

Federal Wage System Job Grading Standard For Small Arms Repairing, 6610

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WORK COVERED

This standard covers nonsupervisory work involved in repairing, rebuilding, and modifying small arms which includes such weapons as machine guns, mortars, rocket launchers, recoilless rifles, and portable flame throwers. The work requires a knowledge of weapons mechanical systems, the ability to recognize and determine the best method to correct malfunctions, and the skill to fit and adjust mechanical parts and assemblies.

WORK NOT COVERED

Not covered by this standard is work primarily involving:

- Repairing, rebuilding, and modifying mounted, motorized, or shipboard artillery. (See [Artillery Repairing, 6605](#).)
- Setting up and operating machine tools to manufacture parts and equipment by machining metals, alloys, and other materials. (See [Machining, 3414](#) and Machine Tool Operating, 3431.)

TITLES

Jobs graded by this standard are to be titled *Small Arms Repairer*.

GRADE LEVELS

This standard does not describe all possible grade levels for this occupation. If jobs differ substantially from the skill, knowledge, and other work requirements described in the grade levels of the standard, they may be graded above or below these grades based on sound job grading methods.

SMALL ARMS REPAIRER, GRADE 6

General: Grade 6 small arms repairers disassemble rifles, pistols, shotguns, other complete small arms of similar complexity, and subassemblies of larger more complicated weapons such as multibarrel machine guns or recoilless rifles. They check parts for obvious wear and defects, sort doubtful parts for check by higher grade workers, make minor repairs to parts, and assemble the weapon. After reassembly they make operational checks and adjustments and often test fire the completed weapons.

Skill and Knowledge: Grade 6 small arms repairers apply a general understanding of mechanical systems in order to disassemble weapons and set aside components with obvious wear or damage, e.g., bent parts, loose rivets, broken teeth or cams, burrs, scratches, pitting, and rust. They use knowledge of technical manuals, specification sheets, and drawings to determine operation, assembly, and tolerances of a variety of small arms subassemblies and parts, such as gas cylinder assemblies, adjustable sights, tripods and mounts, trigger assemblies, or bolt assemblies; and weapons such as revolvers, automatic pistols, shotguns, and rifles. They assemble such items in accordance with these instructions and manually operate the assemblies to check for proper action. They use knowledge of small arms operation to test fire pistols, rifles, or other complete weapons they have repaired. They mount the weapon in a prepared stand, load and fire it, and checks for proper operation or possible damage.

Grade 6 repairers apply skill in using a variety of go, no-go gages to check for proper assembly and operating tolerances such as correct amount of headspace, amount of wear at the muzzle, or proper size of portholes in the barrel. They use hand tools including files, hones, drills, hammers, and punches to smooth burrs and scratches in metal parts, to replace loose rivets in receivers or other assemblies, to refinish wood or composition gun stocks and handgrips, and perform similar tasks that do not require working to close tolerances.

Responsibility: Grade 6 small arms repairers repair uncomplicated weapons using well-proven methods. They select tools, replace worn or damaged parts, and adjust assembled weapons to meet the requirements set out in their instructions and written work orders. A higher grade worker or supervisor is available for assistance on unusual problems such as determining the cause of damage occurring during test firing. Their work is spot checked in progress to insure that they use the methods called for in the work assignment.

Physical Effort: Grade 6 small arms repairers, frequently lift subassemblies or small weapons weighing 7 to 9 kilograms (15 to 20 pounds). They often carry large assemblies or weapons weighing up to 23 kilograms (50 pounds). Work requires walking, bending, and long periods of standing.

Working Conditions: Grade 6 small arms repairers usually work in shop buildings that are well lighted, heated, and ventilator. They stand on concrete floors or other hard surfaces for long periods. They are exposed to oil, grease, and solvents when cleaning and lubricating weapons. They are frequently exposed to the possibility of minor cuts and bruises from tools or sharp edges of metal. They are subject to noise when test firing weapons.

SMALL ARMS REPAIRER, GRADE 8

General: Grade 8 small arms repairers perform overhaul, maintenance, and repair of a number of complete small arms units such as recoilless rifles, very fast firing multibarrel machine guns, heavy machine guns, and grenade launchers. They disassemble guns, examine critical parts for wear or damage using micrometers and precision gages, obtain needed replacement parts, and reassemble the weapon. They modify weapons by replacing old parts with new parts of modified design or make changes such as reaming out a hole or smoothing off rivet heads.

In comparison to Grade 6 small arms repairers who assemble and adjust small uncomplicated weapons such as revolvers and bolt action rifles, or subassemblies such as trigger assemblies and elevating and traversing assemblies, Grade 8 small arms repairers, perform a wider variety of more difficult assignments, assembling, aligning, shimming, and adjusting larger and more complex weapons such as multibarrel machine guns and recoilless rifles which have a greater variety of more complicated assemblies and parts.

Skill and Knowledge: Grade 8 small arms repairers work on weapons that have more parts and subassemblies, develop greater forces, have more adjustments, and must be adjusted to closer tolerances than the weapons described at the grade 6 level. For example, grade 8 repairers apply knowledge of interrelated mechanical systems to check, repair, and adjust recoilless rifles and single and multibarrel high speed machine guns which require exact balancing of recoil forces or critical timing of systems operations. Using this knowledge, they perform all necessary work to repair or rebuild small arms. Grade 8 repairers use more skill while making repairs than grade 6 repairers because the parts and adjustments are more numerous and more complicated. For example, they apply skill in the use of precision gages and measuring instruments such as micrometers, optical comparators, ultrasonic checkers, magnafluxing machines, or borescopes to determine when parts are worn or damaged past acceptable specifications. They apply more skill in the adjustment of lever, cam, and gear linkages by honing, shimming, and aligning parts because they must synchronize the performance of several simultaneous or consecutive functions. For example, they adjust and time buffer assemblies, hone sear or hammer to adjust trigger pull, adjust headspace, and align sights to the bore.

Grade 8 repairers apply a broad knowledge of weapons operation and ability to read specifications and blueprints in order to assemble weapons and locate the cause of improper functioning observed during simulated operation or test firing, such as aligning or replacing parts or adjusting automatic weapons to the proper cyclic rate of fire. They are able to use simple machine tools to alter parts, such as occasionally smoothing off rivet heads, changing the taper or diameter of a pin, or reaming out a hole, when tools and jigs have been preset and aligned.

Responsibility: Grade 8 small arms repairers are responsible for the repair of more complex weapons than are grade 6 repairers. This requires more frequent and difficult decisions such as whether parts must be replaced due to slight wear or damage or can be reworked to meet specifications; deciding when parts require work beyond the scope of his assignment, such as the need for complex machining or extensive refinishing of metal surfaces; or the necessary adjustments to a number of subsystems in order to produce a satisfactory final result.

Grade 6 small arms repairers receive full instructions for each assignment including the established procedures to be used. Their work is spot checked during progress for adherence to proper methods. Grade 8 small arms repairers, however, receive general instructions. They determine work to be done and methods to use on each piece of work. Their work is spot checked to insure choice of acceptable work methods.

Physical Effort: The physical effort is similar to that described at the [grade 6 level](#).

Working Conditions: The working conditions are similar to those described at the [grade 6 level](#).

SMALL ARMS REPAIRER, GRADE 10

General: Grade 10 small arms repairers modify and rework small arms of regularly and widely used design and weapons which have unusual operating principles or critical operating tolerances. They make changes to increase the accuracy and reliability or modify other characteristics to fit the weapon to uses for which it was not specifically designed. They contribute to the design or redesign of small arms by making or reshaping parts, or experimenting with techniques and materials to arrive at a practical solution of the fabrication objectives. Because grade 10 repairers make major changes to weapons, they must balance these changes to one portion of the weapon with compensating adjustments and modifications at other points throughout the system. Grade 8 repairers, in comparison, modify weapons by replacing old parts with new parts which fit the system and adjusts the weapons to conform to established specifications.

Skill and Knowledge: In comparison to grade 8 small arms repairers who apply a knowledge of commonly used small arms mechanical systems to perform the overhaul, maintenance, and repair of weapons, grade 10 small arms repairers use a thorough knowledge of weapon components of a wide variety of pistols, rifles, automatic weapons, and other small arms in order to select weapons and parts which are suitable for use as match weapons or for other nonstandard purposes. Grade 10 small arms repairers use greater knowledge of mechanical systems and small arms operation as well as a working knowledge of the work of other trades in order to plan the modification of weapons. For example, they apply a practical knowledge of factors such as the strength and workability of metals, methods of hardening, tempering and machining metals, ballistics, and other factors affecting the accuracy and durability of weapons, in order to develop or reform components. In addition, they are able to select the appropriate metal, considering function of part, needed strength and hardness, machining characteristics of various materials, and similar factors. They are skilled in the use of shop mathematics to develop new specifications for parts which will be stronger, longer wearing, closer fitting, and smoother acting, and to develop templates and patterns used to lay out work.

Grade 10 repairers apply knowledge of hand and machine metal working to devise jigs, tools, and fixtures to aid in the fitting and testing processes. In comparison with grade 8 repairers who work to tolerances set out in specifications or work orders, grade 10 repairers apply a high degree of skill in precision fitting and finishing of new and modified components to close tolerances which they have developed. For example, they remove small amounts of metal or otherwise reshape parts using equipment such as drill presses, milling machines, lathes, grinders, and buffers to rough out the work, and handfinishing methods to reach final tolerances.

Grade 10 repairers use ability to plan and lay out work in order to draw up requirements for complex machine work to be done by others. They use knowledge of proper shooting posture and balance of weapons to lay out wooden stocks and handgrips to the personal specifications of the user.

Responsibility: While grade 8 small arms repairers are responsible for determining the best commonly used methods by which to accomplish a prescribed task and their work is spot checked to insure use of acceptable work methods, grade 10 small arms repairers, operate with greater independence. Assignments at this level specify the desired final product and grade 10 repairers devise changes to methods, materials, and processes to achieve them. They work within the framework of accepted trade practices. Their work is reviewed on the basis of meeting assigned objectives.

Physical Effort: The physical effort is similar to that described at the [grade 6 level](#).

Working Conditions: The working conditions are similar to those described at the [grade 6 level](#).