

# EC TYPE-EXAMINATION CERTIFICATE

Acting under the Warenwetbesluit machines issued by Liftinstituut B.V.  
identification number Notified Body 0400,  
commissioned by departmental order no. 2014-0000003576 dated January 10<sup>th</sup>, 2014

Certificate nr. : NL 04-400-1001-069-01 Revision nr.: 2

Description of the product : Vacuumlift

Trademark, type : Pneumatic Vacuum Elevator LCC,  
PVE 30, PVE 37, PVE 52

Name and address of the manufacturer : Pneumatic Vacuum Elevator LCC  
12602 N.W. 115th Ave  
Medley, FL 33178, USA

Name and address of the certificate holder : Pneumatic Vacuum Elevator LCC  
12602 N.W. 115th Ave  
Medley, FL 33178, USA

Certificate issued on the following requirements : Machinery directive 2006/42/EC

Certificate based on the following standards : None

Test laboratory : None

Date and number of the laboratory report : None

Date of EC type-examination : January 2004 – July 2004, September 2009 – February 2010,  
January 2015

Annexes with this certificate : Report belonging to the EC type-examination certificate  
nr.: NL 04-400-1002-069-01 Revision 2

Additional remarks : None

Conclusion : The machine meets the requirements of the Machinery directive  
2006/42/EC taking into account any additional remarks  
mentioned above.



Issued in Amsterdam : ing. A.J. van Ommen  
Date of issue : 03-02-2015 Manager Business Unit  
Certification  
Valid until : 03-02-2020

Certification decision by

## Report EC type-examination

Report belonging to EC type-examination certificate no. : NL 04-400-1001-069-01  
Date of issue of original certificate : July 21<sup>st</sup>, 2004  
Concerns : Machine  
No. and date of revision : 2, February 3<sup>rd</sup>, 2015  
Requirements : Machinery Directive 2006/42/EC.  
Standard: EN 81-41:2008 for reference only  
Project no. : P140402-01

### 1. General specifications

Name and address manufacturer : Pneumatic Vacuum Elevator LLC  
12602 N.W. 115th Ave  
Medley, FL 33178, USA  
Description of machine : Vacuumlift  
Type : PVE 30, PVE 37, PVE 52  
Laboratory : None  
Address of examined machine : Variolift B.V.  
Vijfhuizerdijk 157a  
2141 BH Vijfhuizen, The Netherlands  
Pneumatic Vacuum Elevator LLC  
14804 SW 136th street  
Miami, FL 33196, USA  
Data of examination : January 2004 – July 2004, September 2009 – February 2010, January 2015  
Examination performed by : R.E. Kaspersma

### 2. Description machine

The vacuum lift is an innovative concept where the movement of the lift occurs by creating under pressure on top of the car. The under pressure is made by means of five or seven high capacity air pumps which can be installed on top of the well or in the vicinity of the well.

The nominal load range of the lift is 100 kg – 238 kg. The platform is circular shaped and has a car door. The lift moves inside a circular well with wall which has a perfectly smooth and flat surface. The car is guided along four guides rails. Two of them are used for the safety gear.

The lift is connected to 220 - 240V. With a 3 phase circuit, the current can be divided between the three phases if a neutral is present. The lift has a safety gear which is operated with the loss of vacuum above the car.

The lift is operated by a automatic on one of the buttons inside the car. Or outside the well by a single push. The nominal speed is limited to 0,15 m/s.

## 2.1. General specification

Type	PVE 30	PVE 37	PVE 52
Nominal load	159 kg	205 kg	238 kg
Max. number of persons	1	2	3
External diameter	750 mm	950 mm	1338 mm
Internal diameter	640 mm	820 mm	1118 mm
Nominal speed	Maximum 0,15 m/s		
Maximum travel	10 m		
Construction of the well	Aluminum frame circular formed with 4.5 mm polycarbonate walls. The doors for the UN52 have 6.0 mm polycarbonate walls		

## 2.2 Drive system

Type	Lamb electric, Vacuum turbine motors
Number of units	5 or 7
Power consumption (kW)	5 or 7 x 1 kW
Supply voltage	220 – 240 V AC
Maximum total current	21 A or 30 A

## 2.3 Safety components

Safety gear on car	Vacuumlift, instantaneous type
Landing door locking device	Prudhomme LR 180 E EC-type certificate: 0071/199/01
Buffers	Dictator EDH 28 Order nr. 200203
Safety circuit for bridging the landing door lock contacts during start	Stem, NC 80 EC-type certificate: CA50.00340

## 3. Examinations and tests

The examination covered a check whether compliance with the Machinery Directive 2006/42/EC is met, if possible based on the harmonized product standards EN 81-41:2008.

Issues not covered by or not complying these Standards are directly related to the above mentioned essential requirements based on the risk assessment, where applicable with the aid of harmonized A-and B-standards, such as EN-ISO 13857:2008 and EN-IEC 60204-1,

The examination included:

- Examination of the technical file (See annex 2):
- Check of performed calculations according to EN 81-41:2008.
- Examination of the representative model in order to establish conformity with the technical file.
- Inspections and tests to check compliance with the requirements.

## 4. Results

After the final examination the product and the technical file were found in accordance with the requirements. The functional tests passed without remarks. The load tests passed without remarks and did not lead to permanent deformations or loss of stability.

### 4.1 Calculations

The calculations were found accordance with the requirements. As far as needed system limits such as maximum car / carrier \*) mass and maximum bracketing distance for guide rails are given in chapter 5 with respect to the possibility to conduct final inspections on the installed products without the need of performing calculations.

### 4.2. Measurements

#### 4.2.1. Current measurements

Current measurements were made in order to check the machine. The nominal current was measured in upwards direction with the aid of a current clamp.

The final results were satisfactory.

#### 4.2.2. Speed measurements

The following speed measurements were made:

- nominal speed

The final results were within the limits of 0,15 m/s.

### **4.3. Examination of the model**

In this section the results which are of importance for the model are listed.

#### **4.3.1 Normal operation**

The lift can be operated both from the landings as inside the LCU. The LCU is completely enclosed so both on the out and inside automatic run is used. On the landing a single push of the call buttons is sufficient to move the lift up or down to the required level. If the lift is on the bottom floor it's resting on fully compressed buffers. If the lift reaches a landing it will run by the landing with approximately 15 cm. After this the pawl device is de-energized and the motors are switched off. This will invert the movement causing the lift to descent. The pawl device will stop the lift on the landing also activating the unlocking of the landing door. If the pawl device does not work the lift will make a home landing to the bottom floor.

#### **4.3.2 Overload device**

Because no weight detection is provided it was important to check in what way the overload detection was established. If the car is on a landing 2 pumps will be activated to release the clamping device. If the load is more than the nominal load the power of the pumps is not sufficient to lift the car out of the pawl device. This is established by a pressure valve. After the runtime is over the car is stopped and an alarm and indication in the car is activated.

#### **4.3.3 Control panel**

The control panel is situated on the top landing floor on top of the well or placed in the vicinity of the well.

#### **4.3.4 Main switch**

The lockable main switch is located at the wall outside the well. This will also function as a working switch for maintenance purposes. A label is placed on the main switch indicating to switch off the lift only on the bottom floor.

#### **4.3.5 Rescue of entrapped passengers**

In case of power failure the car will run automatically to the ground floor if not already parked on a landing. The alarm and car lighting are provided with backup batteries. In case of the operation of the safety gear outside help is needed. By opening the control panel one is able to activate the pumps and release the safety gear. If this is not possible a winch can be installed to lift the car out of the safety gear. Furthermore panels of the well wall can be removed to rescue entrapped persons.

#### **4.3.6 Provisions for disabled users**

Only the EB52 is large enough to hold a single wheelchair. For the smaller car sizes no provisions are added for disabled users.

#### **4.3.7 Fire protection**

Because of the use of polycarbonate walls the danger of melting of these walls is present in case of fire. If local legislation demands a additional fire curtain can be

provide covering the complete well on the outside with a type of fire blanket protecting the well.

#### 4.3.8 Minimum free space in the pit

Because no pit is needed some additional features are added. When opening the door and the lift is moving the pawl device will stop the LCU at the first landing or at least at 1m above the bottom floor. On the pit floor a marking is placed instructing the maintenance engineer to use the pit prop, provided on the outside of the well. By doing so a chain prevents the landing door from closing

#### 4.3.9 LCU

To operate the lift because the car is fully enclosed, the automatic operation is allowed. The car door is not locked but is closed by the wall of the well. The car interior height is 200 cm (79 inch). The lighting inside the car is provided with LED or Halogen lighting providing a light intensity of over 50 lux. The lighting is also backed up with a battery in case of power failure. A telephone or similar device is not foreseen by the manufacturer and is up to the client. However the travelling cable is equipped with two additional wires for connection of such a device.

#### 4.3.10 Safety gear

A safety gear is provided on top of the car. The safety gear is activated by the loss of vacuum in the space above the car. For safety gear tests, the door can be opened above the car level.

Because the safety gear is activated when the lift is level with a landing a contact provided which is bridged during the start-up procedure. The gears are directly linked with the top ceiling of the car which acts like as plunger. When the vacuum is built up the ceiling rises so releasing the safety gear.

The procedure for safety gear tests is described in the user manual.

## 5. Conditions

On the EC type-examination certificate the following conditions apply:

General see chapter 2.1

#### LCU

- Interior height 2 m.
- Lighting intensity minimum 50 Lux.
- Emergency lighting and alarm with backup.
- Telephone or similar device inside the car (provided by installer or client).
- Top and bottom proximity switches provided over the full width of the car opening.
- Max distance in between car and well wall 15 mm at opening side.
- Dead man's drive for operation of the lift.
- Stop switch provided in car panel.
- Labels for the use of the lift in an emergency and the operation of the stop switch.
- On the car roof a label is placed indicating that the car roof is not accessible

- In case of emergency a safety valve on the car roof can be operated by hand or feet to release the under pressure.

#### Pit and well

- The bottom floor has the same level as the landing floor.
- On the floor a label is fixed indicating that the pit is not accessible without the use of the safety prop.
- On the outside of the well along the bottom landing door a pit prop (pin) is fixed with a chain to the outside of the well. The pin can be installed in the guide rail next to the door. The chain prevents the landing door from completely closing.
- Polycarbonate walls of the well are exchanged every 10 years

#### Controller and drive system

- Free depth for the controller 70 cm.
- Free height for the controller 200 cm.
- Runtime limiter is adjusted to 45 s.
- Main contactors are checked automatically on the breaking of the contacts.
- Safety circuit is connected to earth.
- IP 2X for all connectors above 24 V.

#### Instructions to be provided

- The general manual.
- Inspection manual.
- Maintenance manual.

## 6. Conclusions

Based upon the results of the EC type-examination Liftinstituut B.V. issues an EC type-examination certificate.

The EC type-examination certificate is only valid for products which are in conformity with the same specifications as the type certified product. The EC type-examination certificate is issued based on the requirements that are valid at the date of issue. In case of changes of the product specifications, changes in the requirements or changes in the state of the art the certificate holder shall request Liftinstituut B.V. to reconsider the validity of the EC type-examination certificate.

## 7. CE marking and EC Declaration of conformity

Every product that is placed on the market in complete conformity with the examined type must be provided with a CE marking according to annex III of the Directive under consideration that conformity with eventually other applicable Directives is proven. Also every product must be accompanied by an EC declaration of conformity according to annex II of the Directive in which the name, address and Notified Body identification number of Liftinstituut B.V. must be included as well as the number of the EC type-examination certificate.

Prepared by:



R.E. Kaspersma  
Product Specialist Certification  
Liftinstituut B.V.

Certification decision by:





## Annexes

### Annex 1 : Basic lay-out



Annex 2 : Revision overview

## REVISIONS OF THE CERTIFICATE

Rev.:	Date	Summary of revision
-	21-07-2004	Original
1.0	10-02-2010	Update to new Directive 2006/42/EC, Extension of load range
2	03-02-2015	Reissue of certificate

## REVISIONS OF THE REPORT, BELONGING TO THE CERTIFICATE

Rev.:	Date	Summary of revision
-	21-07-2004	Original
1.0	10-02-2010	Update to new Directive 2006/42/EC, Extension of load range
2	03-02-2015	Reissue of report