[INCH-POUND]
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FEDERAL SPECIFICATION
PADLOCK, KEY OPERATED, TAMPER INDICATIVE

The General Services Administration has authorized the use of this federal specification by all federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers "U" shaped shackle, key operated, heavy-duty padlocks specifically modified to accommodate a tamper indicative seal.

1.2 Classification. The padlocks covered by this specification shall be padlocks with a UL 437 listed restricted key cylinder and shall be modified to accept an ASTM Listed, Type 11 wire style tamper indicative seal.

1.2.1 Type. Tamper Indicative padlock may be submitted for testing in the following types:

Type I – Standard sizes as listed in 1.2.2.
Type II – Special size for unique applications.

1.2.2 Size. The size of the standard Tamper Indicative padlocks shall be determined by the shackle stock diameter, and the clear dimensions of the shackle. The padlocks shall be available in the following size configurations:

A – 1/4 (0.250, 6.35 mm) shackle diameter, 1-inch shackle length.

B – 5/16 (0.314, 7.9375 mm) shackle diameter, 2-inch shackle length.

C – 5/16 (0.314, 7.9375 mm) shackle diameter, 4-inch shackle length.

D – 3/8 (0.375, 9.525 mm) shackle diameter, 2-inch shackle length.

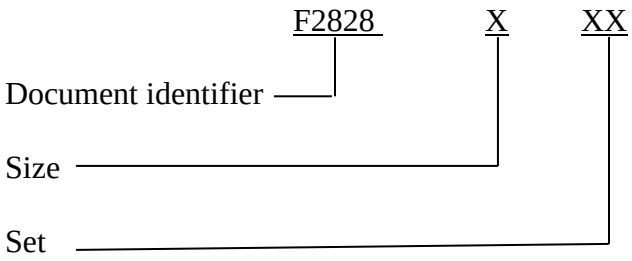
E – 3/8 (0.375, 9.525 mm) shackle diameter, 4-inch shackle length.

F – 1/2 (0.500, 12.7 mm) shackle diameter, 2-inch shackle length.

G – 1/2 (0.500, 12.7 mm) shackle diameter, 4-inch shackle length.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Defense Supply Center Philadelphia, 700 Robbins Avenue, Philadelphia, PA 19111, ATTN: DSCP-ITD, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

1.2.3 Part identification number (PIN). Padlocks covered by this specification are identified by a part identification number (PIN). The PIN consists of a five-digit alpha-numeric document identifier plus the PIN codes. See paragraph 6.3 for PIN code to specify the number of padlocks per set (if applicable). The construction of the PIN is indicated below:



2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1 Government publications. The following documents, of the issues in effect on the date of invitation for bids or request for proposals, form a part of this specification to the extent specified herein.

Military Standards:

MIL-STD-889 – Galvanic Compatibility of Electrically Conductive Materials

(Activities interested in viewing the above listed documents can access the latest versions, using the ASSIST Online database at https://assist.dla.mil/)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on the date of invitation for bids or request for proposals shall apply.

Underwriters Laboratory (UL):

UL 437 – Standard for Safety Key Locks

(Private sector and civil agencies may purchase copies of these voluntary standards from Underwriters Laboratories Inc., 333 Springsteen Rd., Northbrook, IL 60062-2096.)

American Society for Quality (ASQ):

ANSI/ASQ Z1.4 – Sampling Procedure and Tables for Inspection by Attributes

(Private sector and civil agencies may purchase copies of this voluntary standard from the American Society for Quality, P. O. Box 3005, Milwaukee, WI 53201-3005)

ASTM International:

ASTM E18 – Standard Test Methods for Rockwell Hardness of Metallic Materials
ASTM F883 – Standard Performance Specification for Padlocks
ASTM F1157 – Standard Practice for Classifying the Relative Performance of the Physical Properties of Security Seals

(Application for copies should be addressed to ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detailed specifications, specification sheets, or MS standards), the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. The padlocks furnished under this specification shall be products which have been tested and have passed the qualification tests and inspections specified in section 4 and have been listed (Type I only) on or approved for listing on the applicable Qualified Products List (QPL). The Government testing facility for the General Services Administration reserves the right to test the padlock in accordance with standards that are privileged to the Government.

3.1.1 Qualification suspension.

3.1.1.1 Development of entry techniques. The padlocks qualified under this specification will be continually tested by the Government during the term of qualification to determine whether the surreptitious, covert, or forced entry protection afforded by the padlocks should or can be improved. If at any time, entry techniques are developed within the framework of the specification which affects a padlock's security integrity, it shall be removed from the QPL.

3.1.1.2 Change in specification requirements. This specification will be reviewed by the Government to determine whether the specification requirements should or can be changed to improve product quality. If, at any time, requirements are changed and such changes affect the qualification status of a qualified padlock, it shall be removed from the QPL, and the manufacturer will be required to modify the product to the extent necessary to comply with specification changes and have the product requalified.

3.2 Description. The "U" shaped non-removable type shackle, tamper indicative, key operated padlock, hereinafter referred to as "padlock(s)" or "unit(s)" has a body (or case) that has no projections which will cover or shroud the shackle. The padlock shall offer a high degree of protection against the various forms of corrosion and deterioration encountered in inclement environments and harsh operational use. The major components of a padlock shall be a body, a keyed cylinder, a heel, and toe dead bolt locking mechanism and a retained "U" shaped shackle.

The shape of the padlocks shall be the option of the contractor, provided the assembled padlock conforms to all requirements specified herein.

3.2.1 Tamper indicative. Tamper Indicative padlocks will be designed such that a tamper evident wire seal approved under specification ASTM F1157 which can be installed such that the seal wire is placed in a hole through the body and the shackle of the padlock or through a hole in a keyway cover. The seal attachment design to integrate with the padlock body or keyway cover shall be such that the seal must be broken in order to open the padlock or access the keyway.

3.2.2 Pre submission testing.

3.2.2.1 ASTM F883. All padlocks shall be tested and approved to conform to the requirements of ASTM F883 type P01, options A, B, and G.

3.2.2.2 UL 437. All padlock cylinders shall be tested and approved to conform to the security requirements of UL 437.

3.2.2.3 International Protection 68. All padlocks shall be tested and approved to conform to the environmental protection requirements of International Protection (IP) level 68.

3.3 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of the individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from scrap material and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification.

3.3.1 Material deterioration and control. The padlock shall be fabricated from compatible materials, inherently corrosion and deterioration resistant, or treated to provide protection against the various forms of corrosion and deterioration that may be encountered in any of the applicable storage and operating environments to which the padlock may be exposed.

3.3.1.1 Dissimilar metals. Dissimilar metals, as defined in MIL-STD-889, shall be insulated from one another to minimize or prevent galvanic corrosion.

3.3.1.2 Identification of materials and finishes. The contractor shall identify the specified material, material finish, or treatment used for, on, or between components and sub-components, and shall make such information available, upon request, to the contracting officer or designated representative.

3.4 Design. The major components of a padlock shall be a body, a keyed cylinder, a heel, and toe dead bolt locking mechanism and a retained "U" shaped shackle. The shape of the padlocks

shall be the option of the contractor, provided the assembled padlock conforms to all requirements specified herein.

3.4.1 Sizes. Padlocks shall be manufactured to the sizes as stated in 1.2.2.

3.4.1.1 Size A. Padlocks manufactured to size A specifications shall have a nominal 1/4, (0.25-inch, 6.35 mm) diameter shackle and clear dimensions of 1.0 inch (24.5 mm) vertically and 1.25 inches (31.75 mm) horizontally. Each padlock shall be keyed differently. The assembled individual padlock shall have a volume that is not more than 24 cubic inches (0.00042 cubic meters) and shall not weigh more than 3 pounds (lb.) (1.36 kilograms [kg]). Unless otherwise specified, dimensional tolerances are ±0.020 inches (±0.51 mm), capture tolerances for size A shall be +0.25 inches (+6.35 mm).

3.4.1.2 Sizes B & C. Padlocks manufactured to size B specifications shall have a nominal 5/16, (0.314-inch, 8 mm) diameter shackle and clear dimensions of 2.0 inches (51 mm) vertically and 1.25 inches (31.75 mm) horizontally. Padlocks manufactured to size C specifications shall have a nominal 5/16, (0.314-inch, 8 mm) diameter shackle and clear dimensions of 4.0 inches (101.6 mm) vertically and 1.25 inches (31.75 mm) horizontally. Each padlock shall be keyed differently. The assembled individual padlock (either size B or C) shall have a volume that is not more than 24 cubic inches (0.00042 cubic meters) and shall not weigh more than 3 pounds (lb.) (1.36 kilograms [kg]). Unless otherwise specified, dimensional tolerances are ±0.020 inches (±0.51 mm), capture tolerances for size B and C shall be +0.25 inches (+6.35 mm).

3.4.1.3 Sizes D & E. Padlocks manufactured to size D specifications shall have a nominal 3/8 (0.375 ±0.020-inch (10 ±0.51 mm) diameter shackle and clear dimensions of 2.0-inches vertically and 1.0 inches (25.4 mm) horizontally. Padlocks manufactured to size E specifications shall have a nominal 3/8 (0.375 ±0.020-inch (10 ±0.51 mm) diameter shackle and clear dimensions of 4.0-inches vertically and 1.25 inches (31.75 mm) horizontally. Each padlock within its size group shall be keyed differently. The assembled individual padlock shall have a volume that is not more than 24 cubic inches (0.00042 cubic meters) and shall not weigh more than 3 pounds (lb.) (1.36 kilograms [kg]). Unless otherwise specified, dimensional tolerances are ±0.020 inches (±0.51 mm), capture tolerances for size D and E shall be +0.25 inches (+6.35 mm).

3.4.1.4 Sizes F & G. Padlocks manufactured to size F specifications shall have a nominal 1/2-inch (0.500 ±0.020-inch (12.7 ±0.51 mm) nominal diameter shackle and clear dimensions of 2.0-inches vertically and 1.0 inches (25.4 mm) horizontally. Padlocks manufactured to size G specifications shall have a nominal 1/2-inch (0.500 ±0.020-inch (12.7 ±0.51 mm) nominal diameter shackle and clear dimensions of 4.0-inches vertically and 1.25 inches (31.75 mm) horizontally. Each padlock within its size group shall be keyed differently. The assembled individual padlock shall have a volume that is not more than 24 cubic inches (0.00042 cubic meters) and shall not weigh more than 3 pounds (lb.) (1.36 kilograms [kg]). Unless otherwise specified, dimensional tolerances are ±0.020 inches (±0.51 mm), capture tolerances for size F and G shall be +0.25 inches (+6.35 mm).

3.4.1.5 Special Sizes. Padlocks manufactured to a special size (Type II) for a unique purpose, by a manufacturer with approved Type I products, shall be submitted for testing as stated in paragraph 3.1.

3.4.2 Key and keyways. The padlocks UL 437 key cylinder shall have a US Government restricted keyway.

3.4.2.1 Key integrity. The keys furnished with any one padlock shall not be capable of locking, unlocking, or removing the cylinder of any other padlock. Each cylinder shall resist manipulation by each other key for a minimum of one minute.

3.4.2.2 Key retaining. For all sizes, the key shall be captive in the cylinder when the padlock is unlocked.

3.4.2.3 Key changes. There shall be not less than 50,000 different key changes for each size of padlock supplied under any one contract.

3.4.2.4 Water and dust rating. All padlocks shall be independently certified as providing International Protection level 68 (IP 68).

3.4.2.5 Forced entry resistance. The padlock shall withstand a concentrated forced entry attack using a hammer not to exceed 3 lb. (1.36 kg) in weight with a handle 18 inches (0.45 meter) in length for 1 minute.

3.4.3 Covert entry resistance. The padlock cylinder shall be UL 437 listed to resist picking and impressioning for 10 man-minutes. The body and shackle of the padlock are not subject to covert entry testing.

3.4.4 Surreptitious entry resistance. The padlock, when equipped with a high security wire seal, shall resist surreptitious entry for 15 man-minutes.

3.5 Padlock construction. The padlock, components, and keys shall be as specified in 3.3 through 3.11.4.

3.5.1 Body. The complete assembled body of the padlock shall have no openings other than shackle openings, keyway, and drainage holes. If drain holes are included, they shall not allow manipulation of the padlock. The body shall incorporate a means to prevent access to the locking mechanism, except by use of the operating key. The body shall include a 0.125- inch hole to hold a wire security seal such that it will show evidence of opening the padlock or tampering. Any alternative seal hole locations will be subject to testing in paragraph 3.11.2. A serial number that matches the shackle shall be engraved in the padlock body (see FIGURE 1). The serial number shall appear on one side of the case cover and shall be stamped on with a die in the range of 0.09375- through 0.130-inch (2.381 mm through 3.302 mm) such that it can be readily compared to the body serial number upon inspection.

3.5.2 Shackle. The shackle dimensions shall be as specified in 3.4.1. The shackle shall remain securely attached when the padlock is in the unlocked fully opened position and shall be capable of being separated from the padlock only when the padlock is disassembled. In all padlocks, the shackle shall include a 0.125-inch hole to hold a wire security seal which penetrates through the body and the shackle to show evidence of tampering. Any alternative seal hole locations will be subject to testing in paragraph 3.11.2. A serial number that matches the lock body shall be engraved in the shackle (see FIGURE 1). The serial number shall be stamped on the shackle with a die in the range of 0.09375- through 0.130-inch (2.381 mm through 3.302 mm) such that it can be readily compared to the shackle serial number upon inspection.

3.5.3 Locking mechanism. The shackle shall be held in the locked position at both heel and toe by a dead locking action. The padlock shall open when the key is turned in the clockwise direction and lock when the key is turned in the counterclockwise direction. The operating key shall be retained in the keyway of the cylinder and shall not be removable when the padlock is in the open position. The locking mechanism shall not depend on spring action to hold the shackle in the locked position. End pressure on the locking mechanism, when exerted by a burglar's tool known as a "shim" or "sneaker," shall not move it.

3.5.4 Cylinder assembly. The cylinder assembly of the locking mechanism shall have a plug with only two distinct positions: locked and unlocked.

3.5.4.1 Cylinder assembly removal. The cylinder assembly shall be securely retained within the padlock body when the cylinder plug is in either the locked or unlocked position. When removed from the padlock body, the cylinder assembly shall remain as one assembly.

3.5.4.2 Keys. Each padlock cylinder shall be keyed differently (KD) and furnished with two keys. The identical keys for each padlock shall be joined with a steel wire ring. The steel ring with keys attached shall fit over the shackle.

3.5.4.2.1 Key material hardness. The key material shall have a hardness that is not less than Rockwell hardness number of 75 on Rockwell B scale (75 HRB) in in accordance with ASTM E18.

3.5.4.2.2 Key deformation resistance. The key blank cut as specified in 3.5.4.2.1 shall resist a torque of 8 pounds force-inch (lb./in) (0.9 Newton meters [Nm]) without permanent set deformation when measured at the end of an 8-inch (203 mm) lever. The maximum cross section of the material being torqued shall be no greater than the thinnest section of the key blade (see 4.6.4.3 and 4.6.4.4).

3.5.4.2.3 Key shapes. The bows of the operating keys shall be identical.

3.5.4.2.4 Key markings. In addition to the individual key markings specified in 3.5.4.2.5, all keys shall be stamped with: "US GOVT PROPERTY - DO NOT DUP."

3.5.4.2.5 Key serial numbers. The two keys for each padlock shall be identified by the same serial number stamped on each key. The characters shall not be less than 0.094 inch (2.38 mm) in height. The serial number shall not in any way disclose the key bitting either directly or by commercially available or published coding.

3.5.4.2.6 Operating keys. The operating keys shall lock and unlock the padlock.

3.5.5 Appurtenances, slides, or covers. Appurtenances, slides, or covers that may be incorporated in the padlock shall be secure when the locking mechanism is in both the locked and unlocked positions.

3.5.5.1 Keyway cover. Any keyway cover or plate shall remain aligned with the keyway. As a tamper indicative seal placement alternative, padlocks may include a 0.125-inch hole to hold a wire security seal which penetrates through the keyway cover and the padlock body threads to show evidence of tampering (see FIGURE 1). Any alternative seal hole locations will be subject to testing in paragraph 3.11.2.

3.6 Lubrication and maintenance. An environmentally safe dry film lubricant that does not attract foreign particulates shall be used. Lubrication and maintenance shall be specified by the manufacturer, to meet requirements specified herein.

3.7 Color and finish. The color of the padlock shall be the natural color of the body material. All surfaces shall have a uniform finish of sufficient smoothness to accept the required marking. The finish shall be determined by the manufacturer in order to meet all environmental requirements specified herein.

3.8 Identification marking. The body of the padlock shall be marked with the letters "US," the manufacturer's name, trademark or CAGE number, a traceable model identification, the year of manufacture, and an alphanumeric serial to match the key to a padlock(s) for accountability. The markings may be stamped, rolled, cast, or applied in any other manner that will assure legibility after the padlock has been exposed to the testing specified herein, with the exception of forced entry.

3.8.1 Prohibited marking. There shall be no markings on the padlock exterior which would aid in the unauthorized opening of the padlock.

3.9 Instructions. Operating and maintenance instructions shall be furnished with each padlock as are normally furnished with such equipment for the commercial market.

3.10 Workmanship. The padlock and keys shall be free from sharp edges, burrs, and slivers that affect serviceability or appearance.

3.11 Security.

3.11.1 Government testing. The Government reserves the right of testing the padlock in accordance with standards that are privileged to the Government.

3.11.2 Surreptitious entry. The padlock and its seal integration design shall be tested for resistance to surreptitious entry for a period of 15 minutes.

3.11.3 Covert entry. The padlock shall resist opening through manipulation (picking and impressioning etc.) for a period of 10 man-minutes.

3.11.4 Forced entry. The padlock shall resist opening through forced entry for a period of 1 man-minute.

4. QUALITY ASSURANCE PROVISIONS

4.1 Manufacturer. The supplier is responsible for the performance of all inspection requirements as specified herein. The supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. Inspection records of the examination and tests with itemized results shall be kept complete at the manufacturer's facility, available to the Government throughout the duration of the contract, or a minimum of two years, whichever is longer. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of Sections 3 and 5. The inspections set forth in this specification shall become a part of the supplier's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the specification. Sampling in quality conformance does not authorize the submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Component and material inspection. In accordance with 4.1, the supplier is responsible for ensuring that components and materials are manufactured, tested, and inspected in accordance with the requirements of referenced specifications and standards to the extent specified or, if none, in accordance with this specification.

4.2 Qualification testing and inspection. Qualification testing and inspection shall consist of the tests and inspections shown in TABLE 1. Two groups of padlocks shall be tested in the sequences shown. Each group will consist of a minimum of four padlocks. Failure of any padlock to meet any one or more of these requirements shall provide reason to consider the product as having failed to meet the requirement for qualification.

TABLE 1
Qualification Testing.

Defects	Requirement Paragraph
Design of padlock does not conform to size requirements.	3.4.1
Key and keyway design do not have at least 50,000 different key changes.	3.4.1
Shackle capable of being separated from padlock by means other than as specified.	3.5.3
Any prohibited marking on padlock exterior.	3.8
Material not as specified.	3.3
Material deterioration control not as specified.	3.3.1
Dissimilar metals not insulated to minimize or prevent galvanic corrosion.	3.3.1.1
Body of padlock has openings other than as specified.	3.5.2
Shackle not of size specified.	3.5.3
Locking mechanism not as specified.	3.5.4
Cylinder assembly and removal not as specified.	3.5.4.1 and 3.5.4.1.1
Keys not furnished in quantities or joined as specified. Keying requirements not as specified.	3.5.4.2
Keys without the required markings.	3.5.4.2.4 and 3.5.4.2.5
Padlock not lubricated as specified.	3.6
Workmanship not as specified.	3.10
Information to identify material and finish or treatment not available.	3.3.1.2
Color and finish of padlock not as specified.	3.7
Identification markings omitted from padlock, not as specified, or illegible following testing.	3.8
Instructions not furnished with padlock.	3.9

4.3 Inspection for acceptance. The Government reserves the right to inspect and test each padlock, including all component parts thereof, delivered for acceptance under this specification. Padlocks delivered for acceptance shall be inspected as specified in 4.4. Any nonconformance shall provide reason to reject the product. Rejected padlocks may be reworked to correct nonconformance and they may be resubmitted for acceptance. Reworked padlocks shall be so indicated.

4.3.2 Quality assurance testing. Periodically, during the term of the contract, the Government inspector, at a time convenient to the Government, will select samples of the manufacturer's regular production and subject them to the tests in 4.5. This quality assurance testing shall be performed by a Government agency specifically designated by the General Services Administration. Failure of the padlock to meet any one or more of these tests shall provide reason to suspend acceptance of the manufacturer's product until the Government is satisfied that all defects have been corrected.

4.4 Quality conformance inspection. The quality conformance inspection shall include the examinations specified in 4.4.1, and preparation for delivery inspections specified in 4.4.2.

4.4.1 End item inspection. The padlocks shall be examined for nonconformance in accordance with TABLE 2. Sampling and inspection procedures shall be in accordance with ANSI/ASQ Z1.4. The unit of product shall be a complete padlock. All padlocks offered for delivery at one time shall be considered a lot for the purpose of inspection. The inspection level shall be level II with an Acceptable Quality Level (AQL) of 2.5 percent nonconforming.

TABLE 2
Examination for Nonconformance.

Material is not resistant to corrosion and deterioration, nor treated to be resistant to corrosion and deterioration for the applicable storage and operating conditions.
Dissimilar metals as defined in MIL-STD-889 are not treated or plated to prevent corrosion.
Supplier does not have documentation. available for identification of material, material finishes or treatment.
Used, rebuilt, or remanufactured component, pieces or parts incorporated in the padlocks.
Design not as specified.
Security of padlock not as specified.
Dimensions not as specified.
Padlock subassembly not as specified.
Keys not as specified.
Seal hole not as specified.
Key cylinder covers not as specified.
Markings incorrect, missing, or illegible.
Finish not as specified.
Instruction not furnished, or not as specified.
Workmanship not as specified.

4.4.2 Inspection of preparation for delivery. An inspection shall be made to determine that packaging, packing, and marking comply with those specified in Section 5 of this specification and as listed in TABLE 3. For examination of interior packaging, the sample unit shall be one shipping container fully prepared for delivery, selected at random just prior to the closing operations. Sampling shall be in accordance with ANSI/ASQ Z1.4. Nonconformity of closure listed shall be examined on shipping containers fully prepared for delivery. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 with an AQL of 4.0 nonconformities per hundred units.

TABLE 3
Classification of Preparation for Delivery Defects.

Packaging	Instruction sheet not in unit container with padlock. Keys not in unit container with padlock. Unit container not sealed with reinforced tape. Improper quantity of locks placed in intermediate container.
Packing	Shipping container not as specified. Shipping container weights exceed specified limitations.
Marking	Marking not in accordance with FED-STD-123 or MIL-STD-129, as specified. Marking not in accordance with the contract or order. Item description marked on unit container. Unit containers not marked or labeled with special instructions as specified.

4.5 Qualification testing.

4.5.1 Testing agency. Qualification tests on padlocks submitted for approval for inclusion on the applicable Qualified Products List (QPL) and any re-testing that may be required shall be performed by a testing agency specifically designated by the General Services Administration.

4.5.2 Testing costs. All testing costs entailed in determining the qualification of the supplier's product, including costs of re-testing of a qualified product if subsequently disqualified under 3.1.1, shall be borne by the supplier, and shall be paid prior to the commencement of testing. Test fees shall be payable to the testing agency or the General Services Administration, as directed by the General Services Administration.

4.5.3 Test procedures. The following procedures shall govern the testing of all padlocks submitted for qualification under this specification.

a) Samples shall be submitted for qualification only after the supplier has obtained written authorization from the General Services Administration.

b) A qualification test may be discontinued at the Government's testing facility at any time the product fails to meet any one or more of the requirements set forth in this specification. The manufacturer may be permitted to make modifications on the sample

during the testing phase where such modifications, in the judgement of the General Services Administration and the testing facility, are clearly in the interest of the Government.

c) In case of failure of the sample, consideration will be given to the request of the manufacturer for resubmission for retest only after it has been clearly shown that changes have been made in the product which the Government considers sufficient to warrant retest.

d) The manufacturer or his representative will not be permitted to observe the actual tamper resistance tests conducted on the product at the testing facility. However, when samples tested fail to comply with the requirements of this specification, the sample may be examined by the manufacturer or manufacturer's representative and full details of the failure may be made known to them in a manner which, for reasons of security, will be in the best interest of the Government.

4.5.4 Test samples. Qualification test sample representative of the classes, types, and designs of the class the supplier proposes to furnish shall be forwarded at a time and to a place designated by the General Services Administration. During testing, in the event the sample is destroyed or damaged to such an extent that the testing cannot be completed, the Government reserves the right to require the manufacturer to furnish additional samples to complete the testing.

4.5.5 Drawings and material specifications. The manufacturer shall furnish two complete sets of construction and assembly drawings and material specifications with the sample submitted for qualification. When samples have been tested and are approved for inclusion on the applicable QPL, the manufacturer shall furnish three additional complete sets of the assembly and construction drawings and material specifications lists to the General Services Administration for the Government's use in inspection and acceptance of the product after award of contract. All material furnished by the manufacturer will be held in proprietary confidence.

4.5.5.1 Changes in drawings and material specifications. Once the padlock has been tested and approved for QPL, no change of any kind shall be made in its construction or in the construction drawings unless prior written authorization to make the change is obtained from the Federal Supply Service, General Services Administration. Upon receipt of a request for a change, the General Services Administration will determine whether additional testing is required for approval.

4.5.6 Qualification testing. Qualification testing shall consist of the following tests and inspections. Failure of the sample to withstand these tests shall provide reason to consider the product as having failed to meet qualification requirements.

4.5.6.1 Surreptitious, covert, and forced entry test. There shall be sufficient time and opportunity to study the design and construction of the padlock and to develop testing methods prior to the start of testing. There shall be no limit to the number of methods of surreptitious, covert, and forced entries attempted. No more than two men shall be used simultaneously during each attempt at entry. The man-minute working time shall cover the period during which an entry test

on the padlock is in progress and shall be exclusive of time required for safety precautions and rest periods.

4.5.6.1.1 Tool size and weight limits. The tools and devices shall be capable of being carried in two cases or bags, each case or bag not exceeding 1.5 cubic feet in volume. The total weight of the tools used in a single test shall not exceed 150 pounds, exclusive of the weight of the case. The test tools and devices selected for a particular attempt shall be weighed prior to commencement of the test.

4.5.6.1.1.1 Surreptitious entry tools and devices. Tools and devices used in the surreptitious entry tests are unlimited.

4.5.6.1.1.2 Covert entry tools and devices. Tools and devices used in the covert entry tests shall be limited as specified in UL 437 and ASTM F883.

4.5.6.1.1.3 Forced entry tools and devices. The tools and devices used for forced entry tests shall be limited to a 3 lb. hammer.

4.5.6.2 Surreptitious, covert, and forced entry test timing. The time clock shall be started when the test equipment is picked up to approach the sample and shall not be stopped during the test except as specified above. Any change or repair of tools taken from the carrying case during a test shall only be done while the clock is running. The tests must be conducted in a manner that is repeatable. Any surreptitious, covert, or forced entry through the padlock under the above conditions, within the time specified, shall provide reason to consider the padlock as having failed to meet the requirement.

4.6 Inspection.

4.6.1 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions and procedures specified herein.

4.6.2 Examination of defects. The padlocks with keys, selected as specified, shall be examined for the defects indicated on TABLE I.

4.6.3 Test procedures. For all padlocks' tests shall be conducted in accordance with ASTM F883 Type P01, options A, B, and G as follows and 4.5.3 through 4.5.6.2.

	Sizes A - E
a. Forcing tests	F4
b. Surreptitious entry tests	S6
c. Cycle tests (TABLE 3)	GRADE 3
d. Corrosion and environmental tests (TABLE 4, Option G)	GRADE 6
	Sizes F & G
a. Forcing tests	F6
b. Surreptitious entry tests	S6

c. Cycle tests (TABLE 3)	GRADE 3
d. Corrosion and environmental (TABLE 4, Option G)	GRADE 6

4.6.4 Security tests. All padlocks shall be tested by the GSA Testing Agency for security resistance as specified.

4.6.4.1 Forced entry test. The padlock shall withstand a concentrated forced entry for a minimum of 1 minute, using a 3-lb (1.36 kg) hammer with an 18-inch (457 mm) handle. If the padlock opens, it shall constitute a failure.

4.6.4.2 Covert entry resistance. The padlock cylinder shall be UL 437 listed to resist picking and impressioning only for 10 man-minutes. The body and shackle of the padlock are not subject to covert entry testing.

4.6.2.3 Surreptitious entry resistance. The padlock, when equipped with a high security wire seal, shall resist surreptitious entry for 15 man-minutes.

4.6.2.4 Tamper evident test. The padlocks shall be installed on a typical hasp where attempts will be made to open the padlock without creating any evidence of tampering on the approved tamper evident seal.

4.6.3 Water & dust rating. All padlocks shall be independently certified as providing International Protection level 68 (IP 68).

4.6.4. Key operational tests. All padlock keys shall be tested for proper operation as specified.

4.6.4.1 Key integrity test. The test padlock shall be a locked padlock. The keys from 10 other padlocks selected at random from all the padlocks in the sample shall be used to attempt to unlock the test padlock. A key from each of the 10 padlocks shall be fully inserted into the keyway. The key shall then be slowly withdrawn while applying a jiggling-twisting force in the direction that the padlock normally opens. The padlock shall resist the withdrawing and jiggling-twisting force for a minimum of 1 minute with each key without opening. If the test padlock opens, it shall constitute a failure.

4.6.4.2 Key hardness test. Padlock cylinder key blanks shall be tested for hardness in accordance with ASTM E18. Key material shall have a hardness not less than 75 on the Rockwell B scale. Key material that does not meet this standard shall constitute a failure.

4.6.4.3 Key deformation resistance test. Take the key blank cut as specified in 3.4.2. Clamp the key in a vise and attach an 8-inch (203 mm) lever to the key blank bow in such a manner that it will not separate from the bow under the torque load to be applied in this test procedure. Mark the position of the end of the lever opposite the bow on a fixed, immovable surface. Apply a torque force of not less than 8 lb.-inch (0.9 Nm) to the key blank bow for not less than 1 minute. Release the torque load and mark the position of the end of the lever opposite the bow. A difference of more than 0.125 inch (3.18 mm) after torque unloading shall constitute a failure.

4.6.4.4 Operating key function test. Operate a padlock through 10 cycles as follows:

1. Fully insert the key into the keyway.
2. Rotate the key and cylinder plug the necessary number of degrees to open the padlock.
3. Pull the shackle fully open.
4. Reengage the shackle to the locked position.
5. Return the key and cylinder plug to the locked position.
6. Fully retract the key from the cylinder plug.

The cyclic procedure shall be modified so that each time the padlock is unlocked, an attempt to withdraw the key from the padlock shall be affected. Failure of the padlock to unlock, lock or the release of the operating key when the padlock is open, shall constitute a failure. If the keyway cover or plate (where applicable) does not remain aligned with the keyway, it shall also constitute a failure.

4.7 Inspections. A visual inspection shall be made to determine compliance with the requirements specified in the following paragraphs:

3.3 Materials
3.4.1 Size
3.4.2 Keys and keyways
3.5.2 Body
3.5.3 Shackle
3.5.4 Locking mechanism
3.5.4.1 Cylinder assembly
3.5.4.2 Keys
3.5.5 Keyway cover
3.6 Lubrication
3.7 Color and finish
3.8 Identification markings
3.9 Instructions
3.10 Workmanship

5. PREPARATION FOR DELIVERY

5.1 Packaging. Instructions and the keys shall be placed in an envelope. Each padlock and envelope shall be packaged in a close-fitting fiberboard box. The box shall be sealed with reinforced tape. Ten padlocks shall be placed in a close-fitting fiberboard box.

5.2 Packing. Padlocks, packaged as specified in 5.1, shall be packed to ensure carrier acceptance in accordance with the National Motor Freight Classification and Uniform Freight Classification.

5.3 Marking. Marking shall be in accordance with FED-STD-123 or MIL-STD-129, as specified.

5.3.1 Additional marking. Each unit container specified in 5.1 shall be marked with the following special instructions:

IMPORTANT
TO BE OPENED BY DESIGNATED
USER SECURITY PERSONNEL ONLY

The letters shall be ¼-inch high minimum. Color to be red or black and shall be applied by marking the reinforced sealing tape (see 5.1) or by application of preprinted labels.

6. NOTES

6.1 Intended use. This specification covers key operated padlocks to be used in tamper indicative applications.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. PIN of unit(s) required (see 1.2.3).

6.3 Part identification number (PIN). The PIN corresponds to the sizes and types of padlocks covered by this specification and defines the requirements of the options presented under this specification. The document identifier number, size and type code number, and number of padlocks per set (if applicable) are combined to form the PIN as shown in the following example:

PIN code option assignments (also see paragraphs 1.2.3 and TABLE 4 for PIN ordering options): Space one identifies the shackle diameter and length (per TABLE 5) with a letter (A - F).

TABLE 4
Shackle Diameter and lengths.

Shackle Diameter				**Shackle Length**
	(+/- 1/64)	(+/- 0.020)	(+/- 0.51 mm)	(+/- 1/64– .51 mm)
A	1/4	0.25	6.35 mm	1” – 24.5 mm
B	5/16	0.314	7.9375 mm	2” – 50.8 mm
C	5/16	0.314	7.9375 mm	4” – 101.6 mm
D	3/8	0.375	9.525 mm	2” – 50.8 mm
E	3/8	0.375	9.525 mm	4” – 101.6 mm
F	1/2	0.5	12.7 mm	2” – 50.8 mm
G	1/2	0.5	12.7 mm	4” – 101.6 mm

Space three identifies numbers of padlocks per set:

10 – ten padlocks per set
20 – twenty padlocks per set
30 – thirty padlocks per set

TABLE 5
Possible PIN Assignment Options.

DOCUMENT IDENTIFIER	SIZE	PADLOCKS PER SET
F2828	A	10
F2828	A	20
F2828	A	30
F2828	B	10
F2828	B	20
F2828	B	30
F2828	C	10
F2828	C	20
F2828	C	30
F2828	D	10
F2828	D	20
F2828	D	30
F2828	E	10
F2828	E	20
F2828	E	30
F2828	F	10
F2828	F	20
F2828	F	30
F2828	G	10
F2828	G	20
F2828	G	30

6.4 Definitions.

6.4.1 Covert entry. For the purpose of this specification, covert entry is defined as a method of entry which causes physical damage or unusual wear to the internal parts of the lock such as picking and impressioning which would not be detectable by a user during normal use. However, the unique damage or unusual wear created by these techniques to the internal parts could be detectable during inspection by a qualified person. The padlock body and shackle are not subject to covert entry testing.

6.4.2 Entry. For the purpose of this specification, entry means opening the shackle.

6.3.3 Normal use. For the purpose of this specification, normal use means inserting the key, turning the key to unlock the padlock, opening the shackle, closing the shackle, tuning, and then removing the key.

6.3.5 Surreptitious entry. For the purpose of this specification, surreptitious entry means a method of entry, such as manipulation (without damage) of the wire seal installation designed into the padlock which would not be detectable during normal use or during inspection by a qualified person.

6.5 Samples. All samples required for test purposes shall be furnished at no expense to the Government and the manufacturer shall pay for all transportation to and from the point where the tests are performed. All tested samples shall become property of the Government but may be released to the manufacturer at the option of the Government. Upon request, the manufacturer shall furnish to the Government test facility a lock equal in respect to that of the qualified sample for use in inspection and test during the term of qualification. The lock shall be returned to the manufacturer upon removal of the product from the Qualified Products List.

CUSTODIANS:
GSA – FAS

PREPARING ACTIVITY:
GSA – FAS

REVIEW ACTIVITIES:
Army – AR
Navy – YD
Air Force – 99

CIVIL AGENCY COORDINATING ACTIVITIES:

Department of State
CIA
NSA
Department of Justice
Department of Transportation
Department of Commerce
Department of Treasury

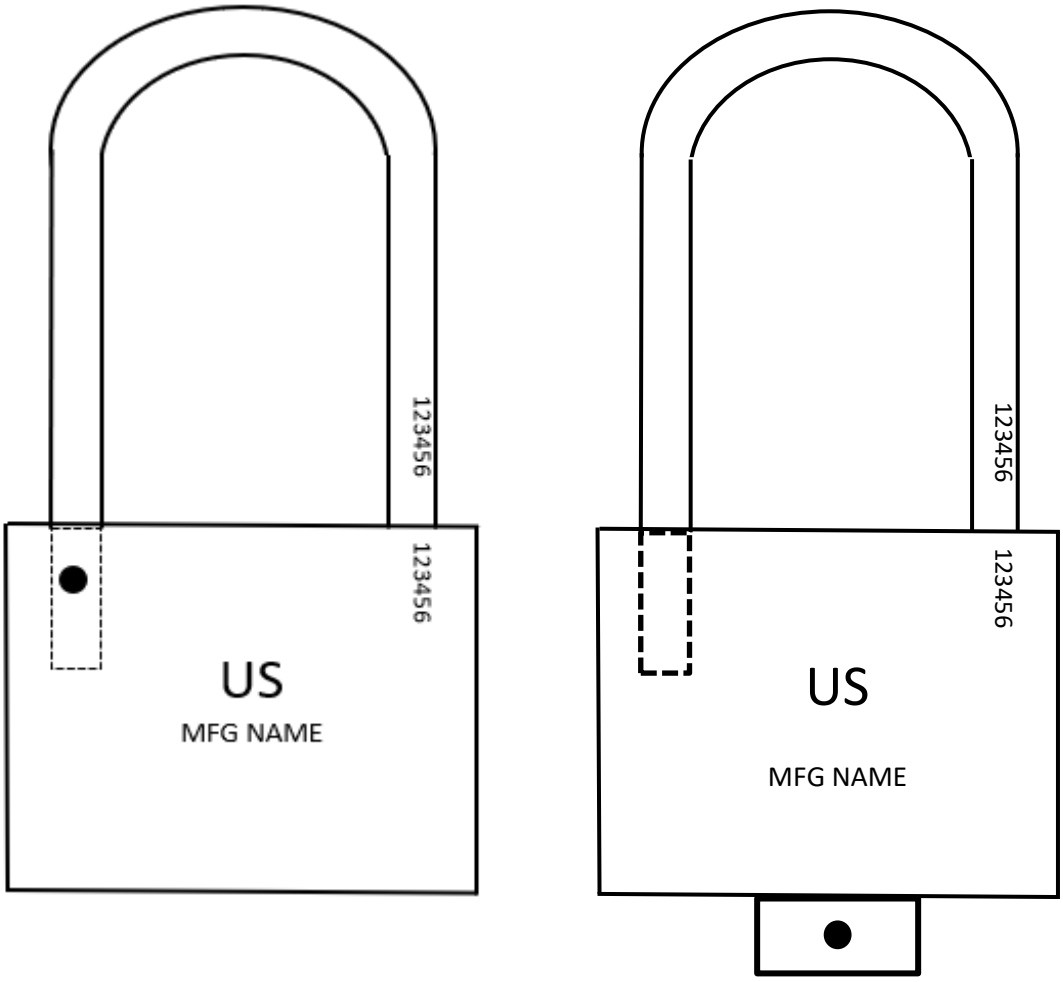


FIGURE 1
Tamper Indicative Padlocks.