**WELDER, COMBINATION**

**RAPIDS: 0622D**

**O*NET/SOC: 51-4121.06**

**REVISION DATE: 09/2019**

**TRADE DESCRIPTION:** Use hand-welding or flame-cutting equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.

**TASK PERFORMANCE:** Demonstrate knowledge and skills for qualifying as Journeyman. Applicable Job Qualification Requirements will be used as a guide in performing tasks and demonstrating knowledge in the following skill areas. Actual work time must be recorded in the Work Experience Log; each skill area must be completed.

**Applicable Ratings/MOS/NEC**

**USMC MOS:** 1316, 2161, 6043

**USCG:** AMT, DC

**USN:** AM, AS, HT, SW

**USA MOS:** 12D, 914A, 91E

**Related Instruction:**

Trade related On-The-Job-Training (OJT) or Any Trade related schools/courses totaling 216 or more hours.

**Additional Requirement:**

None

**Total Hours: 3000**

<table>
<thead>
<tr>
<th>Skill</th>
<th>Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>USE AND MAINTAIN WELDING EQUIPMENT AND TOOLS (HAND AND POWER)</td>
<td>250</td>
</tr>
</tbody>
</table>
--- Recognize, set-up, and operate hand and power tools common to the welding trade, such as shielded metal arc and gas metal arc welding equipment.
--- Detect faulty operation of equipment or defective materials and notify supervisors.
--- Check grooves, angles, or gap allowances, using micrometers, calipers, and precision measuring instruments.
--- Operate metal shaping, straightening, and bending machines, such as brakes and shears.
--- Set up and use ladders and scaffolding as necessary to complete work.
--- Join parts such as beams and steel reinforcing rods in buildings, bridges, and highways, bolting and riveting as necessary.
--- Gouge metals, using the air-arc gouging process.

<table>
<thead>
<tr>
<th><strong>B</strong></th>
<th>WELDING OXYACETYLENE</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>-- Select and install torches, torch tips, filler rods, and flux, according to welding chart specifications or types and thicknesses of metals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Connect and turn regulator valves to activate and adjust gas flow and pressure so that desired flames are obtained.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Guide and direct flames or electrodes on or across workpieces to straighten, bend, melt, or build up metal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Dismantle metal assemblies or cut scrap metal, using thermal-cutting equipment such as flame-cutting torches or plasma-arc equipment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>C</strong></th>
<th>BRAZING AND SOLDERING</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>-- Operate brazing and soldering equipment.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>D</strong></th>
<th>WELDING ELECTRIC ARC</th>
<th>850</th>
</tr>
</thead>
<tbody>
<tr>
<td>-- Weld components in flat, vertical, or overhead positions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Examine workpieces for defects and measure workpieces with straightedges or templates to ensure conformance with specifications.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Weld separately or in combination, using aluminum, stainless steel, cast iron, and other alloys.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Clamp, hold, tack-weld, heat-bend, grind or bolt component parts to obtain required configurations and positions for welding.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-- Ignite torches or start power supplies and strike arcs by touching electrodes to metals being welded, completing electrical circuits.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Monitor the fitting, burning and welding processes to avoid overheating of parts or warping, shrinking, distortion, or expansion of material.

-- Chip or grind off excess weld, slag, or splatter, using hand scrapers or power chippers, portable grinders, or arc-cutting equipment.

-- Remove rough spots from workpieces, using portable grinders, hand files or scrapers.

-- Prepare all material surfaces to be welded, ensuring that there is no loose or thick scale, slag, rust, moisture, grease, or other foreign matter.

-- Fill holes, and increase the size of metal parts.

### E GAS METAL ARC WELDING (GMAW) / GAS TUNGSTEN ARC WELDING (GTAW)

-- Operate manual or semi-automatic welding equipment to fuse metal segments, using processes such as gas tungsten arc, gas metal arc, flux-cored arc, plasma arc, shielded metal arc, resistance welding, and submerged arc welding.

### F SAFETY

-- Operate safety equipment and use safe work habits.

-- Signal crane operators to move large workpieces.

-- Use fire suppression methods in industrial emergencies.

### G MATH

-- Determine required equipment and welding methods, applying knowledge of metallurgy, geometry, and welding techniques.

-- Develop templates and models for welding projects, using mathematical calculations based on blueprint information.

### H SHEETMETAL TOOLS AND EQUIPMENT

-- Position and secure workpieces, using hoists, cranes, wire, and banding machines or hand tools.

-- Cut, contour, and bevel metal plates and structural shapes to dimensions as specified by blueprints, layouts, work orders, and templates, using powered saws, hand shears, or chipping knives.

-- Repair products by dismantling, straightening, reshaping, and reassembling parts, using cutting torches, straightening presses, and hand tools.

-- Hammer out bulges or bends in metal workpieces.

### I SHOP FUNDAMENTALS

250

1000

250

50

50

250
- Analyze engineering drawings, blueprints, specifications, sketches, work orders, and material safety data sheets to plan layout, assembly, and welding operations.
- Clean or degrease parts, using wire brushes, portable grinders, or chemical baths.
- Estimate materials needed for production and manufacturing and maintain required stocks of materials.
- Mix and apply protective coatings to products.

**J SHEET METAL PROJECTS**

- Lay out, position, align, and secure parts and assemblies prior to assembly, using straightedges, combination squares, calipers, and rulers.
- Mark or tag material with proper job number, piece marks, and other identifying marks as required.