

# EECPC CALIBRATION: ORDER THE RIGHT EQUIPMENT

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APPLICATION NOTE EECPC-002 (US)

Calibration of the Engine Exhaust Condensation Particle Counter (EECPC), TSI model 3790A, requires following the procedures described in EURO 5 Regulation 83. Using these systems these components adhere to the guidelines of ISO 27891.

The instruments needed to construct the calibration bench are similar to standard particle instruments from TSI® Incorporated. See Figure 1 for a schematic of the entire calibration process.

## Aerosol Generation

- 3074B Pressurized Air Supply. This optional item is used to assure that the pressurized air used in the calibration process is dry, and free of oil and particles.
- 3482 Advanced Electro spray Aerosol Generator (EAG)
- 1050001 Dilution Bridge
- 3082 Electrostatic Classifier
- 3088 Soft X-ray Neutralizer (strongly recommended; in general, it increases the concentration of particles available for calibration)
- 3085A Nano DMA

## Flow Balance

- 1602051 Filter
- 4148 Flow Calibrator (includes small filter shown in Figure 1) (permits calculation of relative humidity of air presented to aerosol instrumentation, when ambient humidity is known)

## EECPC Calibration

- 3708 Flow Splitter
- 3790A Engine Exhaust CPC (CPC under Test)
- 3772 Condensation Particle Counter (Reference CPC)
- 3068B Aerosol Electrometer (Reference Aerosol Electrometer)

## Tubing

- 3001788 Conductive Tubing (fits ¼" barb)
- 3001789 Conductive Tubing (fits ⅜" barb)

Details for generating emery oil aerosol for the calibration process are provided in a separate application note.



## AEROSOL GENERATION



Role	Purify air	Generate emery oil aerosol	Concentration control	Monodispersity control
Name	Filtered Air Supply	Advanced Electro spray Aerosol	Dilution Bridge	Electrostatic Classifier with Soft X-ray Neutralizer and Nano-DMA
Model #	3074B	3482	1050001	3082, 3088, and 3085A

## FLOW BALANCE



Filter	Flow Calibrator #4148	Filter
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## EECPC CALIBRATION



Role	Reference Aerosol Electrometer	Reference CPC	CPC under Test
Name	Aerosol Electrometer	Condensation Particle Counter	Engine Exhaust Condensation Particle Counter
Model #	3068B	3772	3790A

**Figure 1: Schematic of the EECPC Calibration Setup**



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