Density® UNIK

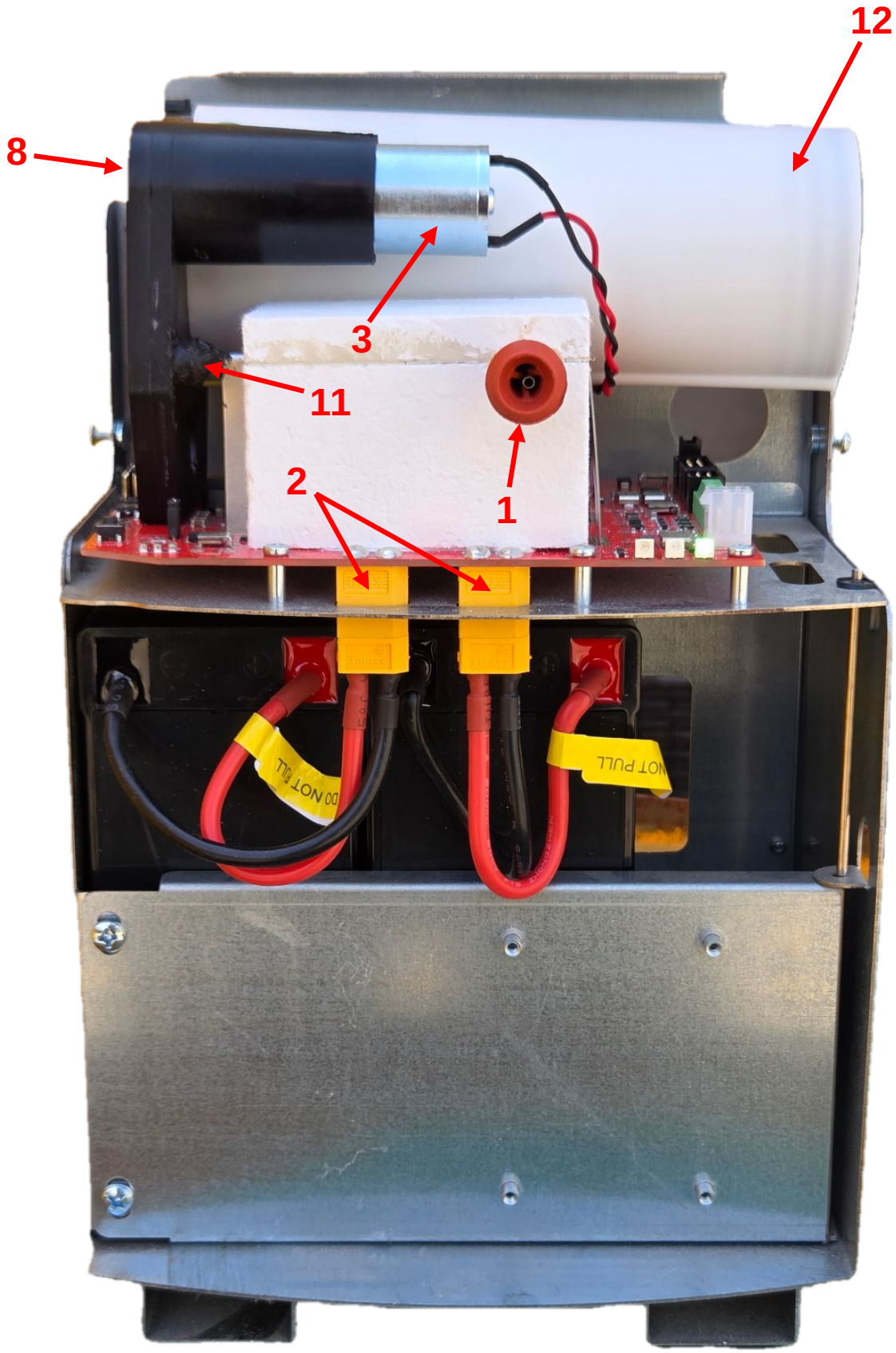
ANNUAL MAINTENANCE PROCEDURE

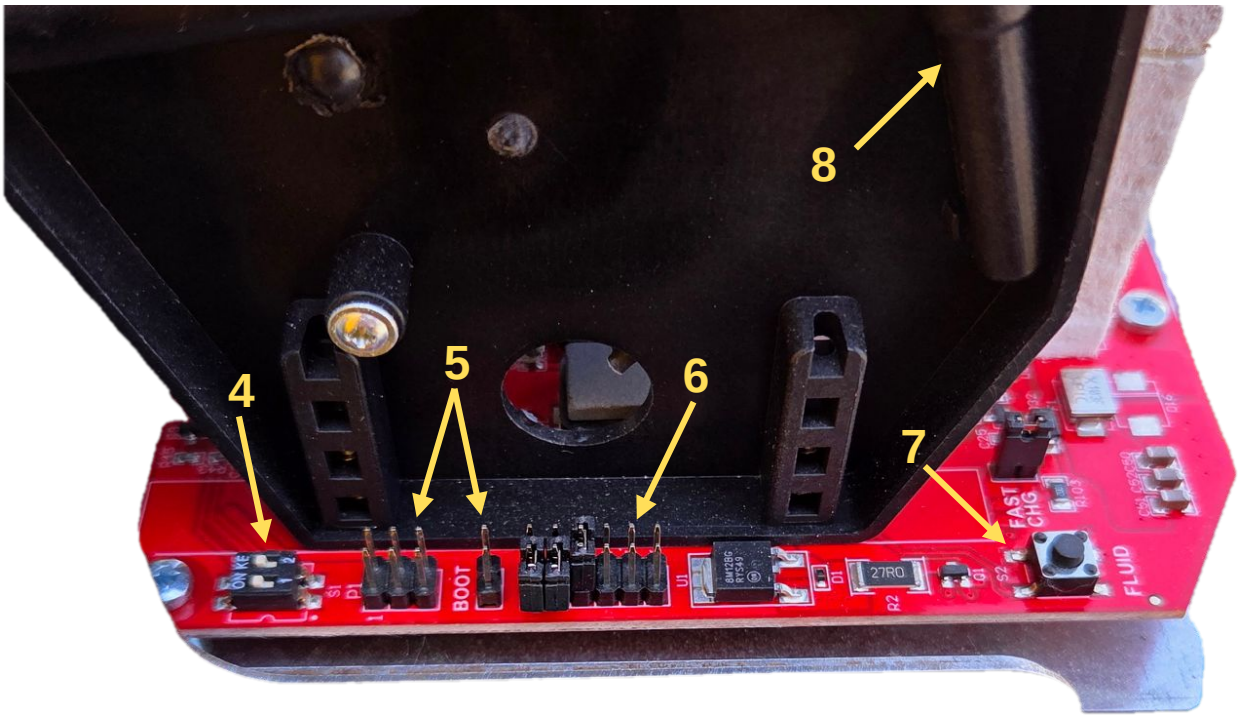
Tempest Line

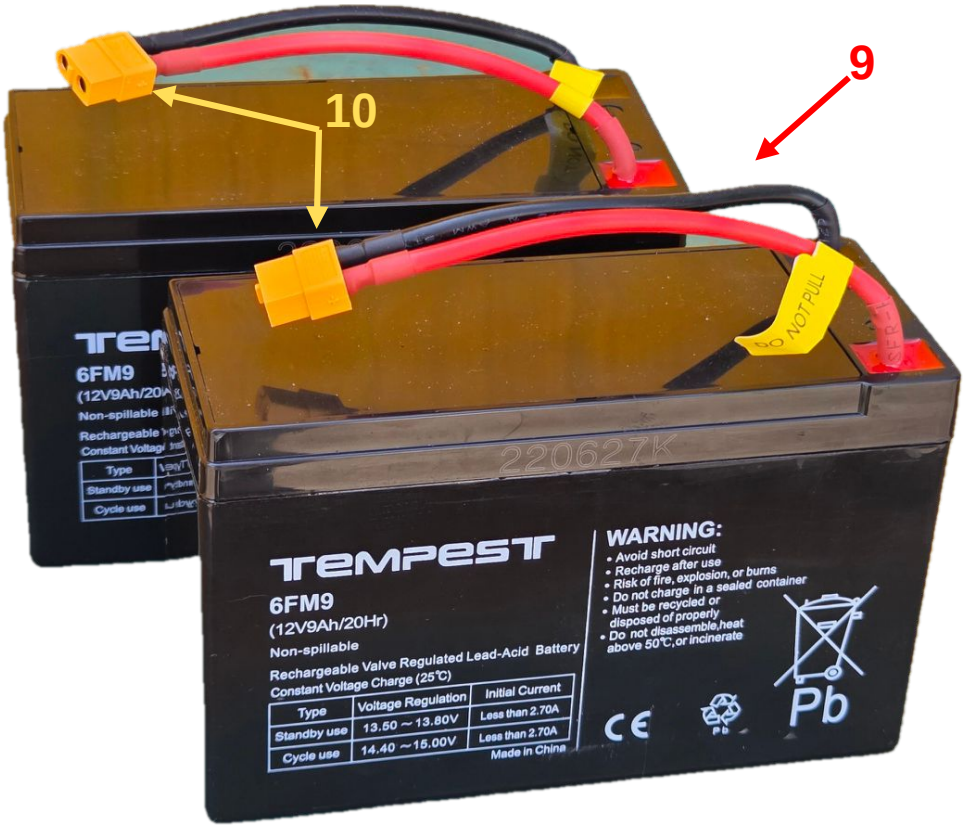
Models

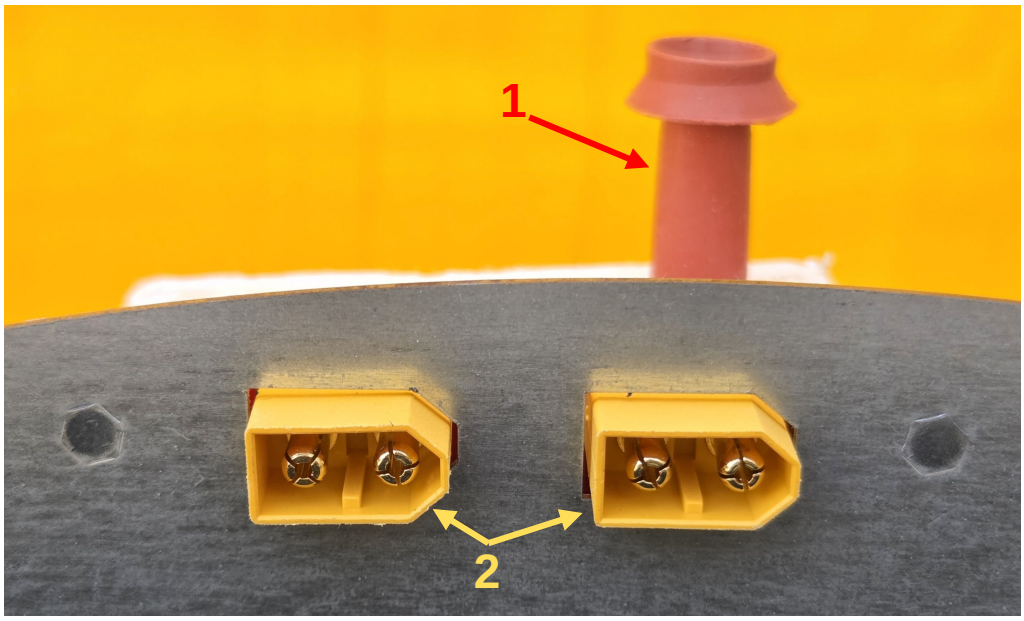
Density UNIK

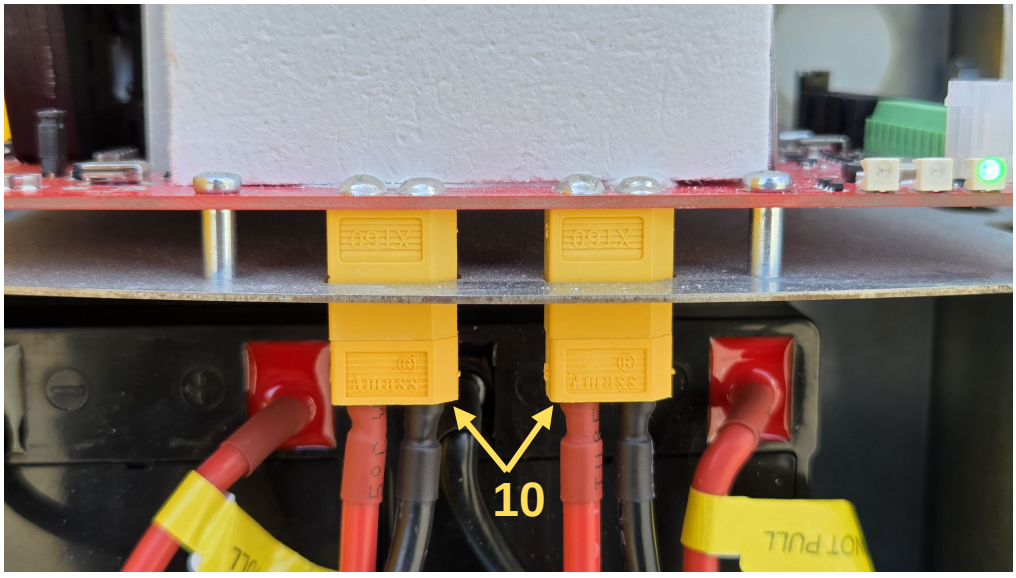
Document revision	2.1.3 — July 2026
Reference standard	EN 50131-8:2019
Intended audience	Qualified maintenance technicians
Service interval	Annual (mandatory)
Estimated duration	15 minutes (excluding battery charging and additional tests)


12
8
3
11
2
1
DO NOT PULL
DO NOT PULL


8
4
5
6
7
BOOT
FAST CHG
FLUID
27R0


9
10
TEMPEST
6FM9
(12V9Ah/20Hr)
Non-spillable
Rechargeable Valve Regulated Lead-Acid Battery
Constant Voltage Charge (25℃)
Type
Voltage Regulation
Initial Current
Standby use
13.50～13.80V
Less than 2.70A
Cycle use
14.40～15.00V
Less than 2.70A
Made in China
WARNING:
• Avoid short circuit
• Recharge after use
• Risk of fire, explosion, or burns
• Do not charge in a sealed container
• Must be recycled or disposed of properly
• Do not disassemble,heat above 50℃,or incinerate
Pb
DO NOT PULL


1
2


10

1. INTRODUCTION AND SCOPE

The Density fog generators of the Tempest line are designed to the highest quality standards. As with any security device, mandatory annual routine maintenance must be carried out in order to:

- comply with the EN 50131-8:2019 standard (where applicable);
- ensure the correct operation of all components (batteries, sensors, pumps, valves, etc.).

⚠ **WARNING:** Maintenance operations must be performed exclusively by qualified operators. Live mains-voltage and/or high temperature parts are present: use the required personal protective equipment (PPE) and avoid touching with bare hands any metal parts other than the outer chassis.

The maintenance procedure must always end with a test shot of at least 2 seconds, carried out under normal operating conditions, with the fluid bag fitted and containing enough fluid to complete the test.

The results of the intervention, any anomalies found and any replaced part must be recorded in the maintenance log by the person responsible for maintenance.

The text that follows refers to the items shown in the previous figures, each of which is identified by a numeric reference.

2. PRELIMINARY OPERATIONS — opening the device

1. Make sure the device is not armed: the blue LED on the front of the fog generator must be off.
2. To open the unit: remove the 2 fastening screws on the left and right sides of the plastic cover.
3. Carefully remove the plastic cover by pulling it towards you.

At this point all the electronic and hydraulic components of the device are accessible.

3. CHECKING THE SETTINGS

On the left-hand side of the fog generator there are several controls that must be set correctly in order to avoid undesired behaviour.

✔ **Shooting time:** Using a small screwdriver, move each microswitch of dip-switch S1 (Ref. 4) up and down 2-3 times to remove any traces of oxide on the contacts that could compromise the correct reading of the shooting time. When finished, remember to return the microswitches to the desired value.

✔ **Programming controls**: Make sure that connector P1 and the *BOOT* pins (Ref. 5) are free of jumpers or any other type of connection. The use of these components is reserved exclusively for the manufacturer.

✔ **Jumpers for various settings**: The jumper block W1-W6 (Ref. 6) is used to set some options that define the operating mode (see the manual for details). Make sure that W1 is open (it is reserved for factory use) and that the remaining jumpers are open/closed according to the desired behaviour.

4. FLUID CIRCUIT — VISUAL INSPECTION

Before undergoing the change of state, the fog fluid passes through a sealed hydraulic circuit that must be checked for any leaks.

- ✔ **Pump leaks:** There must be no traces of fluid leakage from the pump (Ref. 3) and from the connector block (Ref. 8).
- ✔ **Joints:** There must be no dripping from the joint between the connector block and the heat exchanger (Ref. 11). The sealing compound must be intact and free of cracks.

5. FLUID CYLINDER

If the fluid tank has been installed for more than 3 years, replacement is recommended regardless of partial use. The fluid tank with any residual fluid remains usable for tests and demonstrations.

- ✔ **Visual inspection:** Examine the plastic cylinder body (Ref. 12) and check that it is firmly secured to the connector block and that there are no traces of fluid.
- ✔ **Checking the residual fluid:** This procedure is optional and is used to accurately determine the amount of fluid left in the cylinder. The cylinder must be removed from its seat and weighed with a precision scale. Given the weight *p* expressed in grams, the percentage of remaining fluid is given by:

$$f_{perc} = 0{,}769\,(p - 65)\,[\%]$$

The figure thus obtained can help to assess, for a given installation, whether or not the fluid tank needs to be replaced with a new one.

Remember to refit the fluid tank correctly at the end of the procedure.

If the fluid tank is replaced, remember to carry out the *priming* procedure by pressing and holding the S2 button (Ref. 7) as shown in the manual.

6. SILICONE RUBBER NOZZLE (REF. 1)

The silicone rubber nozzle guides the expansion of the fog during the shot and, being subjected to high temperature, must be considered a wear-prone component.

- ✔ **Visual inspection:** Remove the nozzle from the heat exchanger outlet pipe by pulling it towards you and check its circular symmetry (use the one in the figure as a reference). If it appears deformed or cracked, replace it with a similar component, otherwise put it back in place.

It is recommended to replace the silicone rubber nozzle every 2 years, regardless of its state of wear.

7. BATTERY CHECK (REF. 9)

The Tempest line machines are powered by two special VRLA batteries. These batteries are able to deliver high currents continuously, therefore periodic checks must be carried out to allow safe operation and keep the machine efficient.

- ✔ **Wiring:** Remove the batteries from the fog generator and examine the insulation of the red/black cables for any cracks or breaks. The insulating sheath must be intact and continuous; otherwise the batteries must be discarded.
- ✔ **Battery-side connectors:** Examine the condition of the connectors on the batteries (Ref. 10). The plastic body and the surface gold plating of the contacts must be intact; otherwise the batteries must be discarded.
- ✔ **Board-side connectors:** Examine the condition of the connectors on the circuit board (Ref. 2). The plastic body and the surface gold plating of the contacts must be intact; otherwise the machine must be sent for servicing.

Once these checks have been passed successfully, the batteries can be reconnected (after recharging, if necessary) and you must wait 2 minutes for the machine to perform the load test. If the test fails with charged batteries, the batteries must be replaced.

⚠ **WARNING:** During the battery load test the machine may emit a puff of fog from the nozzle: position the machine appropriately, taking care to keep the emission away from people, objects or animals.

8. TEST SHOT

At this point a test shot must be performed.

Make sure there is enough fluid in the cylinder and that the hydraulic circuit is primed (carry out *priming* if necessary), set a shooting time of 2 s and launch a shot, taking care to direct the jet away from people, objects or animals.

- ✔ **Shooting system**: Check that the machine shoots continuously for the preset time and that no empty-bag condition is signalled at the end of the shot.

In case of partial emission, wait 1 minute, repeat the *priming* operation and launch a new shot. In case of failure, the procedure can be repeated up to 5 times, after which the machine must be sent for repair.

⚠ **WARNING:** Remember to restore the correct shooting time and to close the unit again at the end of each maintenance session.

9. ACTIVE MAINTENANCE SOFTWARE — advanced diagnostics

For in-depth diagnostics, the Active Maintenance program, developed for Microsoft Windows, is available free of charge on the manufacturer's website. The program communicates with the fog generator via the serial port and displays all operating parameters in real time.

It is also possible to:

- arm/disarm;
- launch a full or short shot (test shot);
- set the shooting time (see below);
- reset the fluid counter.

In this regard, note that the shooting time set by the Active Maintenance software is valid only for shots launched from the graphical interface. In normal operation the shooting time is given by the position of dip-switch S1.

In order to communicate with the Active Maintenance software, the fog generator must operate in *always-on* mode, i.e. with jumper W3 fitted.

⚠ **WARNING:** Remember to restore the desired operating mode (*always-on* or *low power*) via jumper W3 at the end of the Active Maintenance software session.

For communication with the fog generator, the software requires the 6-pin USB-to-serial adapter cable, available in the catalogue under code FPUCPAS.

10. ANNUAL MAINTENANCE CHECKLIST

Fill in one form for each operation. Keep it in the unit's maintenance log.

Model / Serial no.	Location / Customer	Maintenance date	Operator

#	Operation	Result	Notes / Anomalies / Replaced parts
1	Settings check	☐	
2	Visual inspection of the hydraulic circuit	☐	
3	Fluid cylinder – visual inspection	☐	
4	Fluid cylinder – residual capacity check (optional)	☐	
5	Check and possible replacement of the silicone rubber nozzle	☐	
6	Batteries – check of wiring and connectors	☐	
7	Arming the device (blue LED on)	☐	
8	Test shot (2 s, fog generated for the expected duration)	☐	
9	Restoring the correct shooting time	☐	
10	Closing the unit and re-arming (if necessary)	☐	

Date: _____

Operator's signature: _____

11. NOTES

Below is some useful information for the maintenance technician:

- **PPE**: during the maintenance operations described in this document, the operator may come into contact with live mains-voltage and/or high-temperature parts (up to 250 °C). Make sure you understand the risks and use suitable personal protective equipment.
- **Battery*:*** the average service life of the VRLA batteries installed inside the Tempest line fog generators is about 2 years. After this period replacement is recommended, regardless of their actual state of health.
- **Spare parts**: to order spare parts, please contact your distributor. If this is not possible, contact the manufacturer directly.