**Troubleshooting**

|  |  |  |  |
| --- | --- | --- | --- |
| **Error** | **Check** | **Potential Reason** | **Fix** |
| „Can’t bring MS online“ | I/O test doesn’t work | MS can’t be controlled from the Chem Station | Just turn off the MS power button for 2 seconds and turn it on again (MAX 15 sec.) |
| Computer is shutting down |  |  | Change ventilator on computer |
| Measurement stops |  | Filename already exists  | Change name or delete old file |
|  |  | Hard drive full | Backup and delete files |
| “MS halted, GC still running” | Too much signal in the MS | Overconcentrated sample | Dilute the sample |
|  |  | Solvent delay too short | Adjust solvent delay in method. |
|  |  |  | *See excessive source pressure* |
| Autotune doesn’t work |  |  | Change filament in “diagnostics mode”, “edit ms parameters” and switch from 1 to 2 or 2 to 1. If both are defect, you have to change them. |
| Excessive source pressure or excessive signal level | Check the MS vacuum on the gauge controllerIf its ok, then make an air and water test to see if there’s air in there – if yes | A leakage on the column  | try looking for the leakage by using a tube with argon and look at on which point you see the argon in the MS. |
|  |  |  | Check if all screws are tight |
|  |  |  | Change the septum on the injector. |
|  |  | A leakage on the ion source itself  | clean the ion source |
|  | If no – Go to the diagnostics mode on the MS chem station and go to “edit ms parameters”. There you can press “scan” and see what is reaching the MS when nothing is running except the helium flow. If the biggest peak is at 28 Da then there is way too much Air in there and there’s a leakage. If there is no air peak then… | The helium is set too high.  | Set the total flow on the GC lower (see GC buttons) |
|  |  | Dirty ion source | clean the ion source |
| Missing magnetic sample insert or dirty plunger |  |  | Just click repeat. |
|  |  |  | Clean or change the syringe |
|  |  |  | Apply fat to the moving parts of the injector |
|  |  |  |  |
| No signal but baseline | See if there is solvent reaching the MS by cancelling the solvent delay – if no | The syringe is clogged  | Clean or change the syringe |
|  |  | The liner is clogged | Clean or change the liner |
|  |  | Helium is empty | Change bottle |
|  |  | the sample vial is not full enough | Fill higher |
|  |  | The column is clogged | Cut the column on the injector side |
|  |  |  | Change the column |
|  | If yes | Too little sample in the solution |  |
|  |  | the sample is not suitable for the column |  |
| Gauge controller doesn’t work | Check if the filament of the gauge controller is connected  | It might be removed after cleaning the ion source | Plug it back in |
| Purge doesn’t work |  |  | Turn on PURGE on the GC |

**Maintenance:**

Blauer Liner am Injector B eingang: Ganz oben ist septum (rot oder grün) darunter ein Metallring, darunter der Liner. Liner mit pinzette vorsichtig herausziehen damit er nicht bricht. Kann vorsichtig gereinigt werden

Septum wechseln: the opening must point upward

Liner wechseln:

Cut Column: Check with magnifying glas if cut is clean.

Photomultiplier: it should be < 3000 V it goes higher with age. You can see it on the print out of a standard spectra autotune. If it doesn’t pring go to the printer section of the computer and look for the file.

Helium Flasche Wechseln:

Brauchgas-Brücke schliessen

Flasche schliessen

Flasche abschrauben

Neue Flasche anschrauben

Flasche öffnen, flasche schliessen, spülgas öffnen, spülgas schliessen (repeat 3 x)

Brauchgas Brücke öffnen

Reorder at 40 bar

Spritze wechseln:

Säule wechseln:

Set the „Oven Temp“, “Inj B temp” and “Det b temp” off

Vent the MS by going to the diagnostics mode on the computer chem station and click on “vent…”

Turn the MS off theres a button on the back of the ion source

When everything is cooled down, unscrew on both the injector side and the detector side. Pay attention to what ferrules are where and how the parts are put together. On the MS side: The column goes 22 cm deep into the MS (fully in then 2 cm back).

After the column has been changed turn on the MS

Click on “Pump down…” in the diagnostics mode

Turn on the „Oven Temp“, “Inj B temp” and “Det b temp”

Do an Autotune and an Air and Water check (in diagnostics mode)

Filament wechseln:

Ionenquelle reinigen:

Festplatte:

ISA Card: Das ist die Karte im Computer an dem das GCMS angeschlossen ist. Eine Ersatz-Karte ist in der Schublade. Typ: "FCC ID:B9482335"

Functions:

Gauge controller: This device is measuring the pressure inside the ion cell via an extra filament (glas column with blue plastic). It should only be turned on when the pressure needs to me controlled since the filament might break. Start with the left button set to “ 1 mA” and the right one at “10-4”. When the pointer is on the far right or somewhere in the middle then the pressure is too high, when it is on the far left then go to “10^-5) with the right button. It should be somewhere around 5 or lower. Turn the Power of the gauge controller of after checking the pressure.

Septum Purge:

Buttons on the GC: The ones on the right regulate the temperature of the specific parts. Relevant are: Oven Temp, Inj B and Det B. The buttons on the left regulate the helium current. “Increase total” will make more helium go through the column, thereby increasing both the pressure on the column head (analogous display) and the purged helium from the outlet. “increase column head pressure” will reduce the helium on the outlet and increase the pressure on the analogous display.

Foreline Pump: Before the diffusion pump can be turned on the foreline pump is pumping down.

Edit ms parm, scan

Normal values:

MS Temperature ~ 182 °C

Foreline Pressure: ~ 90 – 130 Torr

Oven temp: 60 °C

Helium: 75 kPa

Solvent A = Ethyl acetate

Solvent B: methanol

Injector B = 250 °C

Detector B = 280 °C

Contact

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Solvents and Samples:

Non-polar samples and non polar solvents. MeOH is ok but anything more polar like DMSO not.