TECHNICAL PROCEDURE:
USING A MIVI ON A LAB STAND

WHY SHOULD I USE A MIVI ON A LAB STAND?

➔ Verify the calibration of the MIVI viscometer

➔ Realize MIVI demos for customers

➔ Measure a sample

REQUIRED CONDITIONS

- Room with constant temperature between 20°C and 30°C,
- Thermal variations must be lower than 0.5°C/hour,
- No thermal radiations (sun, radiator, pipe, etc.)
- No airflows

EQUIPMENT

- Stable workbench without vibrations
- Dumping sheet for a perfect contact between the lab stand and the workbench
- Sofraser " Lab stand kit" (ref. 3.AX003) including:
  - Lab stand
  - Clamp (with non coated jaw)
  - Lab jack
  - CheckTemp thermometer (or certified thermometer with accuracy ≥ 0.3°C with weak thermal inertia)
- Bottles of standard oils (with calibration certificates indicating viscosity @ temperatures between 20°C and 30°C)
- Sample bottles
- Sofraser pre-filled document / measurement report for control points and values recording

IMPORTANT

The bottles dimensions need to comply with the following rules:

- diameter of the bottle neck must be at least 30 mm (to avoid "wall effects")
- height of the bottle must be at least 110 mm
- liquid height in the bottle must be at 10 mm max. from the bottle neck.

INSTALLATION

- The installation must be done at least 1 hour before realizing the measurements, in order to wait for temperature and system complete stabilization.

BAD EXAMPLE SITUATIONS:

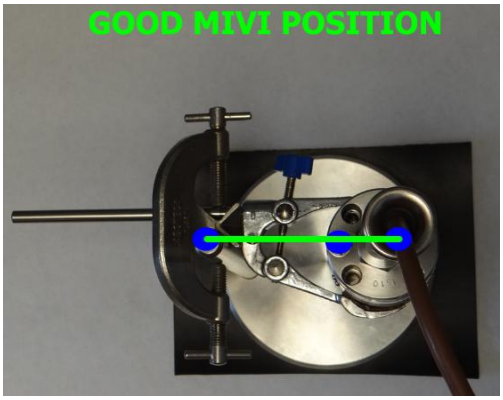
- Install the MIVI right after taking it out from the car in cold winter temperatures
- Install the MIVI in other temperature environment : measuring oil samples at a complete different temperature than the sensor temperature

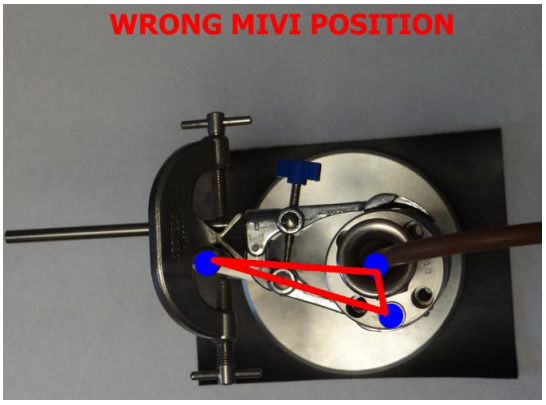
- Install the lab stand on the carpet and check the stability of the installation
- **Don't move the installation for the measurements**

- **Fix strongly** the MIVI with the clamp on the lab stand and
- Make sure the MIVI is in the **correct position**

IMPORTANT: CORRECT POSITION OF THE MIVI

- **The vibrating rod movement has to be perpendicular to the lab stand axis.**
- **To do so, the lab stand axis, MIVI screw and cable output must be aligned**





- **The clamp must be firmly tight.**

- Connect the electronic unit and power on the viscometer

- Check that the **MIVI flexible and cable don't disturb the rough signal and there is no transfer of vibrations** (if necessary, adjust the flexible tube and cable position for more stability)
- Check that the **mass changes of the bench don't disturb the rough signal** on the electronic unit

- Take off the protector in order to clean the vibrating rod with suitable solvent (acetone for ex.) and reassemble the protector

IMPORTANT:
Do not hit the vibrating rod while handling the protector

- Prepare the standard oils and the samples

IMPORTANT:
Wait until the complete temperature stabilization of the system

MEASUREMENT STEPS

IMPORTANT:

- During each step, fill in the pre-filled measurement report by noting
  - Air temperature
  - Rough signal
  - Viscosity displayed
- Do not touch the vibrating rod with the oil bottles
- Do not move the sensor and the support

STEP 1

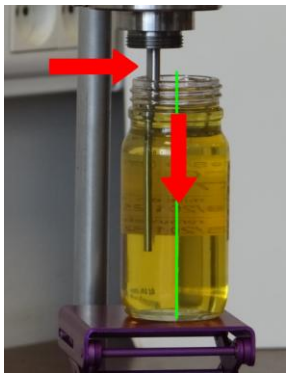
- Check that the position and fixing of the MIVI is correct (INSTALLATION)
- Take off the protector tube
- Check that the vibrating rod is clean and dry

STEP 2

- Make the “zero in the air” procedure of the MIVI (see user manual of your viscometer)
- Read and verify the stability of the “zero in the air” by noting the rough signal on the measurement report (900 mV ±0.1 mV for 9600 series)

STEP 3

- Homogenize the higher and lower layers of the oil sample by agitating the thermometer rod
- Wait for oil temperature stabilization at 0.1°C and note the temperature of the standard oil
- Install the standard oil bottle on the lab jack under the MIVI vibrating rod
- Adjust the position of the bottle thanks to the lab jack elevation system



IMPORTANT

- Install the sample so that the MIVI vibrating rod is perfectly at the center of the bottle
- The bottle neck must not touch the MIVI sensor
- **The MIVI must ideally be immersed at half of the tube of 5 mm diameter**, minimum higher than the welding of the rod of 3 mm diameter (the welding point is the connection of the vibrating rod and larger tube).

- Verify that no air bubble sticks to the vibrating rod
- If the oil sample is of high viscosity, mix the bottle gently by making rotational movements with the aim of avoiding the creation of a hole filled with air around the vibrating rod.

STEP 4

- Read and fill in the measurement report the viscosity and the rough signal displayed on the electronic unit
- Take off the oil bottle by moving down the lab jack
- Let drain the vibrating rod

STEP 5

- Check again the temperature of the standard oil
- Clean carefully the vibrating rod (and the incorporated temperature probe if the MIVI is provided with) with a clean cloth in order not to pollute the next samples
- Clean the thermometer
- Read and note the return of the 0 (viscosity and rough signal). A variation of ± 1mV rough signal in the air is acceptable – It is not necessary at this moment to make the “zero in the air” between 2 oil samples

Repeat the operation for each sample

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