

EDS

Engineering,
GM DAEWOO Auto & Technology
Standards

STEERING WHEEL LOCK

EDS-T-2624

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1. PURPOSE

This test specification defines the test conditions, sequences and requirements to steering wheel locks of passenger car and includes the legal requirements requisite for these parts.

The steering wheel locks are examined by static tests (forced proof) on their safety from burglars and mechanical strength as well as their assembled state in the endurance test on their operability in the vehicle.

2. SCOPE

This standard apply to steering wheel locks part of passenger car

3. NOTE

Samples of components or materials released to this specification shall be tested for conformity with the requirements of this specification and approved by GMDAT Technical Center prior to commencement of delivery of bulk supplies.

In the event of any Intentional deviations from the requirements of this specification, it is the sole responsibility of the supplier to inform the purchaser of all such deviations. Furthermore the supplier shall submit unsolicited samples for re-approval by GMDAT Technical Center prior to commencement of delivery of deviant bulk supplies.

4. TEST SAMPLES AND TEST QUANTITY

4.1. The test of steering wheel lock is performed on the mechanical locking parts at the static test, completely at the steering wheel lock ASM, including electric switching part at the endurance test.

4.2. For the static test, per a supplier, 3 steering wheel locks are requisite at initial samplings as well as for the current quality control, 10 for the endurance test and for material examination is well as 5 for the current quality control.

5. PRETREATMENT OF SAMPLE

The tests are performed at $+23 \pm 5K$ in the delivery state without pre-treating the sample, if nothing else is specified.

6. TESTING INSTRUMENTS AND AUXILIARY MEANS

6.1. Static test

6.1.1. Fixtures for the installation of steering wheel lock

The steering wheel locks are mounted on a production, type-fixed steering ASM.

6.1.2. Torsion-testing machine

On the faceplate of a torsion-testing machine, the supporting device is mounted, into which the mechanical locking part is absorbed. After interlocking the steering gear by the steering wheel lock, a torque moment with a

velocity of 30% min $\pm$ 10% is applied over the steering wheel. Measuring error of the machine $\pm$ 1%.

6.1.3. Torque-moment indicator

The reading accuracy should come to $\pm$ 5Nm. The testing instruments to clause 6.2 to 6.4 described in the following must enable a fast gripping of the steering wheel lock ASM. But the influences, which can possibly tamper the result of the test (for example, too fast gripping of the housing), are to be excluded them.

6.2. Endurance test

6.2.1. The locking bolt must be freely movable and may not engage in any other part. Furthermore the testing instrument must make it possible to perform continuously successive switching and circuit-breaking processes. (A switching and circuit-breaking process $c=1$ cycle) means the revolution of key and lock cylinder in the steering wheel lock housing over the whole operating range from "Block" to starting and back to "Block").

6.2.2. The fast-gripped key is inserted into the lock cylinder without coaxial tilting in position "Block" and moves the lock cylinder in the steering wheel lock housing. All construction-conditioned axial movements of the lock cylinder must be effected free-movably by the key. The switching time from a position to the other comes to 0.1 to 0.5s, the duration of dwell in the individual positions except the position "Block" comes to 1.0 to 2.0s.

6.2.3. With equal velocity of motion, the key is slackened back to the starting position without dwelling time in the individual positions and completely drawn out of the lock cylinder. Duration of dwell in position "Block" max. 5s. During this time the key is drawn off and inserted again.

6.3. Testing instrument for the measurement of extracting forces

The gripped key is inserted into the lock cylinder without coaxial tilting and extracted again.

6.4. Testing instrument for the measurement of the resting and restoring moments

The fast-gripped key moves the lock cylinder in the steering wheel lock housing. All construction-conditioned axial movements of the lock cylinder must be executed free-movably by the key. The switching time from a position to the other comes to 0.1 to 0.5s.

6.5. A tension-pressure-testing machine (suitable is a tension-testing machine to DIN 51 221, class 1) must be so equipped that the testing described in the individual clause can be performed with a stressing velocity of (100 ± 10) mm/min.

6.6. Refrigerator, adjustable to $-40^{\circ}\text{C} \pm 3\text{K}$.

6.7. Warming cupboard, to adhere to the specified requirements including the tolerances (suitable are warming cupboards to DIN 50 011, Pt. 1, section 2.2).

6.8. Adjustable current source, loadable to the current specified for the electric switching part of the steering wheel lock.