

Process description of aeration / deaeration plant 661, max. throughput 3000 m³/h



The figure shown here may contain special accessories

Aeration and deaeration of drinking water reservoirs with filtered air is achieved by means of a three-stage ventilation system charged on both sides with natural air exchange. A prerequisite is air exchange exclusively via the provided aeration and deaeration plant. This means the water chamber must be separated from the operation building and all other air openings to the water chamber must be reliably closed.

The plant design must be in accordance with DVGW Worksheet W 300-1.

The air sucked in is ambient air. The plant must be installed in the operator building and be easily accessible. Measures must be taken for discharge of condensate and protection of the structure in case of operational troubles.

The individual components of the aeration / deaeration plant L661:

The ambient air is sucked in, or the displaced air blown out respectively, **via an attack-proof louvre** or a **supply air chimney**. The sturdy design provides a protection against wilful damage and vandalism. The louvre anchors are accessible from the building inside only. The insect screen serves as first filter stage and prevents the ingress of small animals, insects and organic coarse material, such as tree leaves. The louvre or supply air chimney and following air line are **flexibly connected** for easier installation.

The **air line** is airtight, buckling resistant and distortion-free and laid with a slight slope towards the air filter unit so

that the produced condensate can run off.

The **air filter unit** is installed into the air line. The **prefilter** installed in the air line is filter class ISO ePM10 75 % in compliance with EN ISO 16890 and serves as second filter stage. The pre-filter is required to increase the lifetime of the subsequent **suspended material filter** as third filter stage. This filter is filter class H13 with a separation class H13 of at least 99.99 % in compliance with DIN EN 1822. Both filters consist of a germ-killing material that ensures the drinking water hygiene even under high loads and air moisture.

A pressure transducer controls filter pollution. The pressure differential is measured upstream and downstream of the filter and shown as a four-digit display value. The permissible working pressure is reported by a potential-free changeover contact so that connection to a telecontrol plant or alarm system is optionally possible.

The condensate from the air line and air filter unit is discharged by two condensation water drains with ball valve.

If required, a **safety valve** can be used to protect the structure in case of operational troubles, for example a pipe break.

All parts (except the filter material) are made of austenitic **1.4307 stainless steel**. All welding work is executed in the supplier's factory under an inert gas atmosphere with subsequent pickling and passivation in an acid bath. The design of the entire construction is such that only easy to mount screw connections have to be used on site. Filter replacement and potential cleaning work can easily be carried out.



Layout and performance data of the aeration / deaeration plant 661, max. throughput 3000 m³/h

Project: _____

Feed line ①: DN _____
 Extraction line ②: DN _____
 Maximum flow velocity ③: v _____ m/s
 Maximum inflow ④: Q _____ m³/h
 Maximum extraction ⑤: Q _____ m³/h
 Inspection window: W _____ x H _____ mm
 Access door: W _____ x H _____ mm
 Max. pressure differential: Δ p _____ Pa

The type and size of the filter plant depend on the maximum inflow ④, or maximum extraction ⑤ respectively. The specified **maximum throughput** of a filter plant in m³/h (see table 1) must be maximum inflow ④, or extraction ⑤ [Q in m³/h] respectively, the higher value being decisive. **If there are any inspection windows or access doors to the tank, make sure the maximum pressure differential does not become too high.** Overdimensioning of the Aeration and Deaeration Plant must be avoided as this might affect filter function.

Type	Maximum throughput Δ p = 120 Pa	Minimum louvre size	Minimum air line	Filter size		Filter unit
	in m ³ /h	W x H in mm	in mm	D x W x H in mm		L x W x H in mm
L661	3000	1000 x 800	DN 300 – DN 600	Pre-filter	60 x 610 x 610	720 x 640 x 725
				Suspended solids filter	292 x 610 x 610	

Table 1

The safety valve is an additional overpressure and underpressure protection in case of a pipe break. The applicable valve type (table 2) depends on the nominal width of the extraction line ②.

Safety valve, response pressure p = 1000 Pa					
Type	DN	Maximum air throughput		Δ p	Connection
		Aeration	Deaeration		
170 - 1	100 (DA = 110)	600 m ³ /h	600 m ³ /h	1000	Clamp connection
81 - 180 - E	250	3100 m ³ /h	3100 m ³ /h	1000	Flansch PN 10

Table 2



Aeration / deaeration plant 661, max. throughput 3000 m³/h

Natural aeration / deaeration plant with air connections on both sides to improve the hygiene in drinking water reservoirs.

Comprising:

Item 1.0

Louvre, attack-proof, pre-finished, made of stainless steel material no. 1.4307 (AISI 304 L), rigid design, with a stable frame, slats and 1 x 1 mm insect screen. The insect screen serves as first filter stage and prevents the ingress of small animals, insects and organic coarse material.

louvre welded under inert gas, pickled in an immersion bath and passivated.

For clear wall opening W x H = _____

Item 2.0

Air line in partial lengths according to the specific local conditions, made of stainless steel material no. 1.4307 (AISI 304 L), with a connecting plate designed to suit the louvre for air-tight bolted fixing to the interior structure wall, with pipe connection piece. Pipeline DN, longitudinal welded seam stainless steel pipe, bends as required, flexible joints, including fixing material, foam rubber gasket and mounting brackets.

Air line welded under inert gas, pickled in an immersion bath and passivated.

Item 3.0

Air filter unit L661 with connection pieces on both sides, suitable for the air line, made of stainless steel material no. 1.4307 (AISI 304 L), with fine filter and filter for suspended matter, with two DN 1/2" stainless steel condensate drains upstream and downstream of the filter package, each with check valve, including wall mounting brackets.

The air filter unit is designed for installation directly into the air line. The fine material filter installed in the air line is filter class ISO ePM10 75 % according to EN ISO 16890 and serves as second filter stage.

The fine filter is required to increase the lifetime of the subsequent suspended material filter as third filter stage. This filter is filter class H13 with a separation class H13 of at least 99.99 % in compliance with DIN EN 1822. Both filters consist of a germ-killing material that ensures the drinking water hygiene even under high loads and air moisture. Completely made of 1.4307 stainless steel except the filter material.

A pressure transducer controls filter pollution. The pressure is measured upstream and downstream of the filter package, the pressure differential is shown as a four-digit display value and additionally as an analogue value 0 ... 10 V, 4 ... 20 mA.

Standard measuring range: 0 1000 Pa,
 preset to 500 Pa

Supply voltage: 24 V AC/DC

Linearity: ± 1.5 %

Temperature drift: 0.1 % per K

Cable screw connection: M 12

Protection grade: IP 65

Relay output: potential-free changeover contact

Connection to a telecontrol plant or alarm system is possible.

A connection for power must be available.

Type L361

Air filter tank L x W x H = 720 x 640 x 725 mm

Item 4.0

Safety valve as an additional overpressure/underpressure protection to protect the structure in case of malfunctions. The reaction pressure 1000 Pa. Safety valve made of aluminium, coated red (RAL 3000) on the outside.



Note:

Tank stability must be guaranteed under any usual and exceptional operating conditions. Only with sufficient dimensioning of the structure and all components the customer is permitted, on his own risk, to do without a safety valve after consultation of the stress analyst on the customer's own responsibility.

Options:

- ▶ 1.4404 (AISI 316 L) stainless steel (Exception: safety valve)
- ▶ Radial pipe ventilator for installation in air line for forced ventilation
- ▶ With power supply unit for regulating the pressure transducer from 230 V to 24 V.
- ▶ Connection pipe with flange PN 10
- ▶ Condensation water drain with non-return valve

