Safes, ATM Safes, Strongroom Walls and Strongroom Doors

Requirements, Classification and Test Methods

For confidentiality reasons, the test methods are not shown.

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VdS Guidelines for Physical Security Devices

Safes, ATM Safes, Strongroom Walls and Strongroom Doors

Requirements, Classification and Test Methods

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1 Introduction

1.1 General

On base of these guidelines tests are performed the results of which lead to a classification of the resistance value of secure storage units against burglary. The classification also may be considered for the construction of security systems. For this purpose, it is also to be considered that for real burglary attempts longer times can be anticipated as for testing depending on the skills of the burglar, the conditions on site and the availability of tools.

Results and reproducibility of tests, which are performed manually, depend on the experience of the test team. Automated tests are still in development, but may be considered when revising these guidelines.

For ATM systems the tests and requirements in this guidelines are based on the following assumptions (conditions) of use:

- **ATM system**: assembly of sub-units which provides an ATM function and affords security to cash and/or valuables (e.g. checks) stored within the ATM safe
- For using of an ATM safe the ATM manufacturer is responsible for the secure storage of the cash and/or valuables (e.g. checks)

Examples of different designs of ATM systems are given in Annex C.

1.2 Scope

On the base of these guidelines free-standing safes, built-in safes (floor and wall), ATM safes and ATM base, strongroom doors as well as strongrooms (with or without door) are tested and classified according to their resistance against a burglary attack. These guidelines are not valid for testing and classification of deposit systems and automatic teller machines (ATM systems).

For other secure storage units and systems the following guidelines are valid:

– VdS 2528 Deposit Systems

– VdS 2560 Safes with Special Functions

These guidelines are not valid for locks for secure storage units. These requirements and test methods are contained in the Guidelines for Physical Security Devices, High Security Locks for Secure Storage Units, Requirements and Test Methods, VdS 2396 resp. the European standard EN 1300, Secure storage units – Classification for high security locks according to their resistance to unauthorized opening and High Security Locks, Distributed Systems – Requirements, VdS 3841 resp. the European draft standard prEN 17646:2021, Secure storage units, Classification for high security locks according to their resistance to unauthorized opening – distributed systems.

These guidelines are based on the European standard EN 1143-1 Secure storage units – Requirements, classification and methods of test for resistance to burglary – Part 1: Safes, ATM safes, strongroom doors and strongrooms.

Secure storage units according to these guidelines may be pre-equipped at manufacturing already for the use in intruder alarm systems (IAS) or pre-equipped with system IAS components. In these cases, the following guidelines are valid in addition:

– VdS 2264 IAS Surveillance Measures for Secure Storage Units

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1.3 Validity

These guidelines are valid from 01. May 2021. They supersede version VdS 2450 : 2012-11 (07).

Note: This is a translation of the German guidelines; if there are any discrepancies, the German version shall be binding.

2 Terms and abbreviations

2.1 Terms

ATM base: Any integral part of an ATM system located between the ATM safe and the surface to which the safe is to be anchored

ATM System: Assembly of sub-units, which provides an ATM function and affords security to cash and/or valuables stored within the ATM safe

Note 1: An example of an ATM System is shown in Annex C.

Note 2: Of the sub-units shown in Annex C, the ATM mechanism and the ATM control unit are not tested according to these guidelines.

Basic value (BV): Number in resistance units allocated to a particular tool

Note: The basic value represents problems in obtaining, transporting, the environmental conditions (e.g. cooling by water and availability of a voltage) and using and operating the relevant tool at the site in question and the necessary knowledge and experience for its efficient use.

CD-protection (CD = Core Drill): Protection that secure storage units have against a defined attack with diamond drilling tools. The test of the CD protection comprises at least one attack by which a partial access in the case of safes or a complete access in the case of strongrooms and/or strongroom doors is reached.

Built-in safe: Safe whose protection against burglary is partly dependent upon materials incorporated into it, or attached to it, during installation

Note: Under floor safes and wall safes are special types of built-in safes.

Intruder alarm system (IAS): System for the automatic surveillance of protected premises to unauthorised entry

EX-protection: Protection that secure storage units have against defined attacks with explosives

Note: For safes and ATM safes, the test of EX-protection comprises at least one attack during which a partial access is reached. For strongrooms and/or strongroom doors, the test on EX-protection comprises at least an attack by which a complete access is reached.

Explosion: Sudden oxidation or decay reaction with increasing of the temperature, the pressure or both at the same time

Gas mixture capable of explosion: A mixture of ignitable gas and oxygen or air, which causes an explosion when a fuse, which is located in the gas mixture, is released

Note: A gas mixture capable of explosion exists if a gas concentration within the explosion area, i.e. between lower explosion border (low fuel) and upper explosion border is given (high fuel).

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Free-standing safe: Safe whose protection against burglary depends only upon the materials and construction of its primary manufacture and not upon material added or attached during installation

Gas-protection: Protection that ATM safes have against defined attacks with gas explosives

Note: The test of gas-protection comprises at least one attack during which a partial access is reached.

ATM: System for the storage as well as the automated processing of money and/or valuables

Note: For the purposes of these guidelines, ATM's, money-changing machines, money-recycling machines and machines such as employee-operated ATM's are considered to be ATM.

Operating time: Time during which a tool is used attempting to create a change in the test specimen

Note: In the context of these guidelines, there are also operating times considered during which no visible modification/changes are caused to the specimen.

Internal space: Part of the interior of an ATM safe which is bounded by the inside surfaces and the bolt work cover plate(s) of the door of the ATM safe body

Relocking device: System comprising blocking and detecting elements, which will prevent the boltwork from being withdrawn if a burglary attack is detected

Note: A relocking device can be part of the locking mechanism (e.g. active or live relocker) or an independent unit (e.g. passive relocker).

Test specimen: Testable unit, at which part tests or additional tests may be performed. In this regard, the type testing is the entity of all necessary part and additional tests for the classification of secure storage units.

Boltwork: Mechanism by which a shut door is held such that until it is in the withdrawn position the door cannot be opened

To close: To move the door, so it becomes possible to bolt it

Lock: Device able to recognize a coded input and which performs a blocking function on the boltwork of the door

To lock: To block a closed boltwork by action of a lock

Stoichiometric gas mixture: Gas mixture, which is suitable for the chemical stoichiometry, so that an entire chemical conversion of the source reagents can occur

Partial access: Opening by which a defined testing gauge may be inserted into the inside of the test specimen

To bolt: To throw the boltwork or the bolt of the lock (if there is no bolt work) to a position where it fixes the door in closed position

Latch: Entity of locks and boltwork

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Complete access (complete penetration): Opening by which a defined testing gauge may be inserted through the wall or the door to the inside of the specimen

As complete access also the following is counted:

– Removal of a built-in-safe out of the specimen
– Removal of the safe door
– Opening of the safe door up to an inner width of 300 mm to at least 80 % of the inner height

Tool coefficient: Number in resistance units per minute allocated to a group of tools

Note 1 for Annex A: The tool coefficient represents factors such as noise, smoke, fumes, and other effects, which increase the likelihood of a burglary attack being detected.

Note 2 for Annex B: The tool coefficient represents tool efficiency and factors such as noise, smoke, fumes and other effects, which increase the likelihood of a burglary attack being detected.

Secure storage unit: Strongrooms and safes, which protect against burglary

Strongroom: Storage unit which protects against burglary and when closed has internal side lengths in all directions > 1 m

Note: Strongrooms may be cast in-situ, constructed from pre-fabricated elements or a combination of both.

Strongroom door: Door with lock(s), boltwork and frame intended for giving access to a strongroom

Safe: Storage unit which protects its contents against burglary and when closed has at least one internal side ≤ 1 m length

ATM safe: Safe forming part of an ATM system

Note: In the framework of these guidelines, an additional definition is applicable: Safe, in which an ATM is mounted or around which an ATM is constructed. It is part of the ATM and disposes of pre-prepared openings, which are necessary for the function of the ATM.

Resistance unit (RU): Burglary resistance, which results from one minute's use of a tool carrying the coefficient 1, and the basic value 0

Resistance grade: Classification designation for burglary resistance

Resistance value: Numerical value in resistance units calculated for each test

Active explosive charge mass: part of the solid explosive mass, which is pure pentaerythritol tetranitrate (PETN) without additives

Fuse: The element which delivers necessary energy for the ignition of the gas mixture capable of explosion

Additional devices/accessories: Installations/devices which are in the structure or which pass through the structure of the strongroom or the strongroom door(s) for ventilation or for deposit of cash and valuables

Note: Additional devices/accessories may be always open, usually open (but can be closed in case of emergency) or closed (but can be opened if necessary).

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2.2 Abbreviations

ATM Automated teller machines

RU resistance unit

GAS designation of proven resistance against attacks with explosive gas mixtures

EX designation of proven resistance against attacks with solid explosives

3 Normative references

These guidelines contain dated and undated references to other standards. The reference is made in the respective clauses, titles are listed underneath. Changes or amendments of undated standards are valid only, if they are published as change of these guidelines. For undated references the latest edition of the publication referred will be applied.

EN 1143-1 Secure Storage Units – Requirements, Classification and Test Methods for Resistance to Burglary – Part 1: Safes, ATM safes, Strongroom Doors and Strongrooms

EN 1300 Secure storage units – Classification for high security locks according to their resistance to unauthorized opening

prEN 17646:2021 Secure storage units, Classification for high security locks according to their resistance to un-authorized opening – distributed systems.

EN 10051 Continuously hot-rolled strip and plate/sheet cut from wide strip of non-alloy and alloy steels, tolerances on dimensions and shape

VdS 2264 IAS Surveillance Measures for Secure Storage Units

VdS 2396en High Security Locks for Safes & Strongrooms, Requirements and Test Methods

VdS 2451 Wertschutzräume der Widerstandsgrade V – XIII in Massiv-, Modul oder Mischbauweise, Anforderungen und Prüfmethoden (Strongrooms in Solid and/or Modular Construction for resistance grades V – XIII, requirements and test methods)

VdS 2528 Depositsysteme, Anforderungen und Prüfmethoden (Deposit Systems, requirements and test methods)

VdS 2560 Wertbehältnisse mit Sonderfunktionen, Anforderungen, Klassifizierung und Prüfmethoden (Safes with Special Functions, requirements, classification and test methods)

VdS 3540en Confirmation for Mounting a Secure Storage Unit (Safe) or an ATM Base

VdS 3841en High Security Locks, Distributed Systems, Requirements

4 Classification and requirements

4.1 Classification

Safes are classified to resistance grades according to Table 4-1.

ATM safes are classified to resistance grades according to Table 4-2.

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Strongroom doors and strongrooms (with or without door) or strongroom walls are classified to resistance grades according to Table 4-3.

All products shall meet the general requirements (clause 4.2). Products with EX, GAS, CD and T2 designation shall meet additional requirements (clauses 4.3, 4.4, 4.5 and 4.6).

4.2 General requirements

4.2.1 Safes, strongroom doors and strongrooms

There shall be no openings through the protection material other than those necessary for locks, cables or anchoring, or for the fitting of accessories to strongroom doors and strongrooms.

Cable openings in safes, strongroom doors and strongrooms (with or without a door) shall not exceed 100 mm^2. Unused cable entry openings shall be obstructed or plugged by the manufacturer by means, which cannot be removed from the outside without leaving visible traces.

Freestanding safes with a mass of less than 1,000 kg shall have at least one hole by which they can be anchored according the installation instruction. The anchoring assembly for each anchoring opening shall sustain the force given in Table 4-1.

Note 1: The respective material for the fixing shall be annexed to the safe. The performance features of materials to be used alternatively are to be specified in the manufacturers' instructions.

Note 2: In strongrooms system-relevant openings for deposit systems (e.g. day/night deposit-safe-systems) are admitted only together in connection with an installed system (insertion equipment/device, drop-chute and receiving unit container) up to a dimension of 200 cm^2, if they are contained in the construction sketches (see clause 5, point 3) g)) and the requirements according to clauses 7.4, 7.5.3.2 and 7.5.3.3 are fulfilled.

Note 3: The requirements and test methods for deposit systems (e.g. day/night deposit-safe-system) are contained in the Guidelines for Physical Security Devices, Deposit Systems, VdS 2528.

Note 4: Additional requirements and test methods for strongrooms are implemented in the Guidelines of Physical Security, Strongrooms in solid, modular and composite construction, VdS 2451.

4.2.2 ATM safes

ATM safes shall have means for plugging unused openings. These means shall be impossible to remove from the outside when leaving visible traces.

Note 1: Openings through the protection material for ATM functioning are permitted in ATM safes.

Note 2: Cable entry openings in ATM safes may be larger than 100 mm^2.

ATM safes including optional ATM bases shall have a fixing system by which they can be anchored. When tested in accordance with clauses 7 and 8, the fixing system shall withstand the requirements listed in Table 4-2.

4.2.3 Boltwork cover plate

Safes, ATM safes and strongroom doors shall have an internal boltwork cover plate, which prevents unauthorized viewing of the locks and bolt work, and access to them, when the

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door is open. Boltwork cover plates shall be secured so that they cannot be opened or removed by an unauthorized person without leaving visible traces.

Note: It is recommended to ensure, that the cover plate(s) of the boltwork room cannot be removed by simple measures (e.g. screw drill). Suitable measures are e.g. additional locks or codes or seals resp. inhibiting of the cover so that the cover can be removed only when the boltwork is in intermediate position.

4.2.4 Cable hole

Safes, strongroom doors and strongrooms of resistance grade III and higher shall either have a hole- for a cable or a preparation enabling a connection to be made to an intruder alarm system (IAS) after the secure storage unit has been installed.

Note: The requirements for the surveillance of a secure storage unit by an intruder alarm system (IAS) are described in the guidelines VdS 2264.

4.2.5 Operating instructions

Safes, strongrooms and ATM safes shall be provided with operating and maintenance instructions, including instructions regarding the locks. Free-standing safes and ATM safes shall have instructions for anchoring. For built-in safes, strongroom doors and strongrooms, installations instructions shall be provided.

These instructions should contain the following information:

– Constructional requirements for installation and operation (e.g. floor anchoring, floor loading, quality, dimensions and laying plan of possible reinforcements and enclosures, standard gauges for wall openings)
– Operation instructions (e.g. change of locks, interval of lock changings, intervals for greasing, changing and maintenance, laying plan, and parts list for IAS components if pre-prepared for IAS)
– Note that after intrusion or intrusion attempt or fire as well as incorrect intervention in the construction and the function the validity of the approval of the safe expires.
– Manufacturers´ recommendations for a secure operation (accident prevention), jeopardising items for incorrect operation (e.g. emission of toxic gas in case of fire or intrusion, indication of environmental imperilling constructional material and system of waste disposal)
– Addresses of customer service points
– Note that the proper and professional installation of ATM safes and free-standing safes with a weight of < 1000 kg on site is required
– Note that the proper and professional installation of safes for ATMs as well as free-standing safes shall be documented in writing, e.g. using VdS 3540 (Confirmation for Mounting a Secure Storage Unit (Safe) or an ATM Base).
– Note that the general conditions of the installation site and the mounting shall be agreed with the property insurer in order to avoid endangering the insurance protection[1].

[1] Recommendations on insurance cover may be taken e.g. from the Technical Comments, VdS 3134.

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4.3 Additional requirements for “EX” designation

When tested in accordance with clause 9, safes of resistance grades II to X “EX” designated shall achieve the minimum post-detonation resistance values given in Table 4-1. “EX” designation is not applicable to safes of resistance grade N (0) to I.

When tested in accordance with clause 9, ATM safes of resistance grades II to VIII designated “EX” shall achieve the minimum post-detonation resistance values given in Table 4-2. “EX” designation is not applicable to ATM safes of resistance grades L and I.

When tested in accordance with clause 9, strongroom doors and strongrooms (with or without doors) of resistance grades II to XIII designated “EX” shall achieve the minimum post-detonation resistance values given in Table 4-3. “EX” designation is not applicable to strongroom doors and strongrooms of resistance grades N (0) and I.

4.4 Additional requirements for “Gas” designation

When tested in accordance with clause 10, ATM safes of resistance grades II to VIII designated ”Gas"' shall achieve the minimum post-detonation resistance values given in Table 4-2. “Gas” designation is not applicable to ATM safes of resistance grades L and I.

4.5 Additional requirements for “CD” designation

When tested in accordance with clause 11, safes of resistance grades IV to X designated “CD” shall achieve the minimum resistance values given in Table 4-1. “CD” designation is not applicable to safes of resistance grades N (0) to III and ATM safes.

When tested in accordance with clause 11, strongroom doors and strongrooms (with or without door) of resistance grades VIII to XIII designated “CD” shall achieve the minimum resistance values given in Table 4-3. “CD” designation is not applicable to strongroom doors and strongrooms of resistance grades N (0) to VII.

4.6 Additional requirements for “T2” designation

When tested in accordance with clause 12, safes of resistance grades 0 to X (including EX and CD designation, if applicable) designated 'T2' shall achieve the minimum resistance values and requirements given in Table 4-1.

When tested in accordance with clause 12, ATM safes of resistance grades L to VIII (including EX and GAS designation, if applicable) designated 'T2' shall achieve the minimum resistance values and requirements given in Table 4-2.

For tests under clause 12, strongroom doors and strongrooms (with or without doors) of resistance grades 0 to XIII (including EX and CD designation, if applicable) designated 'T2' shall achieve the minimum resistance values and requirements given in Table 4-3.

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Resistance grade	**Tool attack test** (clause 7) **Tool attack test T2** (clause 12)		**Anchoring**[1] (clause 8)	**Locks**		**Additional requirements for EX-designation (optional)** (clause 9)	**Additional requirement for CD-designation (optional)** (clause 11)
	Resistance value for		Required force	Quantity	Class[2]	Post-detonation resistance value[6) 7)]	Resistance value[6) 7)]
	Partial access	Complete access					
	RU	RU	kN			RU	RU
N (0)[3]	30	30	50	1	A	-[4]	-[5]
I	30	50	50	1	A	-[4]	-[5]
II	50	80	50	1	A	4	-[5]
III	80	120	50	1	B	6	-[5]
IV	120	180	100	2	B	9	1.000
V	180	270	100	2	B	14	1.000
VI	270	400	100	2	C	20	1.000
VII	400	600	100	2	C	30	1.000
VIII	550	825	100	2	C	41	1.000
IX	700	1.050	100	2	C	53	1.000
X	900	1.350	100	2	C	68	1.000

1) Applicable only for freestanding safes with a mass < 1,000 kg.
2) According to VdS 2323, List of Locks for Safes & Strongrooms, whereas class 1, 2 and 3 correspond with VdS-class A, B and C or with the additional designation (DS). The list is shown on the website under https://vds.de.
3) In VdS guidelines the classification of safes and strongrooms begins with grade N in the European standard EN 1143-1 it is spoken of grade 0.
4) EX designation is not provided for resistance grades N (0) and I.
5) CD designation is not provided for resistance grades N (0) to III.
6) Resistance value for partial access
7) If the attack test is carried out with tools according to clause 12 (T2), the resistance value according to clause 12 (T2) shall be achieved.

Table 4-1 Minimum requirements for the classification of safes (exclusively ATM safes) into resistance grades

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Resistance grade		**Tool attack test** (clause 7) **Tool attack test T2** (clause12) **Resistance value for**			**Anchoring** (clause 8.2)	**Tool attack test on fastening elements** (clause 7)	**Additional require-ments for rework after anchoring test** (clause 8)	**Locks**		**Additional requirements for EX- and GAS-marking (optional)** (clauses 9 and 10)
		Partial access		Complete access RU	Required force kN	Resistance value [5] RU	Resistance value rework[5] RU	Quan-tity	Class [1]	Resistance value rework[4] [5] RU
		General RU	Used openings[2] RU							
L	Body	20	20	30	50	30	18	1	A	-[3]
	Door	30	30	50						
I		30	30	50	50	30	18	1	A	-[3]
II		50	35	80	50	50	22	1	A	4
III		80	65	120	50	50	22	1	B	6
I V		120	100	180	100	50	22	2	B	9
V		180	145	270	100	50	22	2	B	14
V I		270	220	400	100	70	22	2	C	20
V II		400	350	600	100	120	22	2	C	30
V III		550	500	825	100	160	22	2	C	41

1) According to VdS 2323, List of Locks for Safes & Strongrooms, whereas VdS-classes A, B and C correspond to classes 1, 2 and 3 resp. With additional marking (DS). Remark: The list of VdS-approved locks is shown under https://vds.de.
2) Only applicable to effectively used openings; closed or not used openings shall fulfil the general values.
3) EX and GAS designation is not provided for resistance grade L and I.
4) Resistance grade for partial access
5) If the attack test is carried out with tools according to clause 12 (T2), the resistance value according to clause 12 (T2) shall be achieved.

Table 4-2 Minimum requirements for the classification of ATM safes in resistance grades

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Resistance grade	**Tool attack test** (clause 7) **Tool attack test T2** (clause 12)	**Locks** [1]		**Additional requirements for EX-designation (optional)** (clause 9)	**Additional requirements for CD-designation (optional)** (clause 11)
	Resistance value for complete access	quantity	Class [2]	Resistance value rework [4) 7)]	Resistance value [5) 7)]
	RU			RU	RU
N (0)[3]	30	1	A	- [4]	- [6]
I	50	1	A	- [4]	- [6]
II	80	1	A	4	- [6]
III	120	1	B	6	- [6]
IV	180	2	B	9	- [6]
V	270	2	B	14	- [6]
VI	400	2	C	20	- [6]
VII	600	2	C	30	- [6]
VIII	825	2	C	41	10.000
IX	1.050	2	C	53	10.000
X	1.350	2	C	68	10.000
XI	2.000	3	C or	100	10.000
		2	D		
XII	3.000	3	C or	150	10.000
		2	D		
XIII	4.500	2	D	225	10.000

1) Not applicable to the classification of strongrooms without door
2) According to VdS 2323, List of Locks for Safes & Strongrooms, whereas VdS-classes A, B and C correspond to classes 1, 2 and 3 resp. With additional marking (DS). Remark: The list of VdS-approved locks is shown under https://vds.de.
3) In VdS-guidelines the classification of safes begins with grade N, in the European standard EN 1143-1 it is spoken of grade 0.
4) EX designation is not provided for resistance grade N (0) and I
5) Resistance grade for a complete access achieved by diamond core drill
6) CD designation is not provided for resistance grade N (0) to VII
7) It the attack test is carried out with tools according to clause 12 (T2), the resistance grade according to clause 12 (T2) shall be achieved.

Table 4-3 Minimum requirements for the classification of strongroom doors and strongrooms into resistance grades

5 Technical documentation

The technical documentation shall contain the following information:

1) The date of issue and the name of the manufacturer or the name of the applicant requesting testing shall be on each page.
2) Statement of the type of product: free-standing safe, built-in safe (floor and wall), ATM safe, strongroom door or strongroom (with or without door) together with a list of sizes covered by the same design
3) Drawings of the test specimen showing the following:
   a) weight, outside and inside dimensions, and the manufacturing tolerances
   b) horizontal and vertical cross sections

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c) quantity, layout and features of locks, boltwork and relocking devices

d) quantity, pitch and position of door bolts, their dimensions (e.g. cross section), throw and engagements and their type (e.g. moving or fixed)

e) location and design of any local areas of special protection materials

f) details of the fastening and/or fitting or anchoring of all elements relevant to physical security; e.g. construction and position of joints and connections, the means by which door and/or frames are joined to walls, the means by which prefabricated panels are joined

g) marking, position and dimensions of any openings which pass through the protection material with a detailed representation of specially protected areas

h) details of optional features, for example feature for time locking and time delay locking

i) for ATM safes, the ATM base, if any, will be identified by the manufacturer

4) List of all the locks, which may be fitted indicating the manufacturer and model and approval number

5) Specification of the materials of construction if not contained on the drawings

6) Statements of details of any materials or device(s) intended to generate gas, smoke, soot, etc. in the event of physical attack or which could generate harmful substances during testing

7) Statements of the nature and position of any cables and/or facilities for penetration of detection systems, for the mounting of electro-mechanical securing devices, alarm devices, etc.

Note: Requirements for monitoring safes by a burglar alarm system are implement-ed in the guidelines "IAS Surveillance Measures for Safes & Strongrooms", VdS 2264en.

8) Installation instructions giving at least the following details:

a) method of anchoring free-standing safes with a mass less than 1,000 kg

b) method of encasing built-in safes, i.e. proportion of body which is to be encased; the minimum size and section thickness of the encasement; the minimum quality of encasement material (types and proportions of aggregates, cement and any other constituents, flowability of the freshly prepared mass and the 28-day cube compression strength together with the relevant methods of test to define these features); any reinforcement or anchoring to be included within the encasing mass

c) method for the construction of monolithic cast in-situ strongrooms, including the following: minimum quality of concrete (types and proportions of aggregates, cement and any other constituents, flowability of the freshly prepared mass, and the 28-day cube compression strength together with the relevant methods of test to define these features); reinforcement to be included in the strongroom, the means by which door and frame are joined to walls and the means by which armouring and anchoring are joined to elements

Note: Additional requirements and test methods for Strongrooms are implemented in our guidelines of physical security "Strongrooms in solid, modular and composite construction" VdS 2451en.

d) method for assembling pre-fabricated strongroom elements

e) method by which

– the ATM safe is anchored to the floor or other surface
– the ATM safe is anchored to the ATM base and the ATM base is anchored to the floor or other surface

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9) ATM safes

For ATM safes with GAS designation up to resistance grade IV GAS inform the user of the background of the test as: Gas testing assumes that the internal volume of the ATM safe is occupied with an ATM mechanism that limits the amount of gas which can be injected. Any unused volume should not exceed 100 litres. To achieve this, additional devices can be installed, e. g. by the ATM manufacturer.

For ATM safes the following information are necessary in addition:

- Description of all openings with dimensions and indication on position in the se-cure storage unit
- Indication on use of the openings (e.g. cable holes)
- Special protection measures for the openings
- Nomination of series with indication on types of models of a series

10) ATM bases for ATM safes

Following information is necessary for ATM bases for ATM safes:

- Description of type of ATM base
- Dimensions (w x h x d) of the ATM base
- Construction sketches – cross section and vertical section for the ATM base
- Specification of used materials
- Indication of connections and/or fastening of all elements
- Indication of the type and the dimensions (w x h x d) of the ATM or the ATM safe , for which the ATM base is provided
- Mounting instructions resp. anchoring instructions of the ATM resp. the ATM safe
- Instructions on the connection of the ATM resp. the ATM safe with the basement
- Instructions on anchoring methods of the ATM base
- Description of series with indication on type of models of a series

6 Test specimen

The test specimen shall be a safe, an ATM safe, a strongroom door or a strongroom (with or without a door). The strongroom test specimen shall consist of elements representing all joints and assemblies essential for testing purposes. Optional features (see clause 5, point 3) h)) which could decrease the burglary resistance value shall be included in the test specimen. Optional features (see clause 5, point 3) h)) and accessories such as time locking and time delay locking which could increase the resistance value in the tool attack test shall be removed or made not operative during the tool attack test.

An ATM safe test specimen shall include an ATM base if this can be used for installation (see clause 5, point 8) e) 2nd indent). If the ATM base is an optional, the testing laboratory can choose whether to test with or without the ATM base.

Cable entrances for detection systems and/or accessories specified in the technical documentation shall be present in the test specimen.

Test specimens for built-in safes and cast *in situ* strongrooms shall be constructed using the components supplied and following the instructions for installation (see clause 5, point 8)).

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13 Test report

A unique identification number is to be allocated to the test report.

When no explosive test and no gas attack test have been made the following is to be reported:

a) name of manufacturer and place and year of manufacture

b) technical documentation supplied in accordance with clause 5 and in case of a built-in safe or cast in-situ strongroom the quality of the encasement work done at the test site

c) manufacturer's identification of the test specimen

d) description and result of any exploratory access made

e) testing programme developed on the basis of the initial examination

f) date and place of testing

g) composition of the testing team, the names of the testing team leader, the time keeper and the testing operatives; names of any independent technical experts consulted

h) specifications of the attack tools used

i) calculated resistance value for each tool attack test

j) applied force in kilo newton (kN) from the anchoring strength test and a description of any deformation or failure in the safe wall or base (if applicable).

When an explosive test has been made additionally the following is to be reported:

– description and result of any exploratory access made

– testing programme developed on the basis of the initial examination

– date and place of explosive test and/or gas attack test

– composition of the testing team, the names of the testing team leader, the time keeper and the testing operatives

– specifications of the used attack tools

– trade mark and type of explosives, charge mass and a description of the location of the charge

– description of the post detonation tool attack and calculation of the resulting resistance value.

When an explosive test with gas has been made additionally the following is to be reported:

– description and result of any exploratory access made

– testing programme developed on the basis of the initial examination

– date and place of gas attack test

– composition of the testing team, the names of the testing team leader, the time keeper and the testing operatives

– Calculation of the internal space and calculation of the gas volume as well as description of the position of the flexible container(s) in the interior space

– specifications of the used attack tools

– description of the post detonation tool attack and calculation of the resulting resistance value.

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The test report should contain a statement that the results obtained relate only to the sample tested, and should be regarded only as the basis for certification. The test report itself should not be considered to be a Certificate of Conformance.

When a T2 test has been made, report above information as applicable.

14 Marking

14.1 General

Markings of the secure storage units by the manufacturer that go beyond those in this clause are permissible. They may include, for example, the following information:

– Name and identification code of the manufacturer
– Designation of the guideline/standard and the degree of resistance and, where applicable, identification of one or more option(s)
– Type, model number, size designation
– Serial number

14.2 Safes, strongrooms and strongroom doors

Each product which are VdS approved on base of these guidelines shall be labelled with the resp. metal VdS approval label according to Figure 14-1 to Figure 14-3 (either in German or English language).

The VdS approval label shall be fixed in such a way on the inner side of a door of a safe or a strongroom door or on the front side of the pre-prepared component of a secure storage unit such that it is not easy to remove it.

The VdS approval labels for VdS-approved secure storage units may be ordered from the VdS Certification body.

The VdS approval label contains the following information indicated by the VdS Certification body:

– Identification code
– Resistance grade, if given ’T2‘ and/or ’EX‘ and/or ’CD‘
– VdS approval number

The following information are to be completed by the manufacturer of the safes & strongrooms for each product:

– Serial no
– Weight (kg)
– Year of manufacture

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Figure 14-1 VdS approval label for safes



Figure 14-2 VdS approval label for strongrooms



Figure 14-3 VdS approval label for strongroom doors

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14.3 ATM safes

14.3.1 Marking

Any of the ATM Safes which are VdS approved on base of these guidelines shall be labelled with the respective metal VdS approval label according to Figure 14-4 or alternatively Figure 14-5.

The approval label shall be fixed on the inside of a door such that it cannot be removed easily.

14.3.2 VdS approval label

The VdS approval label contains the following indications impressed by VdS certification body:

– Identification code
– Resistance grade, if given ’T2‘ and/or ’EX‘ and/or ’GAS‘ protection
– VdS approval number
– Model
– Version
– Design

The following information are to be completed by the manufacturer of the ATM safes for each product:

– Serial-No
– Weight (kg)
– Year of manufacture



Figure 14-4 VdS approval label for ATM safes

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14.3.3 EFSG approval label

The basis for the use of the EFSG approval label is the proven approval/certification of the secure storage unit in question by at least two of the certification bodies listed on the label.

The EFSG approval label may be affixed alternatively to or in combination with the VdS approval label.

EFSG (European Fire and Security Group) is an association of European certification bodies, acting in the field of fire detection and security and supporting free movement of goods and services within Europe and worldwide.

EFSG is working to ease mutual approval of product tests, which are performed by the associated testing laboratories with the aim to reduce multiple testing and thus also costs and time for manufacturers.

The EFSG members are working collectively to reach this aim, however, leave independent certification bodies being responsible for their own decisions and the control of their quality marks.

Deviating from clause 14.2, the EFSG approval labels shall be obtained by the approval holder or alternatively by someone nominated by the approval holder (e.g. the manufacturing site) via the primary certification body (pCB)/the initial certification body, unless otherwise agreed.

The EFSG approval label is available only in English language and contains the following indications impressed by the primary certification body (pCB)/the initial certification body:

– Identification code[1)]
– Grade (if given T2 and/or EX and/or GAS protection)
– VdS approval no[2)]
– SBSC approval no – if existing[2)]
– A2P approval no – if existing[2)]

[1)] If the EFSG approval labels are obtained from the VdS certification body, the VdS certification body is identified in the identification code as the primary certification body (pCB) by the letters: VV.

[2)] Indication of the approval number or certificate number if applicable, but at least two numbers.

The following information are to be completed by the manufacturer of the ATM safes for each product on the EFSG approval label:

– Serial no.
– Weight (kg)
– Year of manufacture

If the EFSG approval label is affixed alternatively to the VdS approval label and not in combination, the approval owner shall indicate in addition the following information:

– Model of the ATM safe
– Version (normally: model series designation according to vds.de)

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This information shall be affixed durably (indelible) by the approval holder on the inside of the door and shall be documented traceably in the frame of his QM-system.

Note: Indelible affixing is for example stamping, cauterizing, imprinting.

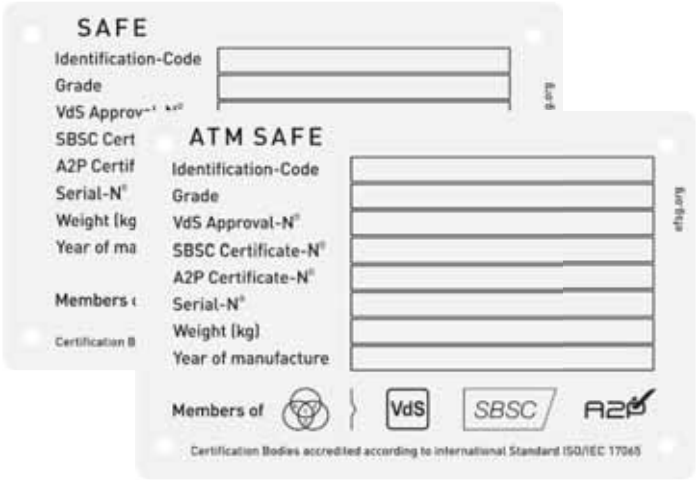


Figure 14-5 EFSG approval label for ATM safes

The EFSG approval label shall be affixed on the inside of the door such that it may not be removed easily.

14.4 ATM bases

Any of ATM bases which are VdS approved on base of these guidelines shall be labelled with the respective metal VdS approval label according to Figure 14-6 (alternatively in German or English language).

If the fixing of the VdS approval label at a visible point of the base is not possible the VdS approval label shall be affixed on the inside of the door of the ATM Safe which is mounted on this base.

The VdS approval label contains the following indications impressed by VdS Certification body:

– Identification code
– VdS approval number (of the base)
– Resistance grade of the ATM safe mounted on the base
– Model of associated ATM safe

Following indications are to be completed by the manufacturer of the ATM base for each product:

– Serial no
– Year of manufacture

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Figure 14-6 VdS approval label for ATM bases

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Annex A Attack tools (normative)

In this annex tool coefficients and basic values are given for each tool (see Table A-1 to Table A-14) and tool categories (A, B, C, D and S) which are allowed to be used in the tool attack test. In addition, the intended use of the tool is described.

Note: In some cases the basic value also will vary within a tool category.

Tools of Table A-1 to Table A5 are used manually only, without external power supply. Tools of Table A-7 to Table A-10 are used with external supply terminals and usually (with the exception of tool category A) depend on external sources of power. Tools of Table A-7, Table A-8 and Table A-10 can be used with cutting and/or cooling fluids.

To reach the lowest resistance value (see 7.1) in general tools are used having power consumption (as specified by the tool supplier) close to the limit in Table A-7 to Table A-14.

Tools shall be used for the purpose for which they are designed. If a tool replaces another type of tool, the coefficient of the replaced or simulated tool (if higher) is applicable.

Example: If a screwdriver is used as a punch then it shall not be regarded as a hand assembling/disassembling tool but as a tool specific accessory with a basic value of 1 resistance unit (RU).

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
weight ≤ 1.5 kg and length ≤ 400 mm BV: 0	weight ≤ 3.0 kg and length ≤ 1,500 mm BV: 5	–	–	–
Note: These tools are used for non-destructive assembling and disassembling of detachable elements, e.g. to detach screws, pins or bolts, spring clips. *Examples: Screwdrivers, fork/ring wrenches*				

Table A-1 Hand assembling/disassembling tools

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
weight ≤ 1.5 kg and length ≤ 400 mm BV: 0	length ≤ 1,500 mm BV: 7	–	–	–
Note: These tools are used for the gripping (lever transmission) of tools and materials, e.g. fixing/holding of chisel. *Examples: Universal pliers, wrenches, chisel holders, forge tongs*				

Table A-2 Hand gripping tools

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Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
length ≤ 300 mm [1)] BV: 1 [1)] length ≤ 750 mm BV: 5	length ≤ 1,500 mm BV: 7	–	–	–
Note: These tools transmit physical force by a lever, e.g. prise-up a door, deform or fracture weak pieces. *Examples: Screwdriver, tyre levers, hand levers, crowbars* [1)] In order to prevent incorrect application of the tools according to Table A-12, deviating from the EN 1143-1, a hand-levering lever tool with a maximum length of 300 mm and a basic value of 1 RU was defined.				

Table A-3 Hand levering tools

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
weight ≤ 1.5 kg and length ≤ 400 mm BV: 0	–	–	–	–
Note: These tools are used for manual grinding, cutting and detaching of various materials without additional electric means of propulsion, e.g. sawing steel sheets. *Examples: Hand drills, saws, files, side cutters, bolt croppers, plate shears, steel cutters*				

Table A-4 Hand sawing/filling/cutting and drilling tools

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
Head weight ≤ 1.5 kg and moment ≤ 10 Nm and length ≤ 750 mm BV: 5	Head weight ≤ 3.0 kg and moment ≤ 25 Nm and length ≤ 1,000 mm BV: 7	–	–	–
Note: These tools are used to break up various materials and to propel different accessories such as chisels, drift punches and wedges. *Examples: Hammers, hand axes, picks*				

Table A-5 Hand hammering tools

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Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
Power consumption ≤ 500 W length ≤ 400 mm and weight ≤ 1.5 kg BV: 18	Power consumption ≤ 800 W length ≤ 750 mm and weight ≤ 3.0 kg BV: 28	–	–	–
Note: These tools are tools which are usually not commercially available but are conceived *or provided especially for certain purposes at the test.* The basic value includes sources of electricity (≤240 V) which can be used to power these tools.				

Table A-6 Specially made tools

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
weight ≤ 3.0 kg and power consumption ≤ 500 W BV: 7	Power consumption ≤ 800 W BV: 11	Power consumption ≤ 1,350 W BV: 25 Plus an addition for a drilling rig BV: 11	–	–
Note: These tools are used to drill or cut (without impacting option) and their working energy is supplied by a source of electricity. *Examples: Drilling machines*				

Table A-7 Electric powered tools, without impact

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
–	Power consumption ≤ 800 W and single blow energy ≤ 6 J BV: 11	Power consumption ≤ 1.350 W and single blow energy ≤15 J BV: 25	–	–
Note: These tools are electric drilling machines, which can be used with or without impacting option. *Examples: Hammer drills, jack hammers, concrete breakers*				

Table A-8 Electric powered rotary tools, with impact option

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Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
–	Power consumption ≤ 800 W and single blow energy ≤ 6 J BV: 11	Power consumption ≤ 1,350 W and single blow energy ≤ 20 J BV: 25	–	–
Note: These tools are used for hammering, breaking up or deforming. *Examples: Electric hammers*				

Table A-9 Electric powered impacting machine tools, without rotation

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
–	Power consumption ≤ 800 W BV: 14	Power consumption ≤ 2,300 W and with abrasive disc BV: 25 Or diamond disc BV: 35	Power consumption ≤ 2,300 W and with: a rig and a drill with length ≤ 450 mm BV: 49 or length ≤ 1,000 mm BV: 63	Power consumption ≤ 11,000 W and with: a drill with length ≤ 450 mm BV: 245 or length ≤ 1,000 mm BV: 300 or wall saw BV: 245
Note: These tools are used for cutting or abrasion. *Examples: Electric disc cutters, diamond core drills*				

Table A-10 Electric power grinding/slitting machine tools

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
–	Oxygen consumption ≤ 50 l/min[1)] BV: 14	Oxygen consumption ≤ 250 l/min[1)] BV: 28	Oxygen consumption ≤ 750 l/min[1)] BV: 42 plus an addition for the power source current ≤ 350 A BV: 25	Oxygen consumption ≤ 1,500 l/min[1)] BV: 70
[1)] At standard ambient temperature and pressure, purity > 99,0 %				
Note: These thermal tools receive the necessary energy either by an exothermic chemical reaction (heating/cutting gas, solid material/cutting gas) or by arc cutting. Examples: Gas cutting and welding, oxygen lance, electric cutting and welding				

Table A-11 Thermal cutting/melting tools

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Tool category (BV: Basic value in RU)				
A, B, C, D or S	**B, C, D or S**	**C, D or S**	**D or S**	**S**
HSS-drill[1)] BV: 1 Saw blade BV: 1 Chisel BV: 1 Wedge BV: 1 Punch BV: 1	HSS/carbide tipped drills BV: 2 Saw blade BV: 2 Chisel/bit BV: 3 Disc Ø ≤ 125 mm and thickness ≥ 2.5 mm BV: 4 Nozzle BV: 4	HSS/carbide tipped drills BV: 3 Chisel/bit BV: 4 Disc Ø ≤ 230 mm and thickness ≥ 2.5 mm BV: 5 Diamond disc with Ø ≤ 230 mm and thickness ≥ 2.5 mm BV: 14 Nozzle BV: 5	Rod with Ø ≤ 16 mm BV: 6/m Lances/electrodes Ø outside ≤ 6.5 mm length ≤ 1,200 mm BV: 10 Lances/electrodes Ø outside ≤ 7.0 mm Ø inside ≤ 3.5 mm length ≤ 450 mm BV: 8 Nozzle BV: 6 Diamond core drill length ≤ 450 mm BV: 14 Diamond core drill length ≤ 1,000 mm BV: 28	3 m oxygen lance BV: 32 Diamond core drill length ≤ 450 mm BV: 70 Diamond core drill length ≤ 1,000 mm BV:140 Disc for wall saw BV: 70
[1)] HSS = High speed steel				
Note: These tools include drills, saw blades, abrasive discs, nozzles, electrodes. They are consumable and/or replaceable objects, used together with tools of Tables A.1 up to A.11. Their use is represented by a basic value.				

Table A-12 Accessories for tools of Table A-1 to Table A-11

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7.5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
Hook BV: 1 Line BV: 1 Commercial fishing device BV: 1 power supply DC ≤ 24 V BV: 1 plug BV: 1 Cable connector BV: 1	–	acids / alkali fluids per litre used: BV: 7	–	–
Note: This group includes tools, special procedures and devices that cannot be subsumed into the categories of defined tools but still are to be taken into account. Their use is timed. Examples: *Cooling/cutting agents, chemicals, electronic devices, hooks, fishing devices and commercial batteries.*				

Table A-13 Miscellaneous tools

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Tool category (BV: Basic value in RU)	
Equipment	**BV**
Measuring equipment	0
Torch	1
Mastic/foam per used 300 ml	7
Jack ≤ 30 kN	7
Rigid endoscope	14
Flexible endoscope	35
Hydraulic equipment ≤ 200 kN and for each pressure application	35
Note: These are tools used to enhance testing work. Their use is not timed but represented only by a basic value. Examples: Torches, endoscopes, electronic devices	

Table A-14 Non-tools

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Annex B Attack tools T2 (normative)

This Annex shows the new tools which can be used, if 'T2' designation is applied.

The tools were integrated to reflect the higher efficiency of available tools.

The requirements set in the introduction of Annex A also apply to this Annex.

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7,5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
-	Length ≤ 1.000 mm BV: 7 Each additional brackets BV: 2	-	-	-
Note: These tools are used for manual cutting and detaching of various materials without additional electric means of propulsion, e.g. cutting steel sheets. *Examples: Larger bolt croppers, plate shears, steel cutters*				

Table B-1 Additional hand sawing/filling/cutting and drilling tools

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7,5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
-		-	Power consumption ≤ 2.300 W and single blow energy ≤ 30 J BV: 37 Any additional chisel BV: 5	-
Note: These tools are used for hammering, breaking up and deforming. *Examples: Building hammer with higher efficiency.*				

Table B-2 Additional electrically driven not rotating tools with impact direction

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Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7,5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
-	Power consumption ≤ 800 W BV: 14	power consumption ≤ 2 300 W used with sawing blade or HSS hole saw blade BV: 25 or used with carbide tipped hole saw blade with Ø ≤ 120 mm BV: 36	Power consumption ≤ 2 600 W with a rig and diamond core drill suitable for cutting walls of ≤ 450 mm thickness BV: 49 or of walls up to ≤ 1 000 mm thickness BV: 63	11 000 W concrete chain saw suitable for cutting walls of ≤ 450 mm thickness BV: 245 or suitable for cutting walls of ≤ 1 000 mm thickness BV: 300
	Any additional saw blade BV:2 or HSS hole saw blade BV: 2	Any additional saw blade BV:3 or HSS hole saw blade BV: 3 or carbide tipped hole saw blade Ø ≤ 120 mm BV: 12 Any drilling rig BV: 11	Any additional diamond core drill suitable for cutting walls of ≤ 450 mm BV: 14 or suitable for cutting walls of ≤ 1 000 mm BV: 28	Any additional concrete chain saw tool accessories suitable for cutting walls of ≤ 450 mm BV: 70 or suitable for cutting walls of ≤ 1 000 mm thickness BV: 140
Note: These tools are used for cutting. *Examples: Hole saws, sabre saws, jig saws, diamond core drills and concrete chain saws.*				

Table B-3 Additional electrically driven cutting/slitting tools

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7,5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
-	-	Power consumption ≤ 1 350 W and with abrasive disc of ≥ 1,0 mm thickness Ø ≤ 125 mm BV: 18 or diamond disc of ≥ 1,0 mm thickness Ø ≤ 125 mm BV: 27	Power consumption ≤ 2 600 W and with abrasive disc of ≥ 1,9 mm thickness Ø ≤ 230 mm BV: 28 or diamond disc of ≥ 1,9 mm thickness Ø ≤ 230 mm BV: 37	-
		Any additional abrasive disc BV:5 Any additional diamond disc BV: 14	Any additional abrasive disc BV:6 Any additional diamond disc BV: 15	
Note: these tools are used for cutting or grinding *Examples: Electric disc cutters with higher efficiency*				

Table B-4 Additional electric disc cutters

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Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7,5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
-	-	Power consumption ≤ 1 350 W and with Tungsten carbide disc with ≥ 1,0 mm thickness Ø ≤ 125 mm BV: 27 Power consumption ≤ 2 300 W and with Tungsten carbide disc with ≥ 2,5 mm thickness Ø ≤ 230 mm BV: 34	Power consumption ≤ 2 600 W and with Tungsten carbide disc with ≥ 1,9 mm thickness Ø ≤ 230 mm BV: 37	-
		Any additional Tungsten carbide disc BV: 14	Any additional Tungsten carbide disc BV: 15	
Note: these tools are used for cutting. *Examples: Circular saws and electric disc cutters with circular saw discs.*				

Table B-5 Circular saws

Tool category (BV: Basic value in RU)				
A	**B**	**C**	**D**	**S**
Tool coefficient: 5 RU/min	Tool coefficient: 7,5 RU/min	Tool coefficient: 10 RU/min	Tool coefficient: 15 RU/min	Tool coefficient: 35 RU/min
-	-	-	Oxygen consumption ≤ 750 l/min[1)] with lance outside Ø ≤ 13 mm and length ≤ 1 200 mm BV: 55	-
			Any additional lances with outside Ø ≤ 13 mm and length ≤ 1 200 mm BV: 20	
[1)] At standard ambient temperature and pressures with a purity of >99% *Note: These thermal tools receive the necessary energy from an exothermic chemical reaction..* *Example: Oxygen lance*				

Table B-6 Additional thermally cutting/melting tools

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Annex C Examples of ATM systems and non-ATM-systems (informative)

A general structure of ATM systems with sub units is shown in Figure C-1.

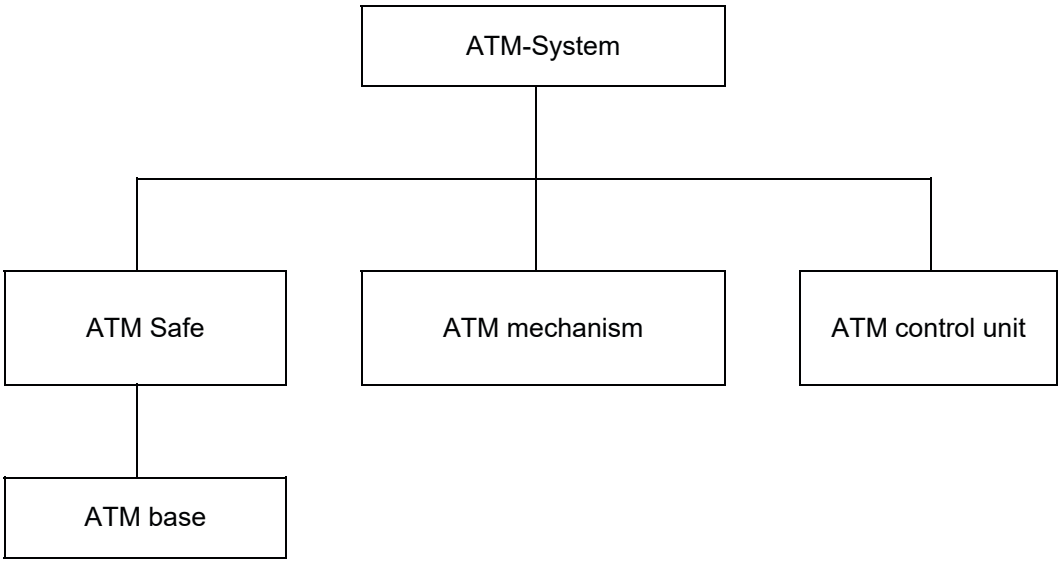
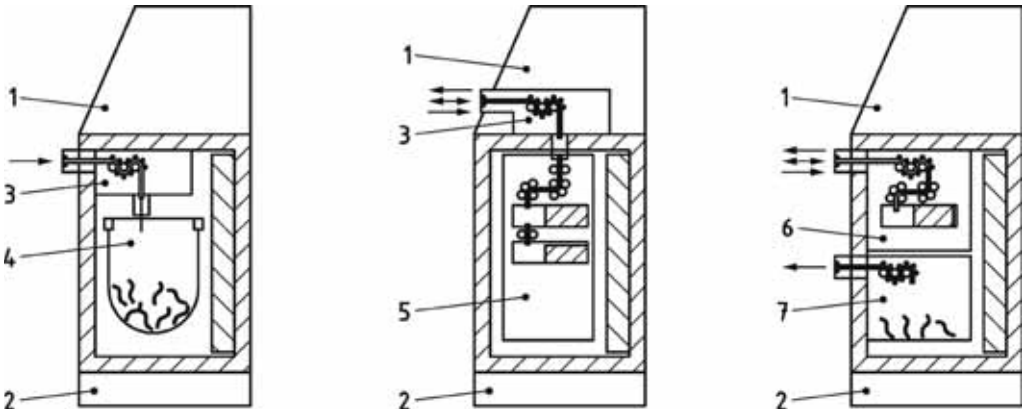


Figure C-1 General example of an ATM system

Design examples of ATM systems, which use an ATM safe according to EN 1143-1, are shown in Figure C-2.



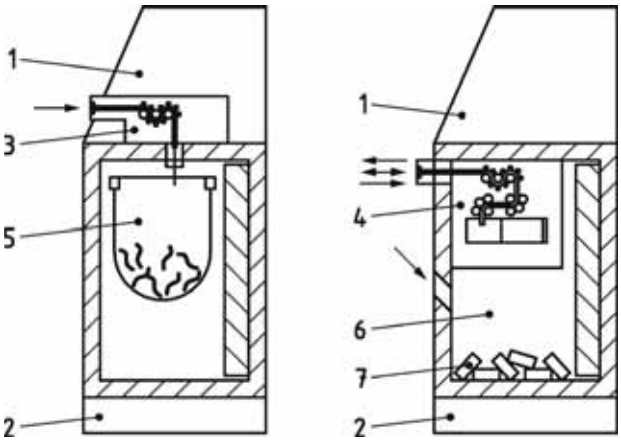
Key

1 ATM control unit
2 ATM base (optional)
3 ATM mechanism for counting, transporting, etc.
4 Storage place – loose or sorted bank notes
5 ATM mechanism for transporting and storage
6 ATM mechanism for counting, transporting and storage
7 ATM mechanism and storage container for deposits

Figure C-2 Designs of ATM systems

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Examples of non ATM systems are shown in Figure C-3.



Key

1 ATM control unit
2 ATM base (optional)
3 ATM mechanism for counting, transporting, etc.
4 ATM mechanism for counting, transporting and storage
5 Storage place for loose banknotes (not certified according to VdS 2528)
6 deposit storage place
7 Valuables

Figure C-3 Examples of non ATM systems

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Annex D Changes to pre-version

– High Security Locks, Distributed Systems – Requirements, VdS 3841 resp. the European draft standard prEN 17646:2021, Safes – Classification of high security locks to their resistance values against unauthorised opening – Distributed systems were added (see clause 1.2, clause 3, Table 4-1, Table 4-2, Table 4-3)

– The validity was changed (see clause 1.3).

– The clause abbreviations was added (see clause 2.2)

– Notes on operation instructions were revised resp. amended (see clause 4.2.5)

– Requirements for the performance of additional test T2 was added (see clauses 4.1, 4.6, 12, 13, 14.2, 14.3.2, 14.3.3, Table 4-1, Table 4-2, Table 4-3); products tested with these new tools which are listed in Annex B have a T2 designation behind the resistance grade

– In Annex A a power supply, connector and cable connector/terminal have been added.

– The constructional requirements for ATM safes of resistance grade L have been deleted (former clause 7.5.5; deleted, changes in Table 4-2 and clause 7.5.4 have been made)

– For clarification clause 4.2.2 has been updated and an informative Annex C and text in the introduction has been added for different types of ATM systems..

– Updates have been integrated for the optional solid explosive test, above all: The explosive mass for the EX-option in clause 9.4 was changed to “active explosive mass”, a definition for active explosive charge mass has been added (clause 2.1), instead of specific energy the explosive heat of the PETN is defined (see clause 9.3); the detonation velocity of the PETN was raised from (7 000 ± 500) m/s to (7 500 ± 500) m/s (clause 9.3); the tolerance of the active explosive charge mass has been changed from ± 1 g to ± 2 %, the requirement that test specimens shall have a certain internal capacity has been deleted from clause 9.2, the shape of the explosive charge shall now be spherical for ATM safes and safes (see clause 9.5.1), the clause for not permitting the entry of explosives through the cable-entry openings has been deleted (clause 4.3). In addition, a note has been added in clause 9.5.2 and in Table 9-1.

– Updates have been made in the optional gas explosive test: the background for using the amount of gas for resistance grade II, III and IV has been explained in greater detail (clause 5, point 9), clause 10.4) and for resistance grade V, VI, VII and VIII a new formula has been integrated.

– An additional test condition for cutting steel sheets has been added (clauses 2.1 and 7.6, point g))

– For the test with diamond core drill (CD-option) clause 11 has been added for a better structure.

– Inclusion of the marking with the EFSG label (clause 14.3.3)

– Table A-3 has been amended with an additional hand-levering tool to prevent incorrect application of tools according to Table A-12

– Editorial changes and slight changes in the clauses 2.1, 4.2.1, 6, 7.1, 7.3.1, 7.5.4.1, 7.5.4.2, 7.6, 7.8, 9.5.2, 9.6, 10.4, 10.6, 11.3, 13 as well as Figure 8-1 was integrated.

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