European Vacuum Drainage Systems

EVAC Eastern Squatting Model
TECHNICAL DATA

VACUUM TOILET
5979301  EVAC 910, SQUATTING TOILET

Materials
Squatting pan: Stainless steel EN 1.4301
Pneumatic push button: white plastic, ABS

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
Materials
Cover: ABS, white
Button: PBT, white
Bottom plate: POM, natural

Connections
Hose nipple Ø4

Shipping data
Net weight: 0.2kg
**VACUUM TOILET**

5979301  EVAC 910, SQUATTING TOILET

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**Detail A**

- Connection to main vacuum line Ø50
- Service door
- Flushing water supply hose
- Access to be provided for service

**Detail B**

- Water connection
  - Shut-off valve R 1/2" MPT
  - Vacuum breaker
  - Flushing water connection R 1/2" MPT

**Detail C**

Installation example
- Sealing material (Silicone) around the pan
- Tiling
- Squatting pan
- Floor

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**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.
1. Drill Ø6 mm hole for the hose (A).
2. Connect the plastic hose (A) from the control mechanism to the bellows (B). Warm the end of the hose if needed to help installation.
3. Install the body (C) of the push button on the wall using the screws (D) (not included).
4. Snap the cover (E) of the push button bellows in its place.

! NOTE: Secure, that the hose (A) is not flattened after installation. Air impulse must always flow free.

Control mechanism

Make sure, that the plastic hose does not get loose from the control mechanism.
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 the 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 the squatting pan are forced into the vacuum sewer by a pressure difference between the squatting pan and vacuum sewer. The flushing cycle in the control mechanism starts the closing cycle. The atmospheric air pulse enters the discharge valve, which closes. After a short delay, the atmospheric air pulse reaches the water valve, which closes and lets a certain level of water at the bottom in the squatting pan. 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). The force of the spring (6) holds the mechanism in the non-activated position.

In the position immediately after the push button has been pressed 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. 3:01025E.

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

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

Jet 3 (doc. 3:01025E pos 15) delays the vacuum changes in chamber 14 (see doc. 3:01025E). 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>Normal discharge period</th>
<th>Longer discharge period</th>
<th>Less restriction shortens the time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Red jet</td>
<td>Blue jet</td>
<td>White jet</td>
<td>1.5 sec.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.0 sec.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.5 sec.</td>
</tr>
</tbody>
</table>

**Water valve opening time**

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

Closed condition:
The control mechanism shuts off connection between the vacuum piping and the discharge valve housing. As the valve housing is under atmospheric pressure the spring-loaded closing mechanism closes the rubber diaphragm and isolates the squatting pan from the vacuum piping.

Open 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 squatting pan to the vacuum pipe line.

Closing sequence:
Atmospheric air enters to the discharge valve via control mechanism and it closes immediately. After a short delay the atmospheric air pulse reaches the water valve which closes and lets a certain level of water at the bottom in the squatting pan.

Maintenance

See document 3:01054E for scheduled maintenance.
VACUUM TOILET
5979301 EVAC 910, SQUATTING TOILET

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 6542990 (2pcs), Rubber diaphragm 6543004.
• 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.
Dismantling of the discharge valve:

1. Remove the rubber sleeves, the cover and the springs (see fig.1).
2. Remove the braces (see fig.2).
3. Press lightly the closing mechanism and remove the rubber sleeve (see fig.2).

### Trouble Shooting

<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 |

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## VACUUM TOILET

### TROUBLE SHOOTING

**5979301**  **EVAC 910, SQUATTING TOILET**

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

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VACUUM TOILET
5979301  EVAC 910, SQUATTING TOILET

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VACUUM TOILET
6543003 DISCHARGE VALVE
6545363 DISCHARGE VALVE

6547327 RECOMMENDED SPARE PART KIT:
1 x 6543004 Rubber diaphragm
2 x 6542990 Rubber sleeve

6543004 Rubber diaphragm
6542990 Rubber sleeve
6542985 Housing
6548334 Spare part kit (for P/N 6543003)
6548335 Spare part kit (for P/N 6545363)
**VACUUM TOILET**

5775500  CONTROL MECHANISM
5881000  SPARE PART KIT FOR CONTROL MECHANISM (EVAC 90 AND 900 MODEL TOILETS)
6546688  SPARE PART KIT FOR CONTROL MECHANISM (EVAC 910 MODEL TOILETS, TOILET WITH AUTOFLUSH UNIT, STAINLESS STEEL TOILET, SQUATTING TOILET)

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**P/N 5775500 Control mechanism**

*5778001 Jet carrier complete (controls flushing period)*

Alternative Jets:

*5778000 Jet carrier complete
*5778002 Jet carrier complete
*5778004 Jet carrier complete

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**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>

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**I NOTE:** See also the operation and maintenance documents:

Doc. 3:111D, Control mechanism (Evac 90 and 900 model toilets)
Doc. 002032-2, Control mechanism (Evac 910 model toilets)
Doc. 002474-2, Control mechanism (Evac 910 Stainless steel toilets)
Doc. 3:01103C, Control mechanism (Evac 910, Squatting toilet)

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**P/N 5881000 Spare part kit (Evac 90 and 900 model toilets)**

<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>

---

**P/N 6546688 Spare part kit**

(Evac 910 model toilets, toilet with Autoflush unit, Stainless steel toilet, Squatting toilet)

<table>
<thead>
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<tr>
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<td>Air filter</td>
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</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>
</tbody>
</table>

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6543030 RECOMMENDED SPARE PART KIT:

1 x 3790009 V-ring
1 x 5774150 Filter
1 x 5774400 Diaphragm
1 X 5774701 Valve washer + Jet

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VACUUM TOILET
6541458  PNEUMATIC PUSH BUTTON, EVAC 900 AND EVAC 910, WALL MODELS
6541057  OPTIONAL PNEUMATIC PUSH BUTTON KIT, EVAC 900 AND EVAC 910, FLOOR MODELS

P/N 6541458  Pneumatic push button

P/N 6540917 is replaced by P/N 6541458

P/N 6541057 Optional pneumatic push button kit

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