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**Federal Wage System
Job Grading Standards**



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**FEDERAL WAGE SYSTEM
JOB GRADING
STANDARD
FOR
SHIPFITTING,
3820**



**Workforce Compensation
and Performance Service**



SHIPFITTING, 3820

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WORK COVERED

This standard is to be used for grading nonsupervisory jobs involved in the modification, fabrication, repair, assembly, and installation of various metal structural parts of ships and other vessels. The work requires knowledge of shipfitting equipment, structures, and metals; skill in laying out, cutting, and shaping of metal parts; and ability to position, align, and secure parts and subassemblies on ships or other vessels.

WORK NOT COVERED

- Work that involves the fabrication and repair of sheet metal parts, items, and assemblies is not covered by this standard. (See job grading standard for [Sheet Metal Mechanic, 3806](#).)
- Work that involves the fabrication, assembly, and installation of boilers, tanks, condensers, uptakes, stacks, or other heavy-pressure vessels is not covered by this standard. (See [Boilermaking Series, 3808](#).)

TITLES

Jobs covered by this standard at the grade 10 level and above are to be titled *Shipfitter*.

Jobs with limited assignments below grade 10 are to be titled *Shipfitting Worker*.

GRADE LEVELS

This standard describes only one grade level. If jobs differ substantially from the level of skill, knowledge, and other work requirements described in this standard, they may be graded above or below this level based on the application of sound job grading methods.

HELPER AND INTERMEDIATE JOBS

Helper and intermediate shipfitting jobs are covered by the [Job Grading Standards for Trades Helper](#) and [Intermediate](#) Jobs. (Grade 10 in this standard is to be used as the “journey level” in applying the Intermediate Job Grading Standard.)



3820-10**SHIPFITTER, GRADE 10****3820-10**

General: Grade 10 shipfitters modify, fabricate, repair, assemble, and install various metal structural parts of ships and other vessels.

Grade 10 shipfitters typically:

- Work from blueprints, design memos, sketches, mold loft templates, and onsite measurements to lay out various structural parts, such as shell, deck, and bulkhead plates, beams, channel bars, struts, angle bars, frames, and foundations.
- Roll, bend, flange, cut, and otherwise shape plates, beams, and other heavy metal parts, using various shop machinery, such as plate rolls, hydraulic presses, bending brakes, joggle machines, and combination punching, shearing, and metering machines.
- Assemble the various pieces to form the required part. Using marking and layout tools, such as soapstone, chalk line, scratch awl, center punch, marking point, carpenter's square, spirit level, and straight edge, they establish sets of working lines, such as waterlines, centerlines, buttock lines, and frame lines. They constantly check and correct locations of parts during assembly by reference to working lines, blueprints, and mold loft templates. They request and direct any burning or chipping required to assure accurate fitting of parts. They reinforce assembly to minimize welding distortion, using strongbacks, turnbuckles, bolts and clips, and other types of braces.
- Install and fit parts on ships. Locate position of pieces from reference lines and set parts in the proper position. Align and adjust parts using jacks, turnbuckles, shoring, saddles, clips, wedges, mauls, and hammers. Straighten distorted parts, using heated torches, flatters, mauls, and sledge hammers. Line up parts for welding or bolting, installing temporary fasteners as required. Install packing, gaskets, liners, and similar items where necessary. Mark holes to be drilled, and establish final target and working lines.
- Remove, repair, or replace damaged parts of ship structures.
- May do structural metal work on tanks, buildings, bridges, cranes, and other structures.

In addition, grade 10 shipfitters may mix and cast various plastic compositions using prefabricated molds and patterns to produce plastic components for ships and submarines, such as sonar domes and other items. They cut, fit, assemble, and install various structural assemblies, such as submarine sails, using fiberglass plates.

Skill and Knowledge: Grade 10 shipfitters must have a knowledge of blueprint reading, mechanical drawing, and geometric and trigonometric principles used in developing and laying out patterns, and a knowledge of standard shipfitting practices, processes, and materials. They must know shipfitting terms, definitions, and abbreviations, and be familiar with a ship's layout.



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In addition, grade 10 shipfitters must know how to use the various metal forming machines required in fabricating ship structures, such as plate rolls, press brakes, angle rolls, cold presses, shears, and punches. They must also know how to operate and use portable electric and air-powered tools, such as chipping hammers and grinding, reaming, and drilling machines. Grade 10 shipfitters must possess a high degree of accuracy and skill in developing, laying out, and fabricating their work; be adept and exact in making templates; be deft and skillful in using the equipment and tools of the shipfitting trade; and quick enough to complete their work within reasonable time limits. They are expected to keep pace with technological developments in the trade.

Responsibility: Grade 10 shipfitters usually work alone or as part of a small group under general supervision, carrying out standard assignments independently and special tasks in accordance with specific instructions. Work is subject to spot check in progress and inspection upon completion. They are responsible for determining the kind and quantity of materials required to accomplish the work without undue waste, and the necessary sequences and procedures to follow in order to produce quality work within specified time requirements. They are also responsible for following safety rules and regulations and for the proper and safe operation of tools and equipment.

Physical Effort: Grade 10 shipfitters frequently lift, pull, push, and carry heavy structural parts, tools, and equipment weighing up to 23 kilograms (50 pounds). Cranes, hoists, chainfalls, or other workers are available when lifting and moving heavier pieces. They walk frequently to and from machines, shops, and various points aboard ships. They stand continuously while working at a bench in the shop, assembling parts, or operating machines. They frequently stoop, kneel, and crawl when making measurements and laying out placement lines for assemblies or installing work in cramped places. They also frequently climb ladders or stagings on high assemblies in shops and aboard ship while assembling and installing structural parts.

Working Conditions: Grade 10 shipfitters work within shops and aboard ships, often under adverse weather conditions. Shipfitters are continuously exposed to such hazardous and unpleasant worksite conditions as vibration, excessive noise, fumes, flying particles, welding flashes, dust, dirt, and grime; thus, employees are subject to damage to eyes and respiratory system, broken bones, bruises, cuts, shocks, and burns. Various protective devices such as hard hats, gloves, safety shoes, and glasses are used to minimize these conditions. They are also exposed to serious injury from slipping and falling while working aloft on masts, in the drydock, and from ladders and stagings. They frequently work in unpleasant and cramped areas of ships having minimum lighting and ventilation.

