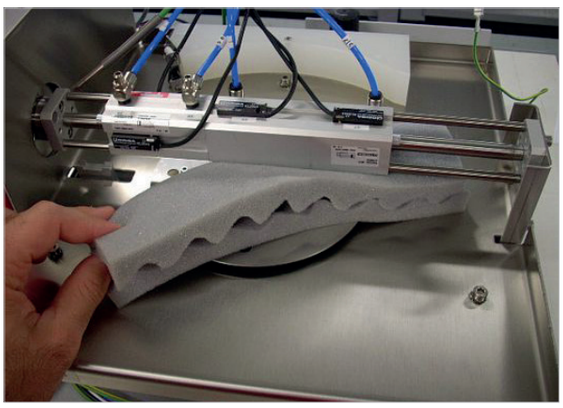
SG003-003• 2021-04

DMA-80 *evo*
Quick Start Guide

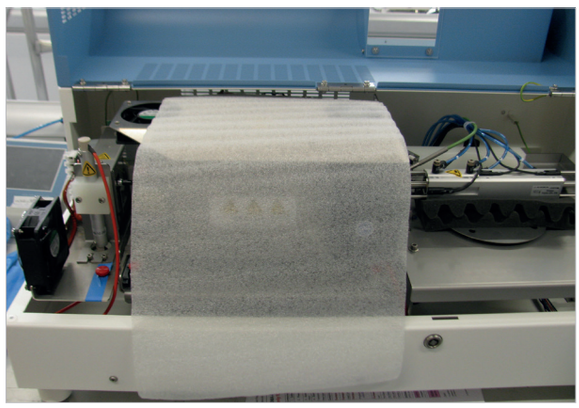
Setting up your Milestone DMA-80 *evo* is simple. Just follow the following instructions. Once completed the setup, take some time to read carefully the User Manual MA213. After the switch on, login as User or Administrator. In case of use of routine methods, the User level is enough.

SETUP YOUR DMA-80 evo

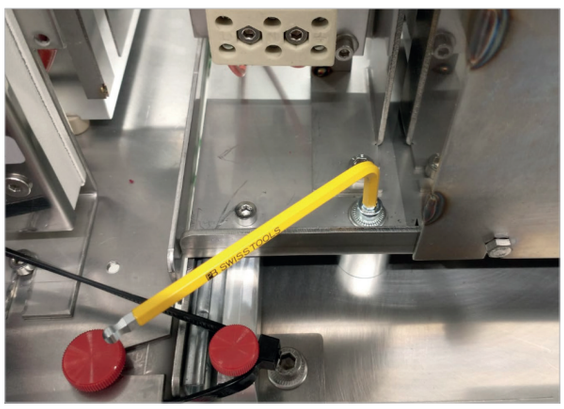
Preliminary steps:



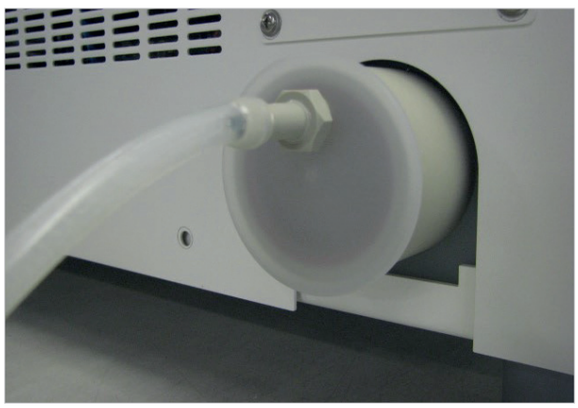
1. Remove the foam under the pneumatic arm.



2. Remove the protection foil on the top of the oven plate.

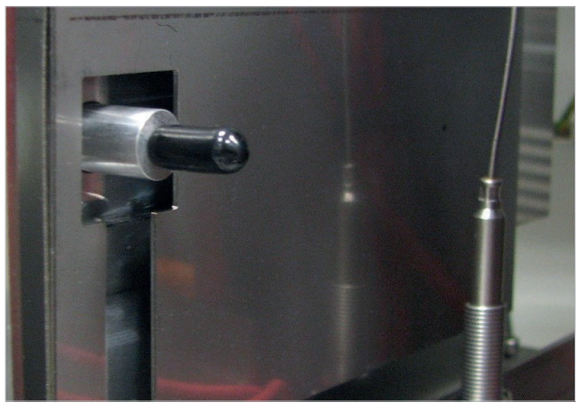


3. Remove the strip and screw which holds the ovens plate.

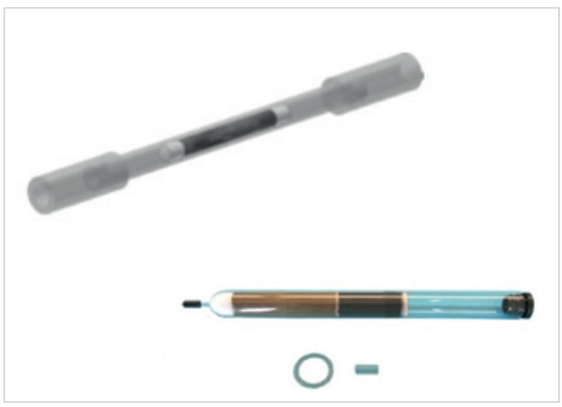


4. Install the outlet adapter plate taking it from the blue accessories case.

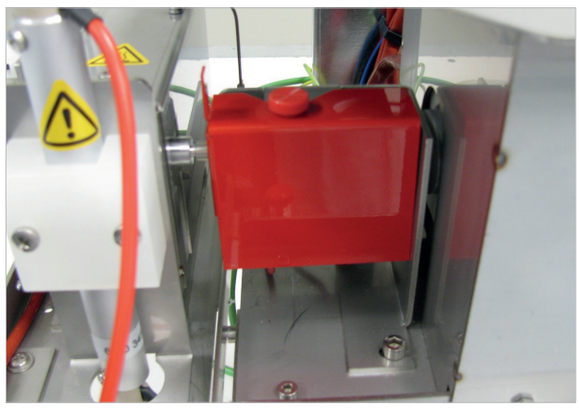
5. Connect the Hg trap and fill the label with the installation date.



6. Remove the cap on the cuvette spout.



7. Install catalyst and amalgamator as described in the user manual.



8. Install the red cover plate of the amalgamator.

VOLTAGE SETUP

The factory voltage setting on DMA-80 *evo* is 220-240 VAC. Follow this procedure every time the input line voltage is different than value set on the unit.

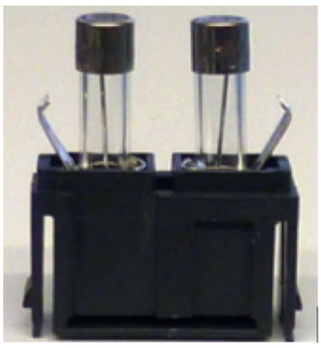
An incorrect voltage setting of the unit can cause damages on the electrical components. Always measure the inlet voltage on the power socket before proceeding with the voltage setting.

DMA-80 *evo* can operate with a voltage of 220-240 VAC or 110-120 VAC. From DMA-80 *evo* SN 20032968, the voltage setting of the device is made by re-wiring the primary connections of the transformer.

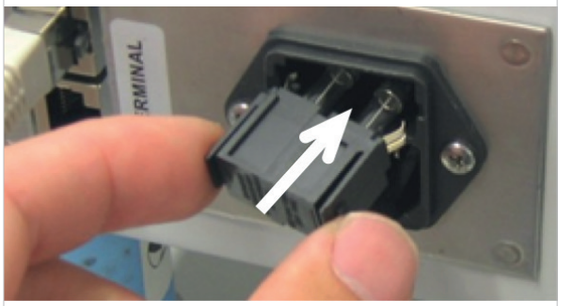
1. FUSE REPLACEMENT

Be sure the unit is turned off and the power cord is not connected.

1. Press the two tabs on the sides of the fuse holder of the plug and take it out.

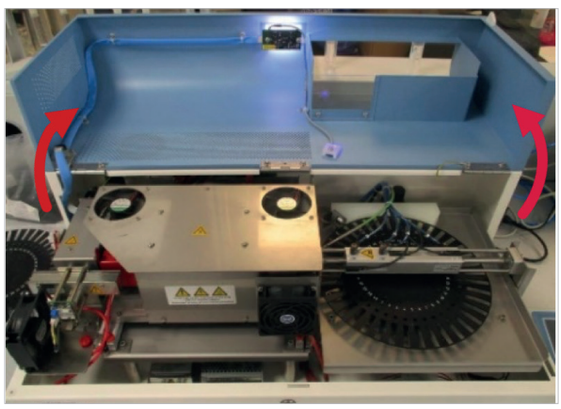


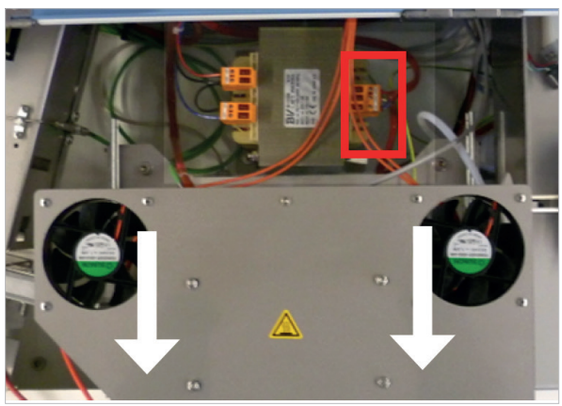
2. Replace the two fuses from the holder with the ones suitable for the inlet voltage:
- for 220-240 VAC: 2 x T6,3A
- for 110-120 VAC: 2 x T10A
The spare fuses are located in a bag in the blue accessories case of the unit.



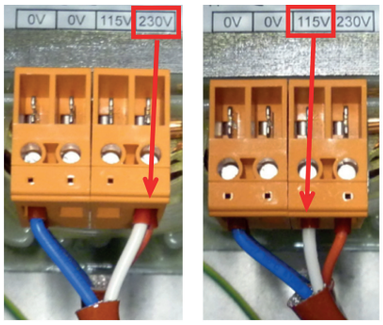
3. Install the fuse holder into the plug and press it until the tabs engage.

2. CHANGE THE CONNECTIONS ON THE VOLTAGE TRANSFORMER





1. Open the main cover of the unit in order to access the transformer. If you have a DMA-80 *evo*, you have to pull the catalyst oven forward. First, be sure that the amalgamator is disconnected from the cuvette and the horizontal pneumatic arm is out from the catalyst flange.



220-240 VAC **110-120 VAC**

2. Change the wiring of the primary connection of the transformer.

- **for 220-240 VAC: connect the white wire to the 230V terminal**
- **for 110-120 VAC: connect the white wire to the 115V terminal**

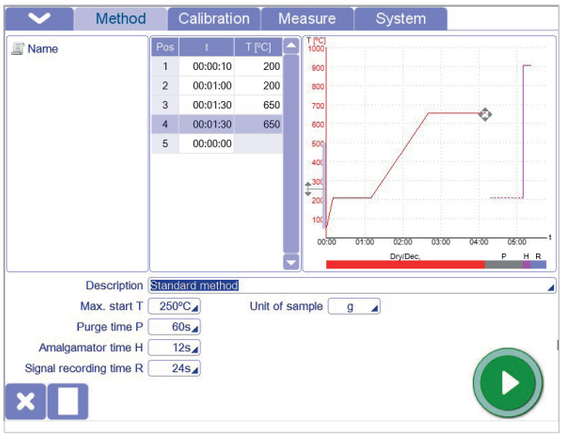
Push the oven back and cover the unit.
Connect the power cord to the unit, turn on the machine and check its function.

3. INDICATE THE SET VOLTAGE WITH LABELS

Locate the labels designated to indicate the set voltage inside the fuse bag.

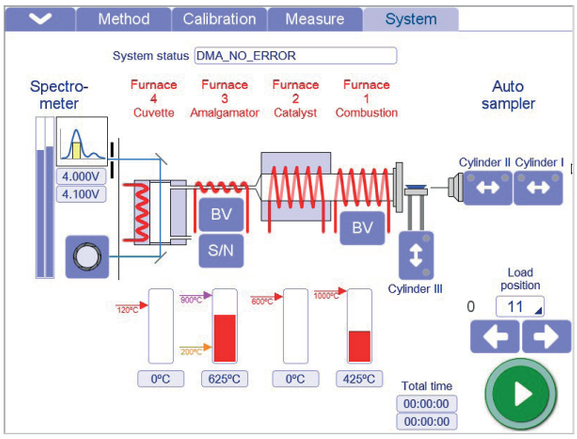
Next to the power socket, replace or overlay the existing labels, indicating the set voltage with the new one.

STARTING YOUR DMA-80 evo



METHOD PAGE – STANDARD METHOD

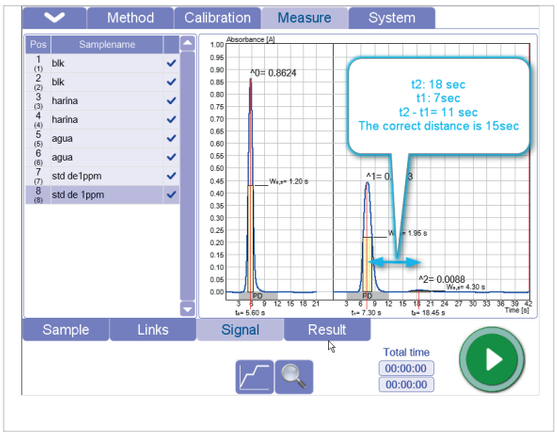
1. Connection of oxygen or air supply (4 bar pre-load). Warm it up to 15 minutes.
2. Select the program or create a new one i.e. standard method for liquid and solid samples.
3. Select DMA Measurement/Meas./Result. Verify the system is Hg free. In case run a couple of blanks.
4. Weight (if neede), activate balance interface.
5. Test the oxygen or air flow before the operation (6/8 l/h). For testing, 10 ng Hg i.e. 100 µl of 100µg/L standard are dosed in the quartz boat.
6. Start the measuring by touching the Start icon



SYSTEM PAGE

You can check the system status using the system page:

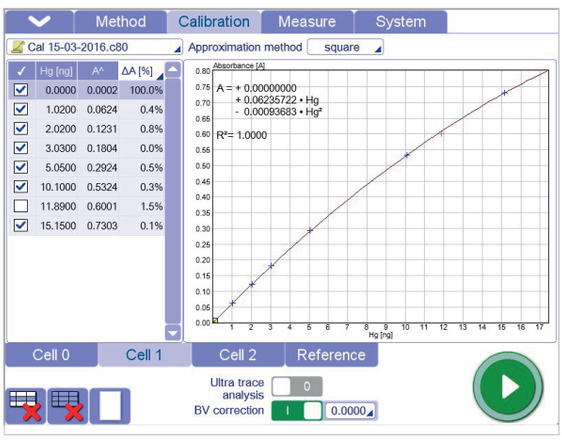
- All system temperatures
- Auto-sampler position under processing
- Total time and Sample time
- Voltage of Detector
- System status messages

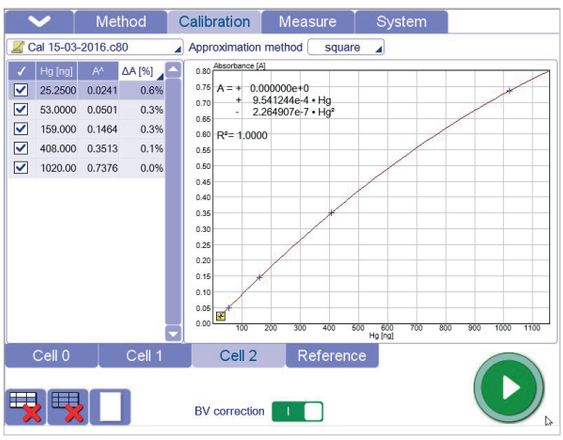


SIGNAL DISTANCE: 14 ± 2 SECONDS

The signal distance between both signals can be adjusted by a slight change of the gas flow (move the gas flow controller). Only if an adjusted and constant gas flow occurs, the device can correctly work. Therefore, also the inlet pressure value should remain constant at 4 bar! The adjustment takes place only one time. The signal distance should be tested every day without any change. Should the signal distance be significantly wider, there could be a leak in the area of the flange. For testing, 10 ng Hg i.e. 100 µl of 100µg/L standard are dosed in the quartz boat.

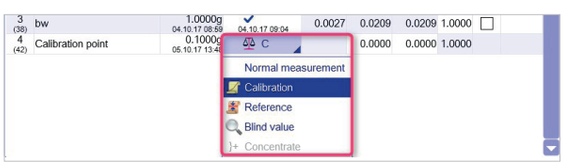
CALIBRATION OF HG CONCENTRATIONS





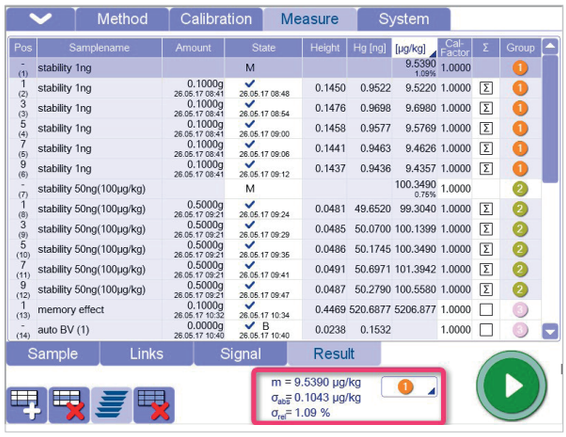
The setting of calibration curves can be carried out with some mercury standard solutions. You shall dose 10 up to 100 µl in the quartz boats. Normally only a test per day is necessary for the calibration control check (i.e. with 5ng Hg or Certified Material).

1. **Calibration only after constant blank values,** i.e.<0.0030 (depending on the working range).
2. Create a new line in the measuring data and mark this for the calibration with "C" (see picture). Edit weight and concentration.



3. Under Measur./Link page introduce the de-sired calibration data file. Here the measuring point is registered. Before doing that, possibly create an empty calibration data file.
4. Measuring values are automatically assigned to the appropriate cell.
5. New calibrated values are represented in red color in the curve and must be confirmed by their storage! Please, note that for values superior to 5ng (Hg), a quadratic analysis is useful. The values under 5ng (Hg) can be linearly analyzed.
6. The curves could intersect the y-axis or going through zero. (Not through x-axis>otherwise false blind values). Not required calibration points can be deactivated by removal (click) of the blue flags.

IT IS NOT NECESSARY TO RECALIBRATE EVERY DAY. It is possible to use Reference feature (check the User Manual)



AVERAGE CALCULATION OF THE MEASURING

Touch behind the column **Calc-Factor** the empty field. After that, will appear the sum symbol ∑. All values marked with the symbol ∑ are considered for the average calculation (incl. standard deviation). The result is displayed in a separate line below the measuring values. See an example in the left picture.

In addition, it's possible to assign groups, whose statistical data can be therefore individually illustrated and printed.

Software screen shots are just examples that don't set any standard value to be reached.

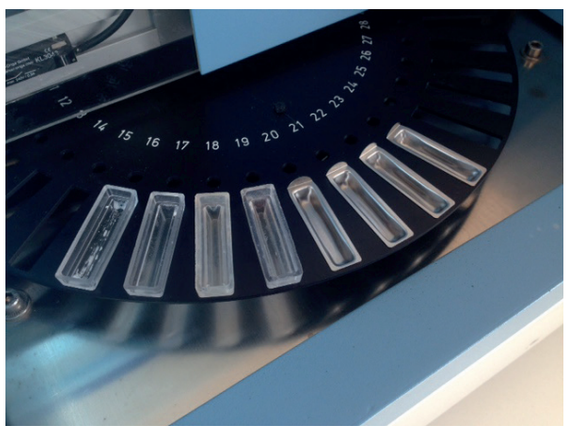
CLEANING AND MAINTENANCE

It's advisable to drive some blind values after high Hg values. You can achieve a particularly fast clea ning by measuring 0.3g of flour plus 50µl of distill Water. The following measured blind val-ues should then obtain a signal level of < 0.0030 Ext. (A) as required (referring Cell 1 sig-nal).

Replace catalyst and amalgamator after 5000 run (life time of consumable is variable according to the sample matrices).

Important: keep the flange and fork clean with o-ring. Leaks caused by pollution cause false results! Black sample waste products inside the ashing part of the catalyst can cause high blind values.

QUARTZ AND NICKEL BOATS CLEANING



The best way to clean the DMA-80 evo boats is high temperature. You can both place them 10/15minutes in a Muffle at 650°C or use the Clean Procedure method with the DMA-80 evo.

Note: Quartz boats are used for liquid samples, nickel boats are used for solid samples. Don't rinse the nickel boats with any acids.

HG TRAP

It consists of a glass tube filled with activated coal and activated charcoal. Thanks to its pores, it can absorb pollutants from air eliminating mercury, chlorine, harmful gases and smells produced during the decomposition of the sample. Laboratories and industries avoid reagents disposal and chemists are protected from hazardous gases.

CONDITIONING PROCEDURE FOR NEW CATALYST/AMALGAMATOR

The following procedure is to be performed after replacing a new catalyst/amalgamator.
Replace catalyst and amalgamator after 2500/3000 runs (life time of consumable is variable according to the sample matrices).

Note: before starting the procedure be sure that the catalyst/amalgamator is correctly installed, alignment of actuators and Oxygen or Air flow checked (for more details see operator manual).

DMA-80 evo – PROCEDURE FOR CATALYST/AMALGAMATOR ACTIVATION

Please refer to the video tutorial that you can find at www.milestoneconnect.com

Step	Reagent/sample type	Sample amount	DMA-80 evo program (initialization method)		
			Drying time and temp.(1) (2)	**Decomposition time and temp.**(1) (2)	**Purge/waiting time**
1°-2°	B/V amalgamator	-	-	-	-
3°-4°-5°	Blank (without sample boat)	100mg (indicative value)	ATC: 10sec/200°C + 120sec/200°C	ATC: 60sec/650°C + 120sec/650°C	60sec
6° *	Common white flour + distilled H_2O	300mg+50mg	ATC: 10sec/200°C + 120sec/200°C	ATC: 60sec/650°C + 120sec/650°C	60sec
7°-8°	Blank (without sample boat)	100mg (indicative value)	ATC: 10sec/200°C + 120sec/200°C	ATC: 60sec/650°C + 120sec/650°C	60sec
9° *	Common white flour + distilled H_2O	300mg+50mg	ATC: 10sec/200°C + 120sec/200°C	ATC: 60sec/650°C + 120sec/650°C	60sec
10°	Blank (without sample boat)	100mg (indicative value)	ATC: 10sec/200°C + 120sec/200°C	ATC: 60sec/650°C + 120sec/650°C	60sec

*: quartz boat (suggested)
Repeat at 5 times the above procedure, up to absorbance < 0.0030 (consider the signal in Cell1)
After conditioning a stability test is required.
Repeat 5 times: a fresh aqueous standard of 100ppb, the RSD should be <3% (5% is still acceptable).
For this evaluation is not important the recovery but only the DMA stability so the previous calibration curve can be used.
If the stability test is according to the specs, please proceed making new calibration (see user manual), otherwise repeat the conditioning procedure again

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