Explore our Technologies
Morse Systems –
Timing Systems Technologies
for all vehicles

borgwarner.com
Morse Systems is the global leader in engine timing systems, valve timing through cam phasing and power transmission applications.

With best in class simulation and testing capabilities, Morse Systems can provide advanced systems and products to improve fuel economy, emissions and performance. Our extensive engine systems and valve timing knowledge allows Morse Systems to be a hands-on, solutions partner from the earliest stages of development.

With advanced technological centers in North America, Europe, and Asia, Morse Systems is able to meet the engine timing and power transmission challenges of today and tomorrow all around the globe.

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**Product Range**

- Complete Vertical Integration
- Engine & Transmission Chains:
  - Silent (inverted tooth)
  - Roller
  - Bushing
- Chain Control Devices:
  - Hydraulic
  - Mechanical
- Sprockets:
  - Random
  - Resonance Attenuation
- Tensioners:
  - Hydraulic
  - Mechanical
- Variable Cam Timing
  - Oil Pressure Actuated (OPA)
  - Torsional Assist (TA)
  - Cam Torque Actuated (CTA)
  - Intelligent Cam Torque Actuated (CTA/TA)
  - Mid Position Lock (MPL)
  - Electric Cam Phasing (eVCT)

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**Morse Systems Engine Chain Product Range**

<table>
<thead>
<tr>
<th>Chain Type</th>
<th>Pitch</th>
<th>Primary Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roller</td>
<td>9.525 mm</td>
<td>Gasoline Engine Timing System &amp; Accessory Drives</td>
</tr>
<tr>
<td></td>
<td>8.8 mm</td>
<td>Diesel Engine Timing System &amp; Accessory Drives</td>
</tr>
<tr>
<td></td>
<td>8.0 mm</td>
<td>Gasoline Engine Timing System &amp; Accessory Drives</td>
</tr>
<tr>
<td></td>
<td>7.5 mm</td>
<td></td>
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<tr>
<td>Bushing</td>
<td>9.525 mm</td>
<td>Diesel Engine Timing System &amp; FIP</td>
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<tr>
<td></td>
<td>8.0 mm</td>
<td>Diesel &amp; Gasoline Engines Accessory Drives</td>
</tr>
<tr>
<td></td>
<td>7.0 mm</td>
<td></td>
</tr>
<tr>
<td>Silent</td>
<td>9.525 mm</td>
<td>Gasoline Engine Timing System Drives</td>
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<tr>
<td></td>
<td>8.0 mm</td>
<td>Gasoline Engine Timing System &amp; Accessory Drives</td>
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<tr>
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<td>7.0 mm</td>
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<tr>
<td></td>
<td>6.35 mm</td>
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</tbody>
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**Global Manufacturing Locations & Technical Centers**

- Auburn Hills, USA
- Ithaca, USA
- El Salto, Mexico
- Itatiba, Brazil
- Pyongtaek-ski and Chungju-City, Korea
- Arcore and Lugo, Italy
- Chennai, India
- Ningbo, China
- Nabari City, Japan
- Rzeszow, Poland
- Shanghai, China
- Iga City, Japan