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Dedicated safes for guns and ammunition

枪支弹药专用保险柜

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Dedicated safes for guns and ammunition

1 Scope

This standard specifies the classification, grading, marking, technical requirements, test methods, inspection rules, etc. of dedicated safes for guns and ammunition.

This standard applies to dedicated safes for storing guns or/and ammunition, that are legally equipped and configured. It is the technical basis for the design, manufacturing, inspection, acceptance, certification evaluation of dedicated safes for guns and ammunition.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB 10409 Burglary resistant safes

GB/T 15211-1994 Environmental testing for alarm systems

GB 16796-2009 Safety requirements and test methods for security

GB/T 16810-2006 Tests and requirements for fire resistance of record protection containers

GB/T 17626.2-2006 Electromagnetic compatibility (EMC) - Testing and measurement techniques - Electrostatic discharge immunity test

GB/T 17626.3-2006 Electromagnetic compatibility - Testing and measurement techniques - Radiated radio-frequency electromagnetic field immunity test

GA/T 73-1994 Thief resistant mechanical locks

GA 374-2001 Thief resistant electronic locks

GA 701 General specifications of burglary resistant fingerprint locks

5.4.3.1 The anti-burglary fingerprint lock, which is configured on the dedicated safe, shall meet the relevant requirements of GA 701, for the function, power supply, environmental adaptability, electromagnetic compatibility, safety, stability.

5.4.3.2 For the performance requirements of the anti-burglary fingerprint lock, which is configured on the dedicated safe: when the false acceptance rate is 0.001%, the false rejection rate shall be less than or equal to 3%.

5.5 Special requirements for smart safes

5.5.1 Requirements for human-machine interface

5.5.1.1 It shall have a man-machine operation interface, which can be independent keyboard operation or touch screen operation.

5.5.1.2 It shall have a man-machine display interface, which shall be able to display the date, time, power status, self-check status, network connection status, data download status, etc. in real time.

5.5.2 Identification requirements

5.5.2.1 It shall have the identification function of fingerprint or other biometric technology.

5.5.2.2 The fingerprint module identification indicator shall meet the requirements of 5.4.3.2.

5.5.2.3 The identification indicators of other biometric technologies shall meet the requirements of relevant standards.

5.5.3 authority management requirements

It shall have hierarchical authority management functions.

5.5.4 Alarm requirements

5.5.4.1 The smart safe shall be able to alarm in time, when the following situations occur:

- Unusual opening of safe door;
- Unusual collection of guns/ammunition;
- Guns/ammunitions not returned on time;
- The safe door unlocked over time;
- The smart safe powered off;

- Safe door opened by standby mode.

5.5.4.2 The on-site sound and light alarm shall be activated, when the smart safe alarms. Under the network connection state, it shall have the remote alarm function.

5.5.4.3 After the on-site alarm is activated, only authorized administrators shall be allowed to cancel the alarm.

5.5.5 Emergency opening requirements

In an emergency, it shall be possible for two persons to open all electric locks, at once, through specific authorization instructions.

5.5.6 Information record requirements

5.5.6.1 It shall be able to automatically record the normal operation information of the smart safe. The normal operation information shall at least include personnel addition/deletion information, safe door opening and closing information, gun and ammunition access information, emergency opening information, alarm release information.

5.5.6.2 It shall be able to automatically record the alarm information of the smart safe.

5.5.6.3 It shall automatically save at least 5000 latest operation information records. All records shall not be manually modified or deleted. After the operation information storage area is full, it shall be able to automatically cover it cyclically. When the power supply is abnormal or power failure, the basic information of the system and the recorded operating information shall not be lost.

5.5.6.4 All recorded operating information shall be able to be downloaded, through the data interface (USB interface, network interface, etc.). The data download shall have download pointer signs and download authority restrictions.

5.5.7 Networking requirements

5.5.7.1 It shall have remote networking capabilities.

5.5.7.2 When the smart safe is networked, it shall be able to upload operating information (operation information, abnormal information, etc.) and gun/ammunition status information, to the networked management platform, to achieve centralized storage of operating information AND real-time monitoring of status information.

5.5.10.2 When the AC power supply changes within the range of 85% ~ 110% of the rated voltage, the smart safe shall work normally, without adjustment. When the standby power (DC) voltage changes within the range of 90% ~ 110% of the rated value, the smart safe shall be able to work normally.

5.5.10.3 The AC power supply shall be able to automatically charge the standby power supply. When the backup power supply (DC) voltage drops to the rated end value, there shall be protective measures, to avoid over-discharge. The standby power supply shall be fixedly installed inside the safe.

5.5.10.4 When the AC power supply is cut off, the standby power supply shall be able to support continuous work, for more than or equal to 8 h. It shall be able to support more than or equal to 8 normal operations during this period.

5.5.10.5 The AC power interface shall be installed in a relatively concealed position AND equipped with a locking device.

5.5.11 Safety requirements

5.5.11.1 Electric strength

For smart safes, which are powered by AC 220 V, BETWEEN the power plug or power lead-in terminal AND the shell, or BETWEEN bare metal parts of the shell, it shall be able to withstand the electric strength test, which has an effective test voltage of 1.5 kV and a duration of 1 min. There shall be no breakdown or arcing.

5.5.11.2 Insulation resistance

The insulation resistance, BETWEEN the power plug or power lead-in terminal of the smart safe AND the bare metal parts of the shell, shall be greater than or equal to 100 MΩ under normal environmental conditions; OR greater than or equal to 10 MΩ, under damp heat conditions.

5.5.11.3 Leakage current

The leakage current of the smart safe shall be less than or equal to 5 mA (AC, peak value).

5.5.12 Electromagnetic compatibility requirements

5.5.12.1 Electrostatic discharge immunity

The smart safe is subject to the electrostatic discharge interference, which is specified in severity level 3 of GB/T 17626.2-2006. The function or performance is allowed to be temporarily reduced or lost, during the test; however, it shall be able to recover by itself.

5.5.12.2 Radio frequency electromagnetic field radiation immunity

The smart safe is subject to the radio frequency electromagnetic field radiation interference, which is specified in severity level 3 of GB/T 17626.3-2006. It shall work normally.

5.5.13 Environmental adaptability requirements

The function of the smart safe shall be able to withstand the influence of the following environmental conditions:

- a) The high temperature environment of severity level 2 in 5.1 of GB/T 15211-1994;
- b) The low temperature environment of severity level 5 in 5.2 of GB/T 15211-1994;
- c) Constant damp heat environment of severity level 3 (working) and 4 (service life) in 5.6 of GB/T 15211-1994.

6 Test method

6.1 Inspection of general requirements

6.1.1 Visually inspect the lock configuration of the dedicated safe. Open the dedicated safe, according to the product manual, to determine whether the result meets the requirements of 5.1.1.

6.1.2 Check the quality certificate of the steel. Make a tensile model, by the same material. Carry out the test, by the use of a material testing machine, which has an accuracy of not less than 1%, to determine whether the result meets the requirements of 5.1.2.

6.1.3 Visually inspect the structure of the dedicated safe, to determine whether the result meets the requirements of 5.1.3.

6.1.4 Use an angle ruler and a steel ruler, to check the opening angle of the safe door, to determine whether the result meets the requirements of 5.1.4.

6.1.5 Place a 30 g/cm sand weight, evenly on the shelf in the safe, to determine whether the result meets the requirements of 5.1.5.

6.1.6 Check the wall fixing parts and their installation instructions, to determine whether the result meets the requirements of 5.1.6.

6.1.7 Visually inspect the dedicated safe's structure, gun's storage location, lock configuration, to determine whether the result meets the requirements of 5.1.7

6.3.3 Test content

The test personnel carry out the following tests:

- a) Look for weak parts. Conduct destructive opening tests on locks, locking points, locking mechanisms. Record the net working-time of entry;
- b) Make a 38 cm² or 13 cm² opening on the safe body (and door panel). Record the net working-time of entry.

6.3.4 Operating time limit

From the start of the test to the end of the test, the total time shall not be greater than 3 times the net working-time.

6.3.5 Test results

The above test determines whether the result meets the requirements of 5.3.

6.4 Lock inspection

6.4.1 Inspection of anti-burglary mechanical lock

6.4.1.1 Inspection of anti-burglary mechanical locks

Carry out the test according to the test method specified in GA/T 73-1994, determine whether the result meets the requirements of 5.4.1.1.

6.4.1.2 Inspection of mechanical code lock

Test the mechanical code lock in accordance with the test method specified in GA/T 73-1994. Determine whether the result meets the requirements of 5.4.1.2.

6.4.2 Inspection of anti-burglary electronic locks

6.4.2.1 Inspection of anti-burglary electronic lock

According to the test method specified in GA 374-2001, inspect the anti-burglary electronic lock. Determine whether the result meets the requirements of 5.4.2.1.

6.4.2.2 Inspection of electronic code lock

Carry out operation test and function test on the electronic code lock, in accordance with the instruction manual, to determine whether the result meets the requirements of 5.4.2.2.

6.4.2.3 Spare unlocking inspection

Lock the dedicated safe AND cut off the power supply. Use a mechanical spare tool to unlock. Determine whether the result meets the requirements of 5.4.2.3.

6.4.3 Inspection of anti-burglary fingerprint locks

6.4.3.1 Inspection of function, power supply, environmental adaptability, electromagnetic compatibility, safety, stability

Check the anti-burglary fingerprint lock, according to the corresponding test method specified in GA 701. Determine whether the result meets the requirements of 5.4.3.1.

6.4.3.2 Performance inspection

6.4.3.2.1 Test library requirements

In the ID card fingerprint test database, randomly select a total of 300 fingerprint images of 50% of men and women, respectively, aged 15 to 59, as the basic image. Use the anti-burglary fingerprint lock sample, to randomly collect on-site fingerprint images, that account for 5% of the basic image. Collect images from two fingers per person, one from left hand and the other from right hand. Collect 3 fingerprint images from each finger. Mix them with the basic image, as a test library for fingerprint recognition performance indicators, for a dedicated safe.

6.4.3.2.2 Test method

Use the test library, which is established in 6.4.3.2.1, AND the performance index test method, which is specified in GA 701.

6.4.3.2.3 Test results

The above test determines whether the result meets the requirements of 5.4.3.2.

6.5 Inspection of special requirements for smart safes

6.5.1 Inspection of man-machine interface

The man-machine operation interface and the display interface are inspected by visual inspection, to determine whether the result meets the requirements of 5.5.1.1 and 5.5.1.2.

6.5.2 Identity reading inspection

6.5.2.1 Use visual inspection method, to check the identity reading unit, to determine whether the result meets the requirements of 5.5.2.1.

6.5.2.2 The fingerprint reading unit index shall be tested according to the test method specified in GA 701, to determine whether the result meets the

6.5.8 Inspection of timing function

6.5.8.1 According to the product instruction manual, check the manual timing of the smart safe, to determine whether the result meets the requirements of 5.5.8.1.

6.5.8.2 According to the product instruction manual, through the corresponding networking management platform software, check the automatic timing, to determine whether the result meets the requirements of 5.5.8.2.

6.5.9 Inspection of anti-burglary electrified locks

6.5.9.1 Inspection of lock working current

Adjust the power supply voltage of the lock, to the rated power supply voltage. Use a DC ammeter and storage oscilloscope, to measure the working current, energization impulse current, continuous energization current of the lock, to determine whether the result meets the requirements of 5.5.9.1a) and 5.5.9.1b).

6.5.9.2 Inspection of unlocking response time

Press the external lock opening switch, to detect the response time of unlocking. Repeat the test three times, to determine whether the result meets the requirements of 5.5.9.1c).

6.5.9.3 Continuous power-on inspection

Adjust the power supply voltage of the lock, to the rated power supply voltage. Power on for 7 s and power off 7 s each time. Make 10 consecutive tests. Determine whether the result meets the requirements of 5.5.9.1d).

6.5.9.4 Inspection of temperature rise

Adjust the power supply voltage of the lock, to the rated power supply voltage. Power on for 7 s and power off 7 s each time. Make 10 consecutive test cycles. Use a point thermometer, to measure the surface temperature of the lock, to determine whether the result meets the requirements of 5.5.9.1e).

6.5.9.5 Power off the lock. Check the opening and closing state of the lock, to determine whether the result meets the requirements of 5.5.9.2.

6.5.9.6 Visually inspect the isolation, BETWEEN the lock body AND the gun storage space and/or the inner wall of the ammunition storage space, to determine whether the result meets the requirements of 5.5.9.3.

6.5.9.7 Test the standby opening method of the lock, one by one, to determine whether the result meets the requirements of 5.5.9.4.

6.5.10 Power supply test

6.5.10.1 After connecting and disconnecting the AC power supply of the smart safe 10 times each, perform a function test, according to the product instruction manual to operate the function of the smart safe, to determine whether the result meets the requirements of 5.5.10.1.

6.5.10.2 Carry out the test of power supply voltage's adaptability of the smart safe, according to 5.8 of GB/T 15211-1994. The test includes making the samples under normal voltage, minimum voltage, maximum voltage conditions, respectively, to perform the function inspection. Determine whether the results meet the requirements of 5.5.10.2.

6.5.10.3 When the main power supply is charging the standby power supply, measure its charging voltage and current. Disconnect the AC power supply. Use the DC power supply to replace the battery. When the smart safe is in a static working state, use a voltmeter to make measurement, at the power input end. Adjust the DC power supply, to drop to the rated termination value of the average cell battery voltage. At this time, the undervoltage protection shall be activated. Determine whether the result meets the requirements of 5.5.10.3.

6.5.10.4 Use the fully charged backup power source, which is provided by the smart safe, to operate the smart device, after the smart safe has been working continuously for 8 hours. Determine whether the result meets the requirements of 5.5.10.4.

6.5.10.5 The installation position of the power interface AND the inspection of the locking device shall be carried out by visual inspection. Determine whether the result meets the requirements of 5.5.10.5.

6.5.11 Safety test

6.5.11.1 Dielectric strength test

Carry out the electric strength test of the smart safe, according to the provisions of 5.4.3 of GB 16796-2009, to determine whether the result meets the requirements of 5.5.11.1.

6.5.11.2 Insulation resistance test

Carry out the insulation resistance test of the smart safe, according to 5.4.4 of GB 16796-2009. Determine whether the result meets the requirements of 5.5.11.2.

6.5.11.3 Leakage current test

Carry out the leakage current test of the smart safe, according to 5.4.6 of GB

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