Meiden Chassis Dynamometer Systems

High Accuracy & High Reliability
Meiden Chassis Dynamometer Systems assure high accuracy and high reliability.

Meidensha’s chassis dynamometer provides customer high accurate and high reliable test environment for vehicle. It has been supporting development and evaluation activity of customer in Japan and abroad.

Features:

- Hydraulic frame floating
  - Minimize cradle resistance and it brings high accuracy torque measuring.
  - Mechanical loss of bearings can be detected by load cell, and be managed with applying Mechanical Loss compensation function.
- Front/rear wheel-speed difference within ±0.1km/h
  - This system is applicable to worldwide regulations for exhaust emission, fuel economy, noise tests, and environmental tests for the completed 4WD vehicles.
- Reliability of electrical inertia simulation
  - The reliability of the electrical inertia simulation is assured by the Linear regression method stipulated by the JASO Standard for the driving force for electrical inertia evaluation.
- Load reproducibility
  - Highly reliable measurements are assured during emission test by the use of a high-accuracy load with a good reproducibility.
- Abundance of product lineups
  - System upgrading is possible according to the applications and types of cars such as 4WD cars, hybrid cars, and EVs (Electric Vehicles).
  - Adopted for the type approval at the Drivers Testing Site of the National Traffic Safety and Environment Laboratory.

Basic Configuration

- Vehicle cooling fan
- Tire cooling fan
- Front-wheel roller and dynamometer
- Rear-wheel roller and dynamometer
- AC drive for dynamometer
- Centering unit
- Driver’s aid
- Operation, data acquisition and control system (MEIDACS DY6200P)

Applications

- Emission and fuel economy test
  - Applicable to worldwide regulations for emission such as Japan, U.S. EPA, and ECE
- Environmental test
  - Applicable to the testing under all environmental conditions in the world
  - Hot, cold, humidity, high altitude, rainfall, snowfall
- Noise test
  - Applicable to noise test and road noise test in a simplified anechoic room by adopting the low-noise liquid-cooled type Dynamometer
- General performance measurements
  - Wide-Open-Throttle performance test enabled with the ratings of high capacity and high load
- Durability test
  - Applicable to durability test for the evaluation of catalyst deterioration at the time of 100,000-mile running (mileage accumulation)
- Line check
  - Applicable to sampling test before shipping from vehicle assembling line
Rollers and Dynamometers
This is an integrated configuration where rollers are overhung at both shaft ends of the dynamometer. Air-cooled type and low-noise liquid-cooled type are available. In combination with IGBT type AC drive for dynamometer, high-accuracy and high-response control can be carried out.

Subsidiary Equipment
Variety of subsidiary equipment are available.

- Vehicle restrain equipment
  Vehicle restrain equipment comes in three types. Each type is designed in consideration of Emission and fuel economy test and it does not give any additional load to the vehicle under test.

  1. Tire restrain type (Exclusively used for 2WD)
     Non-drive wheel is tied down by belt.

  2. 4-point pole-chain type (For 4WD)
     Test vehicle is restrained from the front and rear directions.

  3. Torque box type (For 2WD/4WD)
     Test vehicle is restrained by pins inserted in the torque box holes of the vehicle. If the vehicle has no torque box holes, attachments can be used to restrain the vehicle by pinching its side sills.

- Driver’s Aid
  It is possible to reproduce worldwide regulated exhaust emission mode and to simulate road load running. In addition to time - vehicle speed pattern, the operation for a distance-vehicle speed pattern is possible to carry out. Contour lines and skeletons on real roads are displayed in 3D mode, including the visualization of road inclinations.

- Torque Measuring Tool
  The torque arm and weight are provided for the convenience of load cell calibration. Optional remote operation type automatic balance and floor mounting type balance are also available.

- Driver’s Aid
  It is possible to reproduce worldwide regulated exhaust emission mode and to simulate road load running. In addition to time - vehicle speed pattern, the operation for a distance-vehicle speed pattern is possible to carry out. Contour lines and skeletons on real roads are displayed in 3D mode, including the visualization of road inclinations.
### Operation, data acquisition and control system (MEIDACS DY6200P)

#### Software Specifications

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<td>ECE standard, US standard, JAPAN standard</td>
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<td>Road load correction &amp; verification function, mechanical loss measurement function, Road load data &amp; mechanical loss data storage, printing</td>
</tr>
<tr>
<td>Electrical inertia accuracy verification</td>
<td>ECE standard, US standard, JAPAN standard</td>
</tr>
<tr>
<td>Vehicle assist function</td>
<td>USOE LV assist function, deceleration brake assist function, regeneration brake assist for EV</td>
</tr>
<tr>
<td>Display function</td>
<td>Real-time monitoring function</td>
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<td></td>
<td>Analog meters, digital meters, bar graphs, trend, road load monitor</td>
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<tr>
<td>Automatic vehicle driving function (with a drive robot)</td>
<td>Establishment of driving patterns, max. number of pattern repetitions 999,999 times, Display of driving pattern setup graphs, step-up conditions, Testing info setup: Vehicle info</td>
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<tr>
<td>Measurement condition setup</td>
<td>Average measurement, High-speed measurement, Continuous measurement</td>
</tr>
<tr>
<td>Measurement starting conditions</td>
<td>Start button, measurement items (Threshold value upper/lower, up/skip, low skip, width)</td>
</tr>
<tr>
<td>Measurement ending conditions</td>
<td>Stop button, measurement items (Threshold value upper/lower, up/skip, low skip, width)</td>
</tr>
<tr>
<td>Measurement items</td>
<td>Items of measurement, operation, and specific notes</td>
</tr>
<tr>
<td></td>
<td>Items of measurement and operation, Items of measurement and operation</td>
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<tr>
<td>Measurement period</td>
<td>0.1 s, 1-999 ms, 0.1-99.9 s</td>
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<tr>
<td>Max. measuring times</td>
<td>8,000,000 times/ No. of measurement items 400,000 times/ No. of measurement items</td>
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<tr>
<td></td>
<td>50,000 times per measurement item</td>
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<tr>
<td>No. of data files</td>
<td>100 items max.</td>
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<tr>
<td>Others</td>
<td>Measurement interval (with &quot;times&quot;), Time (in seconds), interlocked with the completion of fuel cost measurement, No. of measurement items: 250 items max.</td>
</tr>
</tbody>
</table>

#### Major Specifications

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<tr>
<th>Specifications</th>
<th>Models</th>
<th>Ultra-cooled AC type</th>
<th>Air-cooled AC type</th>
<th>Liquid-cooled PM type</th>
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<tr>
<td>Spec of test vehicle under test</td>
<td>2WD equivalent inertia mass</td>
<td>454~1722kg</td>
<td>540~1440kg</td>
<td>350~3000kg</td>
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<tr>
<td></td>
<td>4WD equivalent inertia mass</td>
<td>968~3700kg</td>
<td>1090~5400kg</td>
<td>700~3000kg</td>
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<tr>
<td></td>
<td>Weight base</td>
<td>1930~4500mm</td>
<td>1980~4750mm</td>
<td>1980~4750mm</td>
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<tr>
<td></td>
<td>Max. axle load</td>
<td>25kN</td>
<td>40kN</td>
<td>20kN</td>
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<td></td>
<td>Max. speed</td>
<td>150kph</td>
<td>200kph</td>
<td>250kph</td>
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<td></td>
<td>Over load</td>
<td>205kW</td>
<td>371kW</td>
<td>640kW</td>
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<td>Traction force</td>
<td>3.4kN</td>
<td>10.3kN</td>
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<td>Outer width</td>
<td>974.4mm</td>
<td>460mm</td>
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<td></td>
<td></td>
<td>Outer width</td>
<td>2184.4mm</td>
<td>2200~3750mm</td>
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<td>370kW</td>
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#### Remarks
- "1" In regard to the weight range of the vehicle to be tested, please consult us separately.
- "2" The capacity and tractive force can be defined according to the contents of testing.
- "3" Noise values (Chassis dynamometer unit) 65dB (A) at 100km/h for 2WD operation and 68dB (A) at 100km/h for 4WD operation.
- [Setup conditions] Background noise 45dB (A) or below. The roller center shall be located one meter above the floor surface.

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Specifications in this catalog are subject to change without notice.

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