



# Chassis Dynamometer System

## ROTOTEST VPA-RX8 2WD

### Overview

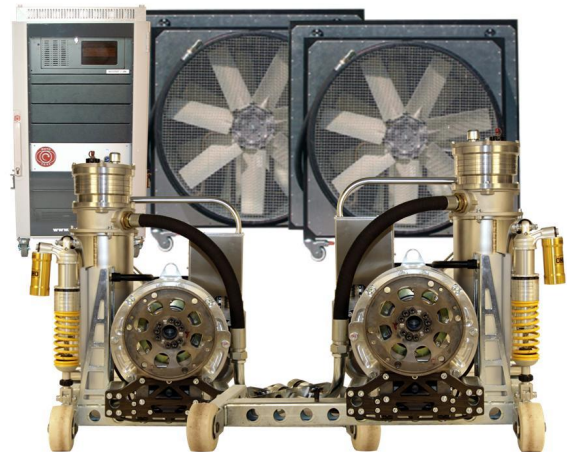
The ROTOTEST VPA-RX™ chassis dynamometer is in reality a supreme engine dynamometer fitted to each drive wheel hub. The ROTOTEST VPA-RX™ chassis dynamometer revolutionizes the way complete vehicle testing is performed by allowing more to be done in less time and with less resources. But unlike a traditional chassis dynamometer (roller type) the ROTOTEST® dynamometer (hub type) is also an advanced true measurement™ instrument. This is accomplished by a front-end mounted torque transducer, a high resolution speed sensor and direct-coupling to the vehicle's hubs. The patented ROTOTEST® dynamometer concept is comparable to a "rolling road", but is far superior in precision and test possibilities as there is no slip between hubs and dynamometer (normally experienced between wheels and rollers), negligible system inertia and thanks to the accurate measuring system that is independent of the absorption system. Another great advantage of the ROTOTEST® chassis dynamometer is its portability. The complete test system can be easily transported to a new test site and set-up in minutes, the only requirement being a flat surface. The ROTOTEST VPA-RX™ range is based on the technology of the industry recognized ROTOTEST VPA-R™ range of dynamometers.

### Description

The turn-key **ROTOTEST VPA-RX8™** 2WD Chassis Dynamometer System is delivered complete with dynamometer units, two Hurricane Cooling Units™ for dynamometer cooling and head wind, a control cabinet (SCU) with UPS, operator PC and real-time controller, and necessary cabling and hoses.

**The ROTOTEST VPA-RX8™ is designed for testing of vehicles in the high performance class.** All parts in the system are designed for maximal endurance and for minimal service requirements.

The dynamometer is operated with the intuitive ROTOTEST DynoVision™ and measurement & reporting are conducted with the versatile and expandable ROTOTEST Datmon™. Both software applications are shared among all ROTOTEST® dynamometer models. Data values are displayed in real-time as analogue and digital values and sweep charts. Measurements are stored in an open, readily available format to allow customized analysis. Reports are generated in tables or graphs with optional automatic correction to selectable performance standards.



Exact model may be different than shown. Optional equipment may be shown.

# ROTOTEST VPA-RX8 2WD

## Characteristics

As part of the ROTOTEST VPA-RX™ range of dynamometer models, the characteristics of the ROTOTEST VPA-RX8™ model include:

- High level capacity to handle the high performance class in 2WD vehicles.
- Powerful and with a capacity to meet even the most stringent requirement
- Option rich

## Standard features

### Measurement

- True Measurement Technology™
- Direct Torque Measurement™
- Dead Weight Calibration
- ROTOTEST Torque Transducer™
- High-Definition Speed™

### Test vehicle cooling

- Integrated Head Wind
- Straight Air Flow

### Hydraulic system

- ROTOTEST® Ultra Fast Hydraulic Valve™
- Hydraulic Common Rail
- Compact Hydraulic System
- Advanced System Fluid
- ROTOTEST® Multi Gear Pumps™

### Dynamometer mounting

- Perfect Dynamometer Connection™
- Advanced Dynamometer Suspension™
- Adjustable Pivot Centre
- Contractible Torque Arm

### System control

- Natural Torque Distribution™, NTD
- Basic

### Portability

- Portable Dynamometer System™
- Light weight dynamometer units
- All units wheel supported
- Transport Optimized Design

### Functional design

- Negligible Parasitic Losses
- Ultra Low Inertia
- Tyre Safe™

- included as standard

# ROTOTEST VPA-RX8 2WD

## Specification overview

### Maximum system performance

Power (maximum absorbed) 2WD	<b>800 kW / 1073 bhp</b>
Maximum Cooling Capacity (at 25°C), head wind 2WD	480 kW, 2200 m <sup>3</sup> /min
Torque (maximum absorbed at hubs) 2WD	<b>4200 Nm / 3098 lb-ft</b>
Speed (maximum hub speed) 2WD	2700 rpm
Vehicle speed (equivalent, wheel dia 650 mm) 2WD	330 km/h / 205 mph

Maximum axle load	3500 kg
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### Measuring accuracy

Torque uncertainty	< <b>1%</b> of measured value
Speed uncertainty	<b>0.1</b> rpm
Measurement repeatability	< <b>0.05%</b>

### Operating environment

Ambient temperature range	+15 °C to +40 °C
Relative humidity	10% to 90%, non-condensing
Altitude	< 1000 m above sea level

## System details

### Main parts

Dynamometer units	<b>1 axle of VPA-RX8</b>
Hurricane Cooling Units™	<b>2 of HCU14</b>
System Central Unit, SCU	<b>1 of SCU2</b> with Uninterruptible Power Supply, UPS
Software (English)	<b>1</b> single-seat license for ROTOTEST DynoVision™ Professional <b>1</b> single-seat license for ROTOTEST Datmon™ Professional
Standard accessories kit	<b>included</b> , contains <ul style="list-style-type: none"> <li>• Operators PC, monitor &amp; keyboard</li> <li>• Electrical cables</li> <li>• Torque rod for calibration</li> <li>• Complete system fluid fill</li> <li>• Wheel Adapters, 4 stud</li> <li>• Wheel bolts M12x1.5 bolts</li> <li>• User and service manual (English)</li> </ul>

# ROTOTEST VPA-RX8 2WD

## ROTOTEST® DynoVision™ Test modules

### Constant Speed

**included**, ROTOTEST® DynoVision™ Test Module that controls speed to a pre-set value independent of load.

### Sweep

**included**, ROTOTEST® DynoVision™ Test Module that controls acceleration between two pre-set speeds.

### Constant Torque

**included**, ROTOTEST® DynoVision™ Test Module that control torque to a pre-set value independent of speed.

## Test cell (site) requirements

### General

Installation type	Above-ground, completely on-wheels, manoeuvrable by a single person.
Electrical power supply	single, 1 phase, 240 VAC (8A) or 120 VAC (16A)
Cooling water supply	<b>None</b> (air-cooled)
Pressurized air supply	None

## System options

Climate Protection Enabled Option	Enables use of ROTOTEST® Climate Protection Accessory.
Sound Insulation Enabled Option	Enables use of ROTOTEST® Sound Insulation Accessory.
NVH Option	Enables analysis of high speed torque signal for Noise, Vibration and Harshness.
HCU cooling upgrade	Additional cooling elements for Hurricane Cooling Unit™, HCU to increase dynamometer cooling capacity and increase continuous power absorption capability.
Suspension shock-absorber upgrade (adjustable)	Upgrades dynamometer suspension system with Three way adjustable Ohlins shock-absorber.
Temperature range upgrade	Extends operational temperature range down to 0 °C.
<b>System Central Unit, SCU Options</b>	
Integrated Head Wind Enabled Option	Enables connection of ROTOTEST® Storm™ electrical fan to simulate head wind.
Drive Enabled Option	Enabled use of ROTOTEST® Drive Accessory.
SCU cooling upgrade	Additional cooling capacity of System Central Unit, SCU cabinet.
UPS capacity upgrade	Upgrades the Uninterruptible Power Supply, UPS for extended battery operation.
Flat panel display rack mounted on SCU cabinet	Flat panel mounting for 2 monitors on top of System Central Unit, SCU cabinet.
Flat panel size upgrade	Upgrades monitor to larger size.

**ROTOTEST VPA-RX8 2WD**

SCU 4WD upgrade	Upgrades a 2WD System Central Unit, SCU to 4WD.
SCU-dynamometer cable length extension	Extended cable length for flexibility in positioning the System Central Unit, SCU.

**ROTOTEST® DynoVision™ optional Test Modules**

<b>Road Load Simulation</b>	ROTOTEST® DynoVision™ Test Module that simulates road resistance caused by aerodynamic drag, tyre rolling resistance and road gradient.
Active Inertia™	ROTOTEST® DynoVision™ Test Module that enables simulation of vehicle inertia during positive accelerations <i>Requires ROTOTEST® DynoVision™ Test Module Road Load Simulation.</i>
Transmission Package	ROTOTEST® DynoVision™ Test Module that adds two additional test modes for individual speed or torque control of the dynamometers.
One Wheel Drive, 1WD	ROTOTEST® DynoVision™ Test Module that allows tests to be conducted using a single dynamometer unit (one wheel).
Powertrain Inertia Detection™	ROTOTEST® DynoVision™ Test Module for detection of powertrain inertia at different gears.
Powertrain Inertia Correction™	ROTOTEST® DynoVision™ Test Module for correction of small variations in Steady Rate™ acceleration.
Magic Ratio Detection™	ROTOTEST® DynoVision™ Test Module for detection of transmission ratios in manual transmissions.

**ROTOTEST® DynoVision™ optional Modules**

Calibration Report	ROTOTEST® DynoVision™ Report Module that Documents all details relating to calibrating procedure.
Project Manager	ROTOTEST® DynoVision™ Report Module that documents time and operating time for specific projects.
CANOut™ Professional	ROTOTEST® DynoVision™ Module that enables distribution of dyno data on a CAN bus (100 Hz). Used for example to connect dyno with ECU for analysis in ECU software. Used with isolated CAN-USB hardware interface.

**ROTOTEST® Datmon™ optional Modules**

DatCAN™ Professional	ROTOTEST® Datmon™ Module that enable logging of data on a CAN bus (100 Hz). Used with Isolated CAN-USB interface. Used for example to display ECU data together with dyno data in ROTOTEST® Datmon.
LogOBD™	ROTOTEST® Datmon™ Module that enable Logging of generic signals from vehicles with On-Board-Diagnostic, OBD system. Use with Bluetooth OBD device.

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## System Accessories

ROTOTEST® Climate Protection	Extends operational temperature range to -30°C to +50°C. <i>Requires Climate Protection Enabled Option.</i>
ROTOTEST® Sound Insulation	Sound insulation covers for dynamometer units for low noise requirements such as in semi-anechoic chambers. <i>Requires Sound Insulation Enabled Option.</i>
ROTOTEST® Calibration weights	Specially designed calibration weights for optimal result during dynamometer torque calibration.
ROTOTEST® WCC – Water Cooling Cube	Water/Oil cooling unit that replaces the air-cooling system. Used in NVH applications to eliminate fan noise or to minimize power dissipation into the test cell.
System Central Unit, SCU 2WD	Free standing System Central Unit, SCU. Enables for example a 4WD system to be used as two independent 2WD systems.
HCU Protecting steel meshes (pair)	Protects Hurricane Cooling Unit™, HCU during transport and handling. Recommended for portable use.

## Measurement & Connectivity Accessories

ROTOTEST® Datacq™	Data acquisition system. Completely modularized to suit any logging requirement.
Isolated CAN-USB interface	Used in conjunction with CAN related modules.
Bluetooth OBD device	Used in conjunction with LogOBD™ module.

## Mounting Accessories

ROTOTEST® Wheel adapters, slotted	Slotted wheel adapters for ease-of-fit in multi car test production.
ROTOTEST® Wheel adapters, multi hole	Long-life wheel adapters with multiple PCD patterns.
ROTOTEST® Wheel adapters, custom made	Custom made wheel adapters with specific centre bore for perfect fit and minimal run-out.
ROTOTEST® Adapter Nuts and Bolts	ROTOTEST® precision shoulder nuts and bolts for attaching the ROTOTEST® wheel adapter to the vehicle wheel hub. The bolts and nuts are hardened for corrosion protection and long service life.

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## Test Cell Accessories

ROTOTEST® Storm™	Electrical blower for head wind simulation of on-road conditions. <i>Requires Integrated Head Wind Enabled Option.</i>
ROTOTEST Drive™	Electrical hub units for synchronizing speeds of non-driven wheels with driven wheels. <i>Requires Drive Enabled Option.</i>
Spot cooling fan	Electrical radial fan (2.2kW) on wheels for spot cooling.
Exhaust extraction fan	Electrical exhaust extraction fan (4 kW) for stationary use in test cell. Minimum exhaust extraction tube diameter 250 mm.

## Services

ROTOTEST® Preventive Care & Maintenance Contract	<ul style="list-style-type: none"> <li>- 1 on-site visit per year with preventive maintenance and safety and performance inspection.</li> <li>- Selection, delivery and cost of materials for preventive maintenance</li> <li>- Labour and travel expenses associated with preventive maintenance</li> <li>- Detailed report of any issues found</li> <li>- Updates of software and firmware (where applicable)</li> <li>- Online support</li> </ul>
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## Specification references

### Parts

Dynamometer units	Specsheet-VPA-RX8
Hurricane Cooling Units™	Specsheet-HCU14
System Central Unit, SCU	Specsheet-SCU
Mounting accessories, wheel adapters etc.	Infosheet-Mounting-Accessories
Standard accessories kit 2WD	Specsheet-StdAcc2WD

### Modules

Standard test modules	Specsheet-StdTM
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Please contact a member of Rototest sales team for further information.



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