

4WD Climatic Emissions Chassis Dynamometers

Millbrook has two facilities in the UK with the following specifications:

Dynamometer specifications

- 4 wheel drive centre mounted motor
- Roller diameter: 1.22m (48")
- Wheelbase range: 1.8m to 4.6m
- Inertia range: 454kg (800kg in 4WD) – 5448kg over WLTC
- Max operating speed: 250 km/h
- Max axle load 4500 kg
- Continuous power: 220kw per axle 2WD, 330kW 4WD (total)
- Overload power (10s): 432kW per axle 2WD, 648kW 4WD (total)
- Continuous tractive effort: 7333N per axle 2WD, 11000N 4WD (total)
- Overload tractive effort (10s): 14666N per axle 2WD, 21600N 4WD (total)
- Dynamic gradient simulation for 3,500 kg inertia, at least 20%
- Simple vertical post restraint system has no vertical or lateral load on vehicle. Flexible approach to allow variety of vehicles to be tested

Speed tracking fan

- Speed tracking fan frontal area of 0.5m² up to 140km/h and 0.3m² at 200km/h
- Adjustable up and down to match vehicle height
- Frontal vanes to be able to be angled
- Fan able to be placed in set speed modes
- Fan calibration meets regulatory requirements as a minimum

Environmental performance

- Temperature range: -20°C to +50°C
- Climatic control to +/-1.5°C over test cycles measured at air onto vehicle
- Heat absorption: 250kW @ 20°C, 150kW @ -7°C, 50kW @ -20°C



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Emissions equipment

- AVL PUMA with IGEM operating system
- 4 phase multi-phase CVS sample system up to 30m³ flow
- Bag bench: THC, Methane, CO, NOx, NO, NO₂, N₂O, CO₂
- Tailpipe and engine emissions bench (1Hz): THC, Methane, CO, NOx, NO, NO₂, N₂O, O₂, CO₂,
- EGR on engine bench
- SESAM FTIR (5Hz) – NO, NO₂, N₂O, NH₃, CO₂, CO, CH₄, alcohols, carbonyls
- Dilute CVS CO₂
- Particulate mass applicable for Euro 4 (phases and backups) and Euro 6 single filter across all phases
- Dilute Particle number counter
- AVL MSS for particle soot determination
- State of charge measurement and correction for 12v and HV traction electrical systems
- Heated and insulated CVS tunnel for Federal tests

Capability

- Large test cell: L13m × W6.5m × H3.5m
- A high performance 4WD chassis dyno for emissions testing
- Facility approved to WLTP and supporting European Federal and Japanese light duty emissions regulations
- Separate exhaust extract system for when not wanting to use the emissions system
- Suitable for gasoline, diesel, LPG, CNG, hybrid, electric and hydrogen vehicles
- 20 vehicle soak bays with diverse individual temperature range -20°C to + 50°C

