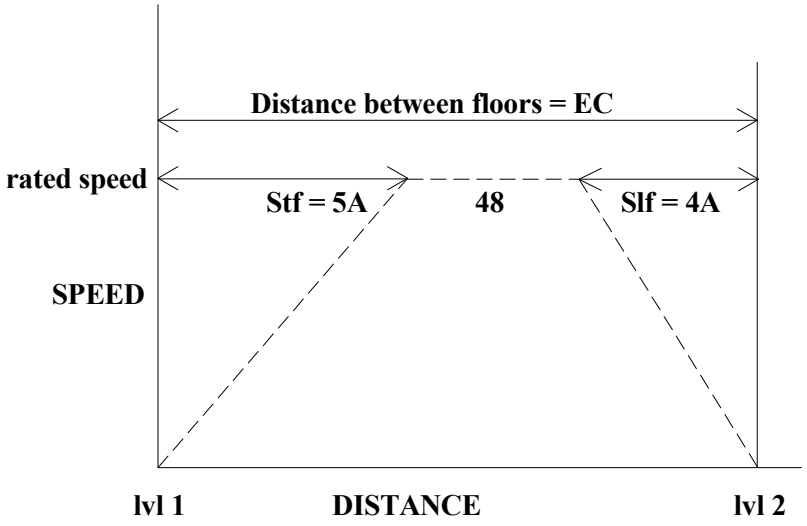


Fig 6c. (Ref. TurboCad – Pulse Graphs)

The medium or intermediate speed is used for shorter floor(s). See Fig 6d.
Assume the distance between another 2 floors has a hex pulse count of **A6.**
A6 is less than B4, which is the minimum count required for a fast speed run.
Therefore, a fast speed run **cannot** be selected (not enough distance) between these 2 floors.

The required distance for a medium speed run is now checked.
4C(Stm) + 4C(Slm) = 98.
98 is less than A6 so a medium speed run is now selected. Ie, the medium speed is selected when Stf + Slf (B4) **>** the commencing floor run (A6) and Stm + Slm (98) **<** the commencing floor run (A6).

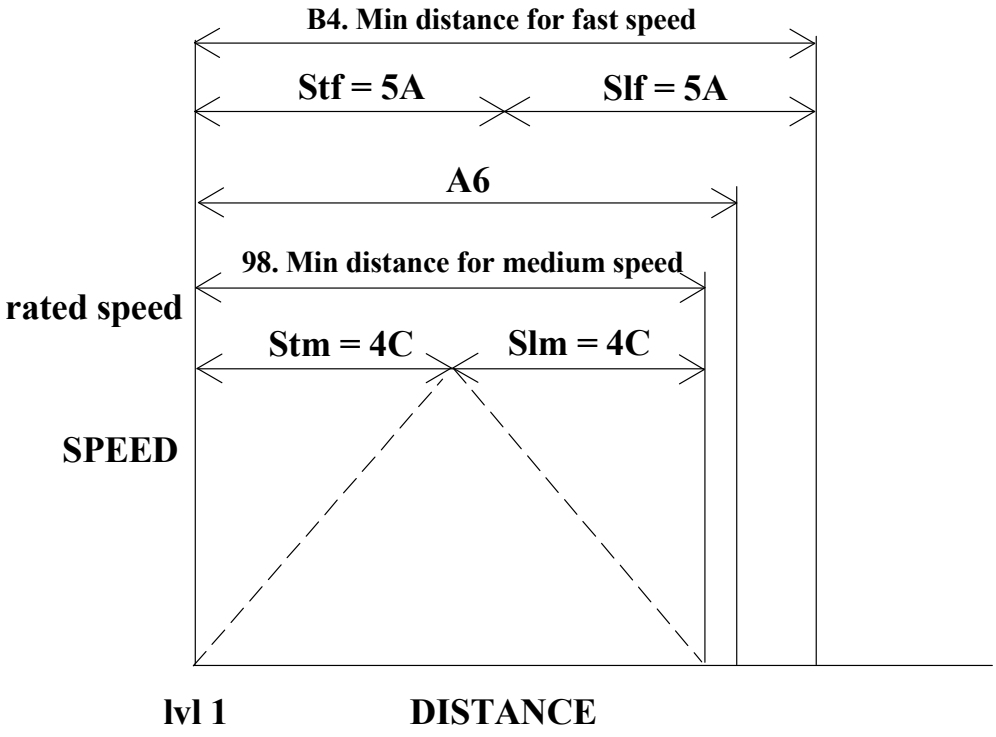
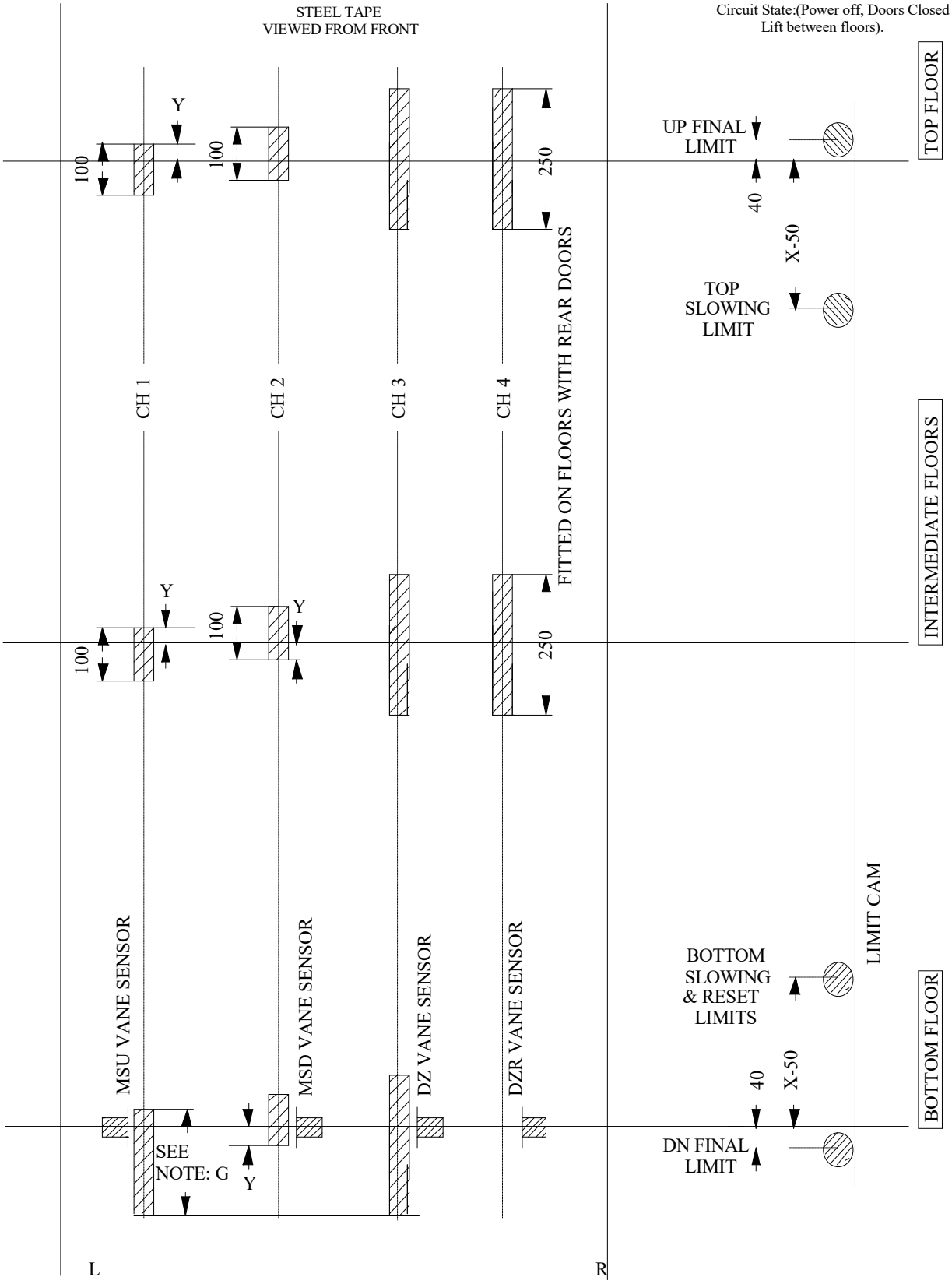


Fig 6d. (Ref. TurboCad – Pulse Graphs)

Terminal floors:
BSL and TSL drop out the fast speed relay, which overrides Slf. These limits do not affect medium speed. Depending on the medium speed, an additional limit at the top and bottom may be required to drop out the medium speed input to the drive.
If the fast speed slowing is required more than a floor from the terminal floors, additional limits (to the TSL and BSL) shall be required to drop out the fast speed input to the drive. This is because BSL & TSL must not overlap other floors. If they did, this would cause the lift to set to a terminal floor before the lift was actually there.
On a correction run the lift shall perform a correction run to the lowest floor unless BSL is off. In some circumstances the lift may require a correction run just above BSL. In this situation the lift will take off on fast speed, then get its slow down very soon afterwards, resulting in a very long creep time. The XTM and RTM settings may be used to overcome this.



Counting Method "01' Shaft Layout

NPT: No Pulse Time out Mode. (MSL = 01, 02 & 03)
During an up run, if the controller loses the pulse input, the lift shall travel to the top floor and stop, then perform a correction run down to the bottom floor and display NPT on the LCD.
During a down run, if the controller loses the pulse input, the lift shall travel to the bottom floor and stop and display NPT on the LCD.
See also Inputs-Outputs, PULSE
Check by observing flashing of PULSE – LED input
NPT is a fatal error. Reset is only via a processor POR or Inspection on/off sequence.

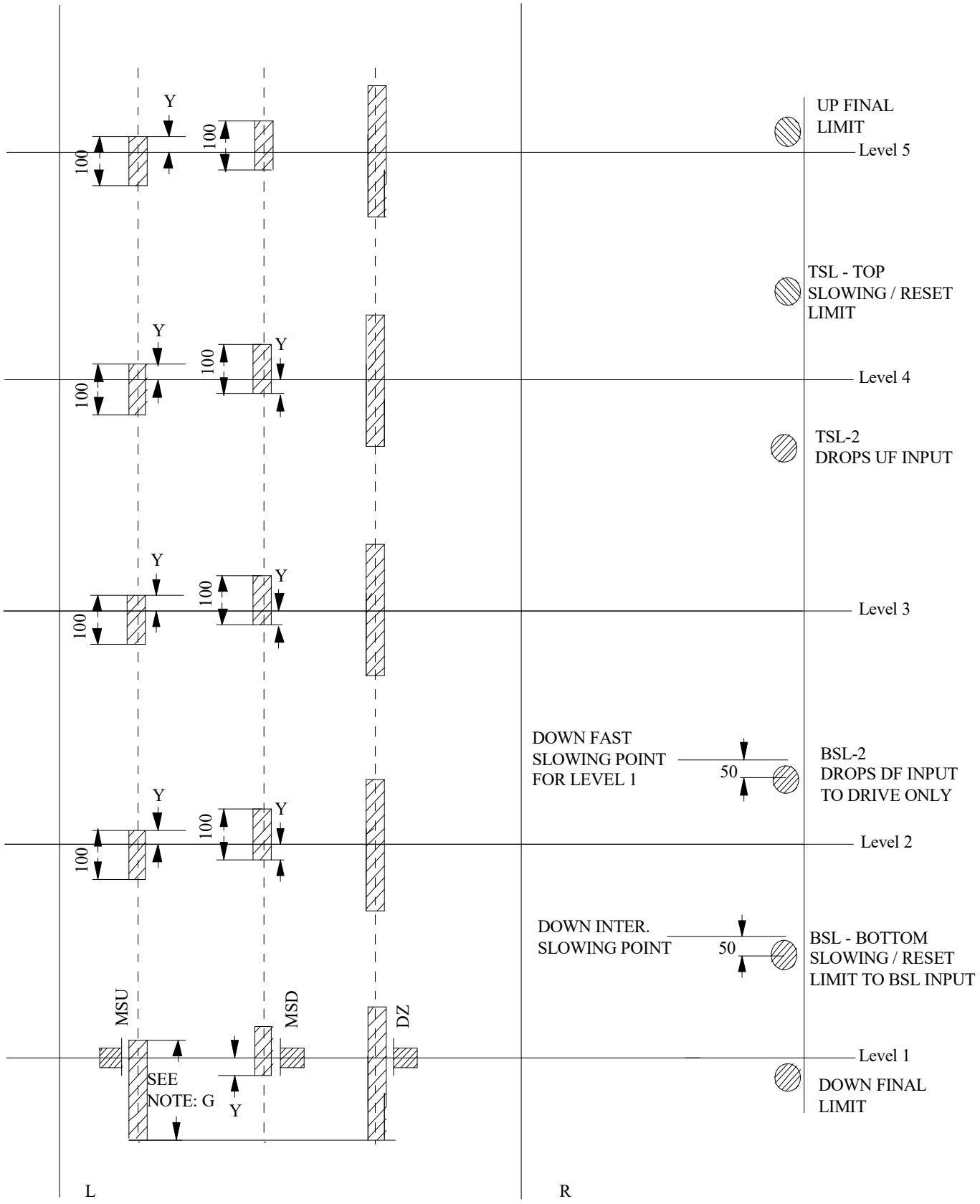
Counting Method "02" - Pulse Counting.

Refer to the following explanation and "Counting Method 02 Shaft Layout" diagram;

If the fast speed slowdown distance for level 1 exceeds the distance from level 2 to level 1, BSL would need to be placed above level 2. This creates a problem, as the lift would reset to level 1, when on level 2.
In this case, the extra limit switch, BSL-2 must be installed and MSL set to 02.
BSL-2 is wired in series with the DF relay contact, to ensure the DF input to the drive is lost when approaching level 1 on fast speed or when a correction run is being performed.
BSL-2 limit switch should switch approx 50mm below the down fast slowdown point.
The normal BSL limit switch (wired to BSL input) is placed between levels 1 and 2 for position correction.
In this case, the lift cannot perform a fast speed (DF) run from level 2 down to level 1, so the medium or intermediate speed (SP2 relay) would be selected.
MSL = 02 ensures the loss of BSL input shall drop the SP2 intermediate speed relay. Nb: When MSL = 01 loss of BSL input does not drop SP2

BSL limit switch (wired to BSL input) should be approx 50mm below the down intermediate speed slowdown point.
BSL must remain activated all the way down to the car being on the buffer.
BSL-2 limit switch (wired in series with DF) must remain activated, at least, until BSL limit becomes activated.

The same applies for the TSL and TSL-2 limit switches, except in the up direction;
TSL limit switch (wired to TSL input) should be approx 50mm below the up intermediate speed slowdown point.
TSL must remain activated all the way up, to the point where the counterweight is landed.
TSL-2 limit switch (wired in series with UF) must remain activated, at least, until TSL limit becomes activated.



Counting Method "02' Shaft Layout

Counting Method “03” - Pulse Counting.

EEPROM MSL setting “03”

Is the same as MSL 01 except that it will not update the pulse count position whilst running.
This setting also requires that the DZ input not be active whilst the lift is travelling above levelling speed.
Eg, Use ODS in series with DZ input.

This setting may be useful for curing “out of step” faults occurring due to electrical noise within the installation.

Section 7

Section 7: Faults – Fault finding.

On board fuse blows

There are 2 fuses mounted on the controller board.
The 2A fuse protects the 5Vdc supply to all the logic on board.
The 4A fuse protects the 24Vdc supply.

If 2A (5Vdc) fuse blows check that the **6V Zener diode** is not short circuited. (return for repairs)

If 4A (24Vdc) fuse blows.

- Test for fault on 24Vdc circuits (inputs/outputs)
- Remove all external plugs except 18Vac and 10Vac
- Replace fuse. If 4A fuse still blows, check that the **30V Zener diode** is not short circuited. (return for repairs)
- If fuse does not blow plug in external inputs/outputs one plug at a time and test for external fault.

Testing 24Vdc

Ensure 0V and +24V are free from other voltages.
Ensure 0V is not connected Earth.
High voltages may be superimposed on 0V and +24V lines as no reference to ground exists. See Warning 1.2.14

- Turn the meter to the HIGH VAC range.
- Meter between 0V and Neutral. (Should be 0V)
- Meter between 0V and L2A (if applicable). (Should be 0V)
- Meter between +24V and Neutral. (Should be 0V)
- Meter between 0V and +24V. (Should be 24Vdc)

If 24Vdc is low or unstable, check large capacitor C69 on PCB. This capacitor may have been hit or knocked, which can break off one of the legs soldered into the PCB. A gentle twist will reveal if one leg has broken. If so, replace the capacitor

Testing RCD / RCBO on 110vac Safety circuit.

To test the trip operation of an RCD / RCBO supplied with a 110VAC safety circuit, place a 1.2K ohm resistor between the load side of the RCD / RCBO and earth.

Doors do not open

Check door disable switch DDO on PCB is off
See Inputs-Outputs, DDO

Doors don't open at terminal floors

Ensure the MSU slowing input is activated **before** the Top Slowing Limit (TSL) at the top floor
Ensure the MSD slowing input is activated **before** the Bottom Slowing Limit (BSL) at the bottom floor
See prints for magnet and limit positions

Lift gets out of step

- MSU and MSD magnets must be within DZ (Door Zone) at floor level. See prints for magnet and limit positions
- MSU, MSD and DZ magnets must be positioned correctly. See prints for magnet and limit positions
- If lift resets incorrectly at top floor check TOP EEPROM setting.
- See MSL = 03

Lift performs correction runs intermittently

Loss of TSL/BSL when not at terminal floor causes position failure and a correction run will be initiated.
TSL/BSL switches may be faulty or high resistance contacts.

Lift does not answer car calls

Check CCM, CC1 setting.

Lift does not answer hall calls

Check UCM, UC1, DCM, DC1 setting.

Lift misses calls

- Some magnets may have dead spots. Change faulty magnets.
- Some magnets may have moved. Ensure magnet is in correct position and stuck to rail with double sided tape.
- MSU, MSD and DZ magnets must be positioned correctly. See prints for magnet and limit positions
- On terminal floors – ensure that MSU/MSD initiates slowing before TSL/BSL respectively.

Red3 LED is not blinking

The microprocessor has locked up (possibility caused by electrical noise interference, power failure). Reset via a processor power on reset (POR);

- Turn the power supply off
- Wait for 10s
- Turn the power supply back on
- Observe LEDs status.

Under normal operation;

- The red Red3 LED blinks to confirm that the microprocessor is running.
- The yellow Yel3 LED comes on to confirm outputs are enabled.
- The green Grn3 LED comes on during power up and turns off during normal operation. It will also flash once when a new value has been written in to EEPROM.

When re-powering; ensure the lift is off for 10 seconds before turning back on.
On power up, a delay of approximately 2 seconds is given on start up to ensure voltages are stable prior to reading and writing outputs.

ELECTRONIC CIRCUIT DESIGNS PTY. LTD.

Operation Guide

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