

APPENDIX-C

TECHNICAL DETAILS OF TEST BED, ENGINE AND DYNAMOMETER

Table C1: Technical Specifications of Dynamometer (Test Bed and Instrument Frame and Instrument Units)

Item	Specification
Test Bed (with Dynamometer and Coupling Guard)	
Length	960 mm
Height	1000 mm
Depth	480 mm
Net Weight	110 kg
Water Supply for Dynamometer	Constant head Minimum 1 bar pressure at 5 Litres per minute
Maximum Dynamometer Rating	7.5 kW at 7000 rev.min-1
Instrument Frame	
Length	1260 mm
Height	800 mm
Depth	520 mm
Net Weight	24.5 kg
Supply Voltage	100 VAC to 250 VAC Single Phase 50/60 Hz
Supply Rating	13 A Maximum Load
Fuse	20 mm 10 A Type T
Instrument Units	
Volumetric Fuel Gauge - AVF1	Gauge Weight: 2.5 kg Fuel Capacities: 8 mL, 16 mL and 24 mL
Engine Inlet Air and Exhaust Display - DPT1	1 x Differential Pressure Transducer 1 x Built-in Ambient Pressure Transducer 2 Sockets for K-type thermocouples (Engine air Inlet and Test Engine Exhaust) Display Module Weight: 4.5 kg Display Module Supply: 100 VAC to 240 VAC 50 Hz to 60 Hz 1 A. F6.3 A Fuse Module Weight: 4 kg
Torque and Speed Display - DTS2	2 x DIN type sockets for Dynamometer Torque and Speed Display Module Supply: 100 VAC to 240 VAC 50 Hz to 60 Hz 1 A. F6.3 A Fuse Module Weight: 4 kg
Test Bed Instruments	K Type Thermocouple at Air Inlet Orifice Diameter: Nominal 18.5 mm - actual value marked on equipment Dynamometer Torque (Load Cell/Force sensor) Dynamometer Speed (Optical Sensor)

Table C2: Technical Specifications Four-Stroke Diesel Engine

Technical Details	
Item	Specification
Dimensions (when fitted to Base Plate)	Width 400 mm Height 450 mm Depth 350 mm
Net Weight (with Base Plate)	35 kg
Fuel Type	Diesel
Fuel Tank	Caramel/light brown - Painted steel with vent and
Exhaust Outlet	Nominally 1" BSP
Ignition system	None - diesel
Absolute Maximum Power	3.5 kW (4.8 hp) at 3600 rev.min ⁻¹
Continuous Rated Power	3.1 kW at 3000 rev.min ⁻¹
Bore	69 mm
Stroke/Crank Radius	62 mm/31 mm
Connecting Rod Length	104 mm
Engine Capacity	232 cm ³ (0.232 L) or 232 cc
Compression Ratio	22:1
Oil Type	Multi grade SAE 5 W - 40
Oil Capacity	2.6 Liter

Table C3: Technical specifications emission analyzer

Features	Specifications
Measurable gases	HC, CO, CO ₂ , O ₂ , NO _x , SO ₂
Measuring principle Infrared spectrometry	HC, CO, CO ₂ ,SO ₂
Measuring principle Electrochemical detection	O ₂ , NO _x ,SO ₂
Warm-up time	480 s
Flow	3.5 l/min
Working pressure	0.75 bar - 1.1 bar
Power supply	1/N/PE 85 V/285 V 50 Hz
Accuracy class	O (OIML)
CO - Measurement range / Measured value resolution (max.)	0 - 15 % Vol. / 0.01
CO ₂ - Measurement range / Measured value resolution (max.)	0 - 20 % Vol. / 0.01
HC - Measurement range / Measured value resolution (max.)	0 - 9999 ppm / 0.1 (Hexan) 0 - 20000 ppm / 1 (Propan)
O ₂ - Measurement range / Measured value resolution (max.)	0 - 25 % Vol. / 0.01
Lambda (calculated)	0,5 - 9,99 / 0.01
NO (Option) - Measurement range / Measured value resolution (max.)	0 - 5000 ppm / 1
Measurement principle	absorption photometry
Measurement chamber length	430 mm
Wave length of the spotlight	567 nm
External/Internal diameter of test chamber	28 mm / 25 mm
Warm-up time of the measurement chamber approx.	180 s
Power supply	1/N/PE 230 V 50 Hz
Power consumption average/max.	0.11 kW / 0.13 kW
On-board voltage	12 V / 42 V
Dimensions total (L x W x H)	240 mm x 560 mm x 300 mm
Weight	10 kg