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## Technical Specification

FOR

ASFT Volvo XC60 CFME

### Continuous Friction Measuring Equipment (CFME) Technical Specification

| <b>Host Vehicle Description</b>                            |                       |
|--|-----------------------|
| Host vehicle model   | Volvo XC 60 B5        |
| Engine output  | 250HP                 |
| No of cylinders  | Four cylinder         |
| Engine's Volume  | 1,969 cm <sup>3</sup> |
| Type of fuel   | Petrol Mild Hybrid    |
| Standard exhaust gas emission standard                     | EURO 6                |
| Transmission   | Automatic 8 gear      |
| Drive  | Front wheels          |
| Steering Wheel Servo                                       | Standard              |
| ABS (ABS – Anti-lock Braking System)                       | Standard              |
| EDB (EDB – Electronic Brake-pressure Distribution)         | Standard              |
| ESP (ESP – Electronic Stability Program)                   | Standard              |
| Automatic Cruise control                                   | Standard              |
| Self levelling air suspension system                       | Standard              |
| Driver's seat height and depth adjustable                  | Standard              |
| Steering wheel height and depth adjustable                 | Standard              |
| Electrical Rear Glass heating                              | Standard              |
| Power Windows  | Standard              |
| Climate control  | Standard              |
| Vehicle body color (Standard)                              | White                 |
| Optional vehicle color: any color including airport yellow | Optional              |
| Roof bar with yellow rotating lights                       | Standard              |
| LED Roof bar   | Optional              |

| <b>Continuous Friction Measuring Equipment (CFME) Description</b> |                      |
|---|----------------------|
| Measuring system type   | ASFT MKIVs Rear Axle |
| Measuring principle   | Fixed Slip           |
| Measuring wheel   | No: 1                |



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| Reference wheel(s)  | No:  | 2 |
| Measuring wheel tire size:  | 4.00x8   |   |
| Compatible with following measuring tire types:                                       |  |   |
|   | Trelleborg T520  |   |
|   | Trelleborg T49   |   |
|   | ASTM E1551   |   |
| Measuring wheel fitted to   | Transmission arm mounted on rear axle                              |   |
| Rear axle type  | Stiff rear axle with moving axles fitted inside steelhousing       |   |
| Free wheel hub / differential between reference wheels and measuring wheel            | Standard   |   |
| Connection type between freewheel hub and measuring wheel                             | Belt 50mm  |   |
| Slip ratio  | 13%  |   |
| Friction measuring method   | Torque on connection belt  |   |
| Friction measuring sensor   | Load cell  |   |
| Means of movement generation of measuring wheel transmission arm                      | Linear Actuator  |   |
| Vertical load control   | Nitrogen spring connected to buffer tank                           |   |
| Vertical load measuring   | Gas pressure measuring   |   |
| Distance and speed measuring method   | Pulse sensor on reference wheel axle (fitted in rear axle housing) |   |
| Corrosion prevention on friction measuring rear axle:                                 |  |   |
| • Zink precoating   | Standard   |   |
| • Powder coating  | Standard   |   |
| Inspection shaft and hatch for rear axle system reachable from the host vehicles boot | Standard   |   |
| Corrosion prevention on inspection shaft and hatch:                                   |  |   |
| • Zink precoating   | Standard   |   |
| • Powder coating  | Standard   |   |
| Suspension type on friction measuring rear axle                                       | Air suspension   |   |
| Measuring wheel ground clearance when elevated (transport mode)                       | 120 mm   |   |

|                                    |                     |
|------------------------------------|---------------------|
| <b>Presentation Computer (PPC)</b> |                     |
| Type                               | Semirobust Panel PC |
| Screen size                        | 10.4"               |
| Operating system                   | Windows 10          |
| Operator Software                  | SARSYS NG           |



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|--|---|
| Processor:   | Onboard Intel Atom D525<br>1.8 GHz Dual Core CPU        |
| RAM  | Onboard 1GB SDRAM<br>+One SODIMM Supports<br>up to 3 GB |
| Hard Disc  | SSD 120GB   |
| Brightness   | 500 NIT (cd/m2)   |
| Resolution   | 1024x768 px XGA   |
| Screen   | 10.4" 4:3 XGA TFT                                       |
| Chipset  | Intel ICH8-M  |
| I/O Chipset  | Winbond W83627DHG                                       |
| Network  | WiFi 802.11b/g  |
| Operating Temp                                     | 0 to 40°C   |
| Storage Temp                                       | -20 to 75°C   |
| <b>Operating Software Language</b>                 |   |
| Operating software language                        | English   |
| Operating language in onther language than English | Optional  |
| <b>Data collection</b>                             |   |
| Beckhoff Embedded PC Series CX5100 or equivalent   |   |

|   |
|---|
| <b>Optional CFME Equipment</b>  |
| GPRS  |
| GPS   |
| Surface and ambient air temp sensor   |
| Mobile Freezing point sensors   |
| LED Roofbar   |
| Follow Me Roofbar   |
| Repainting to airport yellow or other non standard colors                         |
| Black paint with foiled yellow checkers   |
| Nitrogen Refilling Transportation unit (coplete with tank, guage and connections) |
| Quick Release (center bolt) Aluminum rim for measuring wheel                      |

|  |          |
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| <b>Optional Software and software features</b>   |          |
| AFTN Format  |          |
| CAP 683  |          |
| External applications  |          |
| FAA Units  |          |
| MIDAS Compatible (web based, viewing CFME data on external computer with webinterface) |          |
| Operating Language   | English  |
| Other Operating Languages  | Optional |



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| <b>Optional Self Watering System</b>               |   |
|--|---|
| Water film distributed in front of measuring wheel | Standard  |
| Water film thickness                               | 1 mm  |
| Water film beam                                    | 70 mm   |
| Water tank size                                    | 550 l   |
| Max continuous measuring distance (ca)             | 7,850m  |
| Tank material                                      | Stainless steel                                 |
| Removable tank                                     | Standard  |
| Water pump type                                    | Electric  |
| Water distribution measuring type                  | Water flow measuring                            |
| Waterdistribution control and speed adjustment     | Automatic                                       |
| Water filling connectors                           | Cam Lock  |
| Water evacuation valve                             | Standard  |
| Water overflow protection pipe                     | Standard  |
| Water level guage                                  | Electric, positioned at control panel by driver |

| <b>Features</b>   |                      |
|---|----------------------|
| Standard Measuring Report in PDF  | Standard             |
| Measuring data excel enabled  | Standard             |
| Possibility to send measuring report (PDF) to predefined email adress   | Requires option GPRS |
| CAP683 Measuring  | Optional             |
| MIDAS Enabled   | Require Option MIDAS |
| Flying start enabled (lowering on measruing wheel while underway)   | Standard             |
| Free wheel hub, disconnecting measuring wheel from reference wheels when system is idle                         | Standard             |
| Measuring wheel attached only to rear axle, not to vehicle chassis, during measuring                            | Standard             |
| Fully automated self watering system  | Optional             |
| Friction measuring in curves enabled (due to differential and fitting of measuring wheel transarm to rear axle) | Standard             |
| Calibration of horizontal and distance (pulse) sensor only  | Standard             |
| Data transfer via WiFi  | Standard             |
| Data transmission via GPRS  | Optional             |
| GPS positioning of vehicle and measuring points (10m averages)  | Optional             |
| Measuring Speed   | 15 – 130 km / h      |
| Standard Measuring Speed(s)   | 65 and 96 km/h       |
| Ground and ambient air temperature displayed in real time and in  | Optional             |



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| measuring report  |          |
| Detection of freezing point temperature of liquid collected from vehicles wheel spray | Optional |

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| <b>Measuring qualifications</b>   |                 |
| Equipment is Approved to, but not limited to, measuring according to the following standards: |                 |
| <b>Operational friction measuring</b>   | ICAO Annex 14   |
|   | SCAA            |
|   | FAA AC 150.5200 |
| <b>Functional friction measuring</b>  |                 |
|   | ICAO Annex 14   |
|   | FAA AC 150.5320 |
|   | UK CAA Cap 683  |
|   | ASTM 2340       |
|   | ETL 02-14       |

|                                   |  |
|-----------------------------------|--|
| <b>Standard Accessories</b>       |  |
| Horizontal load calibration unit  |  |
| Nitrogen gas refilling connection |  |
| USB Stick                         |  |
| Extra measuring wheel rim         |  |
| Standard Tool Kit                 |  |

|  |             |
|--|-------------|
| <b>CE Approval</b>   |             |
| The product is in conformity with the provisions of the following EC-directives and normative documents: |             |
| Machinery Directive  | 2006/42/EC  |
| Low Volt Directive   | 2006/95/EC  |
| Electro Magnetic Compatibility (Modular approach <sup>1</sup> )  | 2004/108/EC |

|   |                 |          |
|---|-----------------|----------|
| <b>Documentation</b>  |                 |          |
| Vehicle and friction measuring equipment spare parts catalogue                    | English         | Standard |
|   | Other languages | Optional |
| Workshop drawings of vehicle components and friction measuring equipment on a USB | English         | Standard |
|   | Other           | Optional |

<sup>1</sup> Electrical components assembled according to the manufacturer's instructions.



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|  |                 |          |
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|  | languages       |          |
| Vehicle and friction measuring equipment Operating and Maintenance manual on USB | English         | Standard |
|  | Other languages | Optional |

|   |             |          |
|---|-------------|----------|
| <b>Training</b>   |             |          |
| Electro, hydraulic and automatic components maintenance training. |             | Optional |
| Calibration Training  | In Sweden   | Standard |
|   | At Customer | Optional |
| Operational training  | In Sweden   | Standard |
|   | At Customer | Optional |

|                  |           |          |
|------------------|-----------|----------|
| <b>Warranty</b>  |           |          |
| Vehicle Warranty | 12 months | Standard |
|                  | 24 months | Optional |
| CFME warranty    | 12 months | Standard |
|                  | 24 months | Optional |