Tour Hazer II [Service manual]

CAUTION !

The testing person should be a technical skilled person
to avoid dangerous injuries!

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CONTENT

TROUBLESHOOTING

THE TOUR-HAZER 2 REPORTS AN ERROR

Displayed error	Meaning	Solution(s)
E-1	The thermocouple is broken or disconnected	1. Reconnect the thermocouple 2. Exchange the HEM
E-4	The electronic box is getting too hot	1. Disconnect from mains for few minutes and place the hazer in a cooler place 2. Exchange the HCM PCB
	Short-circuit on The PCB HCM (due to humidity?)	1. Exchange the air filter (fan) 2. Exchange the HCM PCB
E-8	Silicon tube between air pump and fluid pump is dirty Fog fluid goes to the air pump (HEM blocked / air pump broken)	1. Exchange the air filter (fan) 2. Clean the silicon tube 3. Exchange the HEM 4. Exchange the air pump

THE TOUR-HAZER 2 DOESN'T REPORT AN ERROR

Trouble	Solution(s)
No Haze / HEM blocked / no E-8	1. Test the HEM 2. Test the air pump 3. Test the photoelectric barrier
Fluid pump doesn't seem to work	1. Check for a hole in the PVC tube 2. Test the fluid pump

FINAL TEST

For this testing a special meter for testing hardware (e.g. Neuberger,TG 0701) is necessary.
The following tests are necessary:

- Ground resistance test:
- Check that all parts of the housing are grounded by touching the meter to unpainted parts (such as the screws). Kind of continuity test. The current flow between the ground of the power socket and the housing will be measured.

Insulation resistance test:

- The resistance between ground and one phase will be measured (very high resistance).

Leakage current test:

- If the Tour-Hazer 2 unit is running, the leakage current needs to be in the allowable range (e.g. this part of the display is green and the not allowed range is red).

▪ Dirt :
Clean the fan and the exit and exchange the air filter of the Tour-Hazer 2 unit at regular intervals. Dirt may make the fan rattle and is the cause for low-pressure in the Tour Hazer 2 housing, which is leading to a rise of humidity and causes malfunction of parts or the whole machine.

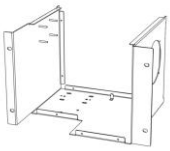
▪ Connections :
After opening the housing, check if all cables and tubes are connected properly.

▪ The Haze :
The haze should always smell neutral. If the haze has a strong smell or is displeasing, something is wrong. Check the Tour-Hazer 2 unit.

SPARE PARTS AND ACCESORIES

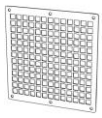
Lid Tour Hazer 2.1

Part N° 70204
Material : Electro galvanized steel 1mm



Bottom Tour Hazer 2.1

Part N° 70202
Material : Electro galvanized steel 1.5mm
color : RAL 9005

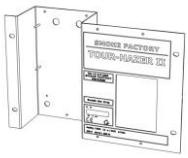


Filter grid Tour Hazer 2.1

Part N° 70477
Material : Stainless steel 1mm

Filter grid counter plate Tour Hazer 2.1

Part N° 70478
Material : Electro galvanized steel 1mm



Front panel Tour Hazer 2.1

Part N° 70203
Material : Electro galvanized steel 1.5mm
Color : RAL 9005

Control panel Tour Hazer 2.1

Part N° 70673 (for PowerCon True)
Material : Electro galvanized steel 1.5mm
Color : RAL 9005

Ventiliation shaft Tour Hazer 2.1

Part N° 70665
Material : Stainless steel 1mm

Bracket for pump

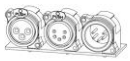
Part N° 70206
Material : Electro galvanized steel 1mm

Counter plate for mounting air pump

Part N° 70402
Material : Electro galvanized steel 1mm

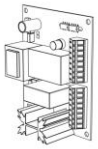
PCB HCM Tour Hazer 2.1

Part N° 39110



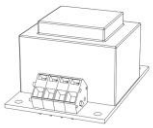
PCB remote (DMX and Analog)

Part N° 39004



PCB Power Tour Hazer 2.1

Part N° 39108 for 230V
Part N° 39109 for 110V



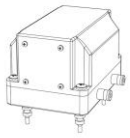
PCB choke Tour Hazer 2.1

Part N° 39111 for 230V
Part N° 39112 for 110V

Fan Tour Hazer 2.1

Part N° 40187 for 230V

Part N° 40188 for 110V



Air pump APE-TM

Part N° 50081 for 230V
Part N° 50082 for 110V

Fluid pump NME1

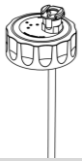
Part N° 50183 for 230V
Part N° 50107 for 110V

Air filter

Part N° 90228

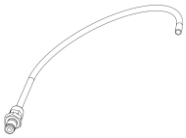
HEM Tour Hazer 2.1

Part N° 69035 for 230V
Part N° 69037 for 110V



Bottle Cap 5/1

Part N° 59059



Fluid pipe with push-on spigot

Part N° 59004

Reducing bulkhead coupling for fluid tube

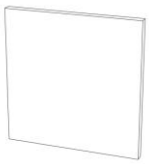
Part N° 50118
Material : Zinc plated brass

Silicon pipe 5 x 2mm

Part N° 50165

Silicon piece with check valve

Part N° 50165



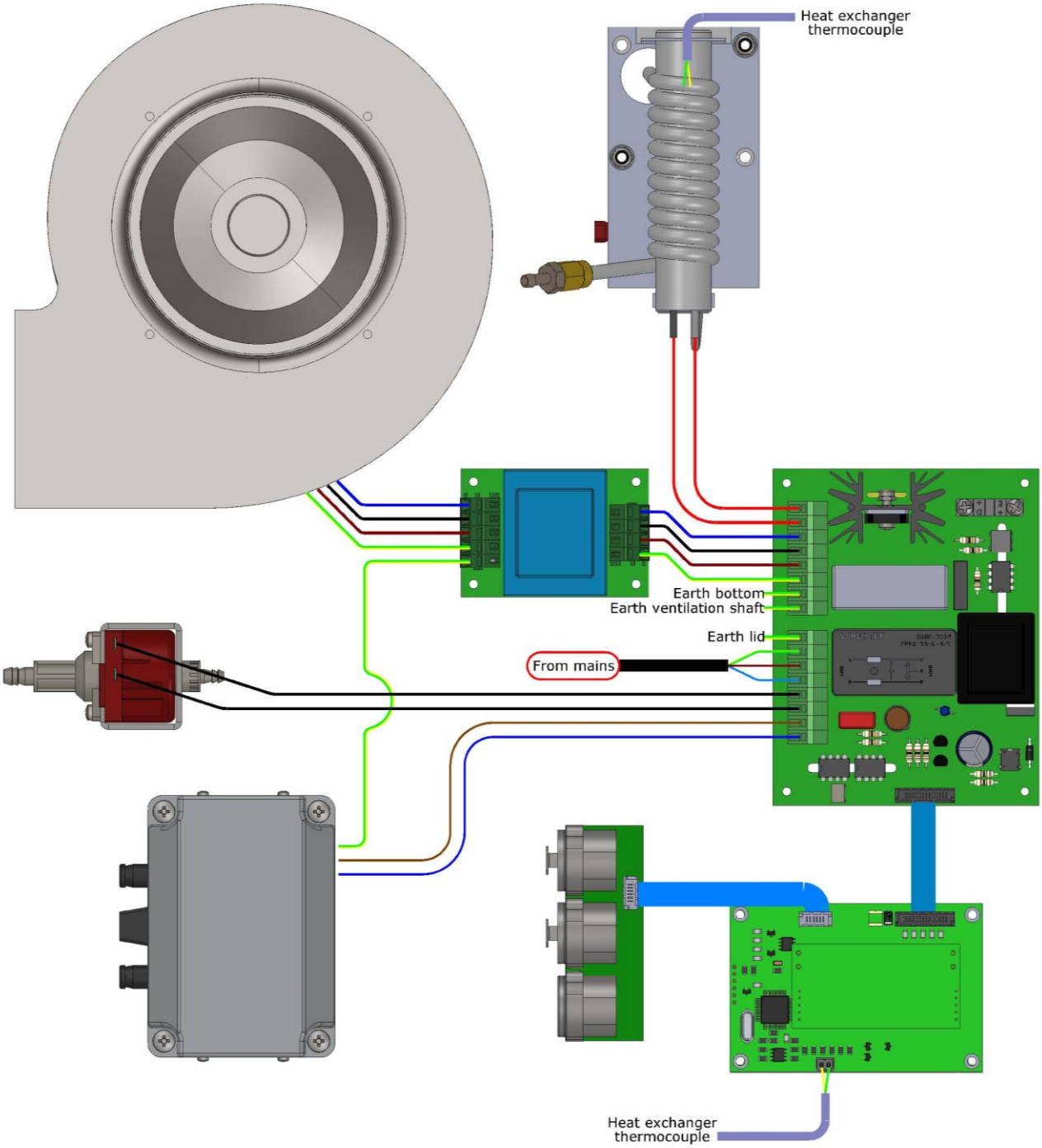
Filter pad

Part N° 90103
170 x 170 x 10mm

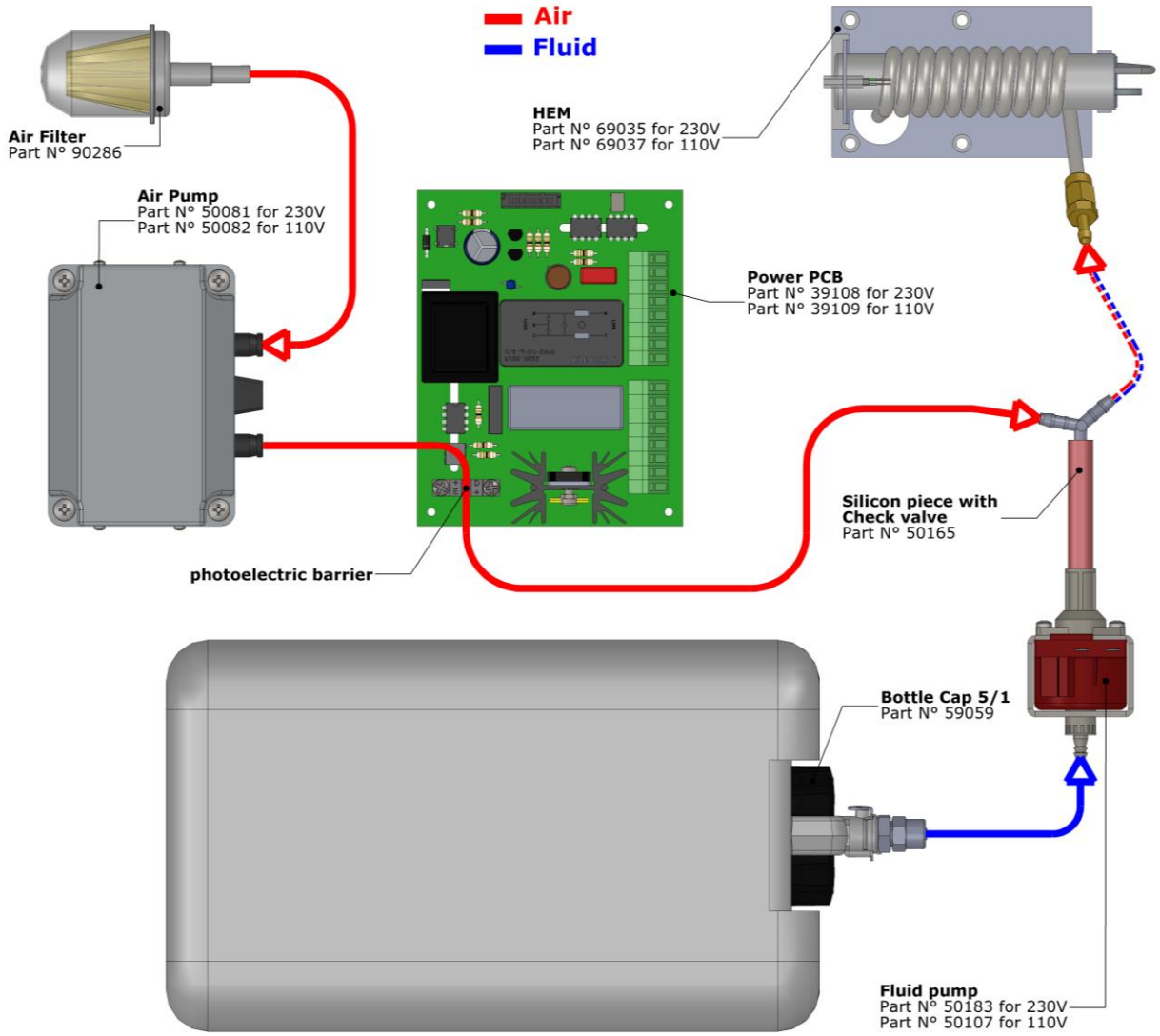
SMALL PARTS

Article N°	Description	Quantity / Set
30079	Cable entry 10mm PVC	10
30380	Spacer M4 for HEM insulation	10
40147	Power cord 2 meters	1
49015	Flat cable 14 pin 250mm	1
49027	Flat cable 6 pin 100mm	1
50061	Silicon pipe (inside 3mm / outside 5mm)	1 m
50011	Push on spigot for quick acting coupling (plastic)	5
50122	PVC pipe (inside 4mm / outside 6mm)	10 m
50118	Bulkhead coupling for PVC and silicon pipe (for PCB box)	1
70013	Cable gland PG11 Black	1
70020	M3 nylock nut	100
70236	M4 metal lock nut	100
70023	Tap tite M3 x 8mm	100
70232	Tap tite M2.5 x 6mm	100
70212	Tapping screw 3.5 x 9.5mm	100
70224	Screw M5 x 20mm	10
70304	Aluminum rivet 5 x 10mm (black)	100
50218	PVC pipe kink protector	1

WIRE PLAN

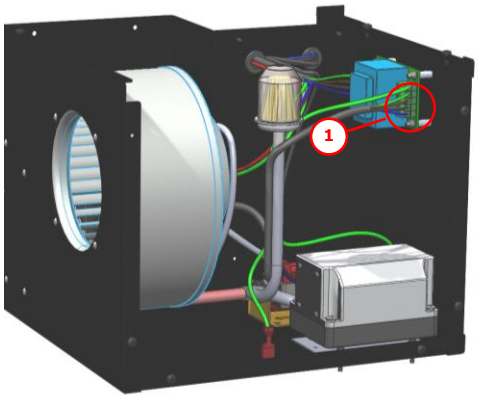

Heat exchanger thermocouple
Earth bottom
Earth ventilation shaft
Earth lid
From mains
Heat exchanger thermocouple

FLUID AND AIR FITTING PLAN



TESTING

CHECK THE FAN



220V / 110V	Brown	Black	Blue
Brown	0	450/ 92 Ω	276/ 57 Ω
Black	450/ 92 Ω	0	175/ 35 Ω
Blue	276/ 57 Ω	175/ 35 Ω	0

Article description	Article N°
Fan (230V / 115V)	40187 / 40188

Noise test

- Listen whether the fan makes proper noise.
- Is the air flow blocked? If yes, remove the parts disrupting the air flow.
- Is the fan outlet clean? If not, clean the fan outlet.

Power supply test

- If the PCB Power does not work, the fan could not work, too. Measure whether there is power on the PCB power (check the PCB power).
  - ✘ If there is no power, exchange the PCB power.

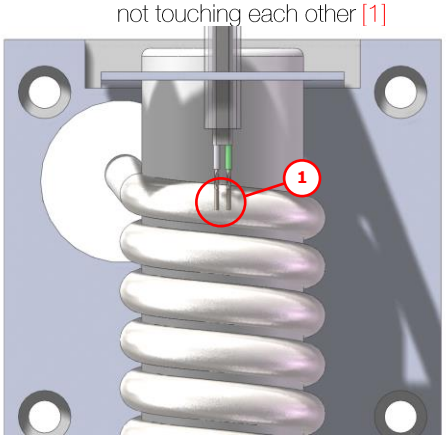
Burned coil

- Disconnect the fan from the PCB Choke [1] and accomplish a resistance test between the Brown, Black and the Blue wire of the fan.
- If the coil in the fan is not burned, the resistance values will be nearly equal to those in the table aside, otherwise change the fan.

CHECK THE HEM TOUR HAZER 2.1 (HEAT EXCHANGE MODULE)

ERROR MESSAGES

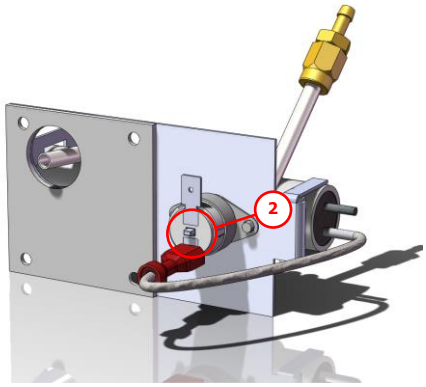
"Optical Test" – both wires properly connected and not touching each other [1]



Article description	Article N°
HEM Tour Hazer 2.1	69035 (230V) 69037 (110V)

- Check the display to see if there is an E-1 or E-4 appearing.
- E-1 means the thermocouple is disconnected (see picture), change the HEM unit.
- E-4 means the machine is getting too hot, the heater switched off and the machine cools down.
  Disconnect the machine from the main power supply for a moment and reconnect it.
- If the thermocouple is connected properly and here are no messages at the display do the "Optical test" if it is still not working properly.

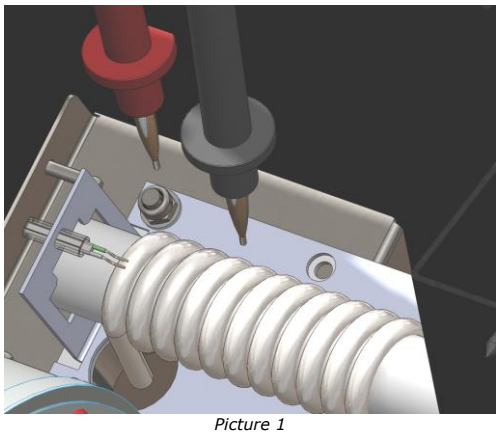
TEST OF HEATING



Article description	Article N°
HEM Tour Hazer 2.1	69035 (230V) 69037 (110V)
Spacer M4 for HEM insulation	30380

- Start the Tour Hazer 2.1 unit and check whether the cartridge and coil of the HEM heats up.
- If the HEM doesn't heat up, diconnect the Tour Hazer 2.1 from mains and check the thermal trip [2] at the bottom of the HEM unit (continuity test or just feel if it is tripped)
- If it is tripped, reset it, connect the Tour Hazer 2.1 to mains and check whether the cartridge and coil are heating up now.
- If they are still not heating up, diconnect the Tour Hazer 2.1 from mains and check if the thermal trip is tripped.
- If the thermal trip is tripped, have a closer look at the thermocouple connection at the coil, maybe a shortcircuit of the connection is the reason (if so, remove this shortcircuit by separating the two wires).
- Another reason for tripping could be a shortcut of the insulation at the bottom of the HEM unit because of humidity (take the HEM out and change the black plastic insulaters).

RESISTANCE TEST



Picture 1

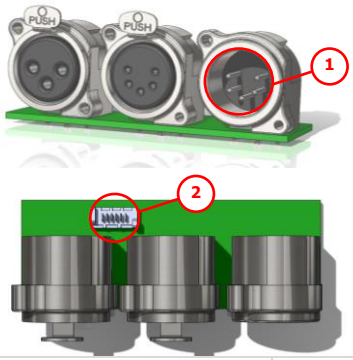
Picture 2

Article description	Article N°
HEM Tour Hazer 2.1	69035 (230V) 69037 (110V)

- Disconnect the HEM thermocouple from the PCB HCM and measure the resistance between the HEM plate and the case (see picture 1) - there should be about 1MΩ, not much less.
- Unplug the Tour Hazer 2.1 unit and measure the resistance between pin 17 and 18 (see picture 2) on the PCB power - the resistance should be about 40Ω (12Ω for the 110V model).
- If the resistance is not in the expected range change the HEM, otherwise go on testing.

CHECK THE PCB REMOTE (DMX AND ANALOG)

OPTICAL TEST



Description	Part N°
PCB remote	39004

- First check whether all pins [1] are ok (not bent, corroded or broken).
- Then check the PCB on both sides (no cracked or burned areas).
- Finally check whether the 6-pin Picoflex PF-50 header [2] is ok.

FUNCTION TEST

- Connect a DMX tester (or DMX remote) to the Tour Hazer 2.1.
- Select DMX start address 001 (on the Tour Hazer 2.1 display).
- Save the DMX start address by pressing the Enter button.
- Select DMX address 001 on the DMX tester.
- Increase and decrease DMX output level at the DMX tester. Verify that at the same time, the Tour Hazer 2.1 fog output increases and decreases proportionally too.
- Select DMX address 002 (on the DMX tester).
- Increase and decrease DMX output level at the DMX tester. Verify that at the same time, the Tour Hazer 2.1 fan output increases and decreases proportionally too.

CHECK THE PUMP NME1

FUNCTION TEST

- Unplug the Tour Hazer 2.1.
- Disconnect the pump from the PCB power.
- Supply power directly to the pump
  pump (50183) : 230V ~
  pump (50107) : 110V ~
- If the pump does not work, exchange the device. Otherwise :
  Reconnect the pump to the PCB power (pin 5 and 6 on the wire plan).
  Plug in the main power.
- After about 60 seconds, the Tour Hazer 2.1 reached its working temperature
  Press the enter button (on the PCB HCM) to start the haze process.
- If there is no haze coming out of the unit, something could be wrong with the PCB power, air pump or HEM.
  Go on testing with the PCB power, air pump and HEM

CHECK THE AIR PUMP APE-TM

FUNCTION TEST

▪ Unplug the Tour Hazer 2.1.

▪ Disconnect the air pump from the PCB power.

▪ Supply power directly to the air pump
Air pump APE TM (50081) : 230V ~

Air pump APE TM (50082) : 110V ~

▪ If the air pump does not work, exchange the device. Otherwise :
Reconnect the air pump to the PCB power (pin 3 and 4 on the wire plan).

▪ Plug in the main power.
After about 60 seconds, the Tour Hazer 2.1 will be heated up and the air pump should start to pump (proceed to the tube test).

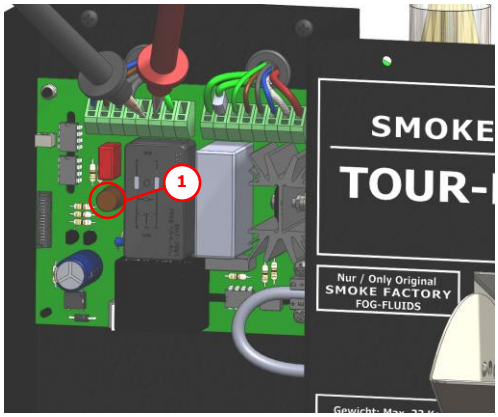
▪ If this is not the case, this could mean that something is wrong with the PCB power or with the HEM.
Go on to testing with the PCB power and HEM

TUBE TEST

▪ Squeeze the tube, coming out from the APE-TM unit just before the Y-unit, while the unit is running. Check whether the consistency of the haze changes at the exit of the Tour Hazer 2.1 and the noise of the Air pump changes.

▪ If there is no change of the consistency of the haze and/or the noise of the air pump unit does not change, the air pump needs to be changed.

CHECK THE PCB POWER TOUR HAZER 2.1



Picture 1

Article description	*Article N°*
PCB Power (230V / 115V)	39108 / 39128
Fuse (230V / 115V)	40144 / 40047

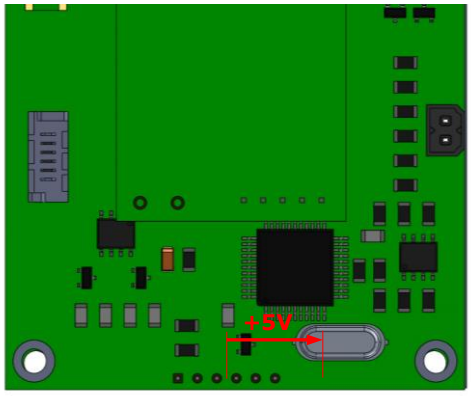
▪ There are three possible reasons why the PCB power does not operate:

✘ The fuse [1] is not ok
Take the fuse out; pull it out of its socket and check for continuity. Change the fuse if there is no continuity.

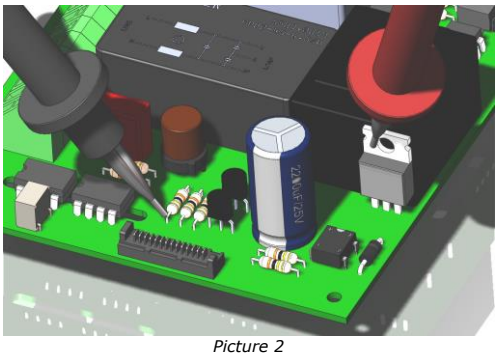
✘ No AC voltage present on the PCB power
Check the voltage at the terminal blocks (see picture 1) for the power input connection. If necessary fix the power supply connection.

✘ Burned circuits
Change the PCB Power whether it is burned or still not working after fixing the connections or changing the fuse.

CHECK THE PCB HCM TOUR HAZER 2.1



Picture 1



Picture 2

Article description	**Article N°**
PCB Power Tour Hazer 2.1	39108 (230V) 39109 (110V)
Fuse	40144 (230V) 40047 (110V)
PCB HCM Tour Hazer 2.1	39110

▪ Possible reason why the PCB HCM Tour Hazer 2.1 does not operate :

▪ Does the PCB power supply the input voltage for the PCB HCM?
Check the input voltage as shown in picture 1.

If the voltage ≠ 5V, four faults are possible :

✘ The PCB HCM is burned
Disconnect the flat cable 14-pin with connectors from the PCB power and check the power supplied to the PCB HCM Tour Hazer 2.1 directly from the PCB power (see picture 2)

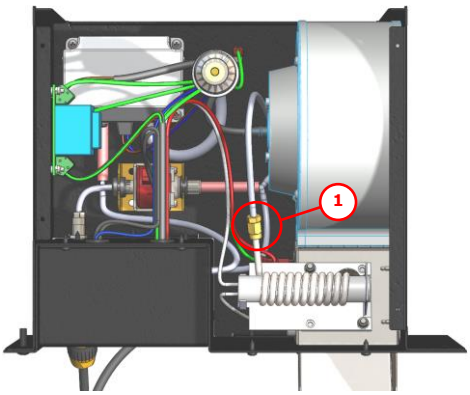
✘ The fuse is blown
Take the fuse out; pull it out of its socket and check for continuity. Change the fuse if there is no continuity. (Item number 40144 for Tour Hazer 2.1 230V and 40047 for Tour Hazer 2.1 110V)

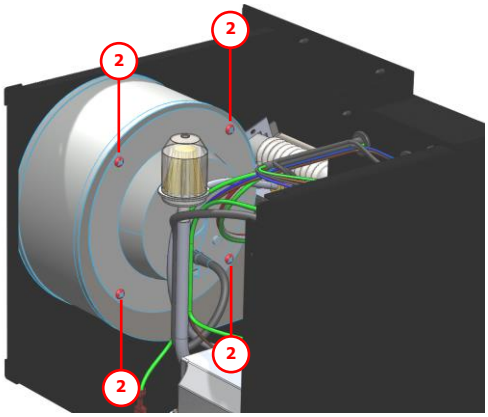
✘ The PTC has opened the circuit
This means that the voltage on the PCB power is too high. This could mean that the power supplied to the unit is too high or maybe that there is a shortcircuit.

✘ The PCB Power is burned
If the PCB power Tour Hazer 2.1 is burned, the PCB HCM Tour Hazer 2.1 can consequently not work. Exchange the PCB power Tour Hazer 2.1.

EXCHANGE

EXCHANGE THE FAN



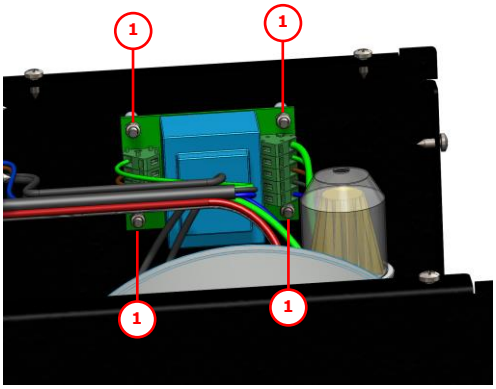


▪ To exchange the fan :

- Disconnect the fan from the PCB choke.
- Release the silicon tubes [1] from the HEM.
- Remove the four screws [2].
- Take out the wheel motor module.
- Exchange the wheel motor module with the new one.
- Connect the 4 wires to the PCB power (cable color is written on the PCB)

▪ Make a function test of the Tour Hazer 2.1.

EXCHANGE THE PCB CHOKE TOUR HAZER 2.1



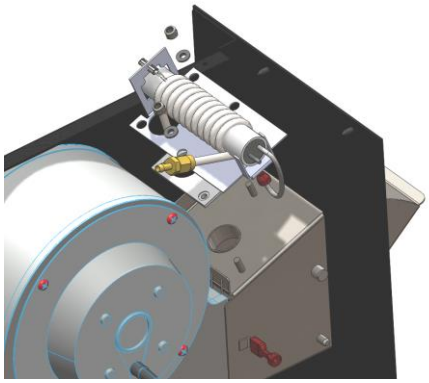
▪ Disconnect all cables from the PCB choke.

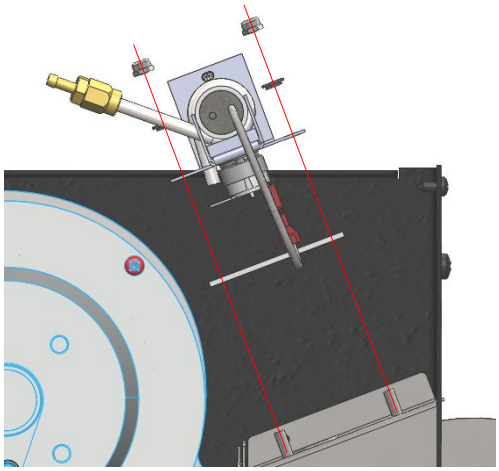
▪ Release the 4 M3 nylock nuts [2].

▪ Exchange the PCB power, reconnect the cables (cable color is written on the PCB) tighten the nuts [2] properly.

▪ Make a function test of the Tour Hazer 2.1.

EXCHANGE THE HEM





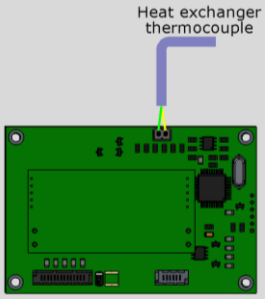
Article description	Article N°
HEM Tour Hazer 2.1	69035 (230V) 69037 (110V)

- Disconnect all tubes and cables.
- Detach the nuts (spanner size 7).
- Take out the HEM.
- Screw in the new HEM, using the 2 new spacers M4 (see picture 4)

Never forget to build in the spacers; otherwise the HEM will get TOO HOT!!

- Before reconnecting the thermocouple, measure the resistance between the HEM plate and the case. It should be about 1MΩ, not much less.
- Reconnect the thermocouple to the HCM PCB.

make sure that the thermocouple polarity is correct otherwise the HEM will get TOO HOT!!



- Reconnect the tubes and wires.
- Change the nuts and black spacers M4 for insulation and be sure that the spacers are between the nuts and the HEM plate so that housing and HEM are isolated
- Tighten the nuts properly.
- Be very careful with the thermocouple as it can break easily or short-circuit both wires at the coil.
The Tour Hazer 2.1 needs to run a while before working properly again because of fluid residue left in the tubes.

EXCHANGE THE PCB REMOTE

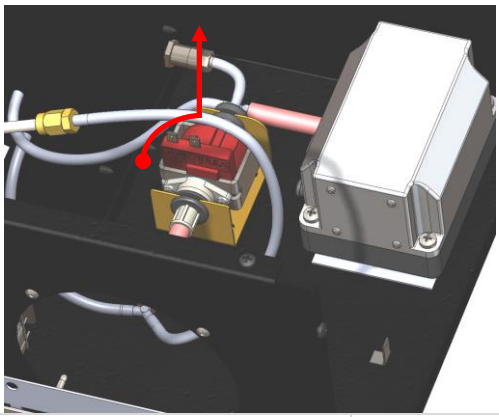
Picture 1

Picture 2

Article description	Article N°
Control panel Tour Hazer 2.1	70673
Tapping screw 3.5 x 9.5mm	70212
Flat cable 6 pin	49027

- Unplug the Tour Hazer 2.1.
- Unscrew the Control panel Tour Hazer 2.1 (see picture 1).
- Disconnect the 6 pin connector form the remote PCB (DMX and analog).
- Unscrew the four red marked screws (see picture 2) and loose the PCB remote.
  Replace the device.

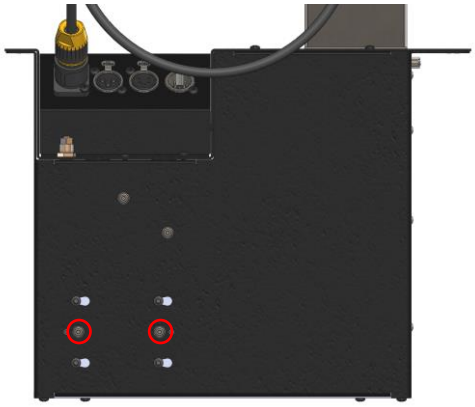
EXCHANGE THE PUMP



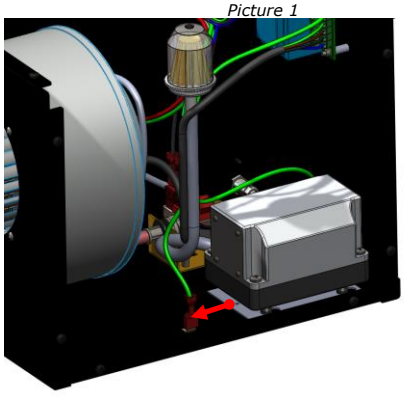
Article description	Article N°
Fluid pump NME1	50183 (230V) 50107 (110V)

- Swivel the pump 30° from the right and then push it upward.
- Disconnect the wires and the silicon tubes.
- Exchange the pump.
- Reconnect the wires and the silicon tubes.
- Relock the pump.

EXCHANGE THE AIR PUMP



Picture 1



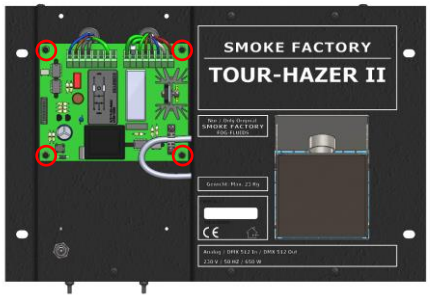
Picture 2

Article description	Article N°
Air pump APE-TM	50081 (230V) 50082 (110V)
Aluminum rivet 5 x 10mm	70304

- To exchange the air pump it is necessary to drill out the two blind rivets from the air pump holder (see picture 1).
- Push the air pump holder like shown in picture 2.
- Pull the air pump out of the Tour Hazer 2.1 housing bottom.
- Pull out the tubes.
- Disconnect the air pump wires from the Tour Hazer 2.1 PCB power.
- Take away the old air pump and fit a new replacement air pump.
- Reconnect the tube and wires.

EXCHANGE THE PCB POWER

Picture 1



Picture 2

Article description	Article N°
PCB Power Tour Hazer 2.1	39108 (230V) 39109 (110V)
Fuse	40144 (230V) 40047 (110V)

- To exchange the PCB power, first remove the Control panel Tour Hazer 2.1 (four red marked screws on picture 1).
- Loose the flat cable 14 pin from the PCB power.
- Loose all the cable from the terminal block on the PCB power.
- Release the 4 M3 nylock nuts holding the PCB power (picture 2).
- Exchange the PCB power, reconnect the cables (see wireplan) tighten the nuts properly.
- Screw the Control panel Tour Hazer 2.1 onto the Tour Hazer 2.1 housing.

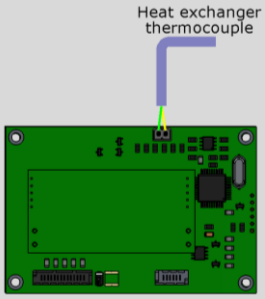
Picture 1

Picture 2

Article description	*Article N°*
PCB HCM Tour Hazer 2.1	39110

- To exchange the PCB HCM first remove the Control panel Tour Hazer 2.1 (four red marked screws on picture 1), the 14 pin flat cable from the PCB power and the 6 pin flat cable from the remote PCB.
- Detach the nuts (spanner size 5,5).
- Replace the device.
- Reconnect the 14 and the 6 pin flat cables
- Reconnect the thermocouple.

make sure that the thermocouple polarity is correct otherwise the HEM will get TOO HOT!!



- Push the Up and Down Button at the display (see picture 2) keep them pushed, and connect the machine to mains. “CAL” appears on the display.
- Push the Enter button to confirm the calibration process. The machine is now recalibrated.