NGV A3 VALVE MANUAL
INSTALLATION, USE AND MAINTENANCE

AVAILABLE WITH TANK TYPE
GL, F1, T2, T3, T4, MRL-T, MRL-H
WARNING - IMPORTANT

GMV Spa will not assume any responsibility if the instructions included in this manual are not observed. Particularly, may cause safety problems to the system and to the passengers, if you do not respect the instructions of this manual, about:
- signals RUN, RDY ed UP
- motor/pump power on and power off
- soft stop sequence
- sensors S1, S2 ed S3

WARNING
The automatic return to the landing in event of lack of voltage should be made moving the car to the lowest floor. To return to a landing floor that is not the lowest floor, may cause safety problems to the system and to the passengers.

Never move the sensors S1 S2 S3!
The sensors are installed, adjusted and tested at the factory.
The change of their position should be performed only by authorized and properly trained people.
The movement of these sensors may cause safety problems, to the system and to the passengers.
The displacement sensors voids the warranty.

IMPORTANT PARAMETERS

5.12 Mode
The factory setting is: INSTALLATION
It's possible to change the parameter to NORMAL only after you have completed:
- The installation of the main parties (car)
- The connection of all the signals of the shaft

5.5 p_stat min
5.6 p_stat max
The parameters are adjusted at the factory on the following pressures:
Pmin (P min> = 12) = pressure calculated with empty car
(or Pmin of the motor / pump - 20)
Pmax = pressure with car fully loaded.

After the installation, to check reading the parameter (Menu 1.1), that the values match those entered and if they are different correct them with the ones detected.
These values refer to the run curve in NORMAL mode, and they are ignored in INSTALLATION mode.

All other parameters did not affect the installation, but are used to regulate in detail the system working in normal mode

ALARMS

ALARM ?
To prevent the appearance of some alarms is sufficient that:
- The pressure is at least 7-8 bar (Menu 1.1)
- The oil temperature is at least 5-8 ° C (Menu 1.2)
- The motor / pump will start only after the RUN signal, sent from the card (Menu 1.5 output parameter N)

In case of alarms see the troubleshooting section of this manual and follow the directions.
If you do not find a solution to the problem call for service.

SWITCH TO NORMAL MODE AT THE END OF THE INSTALLATION

1. Use the PT01 programmer to modify the parameter value 5.12 Mode = Normal
2. Verify that the following parameters (menu 5 Setting) are correct:
   - 5.1 Lift Ratio: must match the value shown on the project layout
   - 5.2 Jack Diam: must match the value shown on the project layout
   - 5.5 Pstat min: with empty car must be equal to the value of the menu 1.1 Pressure
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<th>Description</th>
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<tbody>
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<td>1</td>
<td>Regulator of the pressure safety valve (pressure limiter)</td>
</tr>
<tr>
<td>5</td>
<td>Shut-off valve / Screw for rupture valve test</td>
</tr>
<tr>
<td>6</td>
<td>Shut-off valve for pressure gauge exclusion</td>
</tr>
<tr>
<td>7</td>
<td>Regulator of the ram pressure (only 2:1 acting jacks)</td>
</tr>
<tr>
<td>10</td>
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</tr>
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<td>BOX</td>
<td>Interface box (NGVA3 / Control panel)</td>
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<td>C1</td>
<td>Chamber of the VRP</td>
</tr>
<tr>
<td>C2</td>
<td>Inlet chamber</td>
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<td>CARD</td>
<td>NGV A3 control card</td>
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<td>D</td>
<td>Downward signal</td>
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<td>DAL</td>
<td>Levelling auxiliary device (Micro-Levelling)</td>
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<td>DN</td>
<td>Downward</td>
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<td>Jack</td>
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<td>M, Ma</td>
<td>Motor</td>
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<td>M1</td>
<td>Spool of the VRP</td>
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<td>MAN</td>
<td>Pressure gauge</td>
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<tr>
<td>ML</td>
<td>Manual lowering button</td>
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<tr>
<td>MP</td>
<td>Motor / pump</td>
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<tr>
<td>MPS</td>
<td>Maximum pressure spool</td>
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<tr>
<td>NGV-A3</td>
<td>NGV A3 Valve (Complete)</td>
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<tr>
<td>OFF</td>
<td>Not powered</td>
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<tr>
<td>ON</td>
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<td>OPP</td>
<td>MPS pilot valve</td>
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<td>P</td>
<td>VRP pilot spool</td>
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<td>PAM</td>
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<td>Pressure transducer</td>
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<tr>
<td>RDY</td>
<td>Ready - Ready signal (card output to control panel)</td>
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<td>RO</td>
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<td>R/S1,2</td>
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<tr>
<td>RT</td>
<td>Motor thermistors</td>
</tr>
<tr>
<td>RUN</td>
<td>Run - Start signal (card output to control panel)</td>
</tr>
<tr>
<td>S1 (VRP)</td>
<td>Sensor to control the VRP closing</td>
</tr>
<tr>
<td>S2 (VBC)</td>
<td>Sensor to control the VB closing</td>
</tr>
<tr>
<td>S3 (VBO)</td>
<td>Sensor to control the VB opening</td>
</tr>
<tr>
<td>SM</td>
<td>Stepping motor</td>
</tr>
<tr>
<td>TO</td>
<td>Oil thermostat</td>
</tr>
<tr>
<td>TT</td>
<td>Temperature transducer</td>
</tr>
<tr>
<td>UP</td>
<td>Upward / Up - command of starting upward (card to control panel)</td>
</tr>
<tr>
<td>V0</td>
<td>Speed : high</td>
</tr>
<tr>
<td>V1</td>
<td>Speed : medium</td>
</tr>
<tr>
<td>V2</td>
<td>Speed : inspection</td>
</tr>
<tr>
<td>V3</td>
<td>Speed : micro-levelling</td>
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<tr>
<td>VAL</td>
<td>Valve NGVA3 (Valve only)</td>
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<td>VB</td>
<td>Main flow adjustment valve</td>
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<tr>
<td>VC</td>
<td>Rupture valve</td>
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<td>VMD</td>
<td>Downward solenoid valve</td>
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<td>VR</td>
<td>Non-return valve (flow)</td>
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<td>VR1</td>
<td>Non-return valve (inlet)</td>
</tr>
<tr>
<td>VR2</td>
<td>Non-return valve (outlet)</td>
</tr>
<tr>
<td>VPR</td>
<td>Non-return valve - controlled</td>
</tr>
<tr>
<td>VS</td>
<td>Upward signal</td>
</tr>
<tr>
<td>VS1,</td>
<td>Pressure safety valve</td>
</tr>
<tr>
<td>VS10</td>
<td></td>
</tr>
<tr>
<td>VSMA</td>
<td>Lowering valve manual / electrical</td>
</tr>
</tbody>
</table>
## 0 GENERAL SECTION

### 0.1 INTRODUCTION INFORMATIONS

#### 0.1.1 DEFINITIONS

In this manual are used the definitions in EN81-20: Safety rules for the construction and installation of 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:

- EN81-20: 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 EN81-20 and by the rules in force, particularly the following:

- THIS INSTALLATION MANUAL
- WIRING AND HYDRAULIC DIAGRAMS (EN81-20 PAR.7.3).

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 starting 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.

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.

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### 1 FEATURES AND REQUIREMENTS

#### 1.1 THE NGV A3 VALVE

The NGV A3 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

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 rule EN81-20

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

- The driving option

**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.

* Compared to a traditional valve
### 1.2 THE FLUID

GMV use and recommend an hydraulic fluid ISO VG 46 that:

- Thanks to classification as category HEES, as rule ISO-UNI 6743-4 and its biodegradability index > 70%, according to standard OECD-301-B, 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 300°C compared to the 140°C of the traditional mineral oil it is safer and reduces the risk of fire.

### 1.3 HOW THE NGV A3 WORKS

The valve NGV is made with a non-return valve VR, a control spool VB controlled by a stepping motor and by a system with pilot operated non-return valve VRP - P (moved in opening by the electro-valve VMD)

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Valve VR</strong></td>
<td>It is a valve that prevents, during the downward, the oil inlet to the pump. It forces the oil that comes from the VRP C2 to pass through the spool VB and then in the C3 and in the tank T1.</td>
</tr>
<tr>
<td><strong>Valve VRP-P</strong></td>
<td>It is the pilot operated non-return valve, requested by rules. During upward the valve works only as ON/OFF, the spool VRP opens or closes depending on the oil that comes. Its position is determined by the ratio between the pressure that develops in the chamber C2 and the one that occurs in chamber C1. During downward, instead, it opens the oil way to the valve block (chamber C2). Its opening is made by the pushing of the piston P that is opened by the pilot operated valve VMD.</td>
</tr>
<tr>
<td><strong>Spool VB</strong></td>
<td>It's the main part of the control block. It adjusts the oil quantity that should be discharged and determines all the movements of the car. Its movement is controlled by a stepping motor coupled to the spool VB, through a screw-nut coupling (necessary to transform the rotatory motion into translatory). The spool adjusts both the upward phase (with a direct control of the oil that should be discharged and, indirectly the oil for the cylinder) than that of downward (directly).</td>
</tr>
</tbody>
</table>

All the other valves have features of safety, pilotage, etc. For example:

- **MPS+OPP** Maximum pressure valve with pilot
- **5** Overspeed screw
- **VSMA** Emergency lowering valve
1.4 THE DOUBLE SAFETY

For the double safety the system has two spools in series, the VRP and the VB. Both work together to stop the car in different ways between upward and downward.

UPWARD

The spool VB controls acceleration and deceleration. During the approach to the landing, the spool VB, will be almost fully open to discharge a quantity of oil equal to:

\[ Qt = Qp - Qc \]

where

\[ Qt = \text{Oil sent to the drain through the VB, } Qp = \text{Pump flow} \]
\[ Qc = \text{Flow to the cylinder, corresponding to the car speed} \]

The car stop at the landing is made by opening completely the VB and bringing the value of \( Qt = Qp \). As a result \( Qc \) becomes zero.

The car stops when the pressure of the chamber C2 become equal to the pressure of the chamber C1 (Static pressure of the system). In this case, the VRP spool closes, because is pushed by the pressure and by the spring, and the car stops at the landing.

DOWNWARD

The downward phase is simpler and, after the opening of the VRP spool, the car speed is controlled by the VB spool. To a more opening of the spool corresponds an higher speed of the car.

The phase of arrival at the landing is determined by the following events:

- The VRP spool is opened by the push of the spools P, controlled by the VMD pilot valve
- The VB spool closes to stop the car
- The VMD valve, raised the landing, is de-energized and consequently the VRP spool closes.

During standard operation of the system, both upward and downward, the proper working of the two spools (VRP and VB) acting in series, is controlled by three switches:

- One, (S1) installed on the VRP, to control the full close position.
- Two (S2, S3) installed on the VB, to control the full close and the full open positions.

If this do not happen, the system send an alarm to the control panel, which must turn the system into the out of service status.
WARNING
Needful prerequisite of the control panel, when the system is outside of the doors unlocking zone, is that it does not send commands to the card and/or the motor / pump.

1.5 MAIN FEATURES

Valve Type NGV A3
Minimum operating pressure 12 bar
Maximum operating pressure 45 bar
Test speed 1 m/s
Temperature operating range 5°C - 70°C
Rated pump flow range 55 - 600 l/min

2 INSTALLATION OPERATIONS

ATTENTION
During the installation never exclude the safety devices and never connect the motor/pump directly to the power supply

2.1 HYDRAULIC CONNECTIONS

2.1.1 MINIMUM DIMENSIONS AND HOLES FOR POWER UNIT

2.1.1.1 VALVE 1”¼
2.1.2 INPUT AND OUTPUT - POWER UNIT SIDE

2.1.2.1 VALVE 1"¼

2.1.2.2 VALVE 1"½
2.2 HYDRAULIC CIRCUIT
2.3 ELECTRICAL CONNECTIONS

2.3.1 CONTROL PANEL REQUIREMENTS

The control panel must send to the power unit at least the following signals:

<table>
<thead>
<tr>
<th>Mark</th>
<th>Signal/command</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS</td>
<td>Upward signal</td>
<td>10…40mA 12…48Vdc</td>
</tr>
<tr>
<td>V0</td>
<td>Speed : High</td>
<td>10…40mA 12…48Vdc</td>
</tr>
<tr>
<td>V1</td>
<td>Speed : Medium</td>
<td>10…40mA 12…48Vdc</td>
</tr>
<tr>
<td>V2</td>
<td>Speed : Inspection</td>
<td>10…40mA 12…48Vdc</td>
</tr>
<tr>
<td>V3</td>
<td>Speed : Micro-levelling</td>
<td>10…40mA 12…48Vdc</td>
</tr>
<tr>
<td>D+</td>
<td>Downward signal</td>
<td>12…48Vdc, 60…180Vdc</td>
</tr>
<tr>
<td>D-</td>
<td>Downward negative pole</td>
<td>12…48Vdc, 60…180Vdc</td>
</tr>
</tbody>
</table>

The control panel must to receive and to understand correctly at least the following signals:

<table>
<thead>
<tr>
<th>Mark</th>
<th>Signal/comand</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDY</td>
<td>Ready</td>
<td>10mA…2A</td>
</tr>
<tr>
<td>RUN</td>
<td>Run</td>
<td>10mA…2A</td>
</tr>
<tr>
<td>UP*</td>
<td>Up</td>
<td>10mA…2A</td>
</tr>
<tr>
<td>OVL</td>
<td>Overload</td>
<td>10mA…2A</td>
</tr>
</tbody>
</table>

*Command used only to interface control panels that need different signals to start upward or downward travels

Outputs RDY, RUN and UP
- report to control panel about the system state,
- determine when the control panel must start or stop the motor/pump

WARNING
The control panel, when receive a FAULT signal from the NGV-A3 card (RUN and RDY output), should not send commando to the valve and/or the motor/pump
In FAULT condition the motor/pump group should NOT be active

WARNING
To detect the unintended movement of the car the system use the circuit required by paragraph 5.3.8 and 5.12.1.4 of the rule EN81-20. This circuit, if it detects a movement of the car, with doors not closed, outside the unlocking zone, prevents the control panel to send any command to the valve.
The system restore should be performed only by an authorized and properly trained person.

- Distance of setting: ± 200 mm
- Maximum time for the intervention of the circuit 270 ms
For other data or signals sequence see next paragraphs of this manual

2.3.2 INTERVENTION TIME

<p>| | | | | |</p>
<table>
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<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Origin</td>
<td>1</td>
<td>Car speed in the instant of intervention of the braking device ≤ 1,3 m/s</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>Speed</td>
<td>3</td>
<td>Response time of the device that detects the unintended movement of the car ≤ 270 ms</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Time</td>
<td>5</td>
<td>Response time of the braking devices ≤ 200 ms</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Time from start of the unintended movement to the instant in which the car sensor leaves the doors area (dimension = ± 200 mm)</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Stopping time of the car ≤ 500 ms</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Point in which the car stops</td>
<td>0-8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

between 0 and 8 the maximum distance travelled is ≤ 100 cm
2.3.3 FAULT SCHEMAS

A control panel installed with the valve NGV A3 must continuously monitor the signals RDY and RUN (UP) that it receives from the card NGVA3-xx. The control panel should go in error status, stop the system and do not send commands to the valve and/or the motor/pump when, for more than 2s, signals RDY and RUN are simultaneously in the same condition. The contemporary of the ON or OFF status require different behaviours, in particular:

If RDY and RUN are both in ON status, the control panel must detect the error, move the car to the nearest landing and stop the system without allowing more travels;

If RDY and RUN are both in OFF status, the control panel must stop immediately the system and prevent any further movement with the exception of the manual emergency operation.

2.4 OPERATIONS PRELIMINARY TO CONNECTION
2.5 SCHEMAS OF THE CONNECTIONS TO CONTROL PANELS

In the following pages the schemas of the connections between valve / NGVA3 card and control panels.

2.5.1 MAIN SCHEMA
2.5.2 CONNECTION SCHEMAS FOR SIGNALS

**Schema S00**

- **CARD**
- **QM**

24 VDC = +/- 10% 50W

**Schema S48**

- **CARD**
- **QM**

10...48 VDC

2.5.3 CONNECTION SCHEMAS FOR POWER

**Schema W50**

- **CARD**
- **QM**

24 VDC = +/- 10% 25W

**Schema W25**

- **CARD**
- **QM**

12-48 VDC J6=1-2 60-180 Vdc J6=1-3

---

**VAL** | NGV valve | **QM** | Control panel | **BOX** | NGV interface box
---|---|---|---|---|---
VSMA | Emergency downward valve | V0 | High speed | VS | Upward signal
VMD | Downward solenoid valve | V1 | Medium speed | CARD | NGV control card
SM | Stepping motor | V2 | Inspection speed | S1,S2,S3 | Sensors (VRP, VBO, VBC)
D | Downward signal | V3 | Micro-levelling speed | PT | Pressure transducer
(1) | Schema of the connections between D+D-E+E-VMD | | | TT | Temperature transducer
2.6 CONNECTIONS TO THE TERMINAL

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Connection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>230V</td>
<td>Δ Y-Δ</td>
</tr>
<tr>
<td>400V</td>
<td>Y Δ Y-Δ</td>
</tr>
</tbody>
</table>

- RO - Oil heating resistance
- TO - Oil thermostat
- RT - Motor thermistors

2.7 CONNECTIONS TO THE CARD

- X1-X2-X3
- X4-X5-X6
- VMD

J6

- 3 2 1 = 12-48 Vdc
- 3 2 1 = 60-180 Vdc
### 2.8 CONNECTION OF HYDRAULIC PIPES

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Connection</th>
<th>Threading</th>
<th>Seat</th>
<th>Connection</th>
<th>Threading</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 ÷ 100</td>
<td>1&quot;1/4</td>
<td>1&quot; x M36</td>
<td>-</td>
<td>1&quot; x M36</td>
<td>1&quot;</td>
</tr>
<tr>
<td>100 ÷ 150</td>
<td>1&quot;1/4</td>
<td>1&quot; x M45</td>
<td>1&quot;1/4</td>
<td>1&quot; x M45</td>
<td>1&quot;1/4</td>
</tr>
<tr>
<td>180 ÷ 216</td>
<td>1&quot;1/4</td>
<td>1&quot;1/4 x M45</td>
<td>35</td>
<td>1&quot;1/4 x M45</td>
<td>1&quot;1/4</td>
</tr>
<tr>
<td>250 ÷ 300</td>
<td>1&quot;1/2</td>
<td>1&quot;1/2 x M52</td>
<td>42</td>
<td>1&quot;1/2 x M52</td>
<td>1&quot;1/2</td>
</tr>
<tr>
<td>360 ÷ 432</td>
<td>2&quot;</td>
<td>2&quot; x 2&quot;</td>
<td>2&quot;</td>
<td>-</td>
<td>2&quot; x 2&quot;</td>
</tr>
<tr>
<td>500 ÷ 600</td>
<td>2&quot;</td>
<td>2&quot; x 2&quot;</td>
<td>2&quot;</td>
<td>-</td>
<td>2&quot; x 2&quot;</td>
</tr>
</tbody>
</table>

#### 2.8.1 CONNECTION WITH FLEXIBLE HOSE
- Remove the gear and the cutting ring from the terminal connection of the silencer.
- Ensure that the terminal connection is well fixed on the silencer.
- Clean and oil the threading and their seats.
- Fix the flexible hose verifying it is thoroughly tightened.

**WARNING**
Ensure that there is no dirty inside the tube. These impurities could damage the sealing of the piston and of the valve block and inhibit the correct operation of the system.

#### 2.8.2 CONNECTION WITH A RIGID PIPE
- Cut at 90° the head of the tube with a saw (do not use a tube-cutter)
- Do not let metal residuals fall into the tube and eliminate the burrs internally and externally.
- Remove the gear and the cutting ring of the terminal connection and insert it on the pipe.
- Ensure that the cutting ring is inserted as indicated in image
- Ensure that the terminal connection is well fixed on the silencer.
- Clean and lubricate the threading and the connection seat with a slight oil veil.
- Insert the pipe into the cone at 24° up to lay it on the stop limit of the cone itself.
- Screw thoroughly the gear by hand until it is felt that the cutting gear lays perfectly to the nut.
- Then screw the nut using a wrench until the cutting edge of the ring is in contact with the tube and prevents it from rotating.
- Keep the tube against its stop to avoid it rotates, screw the fixing nut by 3/4 rev. In doing so the ring engraves with the necessary depth the external part of the tube and rises a border in front of its cutting edge.
- Loose the nut and check that the tube has all around a well risen border. The border must cover 70% of the front part of the cutting ring.
- Fix the tube, close the nut with a wrench until a certain resistance is felt; from this moment on screw for a further 1/4 turn, contrasting wrench against wrench.

**WARNING**
Ensure that there is no dirty inside the tube. These impurities could damage the sealing of the piston and of the valve block and inhibit the correct operation of the plant.
3 NGV A3 CONTROL BOARD

3.1 ELECTRICAL FEATURES

The hardware features of the card NGV-A3 are:

<table>
<thead>
<tr>
<th>#</th>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Standard supply voltage</td>
<td>24V\text{\textpm10%}</td>
</tr>
<tr>
<td>02</td>
<td>Extended supply voltage</td>
<td>12\ldots42Vdc</td>
</tr>
<tr>
<td>03</td>
<td>Maximum consumption</td>
<td>25W</td>
</tr>
<tr>
<td>04</td>
<td>Voltage input VS-V0-V1-V2-V3</td>
<td>10\ldots48Vdc (70Vp)</td>
</tr>
<tr>
<td>05</td>
<td>Voltage input D+ (VMD), two range selectable by jumper</td>
<td>12\ldots48Vdc / 60\ldots180Vdc</td>
</tr>
<tr>
<td>06</td>
<td>Power voltage sensors VRP and VB</td>
<td>12Vdc</td>
</tr>
<tr>
<td>07</td>
<td>Power voltage pressure transducer</td>
<td>12Vdc</td>
</tr>
<tr>
<td>08</td>
<td>Relays output, Volt free contact according with EN81-20 for distances and insulation up to 250V</td>
<td>10mA@20Vdc / 2A@250Vac</td>
</tr>
</tbody>
</table>

3.2 PERFORMANCES

The card NGV-A3-01 has 3 different versions:
- 01 Standard version : with power supply 24VDC
- 02 Extended version : with all the available functions
- 03 Reduced version : with power supply 24VDC and only serial connection on can bus

<table>
<thead>
<tr>
<th>#</th>
<th>FUNCTION DESCRIPTION</th>
<th>VERSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Power supply Standard, 24V\text{\textpm10%} / Extended, 12\ldots42Vdc</td>
<td>01 02 03</td>
</tr>
<tr>
<td>02</td>
<td>Opto-isolated inputs to command upward and speed level</td>
<td>5 5 -</td>
</tr>
<tr>
<td>03</td>
<td>Opto-isolated input to command downward (separate)</td>
<td>1 1 1</td>
</tr>
<tr>
<td>04</td>
<td>Relay output with voltage free contact according to EN81-20 for distances and isolation up to 250V</td>
<td>7 7 -</td>
</tr>
<tr>
<td>05</td>
<td>Step Motor Command 12\ldots52Vdc, 1.5Arms with the possibility of monitoring the rated current and the connection breaking.</td>
<td>1 1 1</td>
</tr>
<tr>
<td>06</td>
<td>Input for pressure transducer interface, range 0\ldots100 bar</td>
<td>1 1 1</td>
</tr>
<tr>
<td>07</td>
<td>Input for oil temperature transducer interface, range 0\ldots100\degree C</td>
<td>1 1 1</td>
</tr>
<tr>
<td>08</td>
<td>Input for sensor ON/OFF 12V or linear sensor 0\ldots5V (power supply 12V)</td>
<td>2 2 2</td>
</tr>
<tr>
<td>09</td>
<td>Input for sensor ON/OFF 12V</td>
<td>1 1 1</td>
</tr>
<tr>
<td>10</td>
<td>RJ45 port for PT01 / Pc / remote</td>
<td>2 2 1</td>
</tr>
<tr>
<td>11</td>
<td>Slot for \textmuSD card</td>
<td>- 1 -</td>
</tr>
<tr>
<td>12</td>
<td>Calendar watch with CR2030 battery</td>
<td>1 1 -</td>
</tr>
<tr>
<td>13</td>
<td>Can bus serial socket</td>
<td>- 1 1</td>
</tr>
<tr>
<td>14</td>
<td>I\text/O extender connector</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>

3.2.1 SIGNALLERS

GREEN LED

<table>
<thead>
<tr>
<th>Status</th>
<th>OFF</th>
<th>FLASHING</th>
<th>ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply status</td>
<td>Not powered</td>
<td>Power out of range</td>
<td>Correctly powered</td>
</tr>
</tbody>
</table>

RED LED

<table>
<thead>
<tr>
<th>Status</th>
<th>OFF</th>
<th>FLASHING</th>
<th>ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm status</td>
<td>No alarm</td>
<td>Alarm that stops the system work</td>
<td>Alarm that do not stops the system work</td>
</tr>
</tbody>
</table>

PT01

<table>
<thead>
<tr>
<th>Card status</th>
<th>DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Show errors and settings</td>
</tr>
</tbody>
</table>
3.3 CONNECTIONS

3.3.1 CONTROL PANEL INTERFACE

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

Each group can be powered or by an external source within established limits, or directly by the card power, connecting the commons (V- and/or D-) to the A-.

The interfacing with the control panel is made via removable terminal connectors defined as follows:

**Connector X1, step 3,5 mm**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BH</td>
<td>Bus</td>
<td>Can bus H</td>
</tr>
<tr>
<td>2</td>
<td>BL</td>
<td>Bus</td>
<td>Can bus L</td>
</tr>
<tr>
<td>3</td>
<td>SH</td>
<td>Shield</td>
<td>Shield</td>
</tr>
</tbody>
</table>

**Connector X2, step 5,0 mm**

<table>
<thead>
<tr>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>10mA...2A</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>20...250V</td>
</tr>
<tr>
<td>3</td>
<td>21</td>
<td>10mA...2A</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>20...250V</td>
</tr>
<tr>
<td>5</td>
<td>31</td>
<td>10mA...2A</td>
</tr>
<tr>
<td>6</td>
<td>32</td>
<td>20...250V</td>
</tr>
<tr>
<td>7</td>
<td>41</td>
<td>10mA...2A</td>
</tr>
<tr>
<td>8</td>
<td>42</td>
<td>20...250V</td>
</tr>
</tbody>
</table>

**Connector X3, step 3,5 mm**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>10mA...2A</td>
<td>Output: RUN (NO)</td>
</tr>
<tr>
<td>2</td>
<td>51</td>
<td>20...250V</td>
<td>Output: RDY (NO)</td>
</tr>
<tr>
<td>3</td>
<td>52</td>
<td>10mA...2A</td>
<td>Common</td>
</tr>
</tbody>
</table>

**Connector X4, step 3,5 mm**

<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></td>
<td>Power : negative (-)</td>
</tr>
<tr>
<td>2</td>
<td>V-</td>
<td></td>
<td>Inputs : negative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Make a short circuit with A- if you use V+ as power or connect to input negative pole.</td>
</tr>
<tr>
<td>3</td>
<td>VS</td>
<td>12...48Vdc, 10...40mA</td>
<td>Input command : upward</td>
</tr>
<tr>
<td>4</td>
<td>V0</td>
<td></td>
<td>Input command : speed : high (nominal speed)</td>
</tr>
<tr>
<td>5</td>
<td>V1</td>
<td></td>
<td>Input command : speed : medium</td>
</tr>
<tr>
<td>6</td>
<td>V2</td>
<td></td>
<td>Input command : speed : inspection</td>
</tr>
<tr>
<td>7</td>
<td>V3</td>
<td></td>
<td>Input command : speed : micro-levelling</td>
</tr>
<tr>
<td>8</td>
<td>V+</td>
<td></td>
<td>Power : positive common. For input command circuits without voltage. Do NOT use if input commands are under voltage</td>
</tr>
</tbody>
</table>

**Connector X5, step 3,5 mm**

<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></td>
<td>Power : positive</td>
</tr>
<tr>
<td>2</td>
<td>PE</td>
<td></td>
<td>PE, ground</td>
</tr>
<tr>
<td>3</td>
<td>A-</td>
<td></td>
<td>Power : negative</td>
</tr>
<tr>
<td>4</td>
<td>A-</td>
<td></td>
<td>Power : negative</td>
</tr>
</tbody>
</table>

**Connector X6, step 5,0 mm**

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>D+</td>
<td>12...48Vdc, 60...180Vdc</td>
<td>Input command : downward</td>
</tr>
<tr>
<td>2</td>
<td>D-</td>
<td></td>
<td>Input downward : negative</td>
</tr>
<tr>
<td>3</td>
<td>E+</td>
<td></td>
<td>Input command : emergency solenoid valve</td>
</tr>
<tr>
<td>4</td>
<td>E-</td>
<td></td>
<td>Input emergency solenoid valve : negative</td>
</tr>
</tbody>
</table>
### Jumper J6 (to set connector X6 D+ D-)

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Input and downward command VMD 12…48Vdc</td>
</tr>
<tr>
<td>2-3</td>
<td>Input and downward command VMD 60…180Vdc</td>
</tr>
</tbody>
</table>

### 3.3.2 VALVE INTERFACE

The valve interfacing is made by these connections:

#### Connector X7, step 5,0 mm

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

#### Connector X8, step 2,0 mm

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PHA1</td>
<td></td>
<td>Winding of motor phase 1</td>
</tr>
<tr>
<td>2</td>
<td>PHA2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PHB1</td>
<td></td>
<td>Winding of motor phase 2</td>
</tr>
<tr>
<td>4</td>
<td>PHB2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Connector X9, step 3,5 mm

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T+</td>
<td>+Ref</td>
<td>Temperature transducer PTC, 1KΩ a 25°C</td>
</tr>
<tr>
<td>2</td>
<td>T-</td>
<td>2KΩ max.</td>
<td>Pressure transducer</td>
</tr>
<tr>
<td>3</td>
<td>P+</td>
<td>+12Vdc</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>P-</td>
<td>4…20mA return</td>
<td></td>
</tr>
</tbody>
</table>

#### Connector X10, step 3,5 mm - (SensorS1 VRP - Settable)

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>+12Vdc</td>
<td>Sensor ON/OFF (12Vdc) / Linear sensor 0…5V</td>
</tr>
<tr>
<td>2</td>
<td>0…12Vdc / 0…5V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>0V</td>
<td></td>
</tr>
</tbody>
</table>

#### Jumper J3 (to set connector X10)

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Sensor S1 VRP (ON/OFF)</td>
</tr>
<tr>
<td>2-3</td>
<td>Linear Sensor 0…5V</td>
</tr>
</tbody>
</table>

#### Connector X11, step 3,5 mm - (Sensor S2 VB Close - Settable)

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>+12Vdc</td>
<td>Sensor ON/OFF (12Vdc) / Linear sensor 0…5V</td>
</tr>
<tr>
<td>2</td>
<td>0…12Vdc / 0…5V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>0V</td>
<td></td>
</tr>
</tbody>
</table>

#### Jumper J2 (to set connector X11)

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Sensor S2 VB (ON/OFF)</td>
</tr>
<tr>
<td>2-3</td>
<td>Linear Sensor 0…5V</td>
</tr>
</tbody>
</table>

#### Connector X12, step 3,5 mm - (SensorS1 VB Open)

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+</td>
<td>+12Vdc</td>
<td>Sensor ON/OFF (12Vdc)</td>
</tr>
<tr>
<td>2</td>
<td>0…12Vdc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>0V</td>
<td></td>
</tr>
</tbody>
</table>
### 3.3.3 USER INTERFACE

**Connector X13, step 2,54 mm - (AUX 2 x 13)**

Connector for extensions (Encoder, …)

**Slot J1, µSD (serial SPI)**

Slot for µSD memory cards (serial SPI)

**Connector X14, RJ45 (PT01)**

Socket RS232 for programmer PT01

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+12</td>
<td></td>
<td>Power : 12Vdc</td>
</tr>
<tr>
<td>2</td>
<td>+12</td>
<td></td>
<td>Power : 12Vdc</td>
</tr>
<tr>
<td>3</td>
<td>RxD</td>
<td></td>
<td>Data output (to PT01)</td>
</tr>
<tr>
<td>4</td>
<td>TxD</td>
<td></td>
<td>Data input (from PT01)</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>Not in use</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>Not in use</td>
</tr>
<tr>
<td>7</td>
<td>0V</td>
<td></td>
<td>Power : negative</td>
</tr>
<tr>
<td>8</td>
<td>0V</td>
<td></td>
<td>Power : negative</td>
</tr>
</tbody>
</table>

**Connector X15, RJ45 (COMM)**

Socket RS232 for PC, Modem, …

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Mark</th>
<th>Features</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+12</td>
<td></td>
<td>Power : 12Vdc</td>
</tr>
<tr>
<td>2</td>
<td>+12</td>
<td></td>
<td>Power : 12Vdc</td>
</tr>
<tr>
<td>3</td>
<td>RxD</td>
<td></td>
<td>Data output (to Pc, Modem,..)</td>
</tr>
<tr>
<td>4</td>
<td>TxD</td>
<td></td>
<td>Data input (from Pc, modem,..)</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>Not in use</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>Not in use</td>
</tr>
<tr>
<td>7</td>
<td>0V</td>
<td></td>
<td>Power : negative</td>
</tr>
<tr>
<td>8</td>
<td>0V</td>
<td></td>
<td>Power : negative</td>
</tr>
</tbody>
</table>
3.4 SIGNALS AND COMMANDS SEQUENCE

3.4.1 UPWARD DIAGRAM

Start travel sequence: 
RDY=ON + RUN=OFF ⇒ (Vx=ON ⇒) VS=ON ⇒ RDY=OFF – VB/SM=OPEN ⇒ RUN/UP=ON ⇒ (MP=ON)

End travel sequence: 
(Vx=OFF ⇒ VS=OFF ⇒) VB/SM=OPEN ⇒ RUN/UP=OFF ⇒ (MP=OFF ⇒) VB/SM=CLOSE ⇒ RDY=ON

| MP   | Motor / pump | Speed (High, Intermediate, Inspection) |
| SM   | Stepping Motor | VS Upward command |
| Vx = V0, V1, V2 |

<table>
<thead>
<tr>
<th>Speed</th>
<th>V0</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Medium</td>
<td>1</td>
<td>X</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Inspection</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>
<tr>
<td>Powered</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not powered</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anything</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.4.2 DOWNWARD DIAGRAM

3.4.2.1 DOWNWARD SIGNALS AND COMMANDS SEQUENCE

Start travel sequence: 
RDY=ON+RUN=OFF ⇒ Vx=ON ⇒ D=ON ⇒ RDY=OFF ⇒ RUN=ON (⇒ VMD=ON)

End travel sequence: 
(Vx=OFF ⇒) D=OFF ⇒ VB/SM=CLOSE ⇒ RUN=OFF ⇒ RDY=ON

<table>
<thead>
<tr>
<th>D</th>
<th>MP</th>
<th>SM</th>
<th>VMD</th>
<th>Vx = V0, V1, V2</th>
<th>Speed (High, Intermediate, Inspection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Downward command</td>
<td>SM</td>
<td>VMD</td>
<td>Vx = V0, V1, V2</td>
<td>Speed (High, Intermediate, Inspection)</td>
</tr>
<tr>
<td>MP</td>
<td>Motor / pump</td>
<td>Stepping motor</td>
<td>Downward solenoid valve</td>
<td>Speed (High, Intermediate, Inspection)</td>
<td></td>
</tr>
<tr>
<td>V0</td>
<td>V1</td>
<td>V2</td>
<td>V3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Powered</td>
</tr>
<tr>
<td>1</td>
<td>X</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Not powered</td>
</tr>
<tr>
<td>1</td>
<td>X</td>
<td>X</td>
<td>1</td>
<td>0</td>
<td>Anything</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

| Speed : High | 1 | 1 | 0 | 0 | 0 | 1 | Powered |
| Speed : Medium | 1 | X | 1 | 0 | 0 | 0 | Not powered |
| Speed : Inspection | 1 | X | X | 1 | 0 | 0 | Anything |
| Speed : levelling / re-levelling | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
### 3.5 DECELERATION DISTANCES

<table>
<thead>
<tr>
<th>$V_N$ [m/s]</th>
<th>$D_{RALS}$ [m] Upward</th>
<th>Extra Slow</th>
<th>Slow</th>
<th>Standard</th>
<th>Fast</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00 &lt; V \leq 0.15$</td>
<td>0.19</td>
<td>0.15</td>
<td>0.13</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>$0.15 &lt; V \leq 0.40$</td>
<td>0.43</td>
<td>0.39</td>
<td>0.37</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>$0.40 &lt; V \leq 0.65$</td>
<td>0.81</td>
<td>0.71</td>
<td>0.63</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>$0.65 &lt; V \leq 0.85$</td>
<td>1.16</td>
<td>0.99</td>
<td>0.92</td>
<td>0.89</td>
<td></td>
</tr>
<tr>
<td>$0.85 &lt; V \leq 1.00$</td>
<td>1.40</td>
<td>1.27</td>
<td>1.17</td>
<td>1.10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$V_N$ [m/s]</th>
<th>$D_{RALD}$ [m] Downward</th>
<th>Extra Slow</th>
<th>Slow</th>
<th>Standard</th>
<th>Fast</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.00 &lt; V \leq 0.15$</td>
<td>0.15</td>
<td>0.13</td>
<td>0.12</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>$0.15 &lt; V \leq 0.40$</td>
<td>0.41</td>
<td>0.36</td>
<td>0.34</td>
<td>0.31</td>
<td></td>
</tr>
<tr>
<td>$0.40 &lt; V \leq 0.65$</td>
<td>0.78</td>
<td>0.67</td>
<td>0.62</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td>$0.65 &lt; V \leq 0.85$</td>
<td>1.14</td>
<td>0.98</td>
<td>0.88</td>
<td>0.83</td>
<td></td>
</tr>
<tr>
<td>$0.85 &lt; V \leq 1.00$</td>
<td>1.36</td>
<td>1.18</td>
<td>1.11</td>
<td>1.05</td>
<td></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 command
- **ON**: Powered
- **DN**: Upward command
- **MP**: Motor / pump
- **V0, V1, V2, V3**: Speed (high, medium, inspection, micro-levelling)
- **VS**: Upward
3.6 MICRO-LEVELLING

The micro-levelling, using an auxiliary motor/pump group (Ma) with reduced dimensions and capacity, allows a lower power consumption and a shorter response time, compared to the traditional leveling/re-leveling system.

The card, with the inputs V3 and VS on the X4 connector and the output signals RUN/UP and RDY performs the micro-leveling using the following sequence (that it’s not the standard travel sequence) :

1. V3 => ON
2. VS=> ON simultaneous or delayed (compared to V3 = ON)
3. RDY => OFF
4. RUN / UP => ON ok to start the micro-levelling motor
5. VS => OFF.
6. RUN / UP=> OFF
7. RDY => ON

3.6.1.1 SIGNALS AND COMMANDS SEQUENCE

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V3</td>
<td>Speed: Micro-levelling</td>
</tr>
<tr>
<td>VS</td>
<td>Upward signal</td>
</tr>
<tr>
<td>RDY</td>
<td>Not powered</td>
</tr>
<tr>
<td>RUN</td>
<td>Powered</td>
</tr>
<tr>
<td>UP</td>
<td></td>
</tr>
</tbody>
</table>

Start travel sequence :
V3=ON ⇒ VS=ON ⇒ RDY=OFF ⇒ RUN/UP =ON ⇒ MP=ON

End travel sequence :
RUN/UP =OFF ⇒ MP=OFF ⇒ VB/SM=CLOSE ⇒ RDY=ON
### 3.7 µSD, TESTS AND PARAMETERS

#### 3.7.1 µSD MEMORY
NGV-A3 card allow to use an external µSD memory card up to 4 Gb with an SPI standard bus interface (from H4 version).

The slot is Push/Pull made with mechanical retention.
The memory card is locked, completely pushing it and is unlocked re-pushing it again to the end of the slot. You can insert the µSD memory with the main card powered on without damaging it. However, it is recommended to extract it once deactivating it in the menu and with the main card powered off, just to avoid data loss. The way to format the card is FAT32 file system which allows to read it by a pc or another compatible device. You can save inside all the necessary data as a copy of the user manual, technical sheets and so on; just let the operative folders and files tree unmodified.

#### 3.7.2 PARAMETERS

##### 3.7.2.1 DATA BACKUP
You can save in the µSD card different files with different names. The parameters are stored in a particular file witch name matches the valve identity code.

(IDENTIF = nnnnnnnnnnnn, max 13 alphanumeric chatacters), not “case sensitive” controlled (i.e. uppercase or lowercase).

The IDENTIF is stored in the flash memory of the main card and can be modified to use a new spare main card or in order to join the card with a different valve, resetting all the parameters.

There is more than a way to save the operative parameters inside the µSD memory:

- **factory:** it can be performed only with a PC

  The data should be saved in the following folder ...\fact; the parameters saved during the factory test can be recovered for a main card reset by the user.

- **user:** it can be performed both with a PC and the PT01 (menù 11.1)

  It allows to save in the folder ...\usr a copy of all the parameters, including the changes made during the installation.

  Using the PT01 programmer, the name of the saved file is equal to the IDENTIF of the main card and so, as it is not writable, whenever you save you overwrite the previous file.

- With a PC you can use the following command lines:

  ```
  save usr [,filename]  # Save in the µSD memory the user configuration file with the related parameters in the folder ...\usr or the factory configuration file in the folder ...\fact.
  save fact [,filename]  # The filename will result what specified by the [,filename] parameter. If no filename will be specified, it will result IDENTIF as the standard [,filename] parameter.
  ```

##### 3.7.2.2 UPLOAD A PARAMETER FILE
The user can upload a valve parameter file from the µSD:

- **Using the PT01 programmer:**
  - according to the menu 11.3 Load Fact, selecting the factory test configuration from the list of the files saved in the folder ...\fact
  - according to the menu 11.2 Load User, selecting any user configuration (if existing) from the list of the files saved in the folder ...\usr

  NOTE: the parameter IDENTIF of the main card changes according to the uploaded filename.
The next file backup as “user”, will place this filename overwriting the existing file in the µSD memory.

- **Using the PC:** it can be performed using the following command lines:

  ```
  Set id='nnnnnnnnnnnnn
  dir usr  # Shows the user configuration file list (file in ...\usr)
  dir fact  # Or the factory configuration file list (file in ...\fact)
  load usr [,filename]  # Loads the parameter file in the user folder ...\usr
  load fact [,filename]  # Or the factory parameters in the folder ...\fact
  ```

  The filename will result what specified by the [,filename] parameter. If no filename will be specified, it will result IDENTIF as the standard [,filename] parameter and the IDENTIF card will overwrite the filename.

#### 3.7.3 SOFTWARE UPDATE
The NGV-A3 card software can be updated from the menu 12 Sw Update (PT01).
First you can select any software release (menu 12.1); then it will be updated from 12.2 menu. A red and green led flash showing the state:

- Permanent red led: Erasing memory (time interval from 1 to 4s)
- Permanent green led: Writing memory (time interval about 20s)
- Blinking red led: µSD error: erasing memory, writing memory, file error, program error (2 flash + 1s pause)

All the updating procedure will be store in the log file “UPGRADE.TXT” placed in the folder …\log.

### 4 ADJUSTMENTS AND TEST

#### Notes
The periodic tests should be done according to the standards of your own country. Therefore you have to refer to the regulation EN81-20, letter C1 as well as to the procedures stored in this manual. Equivalent tests are allowed, for example, according to TÜV ADIAS standards.

#### 4.1 ADJUSTMENT OF THE OVERPRESSURE VALVE (OPP/MPS)

To adjust the overpressure valve:
1. Refer to the hydraulic circuit of the NGV ¾” 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 9.1 Overpressure Value control procedure on the PT01 programmer (please refer to the Programming chapter)
7. Start the motor-pump group (V0+VS)
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 MPS; unscrew the adjustment screw (1) for reduce the pressure.
   - Start the motor-pump group (V0+VS)
   - 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 (R/S)
13. Close the manometer shut-off valve (B)
4.2 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 (R/S), 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 (7)
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 (R/S)
   • Loosen the locknut (7)
   • Tighten the screw (7) – one turn
   • Tighten the locknut (7)
   • Close the ball valve (R/S)
   • 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 (7)
7. Re-open the ball valve (R/S)

4.3 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

4.4 TEST OF DEVICES THAT PREVENT UNCONTROLLED MOVEMENT

**WARNING**
Perform these tests only after the previous ones.

To verify that the devices that prevent uncontrolled movement work correctly, you must proceed with the test required at point zc) of Appendix C1 of the rule EN81-20 checking that the control panel and the system work according to the rule. (EN81-20 §5.6.7).

4.4.1 PREREQUISITES

To be according to the rule EN81-20 the following points must be respected:
- The system shall be provided with a means /switch able to detect unintended car movement
- The control panel, should NOT send commands to the valve and to the motor / pump when the system is located, with open doors, outside the doors unlocking zone.

**NOTE**
Before proceeding check on the installation manual of the electrical part which operations, required for the test, should be performed
4.4.2 TEST IN UP DIRECTION

For safety it’s required that the test take place behind closed doors. Then proceed as follows:

1. Put at all landings the sign “Out of service”
2. Move the empty car to the floor below the top floor
3. Wait for the closing of the door
4. Start on the valve card NGVA3 the procedure 9.3 UCM UP TEST using the programmer PT01.
5. Start on the control panel the UP direction test procedure. This procedure must:
   - To exclude the possibility to call the car from the landings
   - Open the electrical safety chain at the landing doors level (for the system the doors must be open even if physically closed)
6. Open, manually or electrically, the emergency lowering valve, moving in down direction the car until the intervention of the re-levelling.

When the re-levelling occurs, the system start to move in up direction at rated speed and the switch intended to detect unintended car movement must be activated and the car must stopped.

7. Verify that the car stops according to the rule EN81-20.
8. Exit from the procedure 9.3 UCM UP TEST pushing the ESC key
9. Close the landing doors level of the electrical safety chain
10. Remove the signs “Out of service”
11. Restore the normal working status of the system.

NOTE
The switch to detect unintended car movement can be the same used to detect the movement of the car, away from the landing unlocking zone with doors not in the locked and closed position.

4.4.3 TEST IN DOWN DIRECTION

For safety it’s required that the test take place behind closed doors. Then proceed as follows:

1. Put at all landings the sign “Out of service”
2. Move the fully loaded car to the floor below the top floor
3. Wait for the closing of the door
4. Start on the valve card NGVA3 the procedure 9.4 UCM DN TEST using the programmer PT01.
5. Start on the control panel the DOWN direction test procedure. This procedure must:
   - To exclude the possibility to call the car from the landings
   - Open the electrical safety chain at the landing doors level (for the system the doors must be open even if physically closed)
6. Using the hand pump, moving in up direction the car until the intervention of the re-levelling.

When the re-levelling occurs, the system start to move in down direction at rated speed and the switch intended to detect unintended car movement must be activated and the car must stopped.

7. Verify that the car stops according to the rule EN81-20.
8. Exit from the procedure 9.4 UCM DN TEST pushing the ESC key
9. Close the landing doors level of the electrical safety chain
10. Remove the signs “Out of service”
11. Restore the normal working status of the system.

NOTE
The switch to detect unintended car movement can be the same used to detect the movement of the car, away from the landing unlocking zone with doors not in the locked and closed position.
4.5 TEST OF THE MONITORING SYSTEM

The NGV A3 card, each travel, automatically perform a check of the monitoring system and in event of fault goes into alarm/fault.

To test of the monitoring system is therefore sufficient, at the end of any travel, make sure that (2.1 Alarm) there is no one among the following faults: 06, 07, 13 ÷ 22

NOTE
If requested, it is possible to simulate a fault of the sensors removing from the card or the connector X10 (FAULT 06) or the X11 (FAULT 14). During this event the card must go into alarm.

Using the programmer PT01, verify that an alarm is active (2.1 Alarm), insert the connector previously removed (the alarm end) and reset the alarms (3.1 Al/Flt Reset)

4.6 FAULT SIMULATION ON OUTPUT RDY AND RUN

The test verifies the correct behaviour of the control panel when it receives signals RUN and/or RDY not corrects. It is possible to simulate the failure when the system is stopped a), or during a travel of the system b). To perform the test you must connect the programmer PT01 to the card NGV-A3 and continue simulating faults as follow:

4.6.1 TEST RUN ALWAYS ON
1. Select 9.7 RUN-RDY TEST and push ENT
2. Select using keys U/I : RUN always ON
3. a) Push ENT with the system stopped. The control panel must recognize the error and to prevent any movement of the system.
   b) Make a call in up or down direction and push ENT during the travel. The control panel, after the arrival at landing, after 2 sec, must recognize the error and to prevent any movement of the system.
4. At the end push ENT, Select using keys U/I : NO TEST and press ENT to restore the initial condition.

4.6.2 TEST RDY ALWAYS OFF
1. Select 9.7 RUN-RDY TEST and push ENT
2. Select using keys U/I : RDY always OFF
3. a) Push ENT with the system stopped and call the car in up or in down direction. The control panel must recognize the error and to prevent any movement of the system.
   b) Make a call in up or down direction and push ENT during the travel. The control panel, after the arrival at landing, after 2 sec, must recognize the error and to prevent any movement of the system.
4. At the end push ENT, Select using keys U/I : NO TEST and press ENT to restore the initial condition.

4.6.3 TEST RUN ALWAYS OFF
1. Select 9.7 RUN-RDY TEST and push ENT
2. Select using keys U/I : RUN always OFF
3. a) Push ENT with the system stopped and call the car in up or in down direction. The control panel, after 2 sec, must recognize the error and to prevent any movement of the system.
   b) Make a call in up or down direction and push ENT during the travel. The control panel, after 2 sec, must recognize the error, to stop the system and to prevent any further movement.
4. At the end push ENT, Select using keys U/I : NO TEST and press ENT to restore the initial condition.

4.6.4 TEST RDY ALWAYS ON
1. Select 9.7 RUN-RDY TEST and push ENT
2. Select using keys U/I : RDY always ON
3. a) Push ENT with the system stopped and call the car in up or in down direction. The control panel, after 2 sec, must recognize the error and to prevent any movement of the system.
   b) Make a call in up or down direction and push ENT during the travel. The control panel, after 2 sec, must recognize the error and after the arrival at landing, to stop the system and to prevent any further movement.
4. At the end push ENT, Select using keys U/I : NO TEST and press ENT to restore the initial condition.

4.6.5 EXIT RUN-RDY TEST
Before to exit 9.7 RUN-RDY TEST verify that NO TEST is set as parameter value.
5 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.

Network cord UTP RJ45

WARNING
MIN = Car empty
MAX = Car with full load

5.1 SYSTEM PARAMETERS

NOTE
It is recommended to indicate in the table below the parameters of your system
To write your parameters make easy future maintenance and repairs.

<table>
<thead>
<tr>
<th>4 ADJUSTMENTS</th>
<th>6 UP PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Start UP min</td>
<td>6.2 Int. Speed V1</td>
</tr>
<tr>
<td>4.2 Slow UP min</td>
<td>6.3 Ins.Speed V2</td>
</tr>
<tr>
<td>4.3 High DN min</td>
<td>6.4 Slow Speed</td>
</tr>
<tr>
<td>4.4 Slow DN min</td>
<td>6.5 Relev. Speed</td>
</tr>
<tr>
<td>4.5 Start UP max</td>
<td>6.6 Acc.Profile</td>
</tr>
<tr>
<td>4.6 Slow UP max</td>
<td>6.7 Dec.Profile</td>
</tr>
<tr>
<td>4.7 High DN max</td>
<td>6.8 Start Delay</td>
</tr>
<tr>
<td>4.8 Slow DN max</td>
<td></td>
</tr>
<tr>
<td>4.9 Offset V0 UP</td>
<td>7.1 Nom. Speed V0</td>
</tr>
<tr>
<td>4.10 Offset V0 DN</td>
<td>7.2 Int.Speed V1</td>
</tr>
<tr>
<td>4.11 Offset V1 UP</td>
<td>7.3 Insp. Speed V2</td>
</tr>
<tr>
<td>4.12 Offset V1 DN</td>
<td>7.4 Slow Speed</td>
</tr>
<tr>
<td></td>
<td>7.5 Relev. Speed</td>
</tr>
<tr>
<td></td>
<td>7.6 Acc.Profile</td>
</tr>
<tr>
<td></td>
<td>7.7 Dec.Profile</td>
</tr>
<tr>
<td>5 SETTING</td>
<td>8 OUTPUT FUNC</td>
</tr>
<tr>
<td>5.1 Lift Ratio</td>
<td>8.1 Output 11-12</td>
</tr>
<tr>
<td>5.2 Jack Diam</td>
<td>8.2 Output 21-22</td>
</tr>
<tr>
<td>5.3 Pump Flow</td>
<td>8.3 Output 31-32</td>
</tr>
<tr>
<td>5.5 Pstat. min</td>
<td>8.4 Output 41-42</td>
</tr>
<tr>
<td>5.6 Pstat.max</td>
<td></td>
</tr>
</tbody>
</table>
5.2 COMPLETE MENÚ

1. NGV-A3 VX.XRXXHX DIAGNOSTICS
   - 1.1 Pressure // xx.x bar
   - 1.2 Temperature // xx.x C°
   - 1.3 Ref.Speed // xx.x m/s
   - 1.4 In: S0123DICA
   - 1.5 Out: 1234YND
   - 1.6 Supply // xx.x Vdc
   - 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-A3 VX.XRXXHX ALLARMS
   - 2.1 Alarm 01 // 00: No Alarm
   - 2.8 Alarm 08 // 00: No Alarm

3. NGV-A3 VX.XRXXHX AL/FLT RESET
   - 3.1 Reset ? ESC=NO ENT=YES

4. NGV-A3 VX.XRXXHX ADJUSTMENTS
   - 4.1 Start UP min // ±xx
   - 4.2 Slow UP min // ±xx
   - 4.3 High DN min // ±xx
   - 4.4 Slow DN min // ±xx
   - 4.5 Start UP max // ±xx
   - 4.6 Slow UP max // ±xx
   - 4.7 High DN max // ±xx
   - 4.8 Slow DN max // ±xx
   - 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-A3 VX.XRXXHX SETTINGS
   - 5.1 Lift Ratio // x:x
   - 5.2 Jack Diam // xxx mm
   - 5.3 Pump Flow // xxx l/min
   - 5.4 Map // xx
   - 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 P overload // xx.x bar
   - 5.10 P max // xx.x bar
   - 5.11 Cool Temp // xx °C
   - 5.12 Mode: Normal-Installation

6. NGV-A3 VX.XRXXHX UP PARAMETERS
   - 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.xxx m/s
   - 6.5 Relev. Speed // x.xxx m/s
   - 6.6 Acc. Profile // XS,S,ST,F,C
   - 6.7 Dec.Profile // XS,S,ST,F,C
   - 6.8 Start Delay // x.x s

7. NGV-A3 VX.XRXXHX DN PARAMETERS
   - 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.xxx m/s
   - 7.5 Relev. Speed // x.xxx m/s
   - 7.6 Acc. Profile // XS,S,ST,F,C
   - 7.7 Dec.Profile // XS,S,ST,F,C

8. NGV-A3 VX.XRXXHX OUTPUT FUNC
   - 8.1 Output 11-12 // FUN xx Nx
   - 8.2 Output 21-22 // FUN xx Nx
   - 8.3 Output 31-32 // FUN xx Nx
   - 8.4 Output 41-42 // FUN xx Nx

9. NGV-A3 VX.XRXXHX TEST...
   - 9.1 OverP. Value // Ent = Start
   - 9.2 Pipe Rupture // Ent = Start
   - 9.3 UCM UP test // Ent = Start
   - 9.4 UCM Test up // Ent = Start
   - 9.5 VB test down // Ent = Start
   - 9.6 VB test up // Ent = Start
   - 9.7 Run-Rdy test // No test
   - 9.8 S3 tuning // Ent =Start

10. NGV-A3 VX.XRXXHX ADVANCED
    - 10.1 Password // -00000
    - 10.2 Register..// R000 = +00000

11. PARAMS...
    - 11.1 Save User
    - 11.2 Load User
    - 11.3 Load Factory

12. SOFTWARE UPG...
    - 12.1 Select file
    - 12.2 ENT >> Start
5.3 MENÙ

- 1 - DIAGNOSTICS

NGV VER XX.XXX
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 S0123DICA
000000000
State of the input signals: S0123DICA
100000000=VS 010000000=V0 001000000=V1
000100000=V2 000010000=V3 000001000=D
000000100=IND(S1) 000000010=VBC(S2) 000000001=VBO(S3)

1.5 OUTPUT 1234YND
0000000
State of the output signals: 1234YND
1000000=Out1 0100000=Out2 0010000=Out3 0001000=Out4
0000100=RDY 0000010=RUN 0000001=VMD

1.6 SUPPLY
XX.X V
Supply voltage [V] of the control board

1.7 FLY TIME
Total time of the lift [s]

ENT
1.7.1 TOTAL
XXX.X s
Time between the start of the lift and the start of the deceleration phase [s]

1.7.2 START->DEC
XXX.X s
Time between the start of the deceleration phase and the stop of the lift [s]

- 2 - ALLARM

NGV VER XX.XXX
2-ALARM

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

NGV VER XX.XXX
3-AL/FLT RESET

3.1 FAULT RESET
Pressing the ENT key on the programmer all the faults and the alarms are deleted
**- 4 - ADJUSTMENTS**

NGV VER XX.XXX

4-ADJUSTMENTS

---

**Optimal car motion**
---

**Real car motion**

---

4.1 START UP MIN

±XX.X

+↑ -↓

UPWARD start adjustment (-99 ÷ +99)

---

4.2 SLOW UP MIN

±XX.X

+↑ -↓

UPWARD levelling speed adjustment (-99 ÷ +99)

---

4.3 HIGH DN MIN

±XX.X

+↑ -↓

DOWNWARD high speed adjustment (-99 ÷ +99)

---

4.4 SLOW DN MIN

±XX.X

+↑ -↓

DOWNWARD levelling speed adjustment (-99 ÷ +99)

---

4.5 START UP MAX

±XX.X

+↑ -↓

UPWARD start adjustment (-99 ÷ +99)

---

4.6 SLOW UP MAX

±XX.X

+↑ -↓

UPWARD levelling speed adjustment (-99 ÷ +99)

---

4.7 HIGH DN MAX

±XX.X

+↑ -↓

DOWNWARD high speed adjustment (-99 ÷ +99)

---

4.8 SLOW DN MAX

±XX.X

+↑ -↓

DOWNWARD levelling speed adjustment (-99 ÷ +99)

---

4.9 OFFSET V0 UP

XXX mm

+↑ -↓

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

---

4.10 OFFSET V0 DN

XXX mm

+↑ -↓

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

---

4.11 OFFSET V1 UP

XXX mm

+↑ -↓

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

---

4.12 OFFSET V1 DN

XXX mm

+↑ -↓

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

Data entered by GMV, run control during the installation of the system

NGV VER XX.XXX

5-SETTINGS

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 ÷ 50.0 bar)*

5.10 P MAX
XX.X bar

Pressione di massima, 140% del carico nominale (15.0 ÷ 70.0 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

**NGV VER XX.XXX**

<table>
<thead>
<tr>
<th>6-UP PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 NOM. SPEED V0</td>
</tr>
<tr>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.2 INT. SPEED V1</td>
</tr>
<tr>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.3 INS. SPEED V2</td>
</tr>
<tr>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.4 SLOW SPEED</td>
</tr>
<tr>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.5 RELEV. SPEED</td>
</tr>
<tr>
<td>X.XX m/s</td>
</tr>
<tr>
<td>6.6 ACC. PROFILE</td>
</tr>
<tr>
<td>XXXXXXX</td>
</tr>
<tr>
<td>6.7 DEC. PROFILE</td>
</tr>
<tr>
<td>XXXXXXX</td>
</tr>
<tr>
<td>6.8 START DELAY</td>
</tr>
<tr>
<td>X.X s</td>
</tr>
</tbody>
</table>

### - 7 - DOWNWARD PARAMETERS

**NGV VER XX.XXX**

<table>
<thead>
<tr>
<th>7-DN PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 NOM. SPEED V0</td>
</tr>
<tr>
<td>X.XX m/s</td>
</tr>
<tr>
<td>7.2 INT. SPEED V1</td>
</tr>
<tr>
<td>X.XX m/s</td>
</tr>
<tr>
<td>7.3 INS. SPEED V2</td>
</tr>
<tr>
<td>X.XX m/s</td>
</tr>
<tr>
<td>7.4 SLOW SPEED</td>
</tr>
<tr>
<td>X.XX m/s</td>
</tr>
<tr>
<td>7.5 RELEV. SPEED</td>
</tr>
<tr>
<td>X.XXX m/s</td>
</tr>
<tr>
<td>7.6 ACC. PROFILE</td>
</tr>
<tr>
<td>XXXXXXX</td>
</tr>
<tr>
<td>7.7 DEC. PROFILE</td>
</tr>
<tr>
<td>XXXXXXX</td>
</tr>
</tbody>
</table>
- 8 - OUTPUT FUNCTIONS

NGV VER XX.XXX
8-OUTPUT FUNC.

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 OUTPUT 11-12</td>
<td>Active function on output 11-12. Every function is identified by a code described into Output Programmable Functions Chart</td>
</tr>
<tr>
<td>8.2 OUTPUT 21-22</td>
<td>Active function on output 21-22. Every function is identified by a code described into Output Programmable Functions Chart</td>
</tr>
<tr>
<td>8.3 OUTPUT 31-32</td>
<td>Active function on output 31-32. Every function is identified by a code described into Output Programmable Functions Chart</td>
</tr>
<tr>
<td>8.4 OUTPUT 41-42</td>
<td>Active function on output 41-42. Every function is identified by a code described into Output Programmable Functions Chart</td>
</tr>
</tbody>
</table>

As default the output are set up with this functions:
- Output 11-12: Minimum pressure (01NC)
- Output 21-22: Maximum pressure (02NC)
- Output 31-32: Overload (08NO)
- Output 41-42: Up (09NO)

- 9 - TEST

NGV VER XX.XXX
9-TEST...

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1 OVERP. VALUE</td>
<td>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.</td>
</tr>
<tr>
<td>9.2 PIPE RUPTURE</td>
<td>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.</td>
</tr>
<tr>
<td>9.3 UCM UP TEST</td>
<td>Start the routine that allows to simulate the unintended car movement in up direction. To use this function see the chapter Test in Up direction. This routine needs that the control panel works in normal mode (not inspection). Press ENT to start the routine. Press ESC to end/exit.</td>
</tr>
<tr>
<td>9.4 UCM DN TEST</td>
<td>Start the routine that allows to simulate the unintended car movement in down direction. To use this function see the chapter Test in Down direction. This routine needs that the control panel works in normal mode (not inspection). Press ENT to start the routine. Press ESC to end/exit.</td>
</tr>
</tbody>
</table>
9.5 VB TEST DOWN
ENT=Start

9.6 VB TEST UP
ENT=Start

9.7 RUN-RDY TEST
ENT=Start

NOTE
Exit from test using the ESC key, do not restore the NO TEST condition necessary for the normal working of the system. To return to normal operating condition parameter, you should select NO TEST and press ENT to confirm the condition change, before to exit pushing ESC.

9.8 S3 TUNING
ENT=Start

Start the routine to check if the VRP working well in event of VB breaking at upward end. To use this function see chapter Fault simulation on output RDY and RUN. Press ENT, select the fault that you want simulate, push ENT to activate the fault. The fault condition that you can choose are: RUN always ON, RDY always OFF, RUN always OFF, RDY always ON.

Start the routine that allows to place the sensor S3 in the correct position. The routine open the VB allowing to move the sensor in the exact lighting position. To use this function see chapter 6 Adjusting of the sensors. Press ESC to end.

- 10 - ADVANCED PROGRAMMING

NGV-A3 VX.XRXXHX
10-ADVANCED

10.1 PASSWORD
00000

10.2 REGISTERS
R000 = +00000

Use the password to enter the full list and modify the main NGV valve parameters. Shows the advanced programming registers.

- 11 - PROGRAMMING PARAMETERS

NGV-A3 VX.XRXXHX
11-PARMS...

11.1 SAVE USER

11.2 LOAD USER

11.3 LOAD FACTORY

Save a program copy stored in the μSD memory. Take care to perform it at the end of the installation test.

Load in the main card the program previously saved in the μSD with the 11.1 option.

Load in the main card the factory configuration. The user configuration is not included.

- 12 - SOFTWARE UPDATE

NGV-A3 VX.XRXXHX
12-SOFTWARE UPG.

12.1 SELECT FILE

Allows to update the software card selecting it from different options. Just contact GMV prior to proceed.
### 5.4 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 defined active as NO (Normally Open) or as NC (Normally Close).

<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>Signal UP</td>
<td>FUN09NC FUN09NO</td>
</tr>
</tbody>
</table>

### 5.5 Chart of Failures

<table>
<thead>
<tr>
<th>Fault</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00: NO ALARM</td>
<td>No alarm</td>
</tr>
<tr>
<td>01: SUPPLY LOW</td>
<td>Low power supply &lt; Vdc - 15%</td>
</tr>
<tr>
<td>02: SUPPLY HIGH</td>
<td>High power supply &gt; 40 Vdc</td>
</tr>
<tr>
<td>03: PRESS. FAULT</td>
<td>Pressure transducer PT short circuit</td>
</tr>
<tr>
<td>04: TEMP. FAULT</td>
<td>Temperature transducer TT short circuit</td>
</tr>
<tr>
<td>05: STEP MOTOR</td>
<td>Stepping motor driver SM overheated</td>
</tr>
<tr>
<td>06: S1 VRP OPEN</td>
<td>Contact S1 (VRP) open with lift stopped</td>
</tr>
<tr>
<td>07: S1 VRP OPEN</td>
<td>Contact S1 (VRP) open at the end of a downward travel</td>
</tr>
<tr>
<td>08: VS–VD INPUT</td>
<td>Signals VS and D contemporaneous</td>
</tr>
<tr>
<td>09: PRESS. MAX</td>
<td>Maximum pressure &gt; 5.10 PSTAT MAX</td>
</tr>
<tr>
<td>10: PRESS. MIN</td>
<td>Minimum pressure &lt; 5.7 PSTAT MIN</td>
</tr>
<tr>
<td>11: OIL TEMP LOW</td>
<td>Minimum oil temperature &lt; 5°C</td>
</tr>
<tr>
<td>12: OIL TEMP HI</td>
<td>Maximum oil temperature &gt; 5.11 COOL TEMP</td>
</tr>
<tr>
<td>13: S3 CLOSED</td>
<td>Contact S3 (VBO) closed with lift stopped</td>
</tr>
<tr>
<td>14: S2 OPENED</td>
<td>Contact S2 (VBC) opened with lift stopped or stopped in up dir.</td>
</tr>
<tr>
<td>15: S1 NOT OPEND</td>
<td>Contact S1 (VRP) did not opened during starting downward travel</td>
</tr>
<tr>
<td>16: S1 NOT CLOSD</td>
<td>Contact S1 (VRP) did not closed during end of downward travel</td>
</tr>
<tr>
<td>17: S2 NOT CLOSD</td>
<td>Contact S2 (VBC) did not closed during end of downward travel</td>
</tr>
<tr>
<td>18: S3 NOT CLOSD</td>
<td>Contact S3 (VBO) did not closed when VB opens</td>
</tr>
</tbody>
</table>
### 5.6 ACCESSORIES

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Box MR</td>
<td>40370007 + 61000010 + 40990003</td>
<td>NGV-A3-XX</td>
</tr>
<tr>
<td>Box MRL</td>
<td>60200369</td>
<td>PT01</td>
</tr>
<tr>
<td>Terminal board</td>
<td>01: 70200334</td>
<td>24Vdc: 80395002C</td>
</tr>
<tr>
<td></td>
<td>02: 70200335</td>
<td>12Vdc: 80395002C</td>
</tr>
<tr>
<td></td>
<td>03: 70200336</td>
<td></td>
</tr>
</tbody>
</table>

### 6 MAINTENANCE AND FAULT ANALYSIS

#### 6.1 PROGRAMMED MAINTENANCE

For a correct and safe lift use, it is necessary to make a preventive programmed maintenance, following a fixed plan.

To define the periodical maintenance frequency, you should consider more events, particularly:
- Number of travel per year
- Travelling and stopping periods
- Age and condition of the lift
- Site and type of the building in which the lift travel
- Passengers and goods demand
- Inside and outside working condition (climate, vandalism, etc.)

In the next table, parts are shared in groups and for each group is shown the type of check and its longest frequency recommended. You can find the detailed instructions to perform the operational checks, inside the maintenance schedules, in the following pages.

Please, note that all checks are applicable only if the part is really installed.

#### 6.2 PERIODICAL MAINTENANCE AND CHECKS TABLE

<table>
<thead>
<tr>
<th>Operation checks</th>
<th>Recommended maximal Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve gaskets seal</td>
<td>☑ 6</td>
</tr>
<tr>
<td>Oil level check up</td>
<td>☑ 6</td>
</tr>
<tr>
<td>Characteristics of the oil</td>
<td>☑ 6</td>
</tr>
<tr>
<td>Motor protection operation</td>
<td>☑ 6</td>
</tr>
<tr>
<td>Filters</td>
<td>☑ 1</td>
</tr>
<tr>
<td>Pressure check</td>
<td>☑ 6</td>
</tr>
<tr>
<td>Pressure gauge shut off (6)</td>
<td>☑ 6</td>
</tr>
<tr>
<td>Pressure test (static pressure x2)</td>
<td>☑ 6</td>
</tr>
<tr>
<td>Ball valve seal</td>
<td>6</td>
</tr>
<tr>
<td>Labels, signs and schemes</td>
<td>☑ 6</td>
</tr>
<tr>
<td>Overall check-up</td>
<td>5</td>
</tr>
</tbody>
</table>
6.3 MAINTENANCE SCHEDULES

What to do: (see image)

Valve gaskets seals
- At the end of installation, and during check-ups, verify the gasket seals, in the following way: with the oil at room temperature close the ball valve (R/S) and open the pressure gauge shut off (6). Check that the pressure gauge reading on pressure gauge should not drop more than 4 bar in 5 minutes.

Oil level check-up.
- With the elevator at the highest floor, check, using dipstick (F) or level indicator (L), that the oil level is above the minimum level and (the motor should be fully covered in oil).

Oil Characteristics
- Check visually that no change are occurred in the oil conditions. Perform this check after leaving the system down for a few hours. Once every year it should be better to discharge a little amount of oil from cap (J) and to check if it’s clean. If oil is not clean keep on discharging oil until you see to flow clean oil.

Motor protection functionality
- Disconnect one terminal of the thermistors, and check that the motor protection working properly.

Filter
- Check the main filter (FIL) mounted inside the silencer and clean it if is necessary.

Pressures check
- Check static and dynamic (working) pressure at the end of installation. Check regularly that all values of these parameters remain unchanged.

Pressure gauge shut off (6)
- Close the ball valve (R/S), open the pressure gauge shut off (6) and fully discharge the pressure using electro-valve (VMD). Close the pressure gauge shut off (6) open the ball valve (R/S) and check that the level shown on pressure gauge is zero.

Pressure test (static pressure x2)
- This test assures you about the integrity of parts under pressure, including those which can not be visually checked.
- To correctly carry out this test follow these instructions and make reference to the images:
  - Close the pressure gauge valve (6).
  - Close the ball valve (R/S). Remove the pressure gauge (MAN).
  - Connect the hand pump (M) in place of the pressure gauge (G1/4) as shown in the image on the right side
  - Open the pressure gauge valve (6).
  - Open the ball valve (R/S).
  - Open the hand pump valve (N) for about 1 minute.
  - Close the hand pump valve (N).
  - Close the ball valve (R/S).
  - Operate the hand pump (M) until the required pressure is reached, checking it on hand pump pressure gauge (O).
  - At the end of the test, discharge the pressure to zero by pressing the push-button on (VMD) (see image up).
  - Close the pressure gauge shut off (6).
  - Disconnect the hand pump (M)
  - Mount the pressure gauge (MAN).

Ball valve seal
- Close the ball valve (R/S) and open the pressure gauge shut off (6). Fully discharge the pressure-using valve (VMD), check that the level shown on pressure gauge (MAN) is zero.
Labels, signs and schemes  
- Check that all the tags and diagrams are in place and legible (oil data label, emergency operation manual, electrical diagram and hydraulic power unit schemes).

Overall check-up  
- Perform an overall check up of the power unit. When the overall check-up ends, check all the settings for the power unit start-up.
  - Replace or restore all the components not correctly working.

NOTE  
In case of oil replacement, do not throw the oil away in the environment, but give it to oil recycling company.

NOTE  
When the power unit in no longer required, don’t throw it away, but give it to a recycling company or to the manufacturer.

### 6.4 FAULT ANALYSIS

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Possible solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>01: SUPPLY LOW</td>
<td>Low power supply</td>
<td>Increase power voltage by adjustment or replace power supply</td>
</tr>
<tr>
<td>02: SUPPLY HIGH</td>
<td>High power supply</td>
<td>Decrease power voltage by adjustment or replace power supply</td>
</tr>
<tr>
<td>03: PRESS. FAULT</td>
<td>Pressure transducer PT failure</td>
<td>Replace transducer PT</td>
</tr>
<tr>
<td>04: TEMP. FAULT</td>
<td>Temperature transducer TT failure</td>
<td>Replace transducer TT</td>
</tr>
<tr>
<td>05: STEP MOTOR</td>
<td>Stepping motor (SM) overheated</td>
<td>Wait for motor cooling. If the problem recurs after a short time, replace stepping motor.</td>
</tr>
<tr>
<td>06: S1 VRP OPEN</td>
<td>Contact S1 (VRP) open with lift stopped</td>
<td>See 13-22</td>
</tr>
<tr>
<td>07: S1 VRP OPEN</td>
<td>Contact S1 (VRP) open at the end of a downward travel</td>
<td>See 13-22</td>
</tr>
<tr>
<td>08: VS–VD INPUT</td>
<td>Signals VS and D contemporaneous</td>
<td>Verify that the control panel sends signals correctly</td>
</tr>
<tr>
<td>09: PRESS. MAX</td>
<td>Maximum pressure &gt; 5.10 PSTAT MAX</td>
<td>Verify that the parameter is equal to the system value. If it is not equal, set parameter equal to the system, if equal to find the cause of overpressure.</td>
</tr>
<tr>
<td>10: PRESS. MIN</td>
<td>Minimum pressure &lt; 5.7 PSTAT MIN</td>
<td>Find and correct the cause that does not allow to the pressure to reach the minimum value required.</td>
</tr>
<tr>
<td>11: OIL TEMP LOW</td>
<td>Minimum oil temperature &lt; 5°C</td>
<td>Verify that the sensor works correctly or install an oil heater</td>
</tr>
</tbody>
</table>
| 12: OIL TEMP HI  | Maximum oil temperature > 5.11 COOL TEMP | If the parameter 5.11 COOL TEMP is < 70°C set the value up to 70°C  
If the parameter 5.11 COOL TEMP is = 70°C probably you must install an heat exchanger |
### 6.5 TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Fault</th>
<th>Possible cause</th>
<th>Possible solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The system - do not start but the pump works</td>
<td>The card do not receive the signal VS from the control panel. The control panel do not receive/recognize the RUN signal from the card.</td>
</tr>
<tr>
<td>2</td>
<td>The system - run slowly in up and down direction - stops immediately without deceleration</td>
<td>The Menu 5.12 is set on “Install” and the system run only in inspection speed.</td>
</tr>
<tr>
<td>3</td>
<td>The system - run only with low speed</td>
<td>The card - do not receive the speed signal (V0, V1, V2) - receive the speed signal after the direction signal (VS, D)</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Solution</td>
</tr>
<tr>
<td>---</td>
<td>-------------</td>
<td>----------</td>
</tr>
<tr>
<td>4</td>
<td>The system - has an abrupt departure in up direction (run fast for piece of the travel, slows, and return to the correct speed.</td>
<td>The motor starts before of the RUN signal. Verify that the signals RUN and RDY are in compliance with § 2.3.3. Verify (menù 1.4 S0123DICA) that all signals are received and (menù 1.5 1234YND) send correctly to/from the card. The motor do not must start before: - VS, up command - RUN - Out 4=UP if used</td>
</tr>
<tr>
<td>5</td>
<td>The system - starts in up direction with an not regular acceleration (it starts with a little burst and immediately return to the correct acceleration)</td>
<td>The starting time is not correct, the oil output line was open in advance and the oil reach the piston until the motor is at full. Increase the value of the menu point 6.8 to delay the oil output line opening.</td>
</tr>
<tr>
<td>6</td>
<td>The system - run irregularly and inaccurate</td>
<td>The basic parameters are not corrects. Verify (menu 5) that the values set are in compliance with the effective system data. Particularly, verify values 5.5 Pstat MIN e 5.6 Pstat MAX</td>
</tr>
<tr>
<td>7</td>
<td>The system - stops over/under the landing level when the system has a reduced floor distance (&lt; 1,8m)</td>
<td>The system arrive at landing in nominal speed (Vo) instead of intermediate speed V1. The intermediate speed set is too high. Verify that the card receives the speed signal V1 (menu 1.4 S0123DICA). If the card do not receive the signal check the signal flow from the control panel and repair the error. If the card receive the signal you must decrease the intermediate speed V1 parameter (in up direction menu 6.2, in down direction menu 7.2 recommended value 0,3 m/s) and/or increase the deceleration distance.</td>
</tr>
<tr>
<td>8</td>
<td>The system - do not decelerate correctly</td>
<td>The speed signals (V0, V1 o V2) are not according with § 3.5 or the magnet position is not correct. Verify (menù 1.4 S0123DICA) that the status of the speed signal V0 changes from 1 to 0 when the car comes in the deceleration zone. Verify that the parameters 4.9, 4.10, 4.11 e 4.12 are correctly set (default = 0) and otherwise, set the correct value. Verify that the magnets are at the correct distance from the floor. If the problem persist, please, contact the technical support.</td>
</tr>
<tr>
<td>9</td>
<td>The system - do not stops at landing</td>
<td>The signal VS or D do not switch off or is switched off too late (up to 1-2 cm from floor) The deceleration speed or the levelling speed is too high. Verify (menu 1.4 S0123DICA) that the signal VS or D is switched off before that the car arrives at floor, at the beginning of the deceleration zone. If the signal do not change status check the signal flow from the control panel and repair the error. If the problem persist, verify the parameters set in Menu: 4.2, 4.4, 4.6 e 4.8 and if are not the default value set to default (default = 0). Verify that the value of parameters 6.4, 6.5, 7.4 e 7.5 is the recommended value. (see § 5.3) If setting parameter to the default values do not solve the problem, you should personalize the value set in the Menu: 4.2, 4.4 (min = car empty), 4.6 e 4.8 (max = car with full load).</td>
</tr>
<tr>
<td>10</td>
<td>The system stops during the switching from nominal speed to slow speed; with the car empty or full loaded.</td>
<td>If the basic settings are correct (Menu 5) the slow speed (6.4 and 7.4) or the low speed offsets (4.2, 4.4, 4.6 e 4.8) should be too low.</td>
</tr>
<tr>
<td>11</td>
<td>The control panel detects an insufficient minimum pressure</td>
<td>The system minimum pressure is below the minimum allowed or control panel and card do not work with the same type of signal. (the card send a normally close (NC) signal and the control panel works with a normally open (NO) signal).</td>
</tr>
</tbody>
</table>

### 6.6 ADJUSTING THE SENSORS

The adjusting of the sensors should be done with the system stopped.

#### 6.6.1 SENSOR S1

1. LED OFF
2. LED OFF
3. LED ON

#### 6.6.2 SENSOR S2

1. LED OFF
2. LED OFF
3. LED ON
6.6.3 SENSOR S3

5. Using the programmer PT01 select the function **9.8 S3 tuning** and activate it pressing ENT
6. Proceed as show in the image
7. deactivate the function **9.8 S3 tuning** by pressing ESC
7 CERTIFICATES

7.1 TYPE EXAMINATION

CERTIFICATO DI ESAME UE DI TIPO

Nome ed indirizzo del titolare:
GMV S.p.A.
Via Dion Ducechi, 10
20019 Pero (MI) Italy

Data della domanda:
06/09/2010

Nome ed indirizzo del fabbricante:
GMV S.p.A.
Via Dion Ducechi, 10
20019 Pero (MI) Italy

Prodotto:
Dispositivo idraulico, parte di un sistema contro il movimento incontrollato della cisterna ai piani a porte aperte.
NGV A3 1 1/4" - NGV A3 1 1/2"

Norme di riferimento:
EN 81-20:2014
EN 81-50:2014

Laboratorio di prova:
TÜV Italia S.r.l.
Via Carducci, 125
20039 - Sesto San Giovanni (MI)

Data e numero rapporto di prova:
19/01/2011 TR DC 361
UMA198513-90-2209046

Risultati:
Il dispositivo esaminato, se collegato a un idoneo dispositivo di individuazione e interruzione e installato e utilizzato secondo le istruzioni del Fabbricante, è conforme alle disposizioni della Direttiva.

The device examined, if connected to an appropriate detection/interuption device, installed and used according to the Manufacturer's instructions, is in compliance with the provisions of the Directive.

7.2 CONFORMITY

UNI EN81-20 §5.10.3.2
NGV A3 VALVE MANUAL
INSTALLATION, USE AND MAINTENANCE

APPARECCHIATURE FLUIDODINAMICHE
E COMPONENTI PER ASCENSORI

Via Don Gnocchi, 10 - 20016 PERO – Milano (Italy)
TEL. +39 02 33930.1 - FAX +39 02 3390379
http://www.gmv.it - e-mail: info@gmv.it

AZIENDA
Certificata
UNI EN ISO 9001
APPARECCHIATURE FLUIDODINAMICHE
E COMPONENTI PER ASCENSORI

GMV Spa

Via Don Gnocchi, 10 - 20016 PERO – Milano (Italy)
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AZIENDA Certificata
UNI EN ISO 9001