

Process description of aeration / deaeration plant L251, max. throughput 250 m³/h



The figure shown here may contain special accessories

Aeration and deaeration of drinking water reservoirs is necessary for pressure equalisation as the water level in the water chamber varies. The air streaming into the reservoir must be filtered sufficiently to ensure it is free of dust, pollen and other pollutants.

This is achieved by means of an air filter unit 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 also all other air openings to the water chamber must be reliably closed.

The air sucked in is ambient air that is routed through a pipeline into the operation building where it is cleaned by the air filter unit prior to being discharged directly into the water chamber.

The plant must be easily accessible for filter replacement. Measures must be taken for discharge of condensate and protection of the structure in case of operational troubles.

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

The individual components of the aeration / deaeration plant L251:

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 **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 runs off via the condensate outlet. All connections are **flexible connections** for easier installation.

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

The **air filter unit** is installed into the air line. The air filter unit houses the filter for suspended matter; it is filter class H13 and achieves a separation degree of up to 99.99 % in accordance with DIN EN 1822 for optimal supply air purification. The filter consists of a germ-killing material that ensures the drinking water hygiene even under high loads and air moisture. The condensate is reliably discharged via a condensate drain with ball valve installed in the air filter unit.

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. Connection to a telecontrol plant or alarm system is optionally possible.

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 L251, max. throughput 250 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: Δp _____ 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.**

Type	Maximum throughput at $\Delta p = 200$ Pa	Minimum louvre size	Air line	Filter size	Filter unit
	in m ³ /h	W x H in mm	in mm	Diameter in mm	Flange outside diameter and L in mm (without socket)
L251	250	500 x 300	DN 100 – DN 200	Suspended solids filter \varnothing 200	\varnothing 340 Length 500

Table 1

The safety valve is an additional overpressure and underpressure protection in case of a pipe break.

Sicherheitsventil, Ansprechdruck p = 1000 Pa					
Type	DN	Maximum air throughput		Δp	Connection
		Aerotation	Deaeration		
170 - 1	100 (DA = 110)	600 m ³ /h	600 m ³ /h	1000	Clamp connection

Table 2



Aeration / deaeration plant L251, max. throughput 250 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, 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

Cylindrical air filter unit L251, with connection pieces on both sides, suitable for the air line, made of stainless steel material no. 1.4307 (AISI 304 L), with filter for suspended matter H13, with central 1/2" condensate drain and ball valve for connection to the customer's drain pipe.

The cylindrical air filter unit is designed for installation directly into the air line. The air filter unit houses a filter for suspended matter that achieves a separation degree of up to 99.99% in accordance with DIN EN 1822 for optimal supply air purification. The inspection opening in the casing ensures easy filter replacement. 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, 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.

Maximum throughput: 250 m³/h

Dimensions without connection piece:

Plant length = 500 mm

Outside flange diameter = 340 mm

Dimensions with connection piece:

Plant length = 825 mm

Both connection pieces ≥ DN 130 are equipped with condensation drain and ball valve.

DN = _____

Outside diameter DA = _____

Item 4.0

Safety valve type 170-1 as an additional overpressure/underpressure protection for the structure in case of malfunctions. The reaction pressure is 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

