**VACUUM TOILET**

5979301  EVAC 90, SQUATTING TOILET

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**Materials**

- Squatting pan: Stainless steel EN 1.4301
- Pneumatic push button: ABS, white*

**Operating data**

- Water pressure: 200 ... 600kPa
- Recommended water pressure: 250 ... 350kPa
- Operating vacuum: -30 ... -50kPa
- Water consumption: 1.5 - 2.5 litres/flush, adjustable
- Air consumption: 60 ±10 litres/flush (normal atmospheric air)

**Connections**

- Water supply: 1/2" MPT
- Discharge: Straight rubber coupling connection or 90° rubber elbow to pipe size 48...52 O.D.

**Shipping data**

- Net weight: 9kg
- Shipping weight: 12kg
- Shipping volume: 0.2m³
VACUUM TOILET
5900200  PNEUMATIC PUSH BUTTON, EVAC 90, SQUATTING TOILET

Materials
Pneumatic push button: White plastic, ABS

Connections
Hose nipple Ø4/Ø2

Shipping data
Net weight: 0.15kg
Flexible control hoses between mechanism, discharge valve and push button device are marked in different colours for correct identification.

**NOTE:** Connection elbow between discharge valve and main vacuum line is turnable 360°. Different positions can be used. Straight connection tube can be used instead of elbow. Connection upwards shown only as an example.

**Diagram Details:**
- **Detail A:**
  - Service door
  - Flushing water supply hose
  - Access to be provided for service

- **Detail B:**
  - Flushing mechanism
  - Discharge valve
  - Outlet pipe (Ø50) to be cut if necessary
  - Min. bend radius 100

- **Detail C:**
  - Sealing material (Silicone) around the pan
  - Tiling

**Installation Example:**
- Squatting pan, stainless steel
- Fresh water connection R 1/2" BSP
- Flushing water connection R 1/2" BSP
- Flushing water hose
Pneumatic push button installation

Install the plastic hose to the bellow. (The plastic hose behind the wall)

Install the bottom plate on the wall.

Put the slide guide tap to the groove on a cover.

Snap on the cover and the push button.
**Operation**

The squatting toilet is flushed by pressing a push button. The pneumatic push button is connected to the control mechanism with a control hose, which transports the air pulse from the push button to control mechanism. The air pulse starts the flushing cycle and connects vacuum to the water valve and a discharge valve. The water valve opens and lets rinsing water into the squatting bowl through a hose nipple. After a short delay, the vacuum acts in discharge valve housing and forces the rubber diaphragm in discharge valve to open, thus connecting the squatting bowl to vacuum sewer. The contents of bowl are forced into the vacuum sewer by a pressure difference between the bowl and vacuum sewer.

The flushing cycle in the control mechanism starts the closing cycle. Atmospheric air pulse enters the discharge valve, which closes. After a short delay, atmospheric air pulse reaches water valve, which closes and lets a certain level of water at the bottom in the bowl.

After the flushing cycle has stopped, the push button and system will be ready for next flush.
Description of flushing sequence

In the standby position FIG.1

Control valve 1 is closed. Vacuum in chambers 2 and 3 is equalized by the jets 4 and 5. Spring force 6 holds the mechanism in the non-activated position.

In the just switched position FIG.2

Air pressure applied from the flush button to chamber 7 has lifted the lever 8 and opened control valve 1. Atmospheric air has entered chamber 3 through filter 9 and valve 1. The force from the pressure difference between 2 and 3 has moved the shaft 10 to the left and the following sequence of events has occurred:

The inlet valve 11 has closed. Vacuum valve 12 has opened. Vacuum is distributed via check valve 13 to discharge valve 18 and water valve 19 which will both open. Chamber 14 is also subjected to vacuum through check valve 21.

This vacuum will pull lever 8 and close valve 1 and the timer function will start. Chamber 3 will be evacuated through jet 5 and the pressure difference 2-3 equalizes. At a certain level, the counterforce from spring 6 will outweigh and the cycle will go in the opposite direction:

The vacuum valve 12 will close. The air inlet valve 11 will open and atmospheric air enters discharge valve, water valve and chamber 14. The discharge valve 18 will close and somewhat later (because of the jet 17), the water valve 19 closes when a suitable water level has been reached at the bottom of the bowl.

Returning to standby position FIG. 3

The whole system goes to standby position ready for another VT-flush.

! NOTE: Diaphragm 16 has the same effective area as the air inlet valve 11 to balance the vacuum forces. FIG.3

! NOTE: Check valve 13 ensures that connected valves in activated position are unaffected by changes in the vacuum supply level.

! NOTE: If vacuum is too low or absent the function is delayed. Control valve 1 stays open until chamber 14 is subject to vacuum.
**Operation**

The functioning of the vacuum toilet is entirely controlled by the control mechanism. Vacuum in the sewage piping system is the actuating medium.

Description of flushing sequence see doc. 3:01025C.

Jet 1 (doc. 3:01025C pos 5) controls the discharge valve opening time.

Jet 2 (see doc. 3:01025C pos 4) counters the effect of quick changes in the vacuum supply.

Jet 3 (doc. 3:01025C pos 15) delays the vacuum changes in chamber 14 (see doc. 3:01025C). This prevents a new flushing procedure to start before the previous procedure has stopped.

**Maintenance**

Check that the air filters 4 and 5 are not blocked.
Check hoses and pipe connections for leaks.

**Toilet discharge time**

<table>
<thead>
<tr>
<th>Jet 1</th>
<th>Short discharge period</th>
<th>Red jet</th>
<th>1.5 sec.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Normal discharge period</td>
<td>Blue jet</td>
<td>2.0 sec.</td>
</tr>
<tr>
<td>Longer</td>
<td>Longer discharge period</td>
<td>White jet</td>
<td>2.5 sec.</td>
</tr>
<tr>
<td>Less restriction</td>
<td>shortens the time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Water valve opening time**

<table>
<thead>
<tr>
<th>Jet 6</th>
<th>Normal bowl water level</th>
<th>White jet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low bowl water level</td>
<td>Blue jet</td>
</tr>
</tbody>
</table>
Operation

Closed condition:
In the closed position, the control valve shuts off the connection between the vacuum piping and the discharge valve housing. As the valve housing then is under atmospheric pressure, the spring-loaded closing mechanism closes the rubber diaphragm and isolates the bowl from the vacuum piping.

Flushing condition:
As the control valve opens, the discharge valve housing is subjected to vacuum, thus forcing the closing mechanism to open. This in turn allows the rubber diaphragm to open, and connects the bowl to the vacuum pipe line.

Maintenance

See document 3:01054C for scheduled maintenance.
Scheduled Maintenance Program

Every year:
- Change Mini-check valve 5959902 if toilet is connected to the riser pipe.
- Check operation, push button, seat and cover, rinse pattern, discharge pattern.
- Check possible water and vacuum leakage.
- Clean Strainer in water supply.

Every 5 years:
- Change Mini-check valve 5959902 in every toilet.
- Open and clean Water valve filter 5774150.
- Clean Control mechanism air filter 5778600.
- Check operation, push button, seat and cover, rinse pattern, discharge pattern.
- Check possible water and vacuum leakage.

Every 10 years:
- Change Mini-check valve 5959902 in every toilet.
- Change Discharge valve rubbers: Rubber sleeve 5435181 (2pcs), Rubber diaphragm 5435169.
- Change Water valve diaphragm 5774400.
- Open and clean Water valve filter 5774150.
- Clean Control mechanism air filter 5778600.
- Check operation, push button, seat and cover, rinse pattern, discharge pattern.
- Check possible water and vacuum leakage.

! NOTE: Use only genuine Evac spare parts.
# VACUUM TOILET

**5979301  EVAC 90, SQUATTING TOILET**

## Trouble Shooting

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| Squatting toilet is discharging continuously (discharge valve open). | • Foreign object in the bowl or in the discharge valve | • Shut off the problematic branch line valve.  
• Remove foreign object.  
• Change discharge valve.  
• Check and if necessary change the control mechanism. |
| Bowl is not emptying, but water comes (high water in bowl). | • Blocked bowl  
• Blocked discharge valve  
• Loose / clogged hoses | • Clean bowl / clean valve / connect vacuum hoses.  
• Connect hoses |
| No water, but otherwise flushing or too little rinsing water | • Water shut-off valve closed  
• No water pressure  
• Filter in water valve full of dirt  
• Flush ring loose  
• Flush ring clogged  
• Strainer blocked up | • Open valve  
• Provide water pressure  
• Clean filter  
• Connect flushing ring  
• Clean flushing ring  
• Clean strainer |
| Toilet is overflowing. | • Water valve jammed in open position  
• Bowl clogged or discharge valve not operating  
• Misuse (buckets of water thrown in the bowl)  
• Too low vacuum (less than 30%) to flush | • Close water shut-off valve  
• Clean / change water valve nozzles, springs, rubbers  
• Discharge bowl, valve, piping with by-pass or / hose connections |
| Toilet does not flush. | • No vacuum or low vacuum (less than 30kPa)  
• Clogged mini check valve  
• No impulse from flush knob  
• Jammed control mechanism | • Check vacuum level, remove blockage in piping  
• Clean / change mini check valve  
• Check hoses and push button. The triangle must face upwards and the tip of the triangle must point towards the sewage piping. |

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**Diagram:**

![Diagram of VACUUM TOILET](image_url)
VACUUM TOILET
5435015 DISCHARGE VALVE, EVAC 90, SQUATTING TOILET

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| Bowl does not become empty when flushed | • Discharge valve blocked  
• Leak in discharge valve housing  
• Discharge pipe clogged  
• Rubber sleeves leaking | • Clear stoppage, if any, in discharge valve  
• Sharp tools may damage rubber  
• Check that rubber sleeves are undamaged and correctly fitted |

Trouble shooting:

Bowl does not become empty when flushed:

• Discharge valve blocked  
• Leak in discharge valve housing  
• Discharge pipe clogged  
• Rubber sleeves leaking

Remedy:

• Clear stoppage, if any, in discharge valve  
• Sharp tools may damage rubber  
• Check that rubber sleeves are undamaged and correctly fitted

Dismantling of the discharge valve:

1. Compress the closing mechanism (Fig. 1).
2. Remove the rubber diaphragm (Fig. 2).
3. Release the rubber sleeve; free and remove the mechanism (Fig. 3).
4. Unscrew the locking screws and take the assembly apart. Lightly spread upper piston retainers to free lower piston (Fig. 4).

N.B When assembling, better sealing of rubber diaphragm is achieved if a screwdriver handle is inserted as shown. Also check that rubber diaphragm is in right position (see picture above).
VACUUM TOILET
5979301  EVAC 90, SQUATTING TOILET

5712601  Flushing mechanism, complete
5774010  Water valve, special
5775500  Control mechanism
5900200  Push button, complete
5980800  WATER SUPPLY KIT
  5432728  Gasket
  5431884  Shut-off valve
  6543414  Filter
  5432548  Vacuum breaker
5990210  Hose clamp
5900200  Hose clamp
5430160  Hose nipple
5481007  Hose
5935503  Hose
5990210  Hose clamp
6542402  Hose clamp
5921701  Pipe clamp
5990210  Hose clamp
5930160  Hose clamp
5430160  Hose clamp
5978500  Squatting pan

6542811  DISCHARGE VALVE ASSEMBLY
6543029  Recommended spare part kit:
  1 x 5435169  Rubber diaphragm
  2 x 5435181  Rubbersleeve
**VACUUM TOILET**

5775500  CONTROL MECHANISM, EVAC 90, SQUATTING TOILET
5881000  SPARE PART KIT FOR THE CONTROL MECHANISM

**P/N 5775500 Control mechanism**

5778001 Jet carrier complete (as standard), which controls flushing period

Alternative for this jet available:
5778000 Jet carrier complete*
5778002 Jet carrier complete*
5778004 Jet carrier complete*

*Jet Carrier identification:

<table>
<thead>
<tr>
<th>P/N</th>
<th>Colour</th>
<th>Size</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>5778004</td>
<td>Yellow</td>
<td>0.20</td>
<td>Extra long flushing period</td>
</tr>
<tr>
<td>5778000</td>
<td>White</td>
<td>0.30</td>
<td>Long flushing period</td>
</tr>
<tr>
<td>5778001</td>
<td>Blue</td>
<td>0.40</td>
<td>Normal flushing period</td>
</tr>
<tr>
<td>5778002</td>
<td>Red</td>
<td>0.50</td>
<td>Short flushing period</td>
</tr>
</tbody>
</table>

**NOTE:** See also document 3:111 i, Control mechanism for Evac 900 model toilets.
See also document 002032-1, Control mechanism for Evac 910 model toilets.

**P/N 5881000 Spare part kit for the control mechanism:**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Description</th>
<th>Pcs</th>
</tr>
</thead>
<tbody>
<tr>
<td>5778600</td>
<td>Air filter</td>
<td>1</td>
</tr>
<tr>
<td>5778001</td>
<td>Jet carrier complete</td>
<td>2</td>
</tr>
<tr>
<td>5778000</td>
<td>Jet carrier complete</td>
<td>1</td>
</tr>
<tr>
<td>5778700</td>
<td>Filter</td>
<td>1</td>
</tr>
<tr>
<td>5959902</td>
<td>Mini-check valve</td>
<td>1</td>
</tr>
</tbody>
</table>
VACUUM TOILET
5900200  PNEUMATIC PUSH BUTTON, EVAC 90, SQUATTING TOILET

3510100  Bellow