Air management

Electronic throttle valve DV-E/RKL-E

PRODUCT BENEFITS

- Engineering support and large-scale manufacturing capability available worldwide
- Best-in-class Hall IC (delay time, temperature-independent characteristic)
- Smooth engine shutdown and minimized NVH (noise, vibration, and harshness)
- DV-E/RKL-E5.9 is weight/size optimized for medium-low displacement applications
- Robust against corrosive materials

1. DC electric motor
2. Hall sensor for contactless angle measurement
3. Air channel with variable diameters
TASK
For efficient fuel combustion, the injected fuel mass must be perfectly matched to the air supply in the engine cylinder. In an IC engine, the air supply in the combustion chamber is regulated by the electronic throttle valve by reducing or enlarging the intake manifold cross-section. The air management system drives the electronic actuators to regulate the air mass supply with absolute precision.

FUNCTION
The throttle device comprises an electrically driven throttle valve and an angular position sensor for position feedback. The electronic engine management unit triggers the throttle valve electronically. The trigger input variables include the accelerator-pedal position and any system requirements that can influence the engine torque, such as cruise control, adaptive cruise control, or active safety systems such as the electronic stability program ESP®.

TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>DV-E5.2/ RKL-E5.2</th>
<th>DV-E5.9(E)/ RKL-E5.9(E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throttle valve diameter</td>
<td>32 – 82 mm</td>
<td>32 – 64 mm</td>
</tr>
<tr>
<td>Temperature air duct</td>
<td>-40 to +180 °C</td>
<td>-40 to +180 °C</td>
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<tr>
<td>Actuation time tₚ₀</td>
<td>&lt; 100 ms</td>
<td>&lt; 100 ms</td>
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<tr>
<td>Excess torque</td>
<td>&lt; 2.0 Nm</td>
<td>&lt; 2.0 Nm</td>
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<tr>
<td>Idle air leakage (⌀ 57 mm)</td>
<td>&lt; 2.5 kg/h</td>
<td>&lt; 2.3 kg/h</td>
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<tr>
<td>Interface</td>
<td>analog or SENT</td>
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<tr>
<td>Optional</td>
<td>Stainless steel bearing, EMV package, Water heating pipes</td>
<td>Stainless steel bearing, EMV package</td>
</tr>
</tbody>
</table>

1. Cover
2. Seal
3. Hall IMC sensor
4. Idle gear
5. Bearing
6. Gear segment and spring
7. Shaft
8. Throttle valve plate
9. Screws
10. Throttle housing
11. Friction bearing
12. Cover lid
13. Cable clip
14. DC electric motor
15. Cover clips

Cover
Seal
Hall IMC sensor
Idle gear
Bearing
Gear segment and spring
Shaft
Throttle valve plate
Screws
Throttle housing
Friction bearing
Cover lid
Cable clip
DC electric motor
Cover clips

weight and size reduction due to the new DV-E/RKL-E5.9 design as compared to the existing designs

supplied units attest to significant production and field expertise and set the foundation for an optimized design.

up to 30%