

# Federal Wage System Job Grading Standard for Powered Support Systems Mechanic, 5378

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## WORK COVERED

This standard is used to grade nonsupervisory general mechanical work involved in making a variety of repairs to powered ground and similar support equipment used for aircraft ground servicing; missile, aircraft, air control, and radar installations' powered support; field combat support; engineering and construction project support; and general utilities, including standby and emergency power generating systems. The systems repaired are made up of combinations of components such as: gasoline, diesel, multi-fuel, or turbine engines; electrical systems; gears; combustion powered generators, compressors, and similar power supply units including those with heating and cooling applications; and the electric, hydraulic, or pneumatic systems which are part of the equipment repaired.

## WORK NOT COVERED

The following kinds of work are not covered by this standard:

- Work limited to or preponderantly involving a single defined trade or specialization such as: electrical equipment repair (see [Job Grading Standard for Electrical Equipment Repairing, 2854](#)); liquid and gas equipment and systems repair (see [Job Grading Standard for Pneudraulic Systems Mechanic, 8255](#)); conventional air conditioning equipment repair (see [Job Grading Standard for Air Conditioning Equipment Mechanic, 5306](#)); conventional heating systems repair (see [Job Grading Standard for Heating and Boiler Equipment Mechanic, 5309](#)); electronic or computer systems repair (see appropriate standard such as [Electronics Mechanic, 2604](#); and [Electronics Measurement Equipment Mechanic, 2602](#); or series such as [Aircraft Engine Mechanic, 8602](#));
- Repair of automobiles, trucks, buses, and similar vehicles (see [Job Grading Standard for Automotive Mechanic, 5823](#));
- Repair of heavy, special purpose vehicles or their engines, transmissions, and other major systems. (See [Job Grading Standard for Heavy Mobile Equipment Mechanic, 5803](#));
- Mechanical repair of missiles and (small) launching devices. (see [Job Grading Standard for Ordnance Equipment Mechanic, 6641](#));
- Repair of aircraft or equipment on or from aircraft. (See appropriate standard such as [Aircraft Mechanic, 8852](#)).

## GRADES

This standard describes work at the grade 10 level. If jobs differ substantially from the level of skill, knowledge, and other work requirements described for this grade, they may be graded above or below this level based on the application of sound job grading methods.

## TITLES

The title for jobs covered by this standard at grade 10 and above is *Powered Support Systems Mechanic*.

For jobs below grade 10, other than Helper and Intermediate Jobs, the title is *Powered Support Equipment Repairer*.

## HELPER AND INTERMEDIATE JOBS

Helper and Intermediate Jobs coded to this occupation are graded by reference to the [Job Grading Standard for Trades Helper](#) and for [Intermediate Jobs](#). (Grade 10 in this standard is to be used as the "journey level" in applying the Intermediate Job Grading Table.)

## NOTE TO USERS

These and other job grading standards do not themselves limit the authority of agencies to assign work or particular duties to positions. For example, this standard does not limit agency authority to use "specialists" or "generalists" in the various repair functions. However, work in a single defined specialty must be classified appropriately, using standards such as those in the [WORK NOT COVERED](#) section of this standard.

## POWERED SUPPORT SYSTEMS MECHANIC, GRADE 10

*General:* Grade 10 powered support systems mechanics troubleshoot and overhaul, rebuild, or make comparable major repairs to powered support systems, including the major components (e.g., engines, generators, alternators, gears, compressors, and hydraulic, pneumatic, electrical components) of one or several of the following groups:

- Aircraft ground support equipment (e.g., jet engine starters, power supply units, air cycle air conditioners, and power generation systems);
- Missile installations' ground support systems (e.g., emergency power generation systems; large elevating and/or door opening systems with sequencing circuitry and components);
- Combat support vans and units (e.g., transportable or towable hospital units; communications or computer vans; power generating systems; cooling, heating, lighting, and power multi-systems; and other combat support powered ground systems);
- General utilities support equipment (e.g., standard combustion powered generating systems, including load equalizing circuits, for hospitals, offices, water plants, etc.);

- Engineering and construction support equipment such as large combustion powered generators and compressors; mobile shops or similar special purpose units used in engineering or construction projects.

*Skill and Knowledge:* In accomplishing duties such as those described above, grade 10 powered support systems mechanics apply general mechanical and other skills, knowledge, and abilities, such as the following:

- A thorough knowledge of the mechanical and electrical makeup and operation of powered support systems such as those described above, including their major mechanical, electrical, hydraulic, and pneumatic components;
- Skill in troubleshooting and repairing some of the following: diesel, gasoline, and/or multi-fuel engines (e.g., overhauling those of 3 to 8 cylinders and up to 500 horsepower or making less extensive repairs to larger, more complex engines); gearing and governing components for controlling, changing, or transferring speed and power; hydraulic and pneumatic systems and controls; conditioning (cooling, heating, dehumidifying) systems; turbine engines; combustion powered generators and compressors, or other comparably complex components; this includes ability to completely disassemble, reassemble, overhaul, and adjust to specifications;
- Skill in troubleshooting and repairing electrical and transistorized systems with components such as transistors, resistors, rectifiers, switches, relays, meters, governors, harness wiring, commutators, slip rings, brushes, capacitors, generators, motors, timing and sequencing devices, and solid state DC voltage regulators;
- Skill in troubleshooting electrical and transistorized sensing and controlling devices and panels for engines and generators, e.g., overvoltage, undervoltage, overfrequency, underfrequency, overtemperature, fire detection, and low oil pressure.
- Ability to read and use technical manuals, illustrations, diagrams, schematics, and similar guides covering the complete assembly, troubleshooting, and layout of powered support systems;
- Ability to use a wide range of complex troubleshooting, testing and repairing equipment for mechanical and electrical systems, e.g., dynamometers, load banks, impedance bridges; multi-meters, equipment and system test cells or stands, flow meter panels, oscilloscopes,
- turbine engine and analyzers and balancing machines, in addition to less complex equipment such as common mechanic's hand tools, voltmeters, ohmmeters, pressure gages, leak detectors, drills, and hones.
- Knowledge of the basic principles behind the operation of most of the following: AC and DC electric power generation systems; combustion powered reciprocating engines; turbine engines; multi-drive gear units; heating and cooling system; pneumatic, hydraulic, and

pneumatic systems; pressure regulators; and electrical switching, harness wiring, and metering systems;

- Ability to measure and work within close tolerances, clearances, and specifications such as those involved in balancing parts which must rotate up to 60,000 RPM or clearances of one hundredth to one thousandth of an inch between moving parts.

*Responsibility:* Grade 10 mechanics work from instructions such as work orders, pre-repair inspection reports, user reports, standing operating procedures, or oral instructions which give an indication of the possible problems and the kinds and extent of repairs desired. They examine, check, and test the systems and equipment; determine the type and extent of repairs needed; inform a supervisor of any extensive changes to previously specified or anticipated repairs and limitations; and complete approved work in accordance with existing guidelines or instructions. Grade 10 mechanics use experience and judgment in determining why engines, electrical components, hydraulic or pneumatic systems, etc., fail to operate or meet performance specifications and requirements (e.g., power output, temperature, load, frequency, speed, and pressure) and in selecting best repair techniques. When assignments encompass large, complex, multi-systems such as mobile hospitals, or involve a wide range of systems (comparable, for example, to all or most of those listed above, under "General") more supervisory guidance or assistance from specialists or experts is typically received.

Grade 10 mechanics are responsible for planning the sequence of their repair tasks; selecting and safely using the proper tools, devices, and equipment; complying with appropriate specifications that clearances, fittings, adjustments, and settings are precisely and instructions in manuals, regulations and guides; and insuring made within designated clearances and tolerances. Their work may be observed while underway to check on progress, and typically must pass an operational or diagnostic test upon completion.

*Physical Effort:* Grade 10 mechanics perform work which involves frequent bending, reaching, crouching, standing and arm movement. They sometimes must work in awkward positions or cramped areas. They frequently lift and carry items weighing up to about 18 kilograms (40 pounds) and lift heavier items using jacks, hoists, or helpers.

*Working Conditions:* Grade 10 powered support systems mechanics may work inside or outside. Inside, they are frequently exposed to drafts, changing temperature, and loud noise. Outside, they may work in bad weather, in rain or snow, or in wet or icy areas. Both inside and outside, the mechanics are frequently exposed to irritation or discomfort from dust, heat, fumes, and hard damp floors or surfaces.

Grade 10 mechanics work on parts and systems which are dirty and greasy and which may be dangerous to operate or repair because of defects. They are frequently exposed to the possibility of receiving cuts, burns, bruises, strains, and electrical shock while repairing, positioning, adjusting, and moving equipment, and are exposed to the possibility of receiving burns and skin irritations from acids, fluids, and lubricants. To reduce the dangers and irritations from the above conditions, the mechanics follow numerous safety procedures and wear equipment such as protective eye-glasses, ear devices, hard hats, hard-toe shoes, respirators, gloves, and clothing.

Some of these safety items may be uncomfortable to wear or use, and may be worn or used for long periods.