INSTALLATION MANUAL
NGV VALVE

AVAILABLE WITH
TANK TYPE

- HL
- GL
- F1
- T2
- MRL-T
- MRL-H

1 0991 447 EN
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Drawings, descriptions and data included in this manual are indicative.
For all the data not included in this manual refer to the documents of any single part.
To guarantee the products security, do not use spare parts not genuine or not approved by GMV Spa.
GMV Spa will not assume any responsibility if the instructions included in this manual are not observed.
0 GENERAL SECTION

0.1 INTRODUCTION INFORMATIONS

0.1.1 DEFINITIONS

In this manual are used the definitions in EN81-1, EN81-2: Safety rules for the construction and installation of lifts, prEN81-28: Remote alarms on passenger lifts, EN1050: Safety of machinery - Principles for risk assessment, ISO3864: Safety colours and safety signs, and the following apply:

0.1.2 TERMS AND SYMBOLS USED

NOTE

Indicates information which contents must be seriously taken in consideration.

WARNING

Indicates that the described operation is likely to cause, damages to the system or physical damages if performed without complying with the safety standards.

0.1.3 RULES REFERENCE

For all definitions not included in this manual please refer to rules and local laws in force, following, particularly:
EN 81-2: Safety rules for the construction and installation of lifts,
EN 1050: Safety of machinery - Principles for risk assessment,
ISO 3864: Safety colours and safety signs.

0.2 DOCUMENTS RELATED WITH INSTALLATION

The documents to use for the installation are those required by the EN81-2:1998 and by the rules in force, particularly the following:
- THIS INSTALLATION MANUAL
- WIRING AND HYDRAULIC DIAGRAMS (EN81-2:1998 16.2.a.6 and 7).

All the documentation for a correct and safe installation, must be stored by the installation responsible. Please remember that this documentation is considered part of the plant and must be complete, well stored and unabridged in every part.
In order to maintain the readability, the documentation shouldn’t be damaged and shouldn’t have missing parts. Moreover, do not tear or deteriorate sheets during consulting.

0.3 SAFETY PRECAUTION DURING INSTALLATION

WARNING

Before start all kind of installation operation.
ALWAYS verify that all the safety devices, mechanical or electrical, are active and working properly.

0.4 TOOLING

Use standard building-yard tooling for the installation.
0.5 GENERAL ORDERS

The valves shall be maintained in good working order in accordance with the European Standards. To this effect, regular maintenance of the installation shall be carried out, to ensure, in particular, the safety of the installation. The safety of an installation shall take into account the ability to be maintained without causing injury or damage to health. Regular maintenance of the installation shall be carried out to ensure the reliability of the installation. The access and the associated environment shall be maintained in good working order. The competence of the maintenance person within the maintenance organization shall be continuously updated.

NOTE
We inform the owner of the installation that the qualification of the maintenance organization needs to be in conformity with the rules applicable in the country in which the installation operates; if no rules exist, the qualification can be ensured by a certified EN ISO 9001 quality system supplemented if necessary to take into account the specific features of the installation.
0.6 THE NGV VALVE

The NGV Valve with:
- the new Fluitronic digital technology.
- the “Stepping System” device
- the possibility to use ecological fluid or traditional mineral oil
- the working pressure between 12 and 45 bar (from 2010 up to 60 bar)

Guarantees:
- Increased reliability of the control system
- Best performance
- Reduction of costs
- Reduction of the installed power (up to 20%)
- Reduction of consumptions up to 40% (*)
- Reduction of the travel time
- Reduced use of heat exchangers
- Constant downward speed regardless of the load
- Compliance with various regulatory and environmental requirements

(Ex. compliance with the Directive 2006/118/EC on the environment)
- More safety thanks to double lock, already integrated in the product conforms to the new Machinery Directive 2006/42/EC

Offer:
- Ideal solution for renovation and MRL systems
- The most advanced system of control for lift
- Technology in line with the latest trends in the control field
- Speed up to 1 m/s
- Downward speed greater than the upward up to +20%
- Ride comfort comparable to a VVVF electric and no consumption in standby mode
- Maintenance speed adjustable

(*) Maximum value reached under optimal conditions and in combination with other products GMV
- Two different drive options

**INTERNAL FEED BACK (CAR LOAD / TEMPERATURE)**
- The choice to immediate savings, interfaced with all, existing and new systems
- Not require encoder, reduce consumption up to 20% *
- The valve, stored the operating characteristics, reading changing of pressure and temperature, make the appropriate corrections to obtain car speed profiles with low deviations from the ideal profile.

**TOTAL FEED BACK (CAR LOAD / TEMPERATURE / CAR SPEED)**
- The perfect choice when comfort and performance targets are essentials.
- With the encoder precision reduces power consumption up to 30% *
- The benefits obtained are comparable to those of the systems with VVVF drive.

* Compared to a traditional valve

0.7 THE FLUID

**GMV** use and recommend an hydraulic fluid that:
- Thanks to classification as category HEES, as rule ISO-UNI 6743-4 and its biodegradability index > 90%, according to standard CEC L33-A-93, is acceptable from an environmental point of view.
- Thanks to the synthetic base (ISO VG 46) and its viscosity index (>140), higher than the traditional mineral oil, allowing greater stability, ensuring better performance against wear and aging on systems as lifts for persons and goods, in accordance with the environmental directive 2006/118/EC.
- Thanks to a flash point above 220°C compared to the 140°C of the traditional mineral oil it is safer and reduces the risk of fire.
INSTALLATION MANUAL
INSTALLATION OPERATIONS
1 DATA FOR INSTALLATION

1.1 HYDRAULIC CIRCUIT

| 1 | Pressure safety valve adjustment (pressure limiter) | PAM | Hand pump |
| 2 | Pressure safety valve adjustment (hand pump) | PT | Pressure transducer |
| 3 | Ram pressure adjustment (only 2:1 acting jacks) | SI | Inductive sensor |
| 4 | Shut-off valve for pressure gauge exclusion | SM | Stepping motor |
| 5 | Shut-off valve for rupture valve test | TT | Temperature transducer |
| D | Downward signal | UP | Upward |
| DN | Downward | V0, V1, V2 | Speed (high, medium, inspection) |
| ISP | Inspection gauge fitting | VB | Main flow adjustment valve |
| J | Jack | VC | Rupture valve |
| K | Non-return valve | VMD | Downward solenoid valve |
| MAN | Pressure gauge | VR | Non-return valve (flow) |
| ML | Manual lowering button | VR1 | Non-return valve (inlet) |
| M, MP | Motor / pump | VR2 | Non-return valve (outlet) |
| NGV | NGV Valve | VRP | Non-return valve - controlled |
| NGV01 | NGV control card | VS | Upward signal |
| OFF | Not powered | VS1, VS2 | Pressure safety valve |
| ON | Powered | VSMA | Lowering valve manual / electrical |
1.2 SEQUENCE AND TIMING OF THE SIGNALS

WARNING
It is necessary to have 2.5 sec. delay before changing direction of travel.
1.2.1 UPWARD

Time between 0 and 1 depends on motor starting.
VS signal must be switched ON when the motor is completely started.

<table>
<thead>
<tr>
<th>Speed</th>
<th>VS</th>
<th>V2</th>
<th>V1</th>
<th>V0</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Speed</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Intermediate Speed</td>
<td>1</td>
<td>X</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Inspection Speed</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>1</td>
</tr>
<tr>
<td>Levelling/Re-levelling</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### 1.2.2 DOWNWARD

#### Diagram

- **V [m/s]**
- **C [mm]**
- **D**
- **VMD**
- **Vx**
- **SI**

#### Symbols
- **D**: Downward signal
- **SM**: Stepping motor
- **VMD**: Downward solenoid valve
- **Vx**: Speed (high, medium, inspection)

#### Speeds Table

<table>
<thead>
<tr>
<th>Speed Type</th>
<th>D</th>
<th>V0</th>
<th>V1</th>
<th>V2</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Speed</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Intermediate Speed</td>
<td>1</td>
<td>X</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Inspection Speed</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>1</td>
</tr>
<tr>
<td>Levelling/Re-levelling Speed</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

- **D**: Powered
- **0**: Not powered
- **X**: Anything
### 1.3 DECELERATION DISTANCES

<table>
<thead>
<tr>
<th>$V_N$ [m/s]</th>
<th>$D_{RAL,S}$ [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upward</strong></td>
<td></td>
</tr>
<tr>
<td>0,00 &lt; $V$ ≤ 0,15</td>
<td>0,19</td>
</tr>
<tr>
<td>0,15 &lt; $V$ ≤ 0,40</td>
<td>0,43</td>
</tr>
<tr>
<td>0,40 &lt; $V$ ≤ 0,65</td>
<td>0,81</td>
</tr>
<tr>
<td>0,65 &lt; $V$ ≤ 0,85</td>
<td>1,16</td>
</tr>
<tr>
<td>0,85 &lt; $V$ ≤ 1,00</td>
<td>1,40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$V_N$ [m/s]</th>
<th>$D_{RAL,D}$ [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Downward</strong></td>
<td></td>
</tr>
<tr>
<td>0,00 &lt; $V$ ≤ 0,15</td>
<td>0,15</td>
</tr>
<tr>
<td>0,15 &lt; $V$ ≤ 0,40</td>
<td>0,41</td>
</tr>
<tr>
<td>0,40 &lt; $V$ ≤ 0,65</td>
<td>0,78</td>
</tr>
<tr>
<td>0,65 &lt; $V$ ≤ 0,85</td>
<td>1,14</td>
</tr>
<tr>
<td>0,85 &lt; $V$ ≤ 1,00</td>
<td>1,36</td>
</tr>
</tbody>
</table>

The distance between the deceleration sensor ($D_{RAL}$) and the floor must be regulated according to the chart above. If the levelling space is greater is possible to make an adjustment using the programmer as shown in the chapter Programming.

- $D$: Downward signal
- $DN$: Downward
- $M$, $MP$: Motor/pump
- $OFF$: Not powered
- $ON$: Powered
- $UP$: Upward
- $V0$, $V1$, $V2$: Speed (high, medium, inspection)
- $VS$: Upward signal
1.4 ELECTRICAL PART

1.4.1 CONTROL BOARD FEATURES: NGV01/02

The hardware features of the NGV01 control board are:

- **Supply:** 40Vdc not stabilized, obtained from a 30Vac ±15% source rectified. For different supplies refer to the wiring schemas section.
- **Signals from controller interface:**
  - 24...60Vdc isolated (NGV01), 12-24Vdc (NGV02 12V) Upward signal (VS), Nominal speed signal (V0), Intermediate speed signal (V1), Inspection speed signal (V2). For grater voltages refer to the wirings with existing controllers section.
  - 12...100Vdc, 110...180Vdc selected by a jumper (J2) for Downward signal/command (VMD).
- **N° 4 output relè without voltage and programmable for monitoring and fault check (refer to the Output Programmable Functions Chart).**
- **Pressure transducer interface 4...20mA, supply 12Vdc.**
- **PTC temperature transducer interface (1000Ω 25°C).**
- **Inductive sensor for VRP position check (IND) interface, supply 12Vdc, signal 12Vdc max.**
- **Stepping motor driver: 52Vdc max @2A RMS.**
- **VMD command, in series with D signal, max. 2A, EN81.2 surface isolation distances and in air compliant.**
- **RS232 interface by RJ45 connector, suitable both for PT01 programmer and for PC connection.**
- **N°2 diagnostic led:**
  - supply state, GREEN led:
    - SWITCHED OFF: no supply voltage
    - BLINKING: supply voltage out of the ranges
    - ON (FIXED): correct supply voltage
  - alarm state, RED led:
    - SWITCHED OFF: no alarm
    - BLINKING: alarm that blocks the lift
    - ON (FIXED): alarm that doesn’t block the lift
1.4.2 WIRING SPECIFICATIONS

1.4.2.1 CONTROLLER INTERFACE

The interfacing to the controller is made by removable terminal connectors as described below:

**Connector X1**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>10mA…1A 125Vdc</td>
<td>Programmable output relè (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>10mA…1A 125Vdc</td>
<td>Programmable output relè (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>3</td>
<td>21</td>
<td>10mA…1A 125Vdc</td>
<td>Programmable output relè (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>10mA…1A 125Vdc</td>
<td>Programmable output relè (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>5</td>
<td>31</td>
<td>10mA…1A 125Vdc</td>
<td>Programmable output relè (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>6</td>
<td>32</td>
<td>10mA…1A 125Vdc</td>
<td>Programmable output relè (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>7</td>
<td>41</td>
<td>10mA…1A 125Vdc</td>
<td>Programmable output relè (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>8</td>
<td>42</td>
<td>10mA…1A 125Vdc</td>
<td>Programmable output relè (refer to programming menu and programmable functions chart)</td>
</tr>
</tbody>
</table>

**Connector X2**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VS</td>
<td>NGV 01 24…60 Vdc isolated</td>
<td>Upward direction (VS) input</td>
</tr>
<tr>
<td>2</td>
<td>V0</td>
<td>Nominal speed (V0) input</td>
<td>Nominal speed (V0) input</td>
</tr>
<tr>
<td>3</td>
<td>V1</td>
<td>NGV 02 (12V) 12…24 Vdc isolated</td>
<td>Intermediate speed for short floors (V1) input</td>
</tr>
<tr>
<td>4</td>
<td>V2</td>
<td>Inspection speed (V2) input, if it’s not equal to nominal speed</td>
<td>Inspection speed (V2) input, if it’s not equal to nominal speed</td>
</tr>
<tr>
<td>5</td>
<td>V-</td>
<td>Common (0V) would be A-</td>
<td>Common V0, V1, V2 e VS input</td>
</tr>
</tbody>
</table>

**Connector X3**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A+</td>
<td>40…48Vdc levelled (obtained from 30…33Vac)</td>
<td>Board supply inputs 0.5A (1.5A if it has to supply also the VMD valve)</td>
</tr>
<tr>
<td>2</td>
<td>A-</td>
<td>12…100Vdc 110…180Vdc isolated</td>
<td>Downward VMD command input, Selectable range by J2 jumper</td>
</tr>
<tr>
<td>3</td>
<td>D+</td>
<td>12…100Vdc 110…180Vdc isolated</td>
<td>Downward VMD command input, Selectable range by J2 jumper</td>
</tr>
<tr>
<td>4</td>
<td>D-</td>
<td>12…100Vdc 110…180Vdc isolated</td>
<td>Downward VMD command input, Selectable range by J2 jumper</td>
</tr>
<tr>
<td>5</td>
<td>E+</td>
<td>48Vdc max.</td>
<td>Emergency lowering valve inputs, support terminals</td>
</tr>
<tr>
<td>6</td>
<td>E-</td>
<td>48Vdc max.</td>
<td>Emergency lowering valve inputs, support terminals</td>
</tr>
</tbody>
</table>

The input circuits are divided into two groups, both isolated from the board supply:
- V0,V1,V2,VS in common with V-
- D+ in common with D-

**Jumper J2**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2</td>
<td>VMD downward input and command 24…100Vdc</td>
</tr>
<tr>
<td>J2</td>
<td>VMD downward input and command 110…180Vdc</td>
</tr>
</tbody>
</table>
1.4.2.2 VALVE INTERFACE

The interface to the valve is described below:

Connector X4

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>E-</td>
<td>Emergency lowering valve outputs</td>
</tr>
<tr>
<td>2</td>
<td>E+</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>D-</td>
<td>VMD downward command outputs</td>
</tr>
<tr>
<td>4</td>
<td>VMD</td>
<td></td>
</tr>
</tbody>
</table>

Connector X5

Stepping motor connector made by a pre-assembled AMP terminal

Connector X6

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TS1</td>
<td>+Ref</td>
<td>Temperature transducer inputs</td>
</tr>
<tr>
<td>2</td>
<td>TS2</td>
<td>2KΩ max.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>TP1</td>
<td>+12Vdc</td>
<td>Pressure transducer inputs</td>
</tr>
<tr>
<td>4</td>
<td>TP2</td>
<td>4…20mA return</td>
<td></td>
</tr>
</tbody>
</table>

Connector X7

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TP4</td>
<td>+12Vdc</td>
<td>Inductive sensor power supply</td>
</tr>
<tr>
<td>2</td>
<td>TP5</td>
<td>0…12Vdc</td>
<td>Inductive sensor input signal (IND)</td>
</tr>
<tr>
<td>3</td>
<td>TP6</td>
<td>0V</td>
<td>Inductive sensor common</td>
</tr>
</tbody>
</table>

Jumper J3

For the correct working of the inductive sensor, the J3 jumper must be wired between the position 1 and 2 as shown in the picture on the left.

Connector X8

Optional Connector

Connector X9

Optional Connector

Connector X10

Board programming and diagnosis connector

Connector X11

RS232 interface connector for PC or PT01 keyboard

1.5 CONTROL PANEL WIRING SCHEMAS

In this section will be described the wiring schemas between the NGV control board and the lift controllers. Two different situations are shown:

- optimal configuration (no added devices are needed)
- adapting of existing controllers (modernizations)

In the first case are presented four kind of wiring schemas according to the power supply source, the signals source ad the downward VMD valve source.

In the second case are presented two different kind of wirings for modernizations. GMV provides specific adapting boards in order to simplify the connection between the NGV01 control board and the existing controllers.
1.5.1 OPTIMAL CONFIGURATIONS

1.5.1.1 SCHEMA 42-01-42

Features:
- Power voltage for NGV01: Supplied by the control panel, 42 Vdc
- Power voltage for VMD: Independent from card power supply, 24-100Vdc / 110-180Vdc
- Power voltage for signals: Common to the card power supply, 42 Vdc
1.5.1.2 SCHEMA 42-01-60

Features:
- Power voltage for NGV01: Supplied by the control panel 42 Vdc
- Power voltage for VMD: Independent from card power supply 24-100 Vdc / 110-180 Vdc
- Power voltage for signals: Independent from card power supply 24-60 Vdc
1.5.2 OTTIMAL CONFIGURATION WITH POWER SUPPLIER

1.5.2.1 SCHEMA A2-01-48

Features:
- Power voltage for NGV01 independent from control panel: 48 Vdc
- Power voltage for VMD: Supplied by the card power supply: 48 Vdc
- Power voltage for signals: Common to the card power supply: 48 Vdc
1.5.2.2 SCHEMA A1-01-60

Features:
- Power voltage for NGV01: Independent from the control panel, 42 Vdc
- Power voltage for VMD: Independent from card power supply, 24-100 Vdc / 110-180 Vdc
- Power voltage for signals: Independent from card power supply, 24-60 Vdc

Diagram of the installation of NGV01 valve.
1.5.3 ADJUSTMENT TO SIGNALS WITH NON STANDARD POWER

1.5.3.1 SCHEMA 42-01-230

Features:
- Power voltage for NGV01: Supplied by the control panel 42 Vdc
- Power voltage for VMD: Independent from card power supply 24-100Vdc / 110-180Vdc
- Power voltage for signals: Independent from card power supply 60-230Vdc

Diagram showing the connections and components involved in the installation process.
1.5.3.2 SCHEMA A1-01-230

Features:
- Power voltage for NGV01 Independent from the control panel 42Vdc
- Power voltage for VMD Independent from card power supply 24-100Vdc / 110-180Vdc
- Power voltage for signals Independent from card power supply 60-230Vdc

Diagram of NGV01, VSMA, VMD, NGV, BOX, QM connections.
Installation manual – NGV valve
Installation operations

1.5.3.3 SCHEMA 42-02-12

Features:
- Power voltage for NGV02: Supplied by the control panel 42 Vdc
- Power voltage for VMD: Independent from card power supply 12-100Vdc / 110-180Vdc
- Power voltage for signals: Independent from card power supply 12-24Vdc

---

Diagram of NGV02

---

Diagram of BOX

---

Diagram of QM

---
1.5.3.4 SCHEMA A1-02-12

Features:
- Power voltage for NGV02: Independent from the control panel, 42Vdc
- Power voltage for VMD: Independent from card power supply, 12-100Vdc / 110-180Vdc
- Power voltage for signals: Independent from card power supply, 12-24Vdc
To adjust the overpressure valve:
1. Refer to the hydraulic circuit of the NGV valve
2. Close the ball valve (B), the lever must be found to 90° regarding the ball valve
3. Open the manometer shut-off valve (4)
4. Unscrew and remove the protection cap of the adjusting screw of the overpressure valve (1)
5. Loosen the locknut (1)
6. Start the motor-pump group
7. Start the 9.1 Overpressure Value control procedure on the PT01 programmer (please refer to the Programming chapter)
8. Read the pressure on the programmer PT01
9. If the read value is different then the calibration one:
   - Press the manual lowering button (ML) in order to decrease the pressure on the valve block
   - Screw the adjustment screw 1 for increase the pressure on the VS; unscrew the adjustment screw 1 for reduce the pressure.
   - Start the motor-pump group
   - Start the Overpressure Value control procedure on the PT01 programmer
   - Read the pressure on the programmer
   - Repeat this procedure until the pressure value on the programmer is the same than the calibration one
10. Tighten the locknut 1
11. Put back and tighten the protection cap of the adjusting screw (1)
12. Re-open the ball valve (B)
1.6.2 RAM PRESSURE ON THE VSMA ADJUSTMENT

**NOTE**
Adjustment possible only with systems 2:1

To adjust the ram pressure on the VSMA:
1. Close the ball valve (B), the lever must be found to 90° regarding the ball valve
2. Unscrew and remove the protection cap of the adjusting screw of the VSMA valve (3)
3. Press the manual lowering button (ML)
4. Check the pressure gauge on the manometer (MAN) is around 5 bar. If it is 5 bar go to point 6, if it is less then 5 bar go to point 5

5. 
   - Re-open the ball valve B
   - Loosen the locknut (3)
   - Tighten the screw (3) – one turn
   - Tighten the locknut (3)
   - Close the ball valve B
   - Press the manual lowering button (ML)
   - Repeat this procedure until the pressure is close to 5 bar
   - Go to point 6

6. Put back and tighten the protection cap of the adjusting screw (3)
7. Re-open the ball valve (B)

1.6.3 PIPE RUPTURE VALVE (VC) TEST

**WARNING**
Before testing the pipe rupture valve, adjust this valve on the cylinder (refer to the technical data on the plant and instructions of the rupture valve)

To test the pipe rupture valve follow the next procedure:
1. Move the car to the highest floor at full load (refer to system use manual)
2. After the car comes to a full stop loosen the locknut (5) and unscrew the screw (5) – 3 turns
3. Start the 9.2 Pipe Rupture test procedure on the PT01 programmer (please refer to the Programming chapter)
4. Move the car to the lower floor. The valve, during downward, should be stop the car.

**WARNING**
If the valve do not stop the car, verify the settings of the rupture valve on the cylinder

5. At the end of the test fully tighten the screw (5) and tighten the locknut (5)
6. Use the hand pump to release / unlock the rupture valve
7. Exit from the 9.2 Pipe Rupture test procedure

1.7 PROGRAMMING

It is possible to dialog with the NGV01 control board by the programmer PT01. The connection between the programmer and the board is made by a network UTP RJ45 straight cable. The programmer power supply comes from the control board through the connection cable. It is possible to navigate into the menus and change the numeric values using the arrow keys , it is possible to enter into the sub-menus and confirm the input data by the ENT key and finally it’s possible exit and move the cursor left side by the ESC key.
Installation manual – NGV valve
Installation operations

1.7.1 COMPLETE MENU

1. NGV VER XX.XXX
   1.1 Pressure // xx.x bar
   1.2 Temperature // xx C°
   1.3 Ref.Speed // x.xxx m/s
   1.4 Input S012DI // 000000
   1.5 Output 1234D // 00000
   1.6 Supply // xx.x V
   1.7 Fly Time //
   1.7.1 Total //xxx.x s
   1.7.2 Start -> DEC // XXX.X s
   1.7.3 Dec -> STOP //XXX.X s

2. NGV VER XX.XXX
   2.1 Alarm 1 //00:No Alarm

3. NGV VER XX.XXX
   3.1 Fault Reset

4. NGV VER XX.XXX
   4.1 Start UP min // xx.x ±
   4.2 Slow UP min // xx.x ±
   4.3 High DN min // xx.x ±
   4.4 Slow DN min // xx.x ±
   4.5 Start UP max // xx.x ±
   4.6 Slow UP max // xx.x ±
   4.7 High DN max // xx.x ±
   4.8 Slow DN max // xx.x ±
   4.9 Offset V0 UP // xxx mm
   4.10 Offset V0 DN // xxx mm
   4.11 Offset V1 UP // xxx mm
   4.12 Offset V1 DN // xxx mm

5. NGV VER XX.XXX
   5.1 Lift Ratio // x:x
   5.2 Jack Diam // x.x
   5.3 Pump Flow // x.xx l/min
   5.4 Map // xxxx
   5.5 Pstat. min // xx.x bar
   5.6 Pstat.max // xx.x bar
   5.7 P min // xx.x bar
   5.8 P Full Load // xx.x bar
   5.9 Overload // xx.x bar
   5.10 P max // xx.x bar
   5.11 Cool Temp // xx °C
   5.12 Mode: Normal-Installation

6. NGV VER XX.XXX
   6.1 Nom. Speed V0 // x.xx m/s
   6.2 Int. Speed V1 // x.xx m/s
   6.3 Ins.Speed V2 // x.xx m/s
   6.4 Slow Speed // x.xx m/s
   6.5 Relev. Speed // x.xx m/s
   6.6 Acc.Profile
   6.7 Dec.Profile

7. NGV VER XX.XXX
   7.1 Nom. Speed V0 // x.xx m/s
   7.2 Int.Speed V1 // x.xx m/s
   7.3 Ins. Speed V2 // x.xx m/s
   7.4 Slow Speed // x.xx m/s
   7.5 Relev. Speed // x.xx m/s
   7.6 Acc.Profile
   7.7 Dec.Profile

8. NGV VER XX.XXX
   8.1 Output 11-12 // Fun xxxx
   8.2 Output 21-22 // Fun xxxx
   8.3 Output 31-32 // Fun xxxx
   8.4 Output 41-42 // Fun xxxx

9. NGV VER XX.XXX
   9.1 Overp. Value // Ent = Start
   9.2 Pipe Rupture // Ent = Start

10. NGV VER XX.XXX
    10.1 Password // 00000

11. NGV VER XX.XXX
    11.1 Pressure // xx.x bar
    11.2 Temperature // xx C°
    11.3 Ref.Speed // x.xxx m/s
    11.4 Input S012DI // 000000
    11.5 Output 1234D // 00000
    11.6 Supply // xx.x V
    11.7 Fly Time //
    11.7.1 Total //xxx.x s
    11.7.2 Start -> DEC // XXX.X s
    11.7.3 Dec -> STOP //XXX.X s

12. NGV VER XX.XXX
    12.1 Alarm 1 //00:No Alarm

13. NGV VER XX.XXX
    13.1 Fault Reset

14. NGV VER XX.XXX
    14.1 Start UP min // xx.x ±
    14.2 Slow UP min // xx.x ±
    14.3 High DN min // xx.x ±
    14.4 Slow DN min // xx.x ±
    14.5 Start UP max // xx.x ±
    14.6 Slow UP max // xx.x ±
    14.7 High DN max // xx.x ±
    14.8 Slow DN max // xx.x ±
    14.9 Offset V0 UP // xxx mm
    14.10 Offset V0 DN // xxx mm
    14.11 Offset V1 UP // xxx mm
    14.12 Offset V1 DN // xxx mm

15. NGV VER XX.XXX
    15.1 Lift Ratio // x:x
    15.2 Jack Diam // x.x
    15.3 Pump Flow // x.xx l/min
    15.4 Map // xxxx
    15.5 Pstat. min // xx.x bar
    15.6 Pstat.max // xx.x bar
    15.7 P min // xx.x bar
    15.8 P Full Load // xx.x bar
    15.9 Overload // xx.x bar
    15.10 P max // xx.x bar
    15.11 Cool Temp // xx °C
    15.12 Mode: Normal-Installation

16. NGV VER XX.XXX
    16.1 Nom. Speed V0 // x.xx m/s
    16.2 Int. Speed V1 // x.xx m/s
    16.3 Ins.Speed V2 // x.xx m/s
    16.4 Slow Speed // x.xx m/s
    16.5 Relev. Speed // x.xx m/s
    16.6 Acc.Profile
    16.7 Dec.Profile
1.7.2 MENÙ

- 1 - DIAGNOSTICS

1.1 PRESSURE
XX.X bar

Pressure gauge [bar] read by the pressure transducer

1.2 TEMPERATURE
XX.X °C

Temperature gauge [°C] read by the temperature transducer

1.3 REF. SPEED
X.XXX m/s

Set point speed [m/s]

1.4 INPUT S012DI
00000

State of the input signals: S012DI
100000=VS 010000=V0 001000=V1
000010=V2 000010=D 000001=IND

1.5 OUTPUT 1234D
00000

State of the output signals: 1234D
10000=OUTPUT #1 01000=OUTPUT #2 00100=OUTPUT #3
00010=OUTPUT #4 00001=VMD

1.6 SUPPLY
XX.X V

Supply voltage [V] of the control board

1.7 FLY TIME

Fly time of the lift

1.7.1 TOTAL
XXX.X s

Total time of the lift travel [s]

1.7.2 START->DEC
XXX.X s

Time between the start of the lift end the start of the deceleration phase [s]

1.7.3 DEC->STOP
XXX.X s

Time between the start of the deceleration phase and the stop of the lift [s]

- 2 - ALLARM

2.1 ALARM
00:No Alarm

Active alarms. Each alarm is identified by a code explained in the Failure Chart. Last 8 alarms are stored in memory

- 3 - ALARM AND FAULT RESET

3.1 FAULT RESET

Pressing the ENT key on the programmer all the faults and the alarms are deleted
4.1 START UP MIN
\[ \pm XX.X \]
- \( A \)
- \( B \)

4.2 SLOW UP MIN
\[ \pm XX.X \]
- \( A \)
- \( B \)

4.3 HIGH DN MIN
\[ \pm XX.X \]
- \( A \)
- \( B \)

4.4 SLOW DN MIN
\[ \pm XX.X \]
- \( A \)
- \( B \)

4.5 START UP MAX
\[ \pm XX.X \]
- \( A \)
- \( B \)

4.6 SLOW UP MAX
\[ \pm XX.X \]
- \( A \)
- \( B \)

4.7 HIGH DN MAX
\[ \pm XX.X \]
- \( A \)
- \( B \)

4.8 SLOW DN MAX
\[ \pm XX.X \]
- \( A \)
- \( B \)

4.9 OFFSET V0 UP
\[ XXX \) mm \[ \]
- \( A \)
- \( B \)

4.10 OFFSET V0 DN
\[ XXX \) mm \[ \]
- \( A \)
- \( B \)

4.11 OFFSET V1 UP
\[ XXX \) mm \[ \]
- \( A \)
- \( B \)

4.12 OFFSET V1 DN
\[ XXX \) mm \[ \]
- \( A \)
- \( B \)

UPWARD start adjustment (-99 ÷ +99)

UPWARD levelling speed adjustment (-99 ÷ +99)

DOWNWARD high speed adjustment (-99 ÷ +99)

DOWNWARD levelling speed adjustment (-99 ÷ +99)

UPWARD start adjustment (-99 ÷ +99)

UPWARD levelling speed adjustment (-99 ÷ +99)

DOWNWARD high speed adjustment (-99 ÷ +99)

DOWNWARD levelling speed adjustment (-99 ÷ +99)

UPWARD levelling space adjustment in NOMINAL speed (0 ÷ 600 mm)

DOWNWARD levelling space adjustment in NOMINAL speed (0 ÷ 600 mm)

UPWARD levelling space adjustment in INTERMEDIATE speed (0 ÷ 600 mm)

DOWNWARD levelling space adjustment in INTERMEDIATE speed (0 ÷ 600 mm)
### 5-SETTINGS

**NGV VER XX.XXX**

#### 5.1 LIFT RATIO

X:X

Ratio of the lift system (1:1; 2:1; 3:1)

#### 5.2 JACK DIAM.

XXX mm

Diameter or correspondent diameter of the jack [mm]
(see data on technical catalogue tables)

#### 5.3 PUMP FLOW

XXX l/min

Flow rate of the pump [l/min]

#### 5.4 MAP

XXXX

Map code of the power unit (not active)

#### 5.5 PSTAT MIN

XX.X bar

Minimum static pressure (5.0 ÷ 45.0 bar)

#### 5.6 PSTAT MAX

XX.X bar

Maximum static pressure (Pstat Min. ÷ 45.0 bar)

#### 5.7 P MIN

XX.X bar

Minimum pressure (1.0 ÷ 10.0 bar) medium value ±5 bar

#### 5.8 P FULL LOAD

XX.X bar

Full load pressure, 80% of nominal load (12.0 ÷ 45.0 bar)*

#### 5.9 P OVERLOAD

XX.X bar

Overload pressure, 110% of nominal load (12.0 ÷ 45.0 bar)*

#### 5.10 P MAX

XX.X bar

* Re-calculated value when the P\_stat,MIN value (parameter 5.5) or the P\_stat,MAX value (parameter 5.6) are modified

#### 5.11 COOL TEMP.

XX °C

Maximum allowable fluid temperature
(5.0 ÷ 70.0 °C) set value 70°C

#### 5.12 MODE:

XX - XX

Mode: NORMAL  Mode:INSTALLATION

**NOTE**

If the mode set is : NORMAL, the valve works as shown into the manual.

If the mode set is : INSTALLATION, the valve works at V2 speed regardless of signal it receives from the control panel. The installation mode is used routinely during the installation of the system.
### 6 - UPWARD PARAMETERS

<table>
<thead>
<tr>
<th>NGV VER XX.XXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-UP PARAMETERS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 NOM.SPEED V0</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.2 INT.SPEED V1</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.3 INS.SPEED V2</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.4 SLOW SPEED</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.5 RELEV.SPEED</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.6 ACC.PROFILE</td>
<td>FUNxxxx</td>
</tr>
<tr>
<td>6.7 DEC.PROFILE</td>
<td>FUNxxxx</td>
</tr>
</tbody>
</table>

Nominal speed [m/s] referred to the nominal pump flow, piston diameter and size, value not modifiable.

Intermediate speed [m/s]
(15 ÷ 75 % x Nominal Speed)

Inspection speed (0.15 ÷ 0.63 m/s)

Levelling speed (0.01 ÷ 0.15 m/s)

Re-levelling speed (0.01 ÷ 0.15 m/s)

Acceleration profile (Fast – Standard – Slow – Extra Slow - Custom)

Deceleration profile (Fast – Standard – Slow – Extra Slow - Custom)

### 7 - DOWNWARD PARAMETERS

<table>
<thead>
<tr>
<th>NGV VER XX.XXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-DN PARAMETERS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 NOM.SPEED V0</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>7.2 INT.SPEED V1</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>7.3 INS.SPEED V2</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>7.4 SLOW SPEED</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>7.5 RELEV. SPEED</td>
<td>X.XX m/s</td>
</tr>
<tr>
<td>7.6 ACC.PROFILE</td>
<td>FUNxxxx</td>
</tr>
<tr>
<td>7.7 DEC.PROFILE</td>
<td>FUNxxxx</td>
</tr>
</tbody>
</table>

Enter required nominal downward speed (m/s…). es: 0,63

Indicates the Intermediate speed [m/s]
(15 ÷ 75 % x Nominal Speed)

Inspection speed (0.15 ÷ 0.63 m/s)

Levelling speed (0.01 ÷ 0.15 m/s)

Re-levelling speed (0.01 ÷ 0.15 m/s)

Acceleration profile (Fast – Standard – Slow – Extra Slow - Custom)

Deceleration profile (Fast – Standard – Slow – Extra Slow - Custom)
- 8 - OUTPUT FUNCTIONS

NGV VER XX.XXX
8-OUTPUT FUNC.

8.1 OUTPUT 11-12
FUNXXXX
Active function on output 11-12. Every function is identified by a code described into Output Programmable Functions Chart.

8.2 OUTPUT 21-22
FUNXXXX
Active function on output 21-22. Every function is identified by a code described into Output Programmable Functions Chart.

8.3 OUTPUT 31-32
FUNXXXX
Active function on output 31-32. Every function is identified by a code described into Output Programmable Functions Chart.

8.4 OUTPUT 41-42
FUNXXXX
Active function on output 41-42. Every function is identified by a code described into Output Programmable Functions Chart.

As default the output are set up with this functions:
- Output 11-12: Maximum pressure or minimum pressure (03NC)
- Output 21-22: Overload (08NO)
- Output 31-32: Maximum temperature oil (05NC)
- Output 41-42: Fault (09NO)

- 9 - CALIBRATION

NGV VER XX.XXX
9-CALIBRATION

9.1 OVERP. VALUE
ENT=Start
Start the routine for the control of the adjusted pressure on the overpressure valve.
For the overpressure value test please refer to the Overpressure Valve (VS) Adjustment chapter.
This routine needs VS and V0 input signals for working.
Press ENT to start the routine. The display blinks while the routine is working, at the end of the routine the fixed value is the adjustment value of the overpressure valve.
Press ESC to exit and ENT to start again.

9.2 PIPE RUPTURE
ENT=Start
Start the routine for the test of the pipe rupture valve.
For the pipe rupture valve test please refer to the Pipe Rupture (VC) Test chapter.
This routine needs D and V0 input signals for working.
Press ENT to start the routine. The routine is ended when the D signal falls down.
Press ESC to exit and ENT to start again.

- 10 - ADVANCED PROGRAMMING

NGV VER XX.XXX
10-ADVANCED

10.1 PASSWORD
00000
Entering the password it's possible to read and modify the entire parameters of the NGV valve.
## 1.8 CHART OF OUTPUT PROGRAMMABLE FUNCTIONS

The outputs 11-12; 21-22; 31-32; 41-42 are programmable with a specific function. Each function could be used as NO or as NC.

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>PT01 Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No function, output OFF</td>
<td>FUN00</td>
</tr>
<tr>
<td>1</td>
<td>Minimum pressure (see parameter 5.7 into the Programming section)</td>
<td>FUN01NC, FUN01NO</td>
</tr>
<tr>
<td>2</td>
<td>Maximum pressure (see parameter 5.10 into the Programming section)</td>
<td>FUN02NC, FUN02NO</td>
</tr>
<tr>
<td>3</td>
<td>Maximum pressure or minimum pressure</td>
<td>FUN03NC, FUN03NO</td>
</tr>
<tr>
<td>4</td>
<td>Minimum temperature (&lt;5°C)</td>
<td>FUN04NC, FUN04NO</td>
</tr>
<tr>
<td>5</td>
<td>Maximum temperature (see parameter 5.11 into the Programming section)</td>
<td>FUN05NC, FUN05NO</td>
</tr>
<tr>
<td>6</td>
<td>Maximum temperature or minimum temperature</td>
<td>FUN06NC, FUN06NO</td>
</tr>
<tr>
<td>7</td>
<td>Full load (see parameter 5.8 into the Programming section)</td>
<td>FUN07NC, FUN07NO</td>
</tr>
<tr>
<td>8</td>
<td>Overload (see parameter 5.9 into the Programming section)</td>
<td>FUN08NC, FUN08NO</td>
</tr>
<tr>
<td>9</td>
<td>Fault: High/Low supply; DriverSM; VRP Check; contemporaneous Upward and Downward commands</td>
<td>FUN09NC, FUN09NO</td>
</tr>
<tr>
<td>10</td>
<td>Fault or minimum pressure</td>
<td>FUN10NC, FUN10NO</td>
</tr>
<tr>
<td>11</td>
<td>Fault or maximum pressure</td>
<td>FUN11NC, FUN11NO</td>
</tr>
<tr>
<td>12</td>
<td>Fault or minimum pressure or maximum pressure</td>
<td>FUN12NC, FUN12NO</td>
</tr>
<tr>
<td>13</td>
<td>Busy (VS signal must be forbidden)</td>
<td>FUN13NC, FUN13NO</td>
</tr>
<tr>
<td>14</td>
<td>Busy or Fault</td>
<td>FUN14NC, FUN14NO</td>
</tr>
<tr>
<td>15</td>
<td>Busy or Overload</td>
<td>FUN15NC, FUN15NO</td>
</tr>
<tr>
<td>16</td>
<td>Busy or Fault or Overload</td>
<td>FUN16NC, FUN16NO</td>
</tr>
</tbody>
</table>

## 1.9 CHART OF FAILURES

<table>
<thead>
<tr>
<th>Failure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>NO ALARM</td>
</tr>
<tr>
<td>01</td>
<td>SUPPLY LOW</td>
</tr>
<tr>
<td>02</td>
<td>SUPPLY HIGH</td>
</tr>
<tr>
<td>03</td>
<td>PRESS. FAULT</td>
</tr>
<tr>
<td>04</td>
<td>TEMP. FAULT</td>
</tr>
<tr>
<td>05</td>
<td>STEP MOTOR</td>
</tr>
<tr>
<td>06</td>
<td>VRP FAULT 1</td>
</tr>
<tr>
<td>07</td>
<td>VRP FAULT 2</td>
</tr>
<tr>
<td>08</td>
<td>VS-VD INPUT</td>
</tr>
<tr>
<td>09</td>
<td>PRESS. MAX</td>
</tr>
<tr>
<td>10</td>
<td>PRESS. MIN</td>
</tr>
<tr>
<td>11</td>
<td>OIL TEMP LOW</td>
</tr>
<tr>
<td>12</td>
<td>OIL TEMP HI</td>
</tr>
<tr>
<td></td>
<td>No alarm</td>
</tr>
</tbody>
</table>
1.10 ACCESSORIES

- **61000079**
  - Box

- **70200312**
  - NGV01 42Vdc

- **70200320**
  - NGV02 12Vdc

- **60200371**

- **70205431**
  - ALM01 42Vdc 0,8A

- **70205444**
  - ALM02 48Vdc 1,1A

- **70205360**
  - PT01

- **80395001C**
  - 12Vdc

- **80395002C**
  - 24Vdc

- **70205430**
  - NGV-R230 >60Vdc

- **70205432**
  - MDR01