

**TS-6 March 1969**

**Federal Wage System  
Job Grading Standards**



**WCPS-2 August 2002**

**FEDERAL WAGE SYSTEM  
JOB GRADING  
STANDARD  
FOR  
PIPEFITTING,  
4204**



**Workforce Compensation  
and Performance Service**



# PIPEFITTING, 4204

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## WORK COVERED

This standard is used to grade all nonsupervisory jobs involved in the installation, maintenance, and repair of high temperature water and high-pressure piping systems such as hydraulic, nitrogen, oxygen, steamheating, and steam-generating systems.

## WORK NOT COVERED

Jobs involved in the installation and repair of utility, supply, and disposal systems (for example, sewage, water), fixtures and equipment, or installing pipe insulation materials, as a primary assignment, are not covered by this standard.

## TITLES

Jobs covered by this standard are to be titled *Pipefitter*.

## GRADE LEVELS

This standard defines only that grade that reflects the more commonly found level of work in the occupation. It does not describe all possible levels at which jobs might be established. If jobs differ substantially from the skill, knowledge, and other work requirements described in the grade levels of the standard, they may warrant grading either above or below those grades. If lower than journeyman level pipefitting jobs are found, they will be graded by this and the [Plumbing, 4206](#), job grading standard.

## HELPER AND INTERMEDIATE JOBS

Jobs that are part of a planned program of training and development for advancement to a higher grade are graded by the [Job Grading Standard for Trades Helper](#) and [Intermediate](#) Jobs. (Grade 10 in this standard is to be used as the "journey level grade" in applying the Intermediate Job Grading Table.)



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*General:* The work involves installing, modifying, and repairing new and existing high-pressure piping systems and equipment such as steamheating, steam generation, and hydraulic systems, steam generators, flash and expansion tanks, condensate, vacuum, and circulating pumps, and radiators. The pipefitters work from building plans, blueprints, and sketches to plan and lay out the routing, placement, pitch, elevation, pressure reduction, expansion, and operation of various piping systems and equipment. They install, modify, and repair systems like those described above by setting up system routes, placing and cutting route openings, placing hangers for proper pitch and elevation, and determining and installing such things as risers, flexible branches, expansion joints, pumps, gauges, and pressure regulators in the combination needed to support the pressures of the systems and that ensure the proper operation of the systems. The pipefitters also install equipment like that described above by planning and completing the routing and placement of systems leading to the equipment, determining and placing the equipment at the proper levels and points in the systems, and joining, sealing, and testing systems and equipment for proper pressures, leak-free joints, and operation.

*Skill and Knowledge:* The pipefitters are required to have a knowledge of how various high-pressure piping systems and equipment, such as steamheating, steam generation, and vacuum systems, radiators, and circulating pumps, are installed and operate. For example, the pipefitters must know how relief valves, check valves, pressure regulators, expansion joints, and other pressure supporting and controlling devices are installed and how they operate to control increases and decreases in pressure, flow, circulation, and expansion in the systems. The pipefitters must have the ability to plan and lay out the installation, modification, and repair of various new and existing piping systems and equipment. The pipefitters, for example, must be able to lay out and install various kinds of piping, risers, and flexible branches at the proper level and incline; determine the placement and elevation and install steam generators, vacuum and condensate pumps, and radiators; and replace heat exchangers, flash and expansion tanks, and automatic and manual control valves. The pipefitters must have the ability to interpret and apply building plans and blueprints, and to use shop mathematics to lay out angles, arcs, and circles. The pipefitters must have skill in any of the accepted trade methods and techniques, for example, figuring pipe, joint, and valve sizes needed to support pressures of systems, aligning pipes, valves, fittings, and joints for accurate match, and installing proper braces and supports to control movement and vibration and allow for expansion and contraction. The pipefitters must also have skill in the use of tools and equipment such as sliding squares, measuring tapes, dividers, chalklines, plumb bobs, templates, star drills, grinders, flangers, hand and power pipe threaders and cutters, and pipe wrenches.

*Responsibility:* The supervisor assigns work orally and through work orders, building plans, and blueprints. The pipefitters plan and lay out the needed routing, placement, pitch, incline, and elevation of systems and equipment. The pipefitters figure pressures in the systems and see that the piping, valves, fittings, and equipment are proper for the work. The pipefitters complete installations, modifications, and repairs with little or no check during their progress or upon completion. The pipefitters test systems and equipment after completing work for proper

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circulation, flow, pressure, and leak-free joints. The supervisor checks the pipefitters' overall work to see that it meets accepted trade standards.

*Physical Effort:* The pipefitters make repairs and installations from ladders, scaffolding, and platforms, and where the systems and equipment worked on are in hard-to-reach places. This requires the pipefitters to stand, stoop, bend, kneel, climb and work in tiring and uncomfortable positions. The pipefitters frequently handle, lift, carry, and set up parts and equipment that weigh up to 23 kilograms (50 pounds). Occasionally, the pipefitters may lift and carry items that weigh over 23 kilograms (50 pounds).

*Working Conditions:* The work is done inside and outside, and is usually dirty, dusty, and greasy. The pipefitters are sometimes required to make installations and repairs in areas where bad smelling fumes are present. There is frequent exposure to the possibility of uncomfortable heat conditions. The pipefitters are frequently exposed to the possibility of strains, cuts, scrapes, bruises, burns, and infections. They are occasionally exposed to the possibility of broken bones.