

1 START-UP AND RELIEF VALVE

1.1 ADMISSION

The start-up and relief valve has TÜV certification. It is suitable for use in a safety-related system or subsystem according to IEC61508 up to and including SIL1. The safety-related function here refers to safe bleeding (pneumatic energy activation).



When starting and relief valves are used, all valves of the valve terminal must be supplied with external control air (connection 12/14) with at least 3 bar.

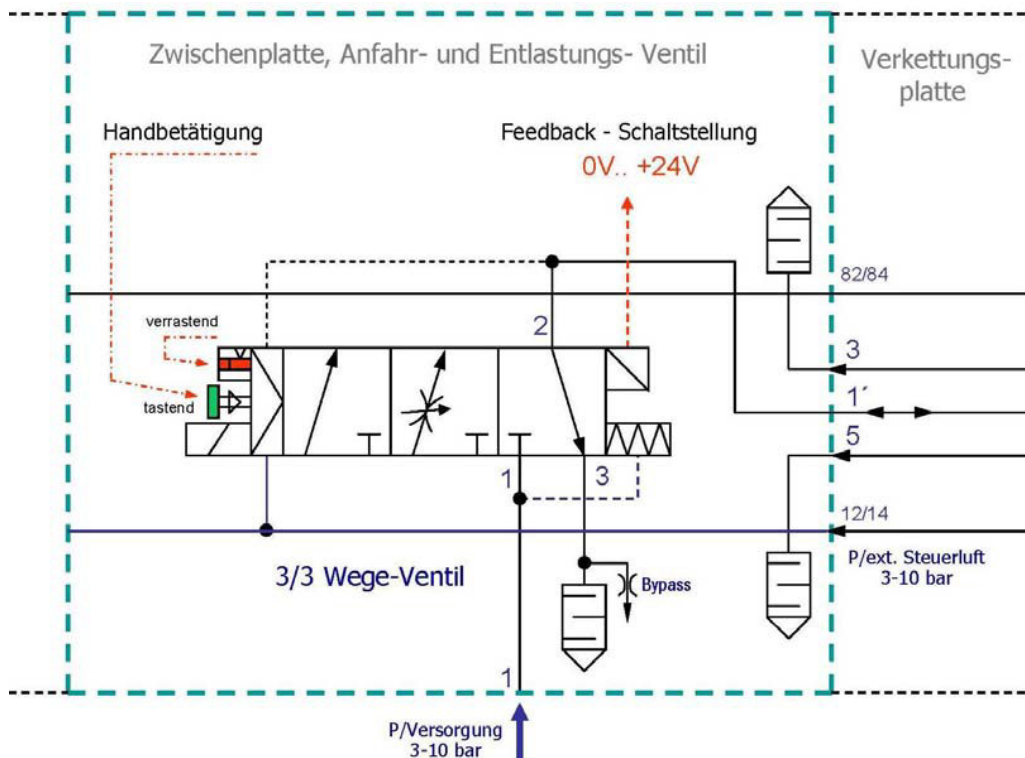
1.2 CONSTRUCTION

- Intermediate plate device with a width of 54 mm
- Own air inlet G1/2, pressure range 3 to 10bar
- External control air supply (12/14 A plate)
- Control magnet with connection technology form "C"
- Switching position monitoring with connection technology M12*1.5
- Relief via silencer with bypass
- Adjustable start-up time via throttle screw
- Position Query of Switching Position of the Main Piston
- Latching manual operation
- Safe release of the latch with pilot valve control signal
- Single or multiple insertion into the valve terminal does not result in an address location shift

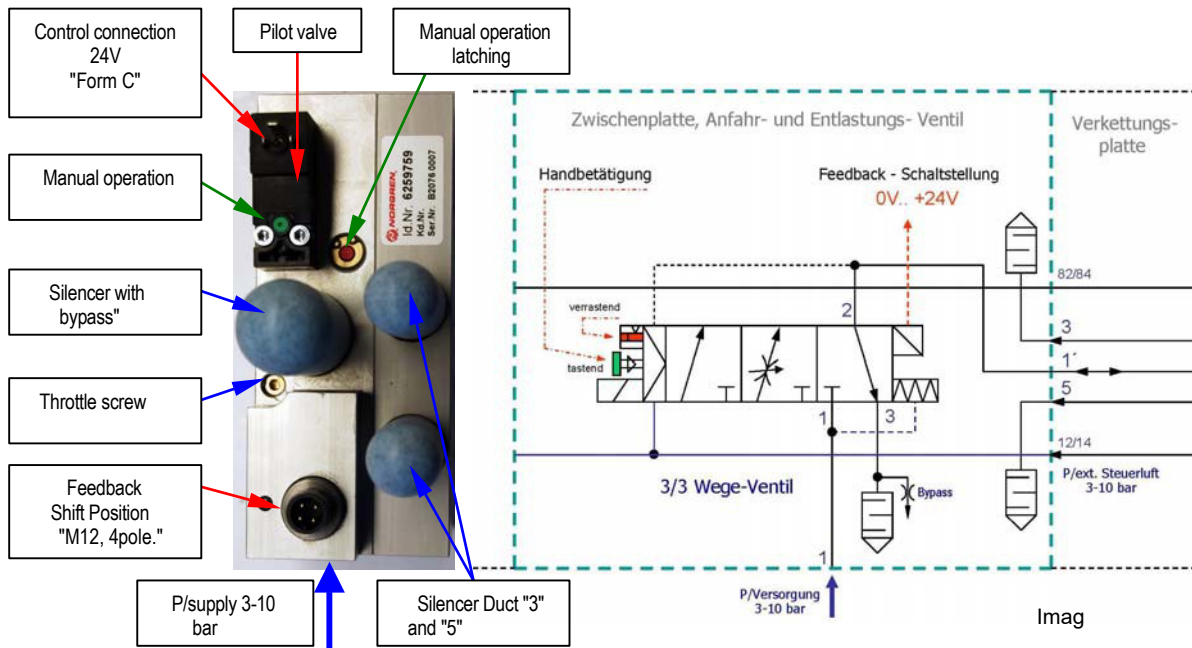


1.3 CIRCUIT DIAGRAM

The start-up and relief valve is a 3/3-way solenoid valve with latching manual auxiliary actuation, piston position detection and relief silencers.



1.4 ARRANGEMENT



1.5 PLACEMENT

The start-up and relief valve can be inserted into the interlinking plates at any even-numbered place

Multiple insertion is also possible (see order below)

Only the valve spaces on the right are pneumatically supplied and secured. The valve is closed on the left side.

NOTE: The air connection "1" of the right side plate must be closed with a sealing plug

Interlinking plates and valve slots

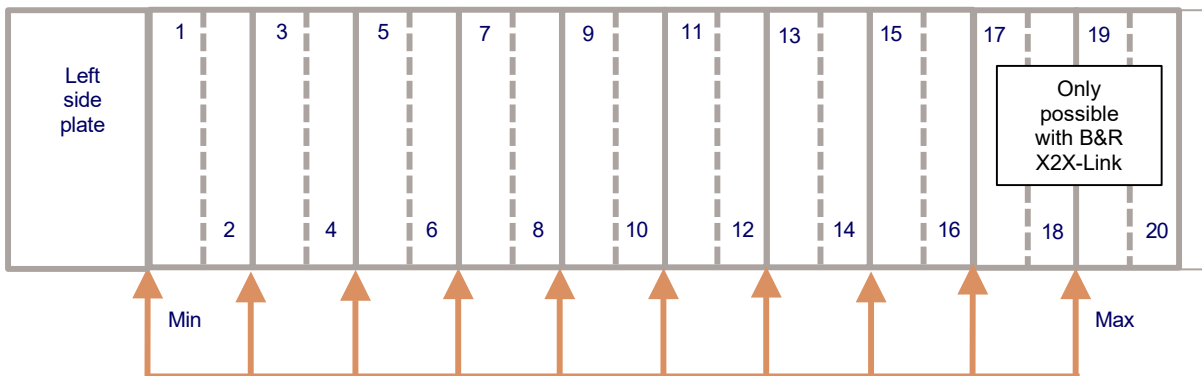


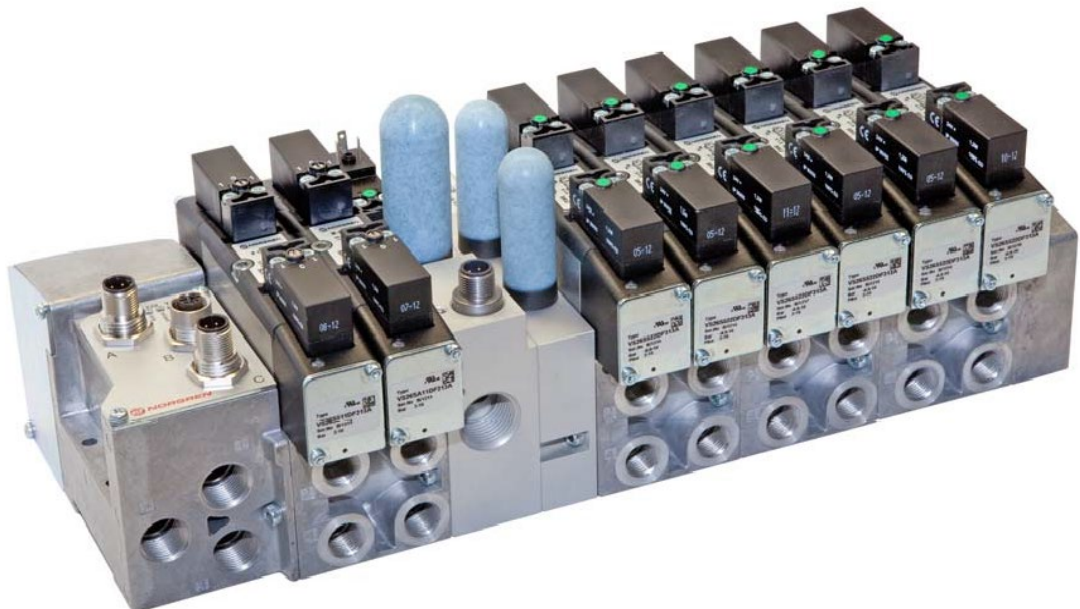
Image 3

Possibility of insertion of start-up and relief valve

Start-up and relief valve, arrangement in front of seat 1



Start-up and relief valve, arrangement behind seat 2



1.6 DESCRIPTION

1.6.1 Initial state

Magnet not controlled or no external control air available. *(Switching position of the main piston to "2-3" "Relief of all connections") Figure 1* All air connections "1","3","5" are relieved via the silencers

No output signal, 0 volts, on "pin 4" release terminal

1.6.2 Approach position

Magnet controlled and external control air available.

(Switching position of the main piston to "1-2" "Filling via throttle") Figure 1

Switching of the main piston to reduced air flow at valve connection "2" to air duct "1" of the daisy chain plate

Filling time of the volume adjustable via throttle (throttle position 10 to 50%)

No output signal, 0 volts, on release connection "pin 4"

1.6.3 Operational position

Magnet controlled

(Switching position of the main piston to "1-2" "Main position full passage") Figure 1

When 50% of the pressure at valve connection "2" is reached, an automatic valve is activated. Switching through the main piston to full air flow to the air duct "1" of the interlinking plate

Simultaneous triggering of the output signal +24V at the release terminal "pin 4"

1.6.4 EMERGENCY STOP

Magnet not controlled

(Switching position of the main piston changes to "2-3" "Relief of all connections") Figure 1

Switching back of the main piston to the basic position and valve relieves connection to the daisy chain plate "1" in valve position "2-3" via silencer

The silencer has a bypass opening to relieve connection "1", through which residual ventilation is guaranteed. (no malfunction due to contamination possible)

Cancellation of the output signal, 0 volts, at the "pin 4" release terminal



The same emergency stop process is also achieved with the magnet controlled by removing the external control air. *Connection 12/14)*

1.6.5 Start-up position with manual operation

Manual operation, (red button) press in with a screwdriver or tool Ø 3 mm until the mechanical stop.

(Switching position of the main piston to "1-2" "Filling via throttle") Figure 1

Switching the main piston to reduced air flow at valve connection "2" to air duct "1" of the daisy chain plate.

Filling time of the volume adjustable via throttle (throttle position 10 to 50%)

No output signal, 0 volts, on release connection "pin 4"

1.6.6 Operating position with manual operation

(Switching position of the main piston to "1-2" "main position full passage")
Image 1

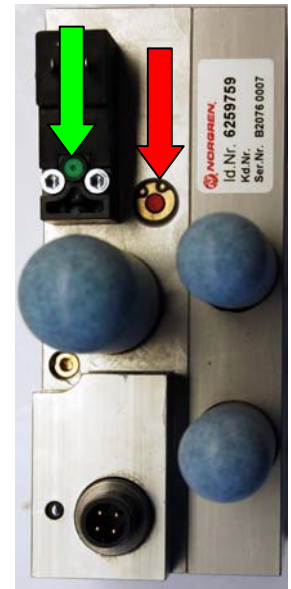
When 50% of the pressure at valve connection "2" is reached, an automatic is applied. Switching through the main piston to full air flow to the air duct "1" of the interlinking plate

Triggering the output signal +24V at the release terminal "Pin 4"

1.6.7 Forced suspension of manual operation

The manual operation is reset by pressing the green button on the pilot valve.

Start-up valve changes to home position and is ready to function again



If the locking of the manual operation is not accidentally released, the valve remains in the main position with full air flow to the air duct "1" of the chaining plate.

There is a compulsory cancellation for this incorrect operation.

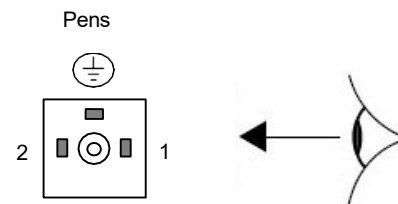


When the pilot valve is electrically controlled again, the engaged manual operation is automatically reset to the home position.

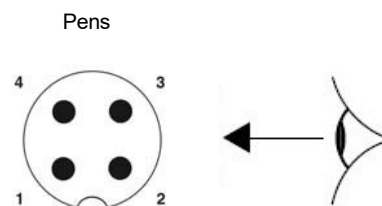
2 ELECTRICAL CONNECTION

Valve control: Plug "C" 2-pin

Pen function	
No.	
1	+ 24 volts
2	0 Volt
3	Mass



Release signal: M 12, 4-pin	
S t e c k e r A - c o d e d	
S t i f f u n c t i o n	
No.	
1	+ 24 volts
2	Free
3	0 Volt
4	Output (PNP) Release

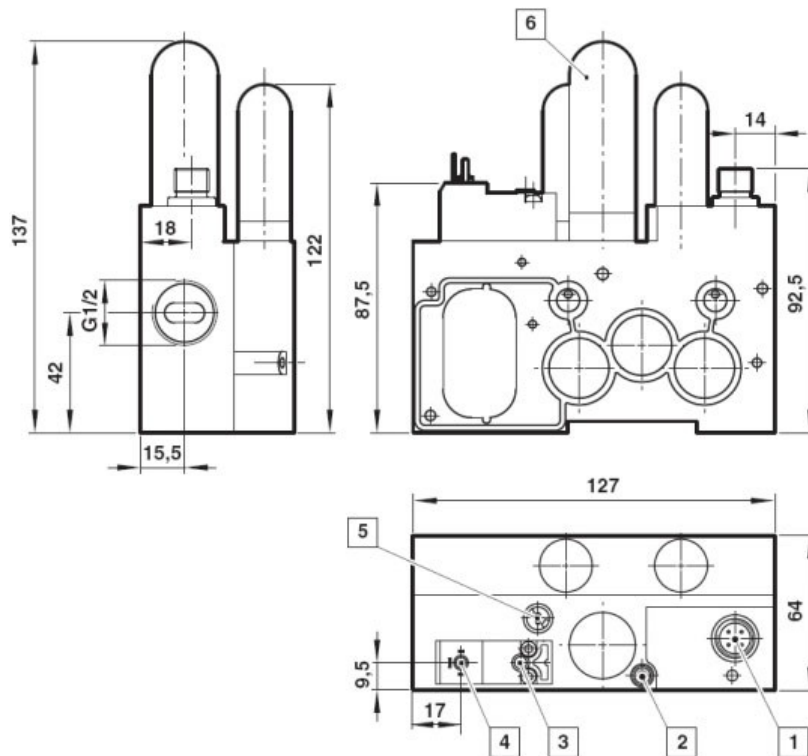


3 SPECIFICATIONS

3.1 TECHNICAL SIZES

Working pressure: 3 to 10 bar
 Max. flow: 2000 l/min flow
 characteristics: see diagram
 pilot valve
 Voltage: 24V DC +/- 10%
 Achievement: 1.2 Watt
 sensor (release signal) Version: PNP
 Voltage: 10 - 30V DC
 Output: 150 mA,

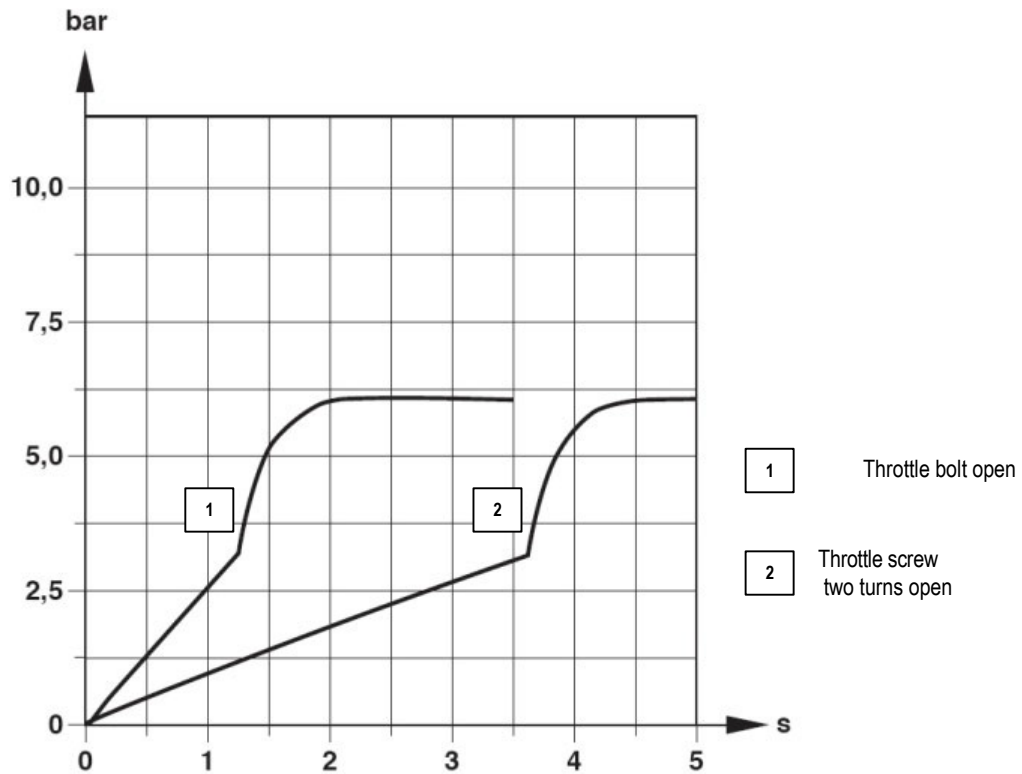
3.2 DIMENSIONS



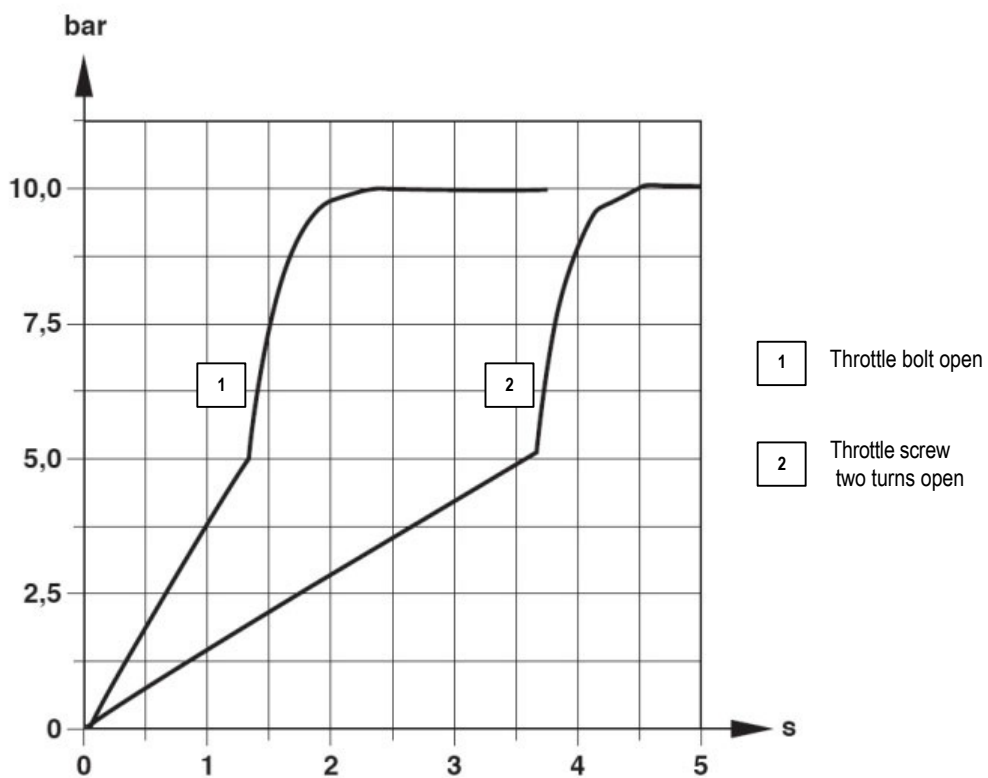
- 1 Connector M12*1.5 4 pin. A - coded (release signal)
- 2 Throttle screw (min - max = 6 revolutions)
- 3 Manual operation pilot valve (keying) Push-in
- 4 connection form "C" (valve control)
- 5 Manual operation snap-in
- 6 Silencer with bypass

3.3 FILLING, UNLOADING CURVES

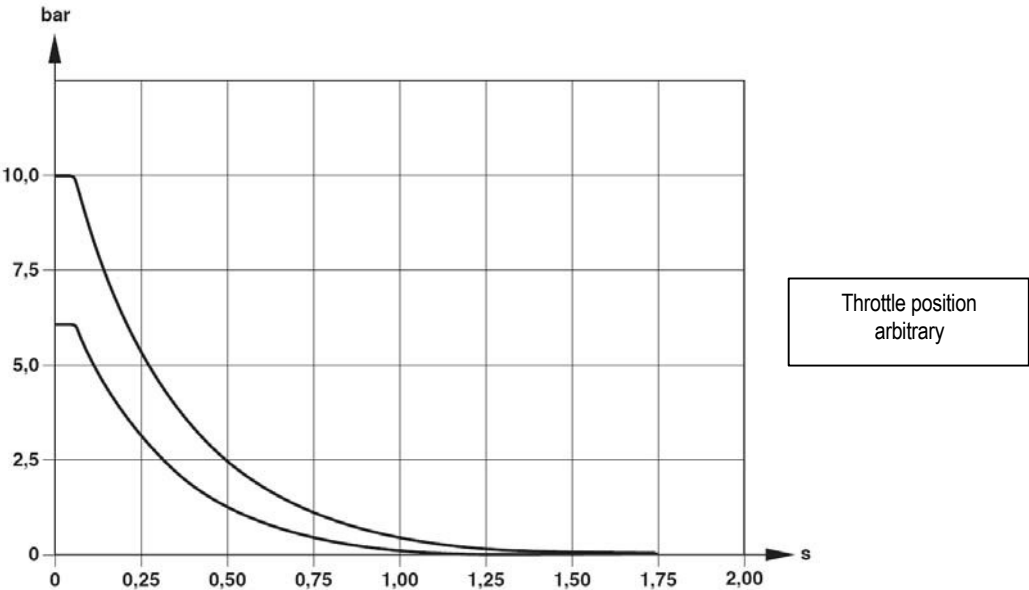
3.3.1 FILLING CURVES AT 6 BAR FOR VOLUME 3 LITERS



3.3.2 FILLING CURVES AT 10 BAR FOR VOLUME 3 LITERS



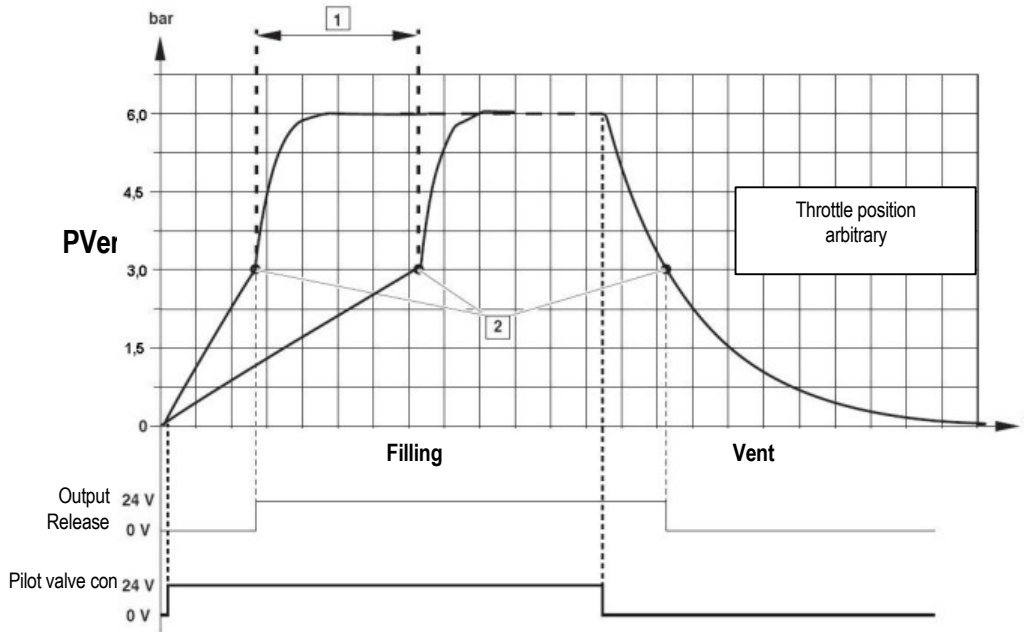
3.3.3 VENTING OF VOLUME 3 LITERS AT 6 AND 10 BAR



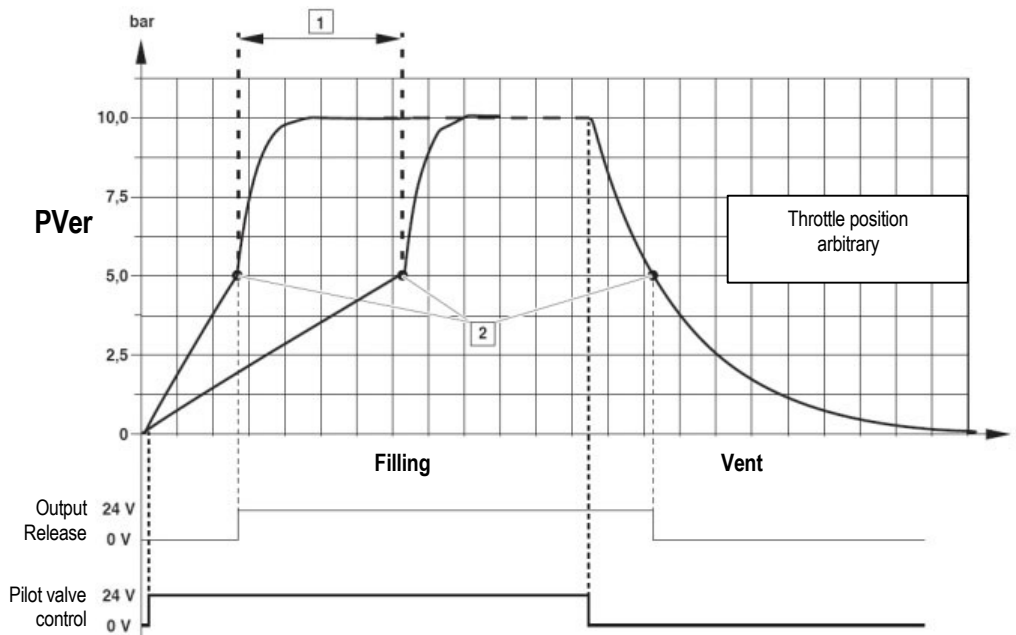
3.4 ELECTRICAL BEHAVIOR

3.4.1 RELEASE SIGNAL ON AND OFF BEHAVIOR

Switching behavior at 6 bar supply pressure (P_{Ver})



Switching behavior at 10 bar supply pressure (P_{Ver})



- 1 Dependent on throttle position
- 2 On-off switching point is 50% P_{Ver}