

### Additional information vacuum generators VADM/VADMI

**FESTO**



## Air-saving function with VADMI-...-P/N and external controller

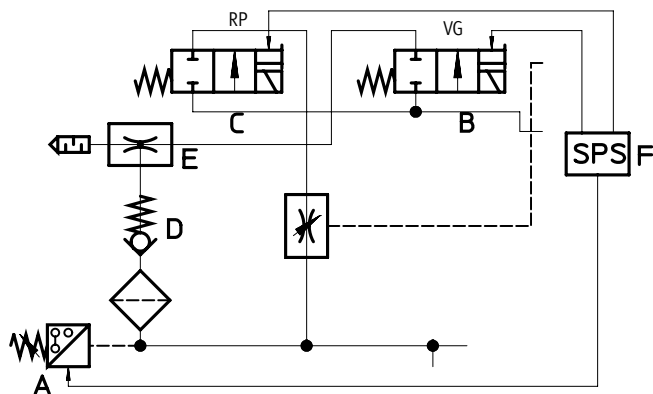
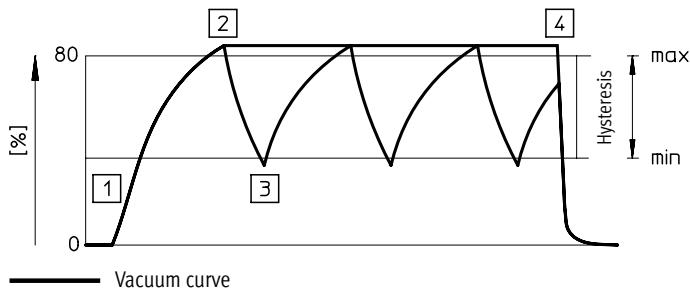
Conventional vacuum switching → A cost-effective energy saving measure

The vacuum range for holding the workpiece is set on the vacuum switch using the two potentiometers. The lower limit defines the minimum value. Provided the vacuum level is within this range, reliable workpiece transport is guaranteed.

The vacuum generator VADMI is only activated by the external controller if the level drops below the minimum value and is deactivated again once the maximum value is regained.

A check valve prevents the vacuum level from being reduced during the inactive phase of vacuum generation.

## The functional sequence



|    |                                  |   |                  |
|----|----------------------------------|---|------------------|
| RP | Solenoid valve for ejector pulse | E | Vacuum generator |
| VG | Solenoid valve for vacuum ON/OFF | D | Check valve      |
|    |                                  | C | Ejector pulse    |
|    |                                  | A | Vacuum switch    |

## Vacuum on

- [1] External controller F switches on the VG solenoid
  - Valve for compressed air supply B is opened
  - Vacuum generation E is activated

## Vacuum stop

- [2] The specified maximum level is achieved:
  - Vacuum switch A sends a signal to external controller F
  - Controller switches VG solenoid off
  - Vacuum generation E is interrupted
  - Check valve D prevents the vacuum level from being reduced

## Vacuum on

- [3] Leakage causes the vacuum level to drop to the minimum value
  - Vacuum switch A sends a signal to external controller F
  - Controller F switches VG solenoid back on
  - Vacuum generation E is active again
  - Constant repetition of points 2 and 3

## Cycle ended: vacuum off

- [4] Transport process is ended
  - External controller F deactivates VG solenoid
  - Vacuum generation E is ended
  - External controller F switches RP solenoid
  - Ejector pulse C is activated
  - Workpiece is set down

### Air-saving function and fault signal with VADMI-...-LS-P/N

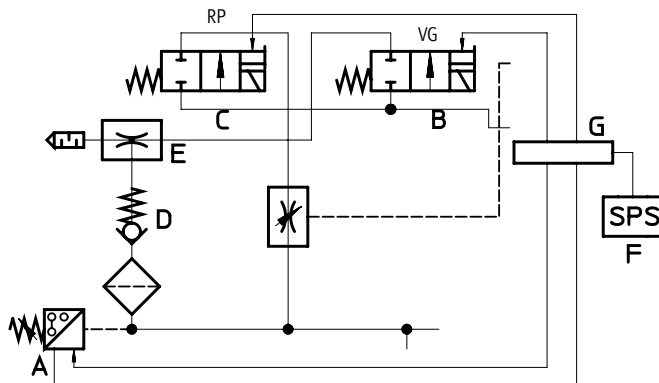
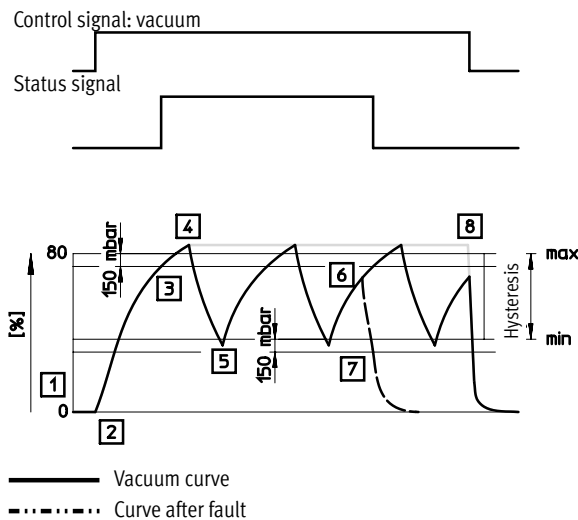
Further development of the vacuum switch

When combined with the supplied cable kit, the vacuum generator VADMI-...-LS-P/N has an air-saving function. The vacuum range for holding the workpiece is set on the vacuum switch using the two potentiometers.

The vacuum switch generates a pulsating signal which only actuates the solenoid for vacuum ON/OFF in the vacuum generator when the vacuum has fallen below the minimum value, for example due to leakage.

At all other times, the vacuum is maintained with the help of the check valve, even when the vacuum generator is not switched on. In addition, a status signal A1 can be interrogated which is connected to +24 V during normal operation, but which is switched to 0 whenever vacuum again falls below the critical value by 150 mbar due to a malfunction. This is the case, for example, if the workpiece has dropped off from the suction gripper and it is therefore no longer possible to generate the selected vacuum range.

#### The functional sequence



|    |                                  |   |                  |
|----|----------------------------------|---|------------------|
| RP | Solenoid valve for ejector pulse | E | Vacuum generator |
| VG | Solenoid valve for vacuum ON/OFF | D | Check valve      |
|    |                                  | C | Ejector pulse    |
|    |                                  | G | Branch           |
|    |                                  | A | Vacuum switch    |

The three control and supply cable harnesses are combined in one branch. Just one cable, containing one core for the signal and three cores for the power supply, is routed from the branch to the PLC.

Given the decentralised control of the switching function, external actuation of the vacuum switching (air-saving function) would be superfluous. As a result, there is significantly less wiring.

**Note**  
The vacuum switch may only be operated with the included cable kit.

#### Start signal

- External controller F activates the vacuum switch
  - Vacuum switch A checks the vacuum status
  - No vacuum present

#### Vacuum on

- Vacuum switch activates the VG solenoid
  - Valve for compressed air supply B is opened
  - Vacuum generation E is activated
- Vacuum level exceeds 150 mbar below the maximum level
  - Vacuum switch sends a release signal to the external controller F
  - Transport process can start

#### Vacuum stop

- The specified maximum level is achieved
  - Vacuum switch A switches VG magnet off
  - Compressed air supply is stopped
  - Vacuum generation E is interrupted
  - Check valve D prevents the vacuum level from being reduced

#### Vacuum on

- Leakage causes the vacuum level to drop to the minimum value
  - Vacuum switch A switches VG solenoid back on
  - Vacuum generation E is active again

#### Fault: transport stop

- Major leakage causes an overly large drop in the vacuum level
  - Vacuum generator E cannot compensate for the drop in level
- Vacuum level falls to 150 mbar below the minimum value
  - Vacuum switch A sends an error message to external controller F
  - External controller F stops the transport process
  - Vacuum generation E is ended

#### Cycle ended: vacuum off

- Transport process is ended
  - External controller F deactivates VG solenoid
  - Vacuum generation E is ended
  - External controller F switches RP solenoid
  - Ejector pulse C is activated
  - Workpiece is set down