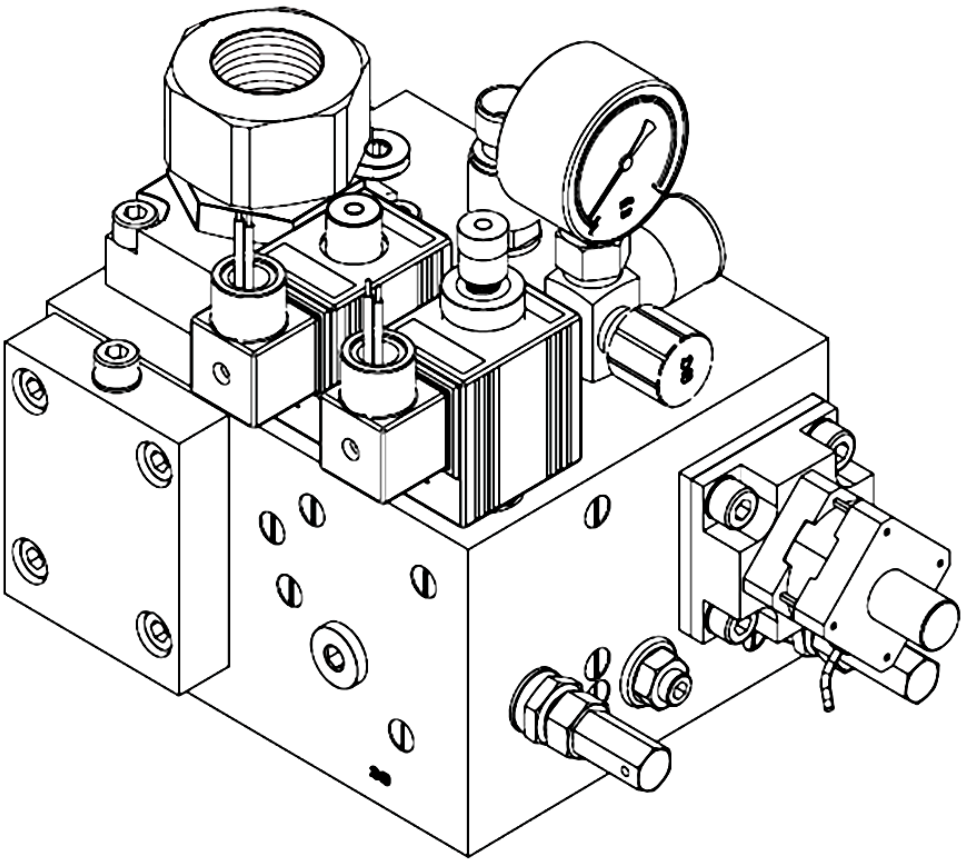


Contents

1 - INTRODUCTION

This guide has been prepared as a reference to assist Lift Engineers when installing a hydraulic lift incorporating the NGV electronic valve. It is assumed that the Installer is already familiar with the installation practices and components associated with a Stannah Hydraulic Lift and therefore the manual focuses on those aspects related to installation and operation of the NGV valve only.

This guide is to be read in conjunction with the following material:

- GMV NGV Valve Installation Manual (provided by GMV with the tank)
- Maxilift Hydraulic Electrical Wiring Manual
- 9333/738 NGV Control Board Wiring Diagram
- 9333/589 Installation Pendant Controller Wiring Diagram
- General Arrangement Drawing (site specific)
- Builders' Work Drawing (site specific)

- *9333/761 NGV Temporary Control Box Wiring (only required when a temporary supply is required - see 6.2)*
- *1009/243 Control Panel Modification Diagram (only required when converting a GEV control panel to NGV)*

This manual is for guidance only. Owing to our policy of continual improvement we reserve the right to alter the contents without prior notice.

The following symbols are used throughout this document:


Operation or action prohibited


Operation or action is mandatory


Warning


Information


Electrical hazard


Safety goggles must be worn


Refer to separate documentation

2 - NGV VALVE OVERVIEW

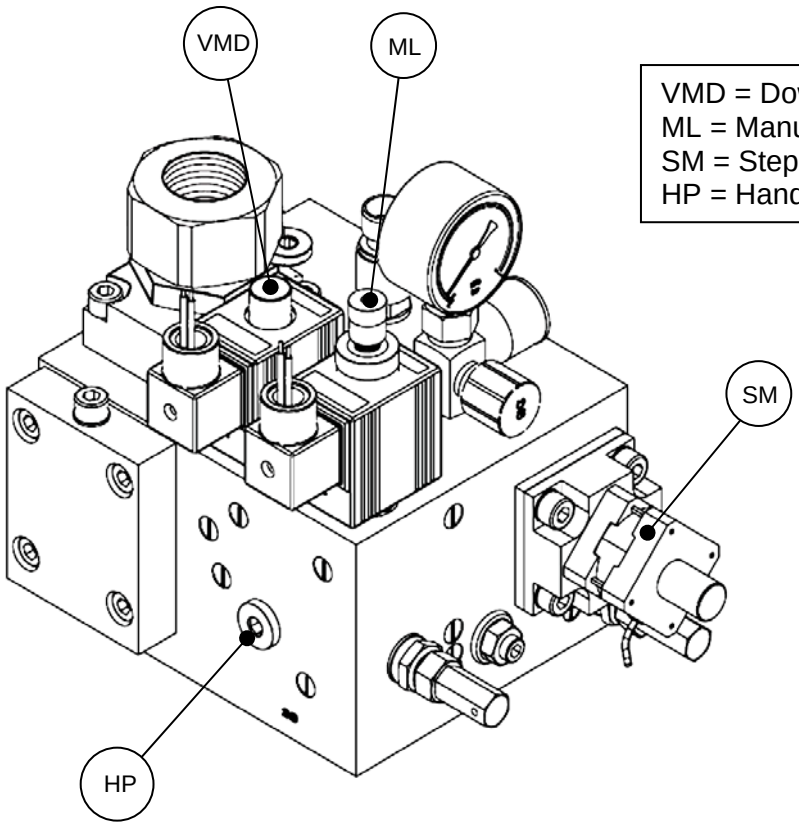
2.1 What is the NGV?

NGV stands for “Next Generation Valve” and is the latest electronic valve manufactured by GMV. It is the successor to the GEV electronic valve and incorporates some key safety improvements and a more simplistic design for improved reliability.

2.2 Main differences between the NGV and GEV

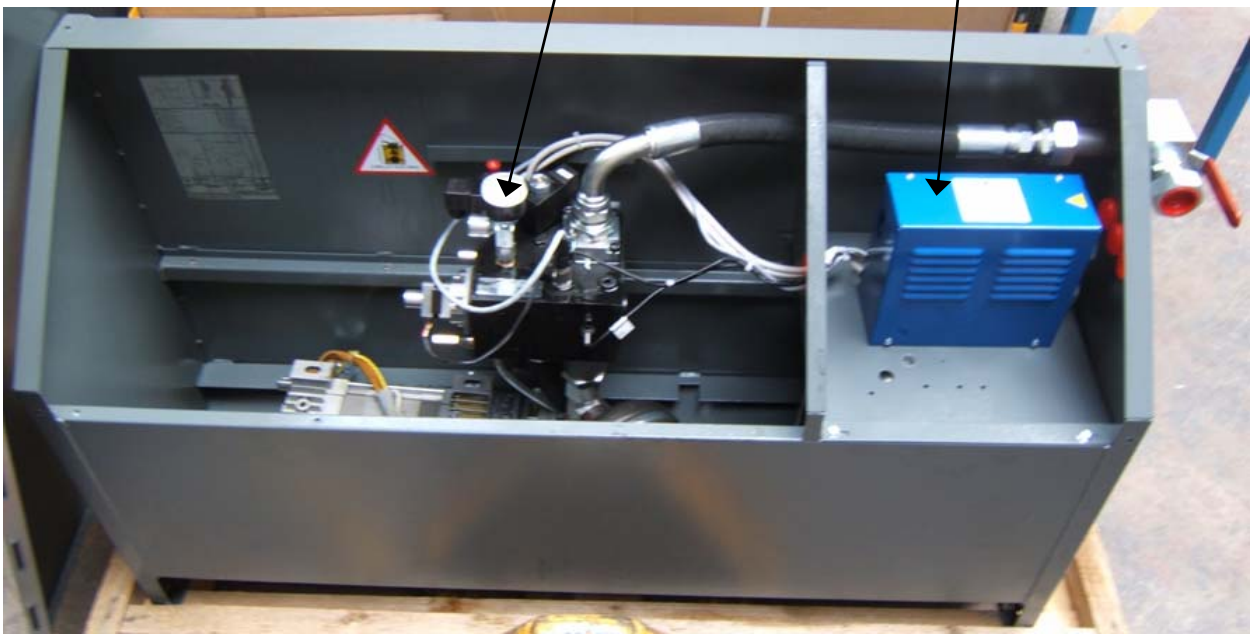
- NGV does not require an encoder on the lift car
- NGV uses a stepper motor to control the valve (i.e. the VB spool is mechanically driven via a leadscrew)
- NGV includes a monitoring sensor which detects if the main check valve fails to close (which in turn initiates closing of the secondary (VB) spool to prevent uncontrolled descent)
- NGV is factory set to permit a quick and easy installation (no bypass pressure adjustment, no temporary wiring for running without an encoder etc)
- NGV does not incorporate a hand pump (a remotely mounted hand pump must be connected to the NGV for manual upwards movement)

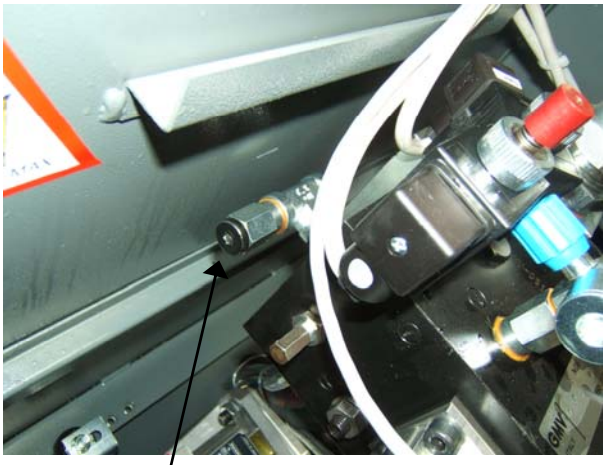
2.3 NGV valve components:



VMD = Down Pilot Valve
ML = Manual Lowering Valve
SM = Stepper Motor
HP = Hand Pump (connection port)

2.4 NGV arrangement in an MRL tank:





3 - SAFETY

3.1 General Safety

Working on lifts can be dangerous and therefore safe practices for all those working on lifts are essential. British Standard BS7255:2001 Code of Practice for Safe Working on Lifts; recommends safe practices for those working on all types of lifts and should be referenced for guidance.

Hazards identified (related to this specific aspect of the installation) are, but not limited to:

- Crushing/struck by moving parts
- Contact with electricity
- Contact with substances hazardous to health

3.2 Safety in the Lift Pit

Due to the location of the hydraulic tank in the pit it is of particular importance that the provided protection devices are utilised at relevant stages of installation, commissioning and servicing of the lift

ON MRLi MODELS EQUIPPED WITH AN NGV VALVE THE FOLLOWING SAFETY EQUIPMENT MUST BE USED:

- **pit prop - at all times when persons are in the pit (even if the buffers are yet to be installed)**
- **kite switch - at all times when persons are in the pit (provided on pit controller models)**
- **pawl device - to be made operational at the earliest opportunity (i.e. when the car is assembled and the car top control box is connected)**

3.3 NGV Safety System

The NGV valve is equipped with an inductive sensor which detects if the main check valve is not closed. In such cases, this safety system prevents rapid uncontrolled descent by closing the VB spool. This results in the lift being limited to a slow descent speed of less than 30mm/second.

IT IS IMPORTANT TO NOTE THAT THIS SAFETY SYSTEM WILL ONLY OPERATE WHEN THE NGV PCB IS POWERED BY THE 48V POWER SUPPLY. IT WILL NOT PREVENT UNCONTROLLED DESCENT IF THE POWER TO THE NGV IS NOT PRESENT.

If the main check valve has failed to close it will be accompanied by a red flashing LED on the NGV PCB. In such cases do not attempt to move the lift until the cause of the failure has been established and rectified.

DO NOT ATTEMPT TO MOVE THE LIFT UPWARDS ONCE THE SAFETY SYSTEM HAS DETECTED A CHECK VALVE FAILURE AS IT MAY RESULT IN THE PLATFORM MOVING AT A FASTER THAN NORMAL SPEED (UP TO RATED SPEED).

Note: The most likely cause of the check valve not closing is the VMD pilot valve being stuck in the ‘energised’ position (causing the main check valve to stay open).

3.4 VMD Down Pilot Valve

The NGV valve is equipped with a manual button on top of the VMD down pilot valve. This manual button is intended to be used for the purpose of fully depressurising the valve block during maintenance, but only when the shut-off valve is closed.

DO NOT MANUALLY OPERATE THE VMD VALVE WHEN THE MAIN SHUT-OFF VALVE IS OPEN TO THE TANK - TO DO SO WILL CAUSE RAPID UNCONTROLLED DESCENT OF THE LIFT.

3.5 PCB Connections

Refer to GMV Installation Manual

3.6.1 Connectors X5, X6 and X7 (stepping motor, temp/pressure sensors and inductive sensor) are pre-wired by GMV. These must remain plugged in to the PCB at all times. Disconnection of these plugs could lead to incorrect operation of the valve and subsequent uncontrolled movement.

DO NOT OPERATE THE VALVE IF CONNECTORS X5, X6 OR X7 ARE UNPLUGGED: CAN CAUSE UNCONTROLLED MOVEMENT (E.G. RUNNING DOWN AT GREATER THAN RATED SPEED)

3.6.2 If any of the plugs are removed at any time (for example, when changing the PCB), ensure that the plugs are re-inserted in to the correct sockets on the PCB. In particular take care with connector X4 (down valve) and connector X6 (temp/pressure sensor) as they are both a 4 way plug.

4 - HYDRAULIC CONNECTIONS

Safety goggles must be worn whenever working with hydraulic oil.

4.1 Main Hose

The power unit is equipped with a standard 35mm shut off valve.

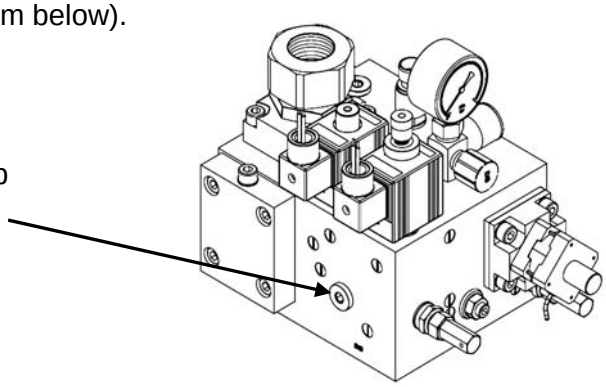
4.1.1 Connect the 1 ¼" hose from the ram to the shut off valve on the tank. *Note: remove the plastic bung from the shut off valve prior to connecting the hose.*

4.2 Hand Pump

The NGV does not incorporate a hand pump and so it is necessary to connect the valve block to a remotely mounted hand pump. On MRLi models the remote hand pump is located in the bottom landing architrave. The hand pump can be connected at any stage of the installation process, but where possible it is advantageous to connect it up before pressurising the system. Fitting it at a later stage will require the shut off valve on the tank to be closed to permit safe depressurisation of the valve block.

4.2.1 Connect the pressure hose of the remote hand pump to the NGV at the port on the rear of the block (see diagram below).

Port for remote hand pump is located on the rear of the valve block (there maybe a T-piece fitted)



Note: If initially operating the valve with the remote hand pump disconnected, ensure the port on the NGV valve is sealed with its 'blanking plug'.

Auxiliary Check Valve

The NGV does not require an additional auxiliary check valve (Blain valve).
For safety provisions refer to Section 3 - Safety.

5 - ELECTRICAL CONNECTIONS

BEFORE PROCEEDING WITH THE CONNECTIONS DETAILED BELOW, ENSURE THAT THE LIFT SUPPLY IS ISOLATED AND LOCKED OFF.

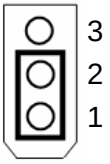
5.1 Motor

5.1.1 Connect the motor cable in accordance with the key wiring diagram. The motor terminals provided by GMV are din rail mounted inside the tank.

5.2 NGV control card (pcb)

5.2.1 Before making any electrical connections check that Jumpers J2 and J3 are set correctly. See below:

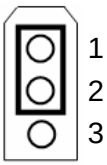
J2



Jumper J2 selects the VMD input voltage range and must be placed across **pins 1 and 2.**

Note: Pin 1 is indicated by the chamfers

J3



Jumper J3 sets the correct operation of the inductive sensor and must be placed across **pins 1 and 2.**

Jumpers J2 and J3 are labelled on the PCB. For the location of the jumpers, refer to the “GMV NGV Valve Installation Manual” (provided with the tank).

5.2.2 **Before** connecting the power supply to the NGV PCB, check that the output voltage from the 48V power supply is set to **42Vdc**.
See power supply instruction leaflet for adjustment details.

5.2.3 Connections between the NGV control card and the lift control panel should be made in accordance with wiring diagram 9333/738 using a 12 core cable.

Note: The NGV valve does not incorporate an encoder or proportional valve (these were standard on the GEV valve). It is therefore not necessary to make modifications to the NGV valve for initial running (i.e. the bridging plug is not required and there is no bypass pressure screw to adjust).

6 - OPERATING THE LIFT PLATFORM (INSTALLATION PHASE)

To operate the lift platform it is necessary to connect the pendant controller in one of two ways (see 6.1 and 6.2 below).

Note: Until the pawl device can be made operational (i.e. car top box connected) it is necessary to place temporary shorting links to bypass the PDR relay. See Technical Bulletin TB88 for details.

The temporary links must be removed once the pawl device is made operational!

6.1 …with a pendant control station connected to the lift control panel

6.1.1 The engineer's pendant controller should be connected to the lift control panel in accordance with wiring diagram 9333/589.

This ensures that the platform runs at inspection speed (input signal V2 on the NGV card). The recommended inspection speed is 0.15m/s and this is factory set as the default value.

Note: The inspection speed can be adjusted using the GMV hand held programmer PT01 (menus 6.3 and 7.3).

THE FOLLOWING IMPORTANT PROCEDURE MUST ALWAYS BE ADHERED TO:

<u>ALWAYS WAIT AT LEAST 3 SECONDS BETWEEN PLACING RUN COMMANDS</u>. FAILURE TO DO SO MAY RESULT IN THE PLATFORM RUNNING AT THE INCORRECT SPEED (EITHER FASTER OR SLOWER)

RELEASING THE RUN BUTTON OR OPERATING THE STOP SWITCH WILL OF COURSE BRING THE PLATFORM TO A STOP IMMEDIATELY.

Reason for this procedure: The NGV requires time before and after movement to permit the valve spools to "reset" to their default position. If a sufficient time delay (3 seconds) is not provided, the spool will be in the wrong position when the second run command is initiated.

6.2 …with a pendant control station connected to an 'NGV temporary control box'

In some circumstances it may be deemed necessary, or more advantageous, to operate the lift platform without connection to the lift control panel. For example, it may be required to permit the control panel to be transported on the platform rather than manually lifting it up the stairs/scaffold or the 415V supply may not be available at the control panel location at the start of the installation etc.
An 'NGV temporary control box' is available for this purpose and can be requested from the Installations department when necessary.

6.2.1 Connect the NGV temporary control box as per wiring diagram 9333/761.

This ensures that the platform runs at inspection speed (input signal V2 on the NGV card). The recommended inspection speed is 0.15m/s and this is factory set as the default value.

Note: The inspection speed can be adjusted using the GMV hand held programmer PT01 (menus 6.3 and 7.3).

The NGV temporary control box incorporates a built-in time delay. The run command (either up or down) is delayed by 3 seconds to ensure correct operation of the valve. It is therefore necessary to push and hold the run buttons for 3 seconds before any movement of the platform can occur. Releasing the button or operating the stop switch will instantly bring the platform to rest.

The 'NGV temporary control box' is only suitable for use with the NGV valve. Do not attempt to use it on tanks equipped with the 3010 or GEV valve.

6.3 Troubleshooting

6.3.1 Platform fails to move down

6.3.1.1 Alarms

Are there any alarms (faults) registered on the GMV hand held programmer (menu 2) or is the red fault led on the NGV control card illuminated?

A flashing red led: indicates an alarm (fault) which prevents lift movement. **From the landing**, clear the alarm log using a GMV hand held programmer (menu 3) and then try to run the platform again.

A solid red led: indicates an alarm that doesn't prevent lift movement. Clear the alarm log using a GMV hand held programmer (menu 3) and then try to run the platform again.

Red led NOT illuminated: no faults are registered. Move on to 6.3.1.2.

6.3.1.2 Signals
Are the correct signals being supplied to the NGV?
To run the platform down on inspection speed it is necessary to supply VD ("VMD") and V2 ("VMT") signals to the NGV control card.

This can be viewed on the GMV hand held programmer (menu 1.4) or the voltages can be measured on the control panel.

6.3.1.2.1 Viewing the input signals on the GMV hand held programmer:
When the down run button is held in, the 0's beneath '2' and 'D' should both change to 1's (see below):

1.4 INPUT	S	0	1	**2**	**D**	I
	0	0	0	**1**	**1**	x

← View on display when down button held in.
Note: 'x' denotes that the state will change between 1 and 0 as the check valve opens and closes.

6.3.1.2.2 Measuring the input signals with a voltmeter:
When the down run button is held in:

- the voltage between 'COM' and 'VMD' should be approx 20 to 24 Vdc
- the voltage between 'COM' and 'VMT' should be approx 20 to 24 Vdc

If the correct signals are not being supplied to the control card please check that you have put the temporary links to bypass the PDR relay (for running the platform prior to installation of the pawl device). See the note at the beginning of section 6 of this document!

If the signals are still not present, seek technical advice from Stannah Lifts.

If the signals are present and the platform still fails to descend then move on to 6.3.1.3.

6.3.1.3 Hydraulic pressure
Is there sufficient pressure to permit the valve to operate correctly?

The NGV is pre-programmed to prevent downwards movement if the pressure drops to less than 10 bar at the start of a down journey.

During early stages of installation (before the weight of the lift car is present) the system pressure may be in the order of 10 to 12 bar. To permit running of the platform it may therefore be necessary to add weight on the car floor to bring the static pressure up to approx 13 to 14 bar.

If it is not possible to increase the pressure enough by adding weight to the car floor, please seek further technical advice from Stannah Lifts.

7 - FINAL SETTINGS (COMMISSIONING PHASE)

- For Test Engineers Only -

Refer to Nexus Manual & GMV Installation Manual

7.1 Pawl device temporary links

Once the lift is operating with the pawl device operational, ensure that the pawl device temporary links are removed from the PDR relay. See Technical Bulletin TB88 for details.

Failure to remove the temporary links can result in the lift being permitted to run with the trigger arm extended.

7.2 Nexus parameter settings

Nexus parameters should be set as required for the specific installation; however, AST, RL1 and RL2 must be set as per the table below for correct operation of the NGV.

Nexus Parameter	Setting (seconds)	Reason
AST: Start Delay	3	NGV requires a min of 2.5 seconds between calls to allow the stepper motor to reach its correct position.
RL1: Relevel Initial Delay	3	
RL2: Relevel Doors Open	3	

7.3 NGV manual adjustments

The pressure relief valve and ram pressure adjustment (“piston weighing”) must be set in accordance with the GMV procedure.

7.4 General parameter settings (menu 5)

Set parameters 5.1 through to 5.10 according to the specific site conditions.

5.11 should be set to 70 deg C.

5.12 should be changed from “Installation Mode” to “Normal” to permit the lift to run at rated speed (Installation Mode only permits the platform to run at Inspection speed regardless of the inputs fed to the NGV control board.
Note: 5.4 Map is not used.

7.5 Upward parameters (menu 6)

Set parameters as per the table below:

NGV Parameter	Setting	Comment
6.1 Nominal Speed V0	preset	Determined by values set in menu 5. Not adjustable.
6.2 Intermediate Speed V1	0.15m/s	Not currently used
6.3 Inspection Speed V2	0.15m/s	
6.4 Slow Speed	0.05m/s	
6.5 Relevelling Speed	0.05m/s	

The NGV incorporates a soft stop feature as standard. THE MOTOR RUN-ON FEATURE OF THE CONTROL PANEL MUST BE ACTIVE.

7.6 Downward parameters (menu 7)

Set parameters as per the table below:

NGV Parameter	Setting	Comment
7.1 Nominal Speed V0	Rated speed	Set this to the same value as that in parameter 6.1
7.2 Intermediate Speed V1	0.15m/s	Not currently used
7.3 Inspection Speed V2	0.15m/s	
7.4 Slow Speed	0.04m/s	
7.5 Relevelling Speed	0.04m/s	

7.7 Output relay settings (menu 8)

Set parameters as per the table below:

NGV Parameter	Setting	Comment
8.1 Output 11-12	FUN12NC	Relay contacts open if Fault, Min Press or Max Press occur
8.2 Output 21-22	FUN05NC	Over temperature output ***(not used)***
8.3 Output 31-32	FUN08NO	Relay contacts close if rated load is exceeded (overload pressure)
8.4 Output 41-42	FUN13NC	VS signal is forbidden if the valve is "busy" ***(not used on NGV s/w version V1.15 R.07 or later)***

7.8 Adjustments (menu 4)

After completing all of the settings above the lift should be operating very closely to the desired speeds but can be "fine tuned" using the parameters available in menu 4. If the speeds are significantly different to those expected, check that the values entered in menu 5 (see 7.3 above) are correct. For example: is the pump flow correct? is the roping ratio correct? etc

The speeds should be checked with an empty car and then a fully loaded car and adjustments made as necessary. For example if the upwards levelling speed is found to be lower than the programmed 0.05m/s when the car is empty an adjustment can be made using menu 4.2.

Note: Parameters 4.1 to 4.4 are for an empty car ("Min")
Parameters 4.5 to 4.8 are for a fully loaded car ("Max")

Slowing distances can be fine tuned by using the offset parameters 4.9 and 4.10 (i.e. if the slowing vanes are set further away from floor than required an offset can be applied using the hand held programmer rather than physically moving the slowing vanes). Slowing vanes must be positioned consistently at every floor.

Parameters 4.1 and 4.5 are intended to provide an adjustment to the initial upward start. During Stannah testing it has been found that adjustment of these values provides no noticeable benefit and can produce adverse effects (such as stopping inaccuracies and inconsistent levelling speeds). It is therefore recommended that parameters 4.1 and 4.5 are left at the default setting of '00'.

7.9 Rupture valve test (menu 9)

The procedure for testing the rupture valve is detailed in the GMV Installation Guide.

Note: It is possible to carry out this operation from outside the lift well using the hand held programmer connected at the external control station.

NEVER UNDERTAKE A RUPTURE VALVE TEST WITH PERSONS IN THE PIT

7.10 Car top label

Fasten the car top time delay label next to the car top controls (see below):

3 second delay at start of
UP and DOWN inspection control

7.11 Advanced parameters (menu 10)

Please check that advanced parameter 193 is set to 100.

This value of 100 represents 10 bar pressure - if the system pressure drops to less than 10bar at the start of a down journey the lift is automatically brought to rest. It may have been necessary for the installer to have changed this to a lower value (30, i.e. 3 bar) to permit running of the platform during the initial stages of installation when the platform is light in weight.

The password to the 'Advanced Menu' (menu 10) is the same as that used on the GEV.

Parameter 193 must be set to 100 to ensure that the lift is stopped when the dynamic pressure drops to less than 10 bar.

8 - DOCUMENT HISTORY

Issue	Name	Changes	Date
Version 1	R Christopher	First Issue	02/06/10
Version 2	R Christopher	6.3.1 added (troubleshooting) 5.2.2 was 40 to 48Vdc setting	08/07/10
Version 3	R Christopher	3.6.2 temp/press sensor plug designation corrected 5.2.1 jumper details made clearer Note added to 7.8 re: adjustment of 4.1 & 4.2 **Document formally introduced for production units.**	26/01/11
Version 4	R Christopher	7.7 Note re: Output 41-42 not being used on later NGV versions added	31/05/11