NGV VALVE MANUAL
INSTALLATION, USE AND MAINTENANCE

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

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 SECTION

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.

Information and support:

GMV SpA
FLUID DYNAMICS EQUIPMENTS AND
COMPONENTS FOR LIFTS
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

UNI EN ISO 9001
Certified Company

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

Offers:
- 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 uses and recommends 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, allows 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 is safer and reduces the risk of fire.

### 0.8 HYDRAULIC CIRCUIT

 promised by 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, allows 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 is safer and reduces the risk of fire.

### 0.8 HYDRAULIC CIRCUIT

![Hydraulic Circuit Diagram](image-url)

**Legend:**

- **1** Pressure safety valve adjustment (pressure limiter)
- **2** Pressure safety valve adjustment (hand pump)
- **3** Ram pressure adjustment (only 2:1 acting jacks)
- **4** Shut-off valve for pressure gauge exclusion
- **5** Shut-off valve for rupture valve test
- **D** Downward signal
- **DN** Downward
- **ISP** Inspection gauge fitting
- **J** Jack
- **K** Non-return valve
- **MAN** Pressure gauge
- **ML** Manual lowering button
- **M, MP** Motor / pump
- **NGV** NGV Valve
- **NGV01** NGV control card
- **OFF** Not powered
- **ON** Powered

- **PAM** Hand pump
- **PT** Pressure transducer
- **SI** Inductive sensor
- **SM** Stepping motor
- **TT** Temperature transducer
- **UP** Upward
- **V0, V1, V2** Speed (high, medium, inspection)
- **VB** Main flow adjustment valve
- **VC** Rupture valve
- **VMD** Downward solenoid valve
- **VR** Non-return valve (flow)
- **VR1** Non-return valve (inlet)
- **VR2** Non-return valve (outlet)
- **VRP** Non-return valve - controlled
- **VS** Upward signal
- **VS1, VS2** Pressure safety valve
- **VSMA** Lowering valve manual / electrical
0.9 SEQUENCE AND TIMING OF THE SIGNALS

**WARNING**

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

<table>
<thead>
<tr>
<th>Vx</th>
<th>V_S</th>
<th>V_0</th>
<th>V_1</th>
<th>V_2</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>

**Acronyms legend**
- **MP**: Motor / pump
- **VS**: Upward signal
- **Vx**: Speed (high, medium, inspection)
- **SI**: Inductive Sensor
- **SM**: Stepping motor

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

Motor / pump
Inductive Sensor
Stepping motor

Vx = V0, V1, V2 (Speed (high, medium, inspection))

VS (Upward signal)
0.9.2 DOWNWARD

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

- **V₀**: Powered
- **V₁**: Not powered
- **V₂**: Anything
0.10 DECELERATION DISTANCES

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.

<table>
<thead>
<tr>
<th>$V_N$ [m/s]</th>
<th>$D_{RAL,S}$ [m]</th>
<th>$D_{RAL,D}$ [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upward</td>
<td>Extra Slow</td>
<td>Slow</td>
</tr>
<tr>
<td>0,00 &lt; $V$ ≤ 0,15</td>
<td>0,19</td>
<td>0,15</td>
</tr>
<tr>
<td>0,15 &lt; $V$ ≤ 0,40</td>
<td>0,43</td>
<td>0,39</td>
</tr>
<tr>
<td>0,40 &lt; $V$ ≤ 0,65</td>
<td>0,81</td>
<td>0,71</td>
</tr>
<tr>
<td>0,65 &lt; $V$ ≤ 0,85</td>
<td>1,16</td>
<td>0,99</td>
</tr>
<tr>
<td>0,85 &lt; $V$ ≤ 1,00</td>
<td>1,40</td>
<td>1,27</td>
</tr>
<tr>
<td>Downward</td>
<td>Extra Slow</td>
<td>Slow</td>
</tr>
<tr>
<td>0,00 &lt; $V$ ≤ 0,15</td>
<td>0,15</td>
<td>0,13</td>
</tr>
<tr>
<td>0,15 &lt; $V$ ≤ 0,40</td>
<td>0,41</td>
<td>0,36</td>
</tr>
<tr>
<td>0,40 &lt; $V$ ≤ 0,65</td>
<td>0,78</td>
<td>0,67</td>
</tr>
<tr>
<td>0,65 &lt; $V$ ≤ 0,85</td>
<td>1,14</td>
<td>0,98</td>
</tr>
<tr>
<td>0,85 &lt; $V$ ≤ 1,00</td>
<td>1,36</td>
<td>1,18</td>
</tr>
</tbody>
</table>

The table above shows the deceleration distances for different speed levels (high, medium, inspection) and directions (upward, downward).
1 ELECTRICAL PART

1.1 NGV A3 CARD SPECIFICATIONS

The NGV-A3 card hardware features are:

<table>
<thead>
<tr>
<th>#</th>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Supply voltage for parallel and serial version</td>
<td>24V= -10%, +50%</td>
</tr>
<tr>
<td>2</td>
<td>Maximum consumption</td>
<td>25W</td>
</tr>
<tr>
<td>3</td>
<td>Voltage input VS-V0-V1-V2-V3</td>
<td>10...48Vdc (70Vp)</td>
</tr>
<tr>
<td>4</td>
<td>Voltage input D+ (VMD), two range selectable by jumper</td>
<td>12...48Vdc / 60...180Vdc</td>
</tr>
<tr>
<td>5</td>
<td>Power voltage sensors VRP and VB</td>
<td>12Vdc</td>
</tr>
<tr>
<td>6</td>
<td>Power voltage pressure transducer</td>
<td>12Vdc</td>
</tr>
<tr>
<td>7</td>
<td>Relays output, Volt free contact according with EN81-2 for distances and insulation up to 250V</td>
<td>10mA@20Vdc / 2A@250Vac</td>
</tr>
</tbody>
</table>

The NGV-A3 card has 2 different versions:

-01 Parallel version (NGV-A3-01), con alimentazione 24Vdc
-02 Serial version (NGV-A3-03) with power supply 24Vdc and only serial connection on can bus (NEOS10)
FUNCTION DESCRIPTION

# | Version
--- | ---
01 | Power supply Standard, 24V=, ±10% / Extended, 12...42Vdc  
02 | Opto-isolated inputs to command upward and speed level  
03 | Opto-isolated input to command downward (separate)  
04 | Relay output with voltage free contact according to EN81-2 for distances and isolation up to 250V  
05 | Step Motor Command 12...52Vdc, 1,5Arms with the possibility of monitoring the rated current and the connection breaking.  
06 | Input for pressure transducer interface, range 0...100 bar  
07 | Input for oil temperature transducer interface, range 0...100°C  
08 | Input for sensor ON/OFF 12V or linear sensor 0...5V (power supply 12V)  
09 | Input for sensor ON/OFF 12V  
10 | RJ45 port for PT01 / Pc / remote  
11 | Slot for µSD card  
12 | Calendar watch with CR2030 battery  
13 | Can bus serial socket  
14 | I/O extender connector

### 1.2 SIGNALLERS

**GREEN LED**  
Power supply status

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

**LED ROSSO**  
Alarm status

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

### 1.3 INTERFACE CARD CONNECTIONS SPECIFICATIONS

#### 1.3.1 GENERIC CONTROL PANEL/PARALLEL NGVA3 CARD INTERFACING

The input circuits are divided in two groups, both isolated from the card power supply:
- V0,V1,V2,VS with common V-  
- D+ con comune 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 X2, 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>11</td>
<td>10mA...2A</td>
<td>Programmable output relay (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>20...250V</td>
<td>Programmable output relay (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>3</td>
<td>21</td>
<td>10mA...2A</td>
<td>Programmable output relay (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>20...250V</td>
<td>Programmable output relay (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>5</td>
<td>31</td>
<td>10mA...2A</td>
<td>Programmable output relay (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>6</td>
<td>32</td>
<td>20...250V</td>
<td>Programmable output relay (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>7</td>
<td>41</td>
<td>10mA...2A</td>
<td>Programmable output relay (refer to programming menu and programmable functions chart)</td>
</tr>
<tr>
<td>8</td>
<td>42</td>
<td>20...250V</td>
<td>Programmable output relay (refer to programming menu and programmable functions chart)</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 20…250V</td>
<td>Output: RUN (not in use)</td>
</tr>
<tr>
<td>2</td>
<td>51</td>
<td>10mA…2A 20…250V</td>
<td>Output: RDY (not in use)</td>
</tr>
<tr>
<td>3</td>
<td>52</td>
<td>10mA…2A 20…250V</td>
<td>Common (not in use)</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>Power : negative (-)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>V-</td>
<td>Inputs : negative</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>Input command : speed : high (nominal speed)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>V1</td>
<td>Input command : speed : medium</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>V2</td>
<td>Input command : speed : inspection</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>V3</td>
<td>Input command : speed : micro-levelling</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>V+</td>
<td>Power : positive common. For input command circuits without voltage. Do NOT use if input commands are under voltage</td>
<td></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>Power : positive</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PE</td>
<td>PE, ground</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A-</td>
<td>Power : negative</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>A-</td>
<td>Power : negative</td>
<td></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 Downhill direction</td>
</tr>
<tr>
<td>2</td>
<td>D-</td>
<td>Negative command Downhill direction</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>E+</td>
<td>Input command Electric Emergency Valve</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>E-</td>
<td>Negative command Electric Emergency Valve</td>
<td></td>
</tr>
</tbody>
</table>

### Jumper J6 (connector configuration 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>

### 1.3.2 NEOS10 CONTROL PANEL/SERIAL CARD INTERFACING

The connection to the control panel is made by a single serial connector. So the X2, X3, X4, X5, X6 connectors are not used.

### 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>
1.3.3 CONNECTION SCHEMAS FOR CONTROL PANEL
1.3.1 CONNECTION SCHEMAS FOR SIGNALS

- **Schema S00**
- **Schema S48**

1.3.2 CONNECTION SCHEMAS FOR POWER

- **Schema W50**
- **Schema W25**

<table>
<thead>
<tr>
<th>VAL</th>
<th>NGV valve</th>
<th>QM</th>
<th>Control panel</th>
<th>BOX</th>
<th>NGV interface box</th>
</tr>
</thead>
<tbody>
<tr>
<td>V0</td>
<td>High speed</td>
<td>VMD</td>
<td>Downward solenoid valve</td>
<td>VS</td>
<td>Upward signal</td>
</tr>
<tr>
<td>V1</td>
<td>Medium speed</td>
<td>SM</td>
<td>Stepping motor</td>
<td>CARD</td>
<td>NGV control card</td>
</tr>
<tr>
<td>V2</td>
<td>Inspection speed</td>
<td>D</td>
<td>Downward signal</td>
<td>S1,S2,S3</td>
<td>Sensors (VRP, VBO, VBC)</td>
</tr>
<tr>
<td>V3</td>
<td>Micro-levelling speed</td>
<td></td>
<td></td>
<td>PT</td>
<td>Pressure transducer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TT</td>
<td>Temperature transducer</td>
</tr>
</tbody>
</table>

(1) Schema of the connections between D+D+E+E-VMD and D+D-E+E-VMD.
1.3.3 VALVE INTERFACING
The valve interfacing, both for parallel and serial Neos card, 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></td>
</tr>
<tr>
<td>2</td>
<td>D-</td>
<td></td>
<td>Downward command VMD</td>
</tr>
<tr>
<td>3</td>
<td>E+</td>
<td></td>
<td>Emergency solenoid valve</td>
</tr>
<tr>
<td>4</td>
<td>E-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Connector X8, step 2.0 mm

Per la connessione la nuova scheda è fornita con un cavetto adattatore di interconnessione tra lo spinotto terminale del motorino passo passo e il connettore X8 su scheda NGV-A3.

<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></td>
</tr>
<tr>
<td>3</td>
<td>P+</td>
<td>+12Vdc</td>
<td>Pressure transducer</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 - (Inductive sensor - 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></td>
<td>0…12Vdc / 0…5V</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>0V</td>
<td></td>
</tr>
</tbody>
</table>

### Jumper J3 (configurazione Connetitore X10)

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Descrizione</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Inductive Sensor ON / OFF</td>
</tr>
</tbody>
</table>
1.3.1 USER INTERFACE

**Connector X13, step 2.54 mm - (AUX 2 x 13)**

Connector for extensions (Encoder, ...)

**Connector 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>
1.4 CARD CONNECTIONS

VMD

J6

1 2 3

= 12-48 Vdc

1 2 3

= 60-180 Vdc
1.5 ADJUSTMENTS AND TEST

1.5.1 ADJUSTMENT OF THE OVERPRESSURE VALVE (VS)

<table>
<thead>
<tr>
<th>Valve 3/4”</th>
<th>Valve 1”1/4</th>
</tr>
</thead>
</table>

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 from the calibration one:
10. Press the manual lowering button (ML) in order to decrease the pressure in the valve block
    - Screw the adjustment screw 1 to 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
11. Tighten the locknut 1
12. Put back and tighten the protection cap of the adjusting screw (1)
13. Re-open the ball valve (B)
1.5.2 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)

1.5.3 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

1.5.4 Hand Pump

To adjust the max working pressure of the hand pump, make as follows:
- Unscrew the bleed screw
- Pump up to spill all the air inside
- Screw the bleed screw
- Pump up to the pressure value Pmax=P (working sheet) * 2.3
1.6 PROGRAMMING

Is possible to dialog with the NGVA3 control board by the programmer PT01, as mentioned in the 1.8.2 chapter.
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.

PT01 PROGRAMMER

ATTENTION
MIN = empty car
MAX = full load car

Straight UTP RJ45 cable
1.7 COMPLETE MENU

1. NGV VER XX.XXX DIAGNOSTICS
   1.1 Pressure // xx.x bar
   1.2 Temperature // xx C°
   1.3 Ref.Speed // x.xxx m/s
   1.4 Input S012DI // 00000
   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 ALLARMS
   2.1 Alarm 1 //00:No Alarm

3. NGV VER XX.XXX AL/FLT RESET
   3.1 Fault Reset

4. NGV VER XX.XXX ADJUSTMENTS
   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 SETTING
   5.1 Lift Ratio // x:x
   5.2 Jack Diam // x.x
   5.3 Pump Flow /7 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 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.xx m/s
   6.5 Relev. Speed // x.xx m/s
   6.6 Acc.Profile
   6.7 Dec.Profile

7. NGV VER XX.XXX 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.xx m/s
   7.5 Relev. Speed // x.xx m/s
   7.6 Acc.Profile
   7.7 Dec.Profile

8. NGV VER XX.XXX OUTPUT FUNC
   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 CALIBRATION
   9.1 Overp. Value // Ent = Start
   9.2 Pipe Rupture // Ent = Start

10. NGV VER XX.XXX ADVANCED
    10.1 Password // 00000
1.8 MENU

- 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

Temp 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

ENT

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 and 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 - ALARMS

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 - ALARMS 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

+ & -

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

+ & -

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

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

**NGV VER XX.XXX**

5-SETTINGS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 LIFT RATIO</td>
<td>Ratio of the lift system (1:1; 2:1; 3:1)</td>
</tr>
<tr>
<td>5.2 JACK DIAM.</td>
<td>Diameter or correspondent diameter of the jack [mm]</td>
</tr>
<tr>
<td></td>
<td>(see data on technical catalogue tables)</td>
</tr>
<tr>
<td>5.3 PUMP FLOW</td>
<td>Flow rate of the pump [l/min]</td>
</tr>
<tr>
<td>5.4 MAP</td>
<td>Map code of the power unit (not active)</td>
</tr>
<tr>
<td>5.5 PSTAT MIN</td>
<td>Minimum static pressure (5.0 ÷ 45.0 bar)</td>
</tr>
<tr>
<td>5.6 PSTAT MAX</td>
<td>Maximum static pressure (Pstat Min. ÷ 45.0 bar)</td>
</tr>
<tr>
<td>5.7 P MIN</td>
<td>Minimum pressure (1.0 ÷ 10.0 bar) medium value ±5 bar</td>
</tr>
<tr>
<td>5.8 P FULL LOAD</td>
<td>Full load pressure, 80% of nominal load (12.0 ÷ 45.0 bar)*</td>
</tr>
<tr>
<td>5.9 P OVERLOAD</td>
<td>Overload pressure, 110% of nominal load (12.0 ÷ 45.0 bar)*</td>
</tr>
<tr>
<td>5.10 P MAX</td>
<td>Maximum pressure, 140% del carico nominale (15.0 ÷ 70.0 bar)*</td>
</tr>
<tr>
<td></td>
<td>* Re-calculated value when the P_{stat,MIN} value (parameter 5.5) or the P_{stat,MAX} value (parameter 5.6) are modified</td>
</tr>
<tr>
<td>5.11 COOL TEMP.</td>
<td>Maximum allowable fluid temperature</td>
</tr>
<tr>
<td></td>
<td>(5.0 ÷ 70.0 °C) set value 70°C</td>
</tr>
<tr>
<td>5.12 MODE:</td>
<td>Mode: NORMAL     Mode:INSTALLATION</td>
</tr>
</tbody>
</table>

**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**

6-UP PARAMETERS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 NOM.SPEED V0</td>
<td>Nominal speed [m/s] referred to the nominal pump flow, piston diameter and size, value not modifiable.</td>
</tr>
</tbody>
</table>
### 6.2 INT. SPEED V1
X.XX m/s
- Intermediate speed [m/s]
  
  (15 ÷ 75 % x Nominal Speed)

### 6.3 INS. SPEED V2
X.XX m/s
- Inspection speed (0.15 ÷ 0.63 m/s)

### 6.4 SLOW SPEED
X.XX m/s
- Levelling speed (0.01 ÷ 0.15 m/s)

### 6.5 RELEV. SPEED
X.XX m/s
- Re-levelling speed (0.01 ÷ 0.15 m/s)

### 6.6 ACC. PROFILE
FUNXXXX
- Acceleration profile (Fast – Standard – Slow – Extra Slow - Custom)

### 6.7 DEC. PROFILE
FUNXXXX
- Deceleration profile (Fast – Standard – Slow – Extra Slow - Custom)

### 7 - DOWNWARD PARAMETERS

#### NGV VER XX.XXX

### 7.1 NOM. SPEED V0
X.XX m/s
- Enter required nominal downward speed (m/s…). es: 0,63

### 7.2 INT. SPEED V1
X.XX m/s
- Indicates the Intermediate speed [m/s]
  
  (15 ÷ 75 % x Nominal Speed)

### 7.3 INS. SPEED V2
X.XX m/s
- Inspection speed (0.15 ÷ 0.63 m/s)

### 7.4 SLOW SPEED
X.XX m/s
- Levelling speed (0.01 ÷ 0.15 m/s)

### 7.5 RELEV. SPEED
X.XX m/s
- Re-levelling speed (0.01 ÷ 0.15 m/s)

### 7.6 ACC. PROFILE
FUNXXXX
- Acceleration profile (Fast – Standard – Slow – Extra Slow - Custom)

### 7.7 DEC. PROFILE
FUNXXXX
- Deceleration profile (Fast – Standard – Slow – Extra Slow - Custom)

### 8 - OUTPUT FUNCTION

#### NGV VER XX.XXX

### 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
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

<table>
<thead>
<tr>
<th>NGV VER XX.XXX</th>
<th>9-CALIBRATION</th>
</tr>
</thead>
</table>

9.1 OVERP. VALUE
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
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

<table>
<thead>
<tr>
<th>NGV VER XX.XXX</th>
<th>10-ADVANCED</th>
</tr>
</thead>
</table>

10.1 PASSWORD
Entering the password it’s possible to read and modify the entire parameters of the NGV valve
1.9 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>

1.10 FAILURES MAPPING

<table>
<thead>
<tr>
<th>Failure</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; 36 Vdc</td>
</tr>
<tr>
<td>02: SUPPLY HIGH</td>
<td>High power supply &gt; 48.5 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: VRP FAULT 1</td>
<td>Inductive sensor SI open with lift stopped</td>
</tr>
<tr>
<td>07: VRP FAULT 2</td>
<td>Inductive sensor SI 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 pressure &lt; 5°C</td>
</tr>
<tr>
<td>12: OIL TEMP HI</td>
<td>Maximum oil pressure &gt; 5.11 COOL TEMP</td>
</tr>
</tbody>
</table>
1.11 ACCESSORIES

- NEOS NGVA3 CARD 24V/DC
- STANDARD NGVA3 CARD 24V/DC
- CARD ADAPTER PLATE
- PT01 PROGRAMMER
- ELECTRIC POWER ALM03
- ELECTRIC EMERGENZA 12V/DC
- ELECTRIC EMERGENCY 24V/DC
FLUID DYNAMICS EQUIPMENTS AND COMPONENTS FOR LIFTS

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