

Federal Wage System Job Grading Standard For Locksmithing, 4804

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WORK COVERED

This standard covers nonsupervisory work involved in repairing, overhauling, modifying, testing, and installing a variety of locking devices typically found on doors, desks, compartments, mobile equipment, safes, vaults, and other secured locations. The work includes the manufacture and duplication of keys and the keying and combining of locking mechanisms.

The work requires a knowledge of the construction, operation, and functional characteristics of locking devices, and skill in manufacturing replacement parts, devising or changing combinations, establishing master keying systems, neutralizing lockouts, and a variety of installation and repair processes such as filing, drilling, chiseling, and grinding.

WORK NOT COVERED

This standard does not cover the following work:

- ! Jobs that are primarily responsible for maintenance and repair of electronic equipment such as electronic keying devices, burglar alarms and surveillance systems. (See [Electrical Equipment Repairing Series, 2854](#), or other appropriate series);
- ! Jobs primarily involved in assuring that the systems, devices, and methods used for safeguarding information and/or material affecting the national security are effective where a knowledge of a wide range of protective devices, facilities, security procedures and methods is required (i.e., conducting physical security surveys in order to determine the number and kinds of safes, alarms, locks, etc., needed for restricted areas). (See [Position Classification Standard for Security Administration, GS-0080](#));
- ! Jobs that are primarily responsible for the adjustment, maintenance and repair of door closer devices. (See [Door Systems Mechanic Series, 5364](#));
- ! Jobs that are primarily responsible for the adjustment, maintenance and repair of timing mechanisms. (See [Instrument Mechanic Series, 3359](#)).

TITLES

Jobs covered by this standard below the grade 8 level are to be titled *Locksmith Worker*.

Jobs covered by this standard at grade 8 and above are to be titled *Locksmith*.

GRADE LEVELS

This standard does not cover all possible levels at which jobs may be established. If jobs differ substantially from the skill, knowledge, or other work requirements described in the grade levels of this standard, they may warrant grading either above or below these grades based on the application of sound job grading methods.

NOTE TO USERS

Because of previous agency practices, "modification of locking devices" has acquired a wide range of meanings from simple recombining of locks to complete reworking of parts, components, etc., for special security reasons. For the purposes of this standard, "modification" means major reworking of the devices to solve special locking problems which may involve experimentation with a variety of materials, part shapes, and fabrication techniques. "Modification" does not mean work described at the grade 7 and 8 levels under the Skill and Knowledge factors involving rekeying and recombining locks, making minor alterations to locks for installation purposes, or substituting, per agency instructions, remanufactured parts designed for the specific type and model of lock being serviced.

LOCKSMITH WORKER, GRADE 7

General: The grade 7 locksmith workers perform routine maintenance, overhaul, and repair of standard types of mechanical locking devices such as mortise, rim, key-in-the-knob, deadbolt, office equipment, padlocks, and emergency exit locks. The locks serviced at this level usually contain limited numbers of parts and components with few operating relationships which would complicate the troubleshooting and repair processes.

Work assignments at this level, for example, involve opening locks when keys are missing, removing broken keys from keyways, disassembling, performing operational checks, visually checking parts for wear and defects, cleaning and replacing parts, reassembling, and reinstalling locking devices. Additionally, the work at this level typically includes installation of locking mechanisms in doors, office equipment, safes, etc., and recombining or rekeying of locking devices.

The locksmith workers complete the assigned tasks using a variety of tools and equipment common to the trade. They apply standard work practices and techniques and work within the framework of guidelines and instructions

Skill and Knowledge: Grade 7 locksmith workers apply a knowledge of the internal structure and operating characteristics to repair and maintain a variety of standard mechanical locking devices. They perform visual and operational checks to locate sources of trouble and determine the best method for opening malfunctioning locking devices. They must have good dexterity and

coordination between hands and eyes to remove broken keys from keyways and open standard locks when keys are missing by such methods as picking, shimmiing, spreading, and slipping. They disassemble items and perform visual checks to detect worn or damaged parts, i.e., broken springs, jammed pins, bent discs, broken tail pieces, rust, and corrosion. They lubricate and clean parts with appropriate lubricants and solvents, straighten bent parts, smooth burrs and scratches, replace defective parts, reassemble, perform operational tests, and reinstall the locking devices. They must be familiar with manufacturer parts catalogs and assembly instructions to obtain replacement parts and make repairs. They are skilled in keying and rekeying locks by using addition, subtraction, multiplication, and division to determine whether to add, remove, or shorten various sizes of tumblers, i.e., pins, discs, levers. They must also be familiar with a variety of key blanks in order to duplicate or make new keys to fit the locks by code, impression or duplicating machine. They use micrometers to measure depths of cuts and pin sizes. They also have a basic knowledge of the construction of combination-type locking devices in order to change the combination by key or manually by disassembling, changing the position of tumbler centers, and reassembling.

In addition, locksmith workers at this level are skilled in the installation of locking devices in doors, desks, office equipment, safes and other units using templates and in making necessary minor alterations to locking mechanisms and units to assure correct fit. For example, they replace escutcheon and face plates on doors to change the size of the existing holes; measure and cut off excess dial spindles; change position of spline key in the drive cam to reverse lock case direction in the door. They must have a basic knowledge of various types of woods and metals in order to select appropriate tools and equipment such as hammers, chisels, jigs, hand drills and bits.

Locksmith workers at this level are skilled in the use of small hand tools such as files, picks, tweezers, tension wrenches, as well as the adjustment and use of powered tools common to the trade such as key duplicating and coding machines, grinders and buffers, and stamping machines.

Responsibility: Grade 7 locksmith workers receive oral and written work orders from the supervisor. On routine assignments, they independently apply standard trade practices in installing, disassembling and replacing worn or damaged parts, rekeying and recombining locking mechanisms. They select tools and technical diagrams and manuals, determine work sequence, and obtain parts necessary to complete repairs. The supervisor or higher graded worker is available to assist with problems which cause deviation from standard work practices. Completed work is reviewed by the user for accomplishing satisfactory results or by the supervisor or a higher graded worker for adherence to standard trade practices.

Physical Effort: Work at this level seldom requires lifting or carrying of items weighing in excess of 7 kilograms (15 pounds). The locksmith workers frequently stand, stoop, bend, kneel and work in awkward positions when installing and opening locks and emergency exit hardware on-site.

Working Conditions: Work at this level is normally done inside in areas that are well lighted, heated and ventilated. Occasionally work is done outside in bad weather or in areas that are drafty and poorly lighted. The locksmith workers are exposed to the possibility of cuts, scrapes and bruises.

LOCKSMITH, GRADE 8

General: In comparison with the routine repair of a limited range of locking devices at the grade 7 level, the grade 8 locksmiths adjust, troubleshoot, repair and install a wider variety of commercially manufactured locking devices including combination locks which are typically installed in such security units as safes, vaults, cabinets, and chests. Unlike the limited function locks described at the grade 7 level, these devices contain such features as dual locking capabilities, and they interact mechanically with timing mechanisms, other combination locks or actuating mechanisms, and security container locking bolts. Troubleshooting is complicated by the necessity to determine which of the components comprising the locking system of the security unit is malfunctioning.

The grade 8 locksmiths perform the full repair cycle of locating trouble, disassembly, repair, cleaning, reassembly, and reinstallation of a wide variety of makes and models of locking devices in addition to those shown at the grade 7 level. They independently plan techniques to be used and apply judgment in the selection of tools and accepted trade practices to troubleshoot and neutralize lockouts. They make operational tests to determine the extent and location of malfunctions, repair, replace or fabricate defective parts. In addition, some Locksmiths at this level establish master key coding systems.

The locksmiths must use judgment in the selection from a greater variety of applicable guidelines, manuals, etc., than grade 7 locksmith workers. Locksmiths at this level typically receive no technical supervision, whereas grade 7 locksmith workers can refer problems to higher graded workers or their supervisor.

Skill and Knowledge: The grade 8 locksmiths apply a thorough knowledge of the internal structure and operating characteristics of a wide range of makes, models and types of common mechanical locking mechanisms and of their working interrelationships with related components comprising the locking system of the security units in which they are installed in order to select methods used in neutralizing, troubleshooting and repairing the locking mechanisms. Troubleshooting at this level is more complicated than at the 7 level since the locking devices are typically connected to locking bolts within the container, other combination locks and/or are activated by timing mechanisms and the Locksmiths, in the case of lockouts caused by defective parts, determine through operational tests which of the components is malfunctioning. They apply sound judgment in the selection of commonly used neutralization techniques. Based upon knowledge of points of least resistance of the locking mechanisms and/or containers, they determine precise locations and angles for drilling and/or burning without harming the contents or causing irrevocable damage to the locking mechanisms or the containers. Depending upon what is malfunctioning, they may aim for safe relocking devices, lock fence removal, lock lever

screw removal, lock trigger removal or locking bolt work removal. They have a knowledge of a variety of metals in order to select the drill bits or torches to be used in neutralizing the lockouts.

At this level, locksmiths are skilled in the manipulation of combination locks as well as picking key locks. They determine the number of wheel tumblers, locate and plot contact point readings on graphs, and determine true centers using a developed sense of "feel" and hearing aids such as stethoscopes to amplify sounds within the lock case.

At this level, locksmiths perform the full repair cycle of locating trouble, disassembly, repair, replacement or fabrication of parts, cleaning, reassembly, and reinstallation of a wide range of commercially manufactured locking devices as well as locking bolts. They independently interpret and apply technical manuals, manufacturers diagrams and specifications while repairing and testing the locking mechanisms. Unlike locksmith workers, they are skilled in soldering or brazing broken locking parts together, reshaping parts by grinding and filing, fabricating parts when they are not available in stock, such as fences, dial posts, rings, spacers, and spline keys by sawing, filing and grinding stock metal. They may also machine parts such as locking bolts and special sized screws using bench lathes and drill presses. Upon repair of the lock, they may inform personnel in other trades or shops; i.e., welders or painters of the need for their services in restoring containers to their original condition or perform such work themselves as an incidental duty.

In addition to the knowledge described above, many locksmiths have a knowledge of master key systems in order to set up coding systems involving varying types of locks and keyways. They refer to manuals to insure that various keyways are compatible and to building blueprints to determine the total number of locks and those which can be keyed alike. They are able to use arithmetic to set up the coding system and to select the correct size of pins.

Grade 8 locksmiths are skilled in the adjustment, maintenance, and use of the same standard hand and power tools of the trade required at the grade 7 level. In addition, they are skilled in using electric drills, acetylene torches, soldering irons and brazing torches, bench lathes and drill presses.

Responsibility: At this level, locksmiths receive assignments from the supervisor either orally or through general work orders indicating location, person to contact for further information, and priorities. Normally the supervisor supervises other trades such as machinists, carpenters, modelmakers, etc., and has little if any technical knowledge of locksmithing practices and procedures. The nature of assignments requires that work typically be performed on-site, necessitating the locksmiths to use sound judgment in independently selecting work processes, techniques, and tools and equipment; determining work sequence and type and extent of necessary repairs. They are responsible for planning, setting up, and maintaining master key systems and assuring that no interchanges occur. They may also be responsible for providing technical assistance to lower graded workers and for coordinating their work with others. Due to the nature of assignments and the supervisor's limited technical knowledge, completed work is not reviewed for adherence to accepted trade practices but rather for effectiveness of meeting schedules and customer needs.

Physical Effort: In addition to the physical effort described at the [grade 7 level](#), grade 8 locksmiths may be required to lift security containers weighing up to 23 kilograms (50 pounds) and heavier weights with assistance.

Working Conditions: In addition to the working conditions described at the [grade 7 level](#), grade 8 locksmiths are exposed to the possibility of burns while using acetylene torches, brazing torches, and soldering irons.

LOCKSMITH, GRADE 9

General: In comparison with grade 8 locksmiths who service a wide variety of commonly used locking devices applying established practices and procedures, grade 9 locksmiths modify and rework locking devices to accomplish special security objectives. These devices are usually designed to work in conjunction with other components and equipment to form a complete security or surveillance system. In addition, grade 9 locksmiths are usually considered experts in the area of locking device capabilities and functions and work closely with management in determining the most suitable locks to be used in solving security problems.

In addition to performing the full range of maintenance functions described at the 8 level, grade 9 locksmiths improvise trade techniques to adapt locking mechanisms for uses to which they were not specifically designed or to hamper or prevent the use of standard neutralization techniques. They apply sound judgment in selecting, reworking or finishing substitute parts, and experimenting with materials and techniques. They are skilled in determining if locking devices have been tampered with and in working with drawings or specifications that are often vague or incomplete, which frequently requires the development of sketches, drawings, or diagrams with sufficient detail to identify missing tolerances, dimensions, and critical parts or surfaces.

Grade 9 locksmiths make independent judgments in determining the work sequence, selection and use of trade tools and the techniques applied. They may be required to provide technical assistance and guidance to lower level workers at remote customer locations.

Skill and Knowledge: Locksmiths at this level apply a thorough knowledge of the full range of locking devices and their parts in order to select substitute parts which would be suitable for use in fabricating locking devices to meet special security objectives. They experiment with various types of materials such as metals, alloys, and plastics when developing parts and components. They are able to select appropriate materials considering such factors as needed strength and hardness, machining characteristics, environmental factors, and the extent to which the materials used could complicate or hamper the use of standard neutralization techniques. In comparison, grade 8 locksmiths service a wide variety of commonly used locks, and the functions they perform involve repairing, replacing or fabricating parts covered by manufacturer parts catalogs and specifications.

In addition to the skills and knowledge described above, grade 9 locksmiths apply a broad knowledge of the functions and capabilities of commercially manufactured locking devices, as well as their working interrelationships with a variety of equipment such as monitors, alarms,

timing mechanisms, sensors, and other related items which make up a complete security or surveillance system in order to provide management with recommendations regarding the most suitable locks to be used in solving specific security problems. In comparison, grade 8 locksmiths need only apply a knowledge of the internal structure and operating characteristics of locking devices in order to trouble-shoot and repair them. Locksmiths at this level also apply a more in-depth knowledge of neutralization techniques than grade 8 locksmiths when conducting investigations to determine if locking devices have been tampered with.

For example, they carefully disassemble the locks while closely inspecting them for tool marks, abrasions, and misaligned parts which would indicate the possibility of an attempted "break-in." In addition they are more skilled in improvising and applying neutralization techniques which do not damage the locking devices and security containers or doors during lockout situations.

At this level, the locksmiths perform the full installation and repair cycle on commercially manufactured locking devices, as well as participate reworking of locks to improve or provide new structural or functional capabilities. The locksmiths are skilled in developing drawings or diagrams which identify necessary dimensions and special parts or surfaces to be used in the manufacture and installation processes. In comparison, grade 8 locksmiths have available appropriate guidelines, manufacturer drawings, diagrams and technical manuals. The grade 9 locksmiths are skilled in reworking and finishing substitute parts and fabricating parts to close fits. They coordinate their work with personnel in other shops or trades, i.e., machinists in identifying tolerances and machining irregularly shaped parts. They assemble, test and evaluate the completed locking devices considering the desired objectives.

Grade 9 locksmiths use the same types of tools and equipment as described at the 8 level; however they are more skilled in planning and laying out their work, as well as reshaping, finishing parts and fabricating parts to close fits.

Responsibility: At this level, locksmiths receive assignments from the supervisor specifying the desired final product. They independently solve problems which require modification of accepted trade practices, procedures and methods and must make more difficult judgments and decisions when modifying and reworking locking devices for special security objectives than is required of grade 8 locksmiths who apply accepted trade practices in conjunction with the application of specific guidelines and technical manuals. The locksmiths may also be responsible for providing technical assistance and guidance to remote customer locations. They typically receive no technical supervision, and their work is reviewed on the basis of meeting user needs.

Physical Effort: The physical effort is similar to that described at the [grade 8 level](#).

Working Conditions: The working conditions are similar to those described at the [grade 8 level](#).