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## Latest release

Sub-major Group

# 33 Engineering Trades Workers

## OSCA - Occupation Standard Classification for Australia

Reference period: 2024, Version 1.0

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Released 6/12/2024

## 33 Engineering Trades Workers

Cut, shape, cast, join and finish metal, metal parts, subassemblies and precision instruments, and maintain aircraft structures.

### OSCA skill level

The occupations in this sub-major group have a skill level corresponding to the qualifications and experience below.

- Skill Level 2: AQF Associate Degree, Advanced Diploma, Diploma, or at least three years of relevant experience
- Skill Level 3: AQF Certificate III including at least two years of on-the-job training, AQF Certificate IV, or at least three years of relevant experience

Minor Group

## 331 Fabrication Engineering Trades Workers

Cut, shape, cast, join and finish metal.

Panelbeaters and Vehicle Body Builders are excluded from this minor group. Panelbeaters are included in Occupation 351331 Panelbeater. Vehicle Body Builders are included in Occupation 351531 Vehicle Body Builder.

## OSCA skill level

The occupations in this minor group have a skill level corresponding to the qualifications and experience below.

- Skill Level 3: AQF Certificate III including at least two years of on-the-job training, AQF Certificate IV, or at least three years of relevant experience

### Unit Group

## 3311 Structural Steel and Welding Trades Workers

Cut, shape, join and repair components of iron, steel and other metal structures, boilers, pressure vessels and pipes, ships and other vessels.

## OSCA skill level

The occupations in this unit group have a skill level corresponding to the qualifications and experience below.

- Skill Level 3: AQF Certificate III including at least two years of on-the-job training, AQF Certificate IV, or at least three years of relevant experience

### Occupation

## 331131 Metal Fabricator

Marks off and fabricates structural steel and other metal stock to make, assemble or repair metal products, pipes and structures, such as boilers and pressure vessels.

Sheetmetal Fabricators are excluded from this occupation. Sheetmetal Fabricators are included in Occupation 331936 Sheetmetal Worker.

## Alternative title

- Boilermaker

## Skill level: 3

## Main tasks

- Studies blueprints, drawings and specifications to determine fabrication job requirements
- Measures and marks out the size, shape and location of cutouts and joints on metal stock
- Uses specialised tools to cut, bend or shape metal into the desired structure or product

- Joins metal sections together by welding, bolting and riveting
- Examines welds for width of bead, penetration and precision, and performs necessary repairs or reworks
- Cleans and smooths welds by filing, chiselling and grinding
- May program machinery or computer-aided fabrication tools to optimise the metal fabrication process

**Occupation**

## 331132 Pressure Welder

Assembles, welds and repairs pressure vessels and pipes to relevant standards.

**Skill level: 3**

**Main tasks**

- Reads and interprets blueprints and technical specifications to determine appropriate welding techniques for pressurised systems
- Examines welds for width of bead, penetration and precision, and performs necessary repairs or reworks
- Shapes, bends, cleans and smooths metal sections and pipes using hand and machine tools, and by heating, hammering, filing and chiselling
- Welds pressurised pipelines used for transporting oil, gas and other high-pressure substances
- Conducts tests on welds to ensure there are no leaks in the pressurised systems
- Applies post-weld treatments to relieve stress and enhance the strength of the welded joints on pressure-containing equipment

**Occupation**

## 331133 Welder (First Class)

Fabricates and repairs metal products using various welding techniques.

**Specialisation**

- Special Class Welder

**Skill level: 3**

**Main tasks**

- Interprets engineering drawings and specifications to determine welding requirements
- Applies appropriate welding techniques to join metal sections
- Monitors and adjusts welding parameters to ensure quality and integrity of welds

- Cleans welds by filing, chiselling and grinding
- Inspects and tests welded joints for defects and compliance with specifications

**Unit Group**

## 3319 Other Fabrication Engineering Trades Workers

This unit group covers Fabrication Engineering Trades Workers not elsewhere classified. It includes Blacksmiths, Electroplaters, Farriers, Metal Casting Trades Workers, Metal Polishers and Sheetmetal Workers.

Second class sheetmetal workers are excluded from this unit group. Second class sheetmetal workers are included in Occupation 732231 Engineering Production Worker.

### OSCA skill level

The occupations in this unit group have a skill level corresponding to the qualifications and experience below.

- Skill Level 3: AQF Certificate III including at least two years of on-the-job training, AQF Certificate IV, or at least three years of relevant experience

**Occupation**

## 331931 Blacksmith

Shapes bars, rods and blocks of metal by heating and hammering to produce or repair metal articles.

### Skill level: 3

### Main tasks

- Collaborates with clients to understand their specific metalworking needs
- Heats metal blocks, bars and rods in a forge, then shapes the metal using hammers, anvils and other tools
- Welds or joins metal pieces together
- Trims, cuts and files metal to remove excess material
- Repairs damaged metal articles by heating and reshaping them
- Inspects finished products for quality and accuracy

**Occupation**

# 331932 Electroplater

Controls plating processes and maintains solutions used to coat metal articles and other parts with non-ferrous metals.

## Specialisation

- Galvaniser

**Skill level: 3**

## Main tasks

- Sets up and operates electroplating equipment
- Prepares electrolytic and silver solutions for electroforming, and applies solution to the objects to be coated
- Cleans, prepares, descales and removes all oxides from the surface of metal materials with cleaning solutions such as acids, alkalis and preflux solutions
- Masks areas not to be electroplated with silicon or oil-based paints
- Places articles in zinc solution for surface coating to reach government or manufacturing specifications
- Tests and adjusts plating solutions to maintain desired specifications
- Inspects plated articles and parts for defects and quality

Occupation

# 331933 Farrier

Inspects, trims and shapes horses' hooves, and forms, fits and nails horseshoes.

**Skill level: 3**

## Main tasks

- Inspects horses' hooves and assesses their condition
- Trims and shapes horses' hooves
- Measures horses' hooves for appropriate shoe size
- Fits and nails horseshoes securely onto hooves
- Provides advice to horse owners on hoof care and shoeing
- Prevents disease and cultivates overall hoof health

Occupation

# 331934 Metal Casting Trades Worker

Forms sand moulds and cores for the production of metal castings.

## Specialisation

- Moulder

### Skill level: 3

#### Main tasks

- Sets up and operates equipment and machinery for sand moulding and core making
- Produces and prepares moulds and cores using boxed and boxless moulding
- Packs and compacts sand to ensure proper mould formation
- Pours molten metal into prepared casts to create metal castings
- Inspects moulds and cores for defects and repairs, or replaces as necessary
- May setup, use and program robotic machinery with appropriate metal working tools to finish metal products

#### Occupation

## 331935 Metal Polisher

Polishes metal to impart smooth, reflective and other finishes.

### Skill level: 3

#### Main tasks

- Selects appropriate polishing materials and equipment
- Applies polishing compounds or abrasive materials to metal surfaces
- Uses hand tools or power tools to polish metal surfaces
- Removes scratches, blemishes or other marks from metal surfaces
- Grinds and smooths welded seams and joints
- Inspects polished surfaces for defects or imperfections
- Applies protective coatings or finishes to polished metal surfaces

#### Occupation

## 331936 Sheetmetal Worker

Marks out, shapes, forms and joins sheetmetal and other materials to make products and components.

Sheetmetal workers (second class) are excluded from this occupation. Sheetmetal workers (second class) are included in Occupation 732231 Engineering Production Worker.

## Alternative title

- Sheetmetal Fabricator

## Skill level: 3

### Main tasks

- Studies blueprints, drawings and specifications to determine job, material and equipment requirements
- Selects metal stock such as stainless steel, galvanised iron, mild steel, aluminium and copper, and checks sizes, gauges and other dimensions of metal stock against specifications
- Marks out metal stock with reference points and lines, using templates, gauges and other measuring instruments
- Cuts metal stock along guidelines using hand and power shears, computerised laser and plasma cutters, guillotines and drills
- Shapes and forms cut metal stock into products using folding and bending machines, rollers, presses and hammers
- Fits and assembles components into final products by welding, riveting, soldering, brazing and otherwise joining
- Finishes products by polishing, filing, sanding and cleaning assembled products
- May specialise in fabrication, or on-site assembly and installation of sheetmetal products
- May produce aircraft sheetmetal components

### Minor Group

## 332 Mechanical Engineering Trades Workers

Machine and prepare aircraft systems, metal parts, subassemblies and precision instruments.

Automotive Technicians and Trades Workers are excluded from this minor group.

Automotive Technicians and Trades Workers are included in Minor Group 351 Automotive Technicians and Trades Workers.

### OSCA skill level

The occupations in this minor group have a skill level corresponding to the qualifications and experience below.

- Skill Level 2: AQF Associate Degree, Advanced Diploma, Diploma, or at least three years of relevant experience

- Skill Level 3: AQF Certificate III including at least two years of on-the-job training, AQF Certificate IV, or at least three years of relevant experience

**Unit Group**

## 3321 Aircraft Maintenance Technicians

Maintain and repair aircraft structures, and avionic and mechanical systems.

**OSCA skill level**

The occupations in this unit group have a skill level corresponding to the qualifications and experience below.

- Skill Level 2: AQF Associate Degree, Advanced Diploma, Diploma, or at least three years of relevant experience
- Skill Level 3: AQF Certificate III including at least two years of on-the-job training, AQF Certificate IV, or at least three years of relevant experience

**Occupation**

## 332131 Aircraft Maintenance Technician (Avionics)

Inspects, tests, aligns, repairs and installs electrical and avionic system components in aircraft, including space vehicles.

**Alternative title**

- Aircraft Maintenance Engineer (Avionics)

**Specialisations**

- Aircraft Maintenance Technician (Electrical)
- Armament Technician (Defence)
- Avionics Technician (Defence)

**Skill level: 3****Main tasks**

- Inspects and tests aircraft electrical and avionic systems to identify any faults or damage, and ensure aircraft are functioning within safety regulations and standards
- Repairs or replaces faulty or damaged aircraft electrical and avionic systems
- Installs new aircraft electrical and avionic system components, including instruments, radio and communication equipment, and navigation systems

- Performs and documents regular maintenance and servicing of aircraft electrical and avionic systems
- May manufacture aircraft electrical and avionic hardware components

**Occupation**

## 332132 Aircraft Maintenance Technician (Mechanical)

Inspects, tests, repairs and installs hydromechanical and flight system components and engines, subassemblies, and components in aircraft, including space vehicles.

**Alternative title**

- Aircraft Maintenance Engineer (Mechanical)

**Specialisations**

- Aircraft Maintenance Technician (Engines)
- Aircraft Mechanic
- Aircraft Technician (Army, Air Force)
- Aviation Technician Aircraft (Navy)

**Skill level: 3****Main tasks**

- Inspects and tests aircraft hydromechanical and flight systems and components to identify any faults, wear, defects or damage, and ensures aircraft are functioning within safety regulations and standards
- Repairs or replaces faulty or damaged aircraft hydromechanical and flight systems or components
- Installs new aircraft hydromechanical and flight systems, including engines, ancillary motors, brakes, hydraulic and pneumatic systems, airframes and subassemblies
- Performs and documents regular maintenance and servicing of aircraft hydromechanical and flight systems
- May manufacture aircraft hydromechanical, flight system and subassembly components

**Occupation**

## 332133 Aircraft Maintenance Technician (Structures)

Inspects, dismantles and reassembles aircraft, including space vehicle structures, and repairs and replaces components of aircraft and/or space vehicle frames. Works with both metal and carbon fibre composite materials.

### Alternative title

- Aircraft Maintenance Engineer (Structures)

### Specialisation

- Aircraft Structural Technician

### Skill level: 3

### Main tasks

- Inspects, dismantles, modifies and reassembles aircraft and/or space vehicle structures to identify damage, defects or wear, and ensures structures are functioning within safety regulations and standards
- Repairs or replaces damaged or worn components of aircraft and/or space vehicle structures
- Works with both metal and carbon fibre composite materials to repair or replace aircraft and/or space vehicle structures
- Performs and documents regular maintenance and servicing of aircraft and/or space vehicle structures
- May manufacture aircraft and/or space vehicle structural components

### Occupation

## 332134 Licensed Aircraft Maintenance Engineer

Supervises, coordinates, inspects and confirms completion of aircraft and/or space vehicle maintenance, and certifies aircraft or aircraft parts as airworthy.

Registration or licensing is required.

### Skill level: 2

### Main tasks

- Supervises and coordinates aircraft and/or space vehicle maintenance activities and personnel
- Inspects and tests aircraft and/or space vehicle maintenance is compliant with regulatory standards

- Assesses, determines the cause of, and rectifies aircraft and/or space vehicle defects, and provides technical guidance and support to maintenance staff
- Confirms aircraft and/or space vehicle maintenance has been completed and documented, and certifies aircraft and/or space vehicle parts as airworthy
- May assist with aircraft defect analysis and investigations

**Unit Group**

## 3322 Metal Fitters and Machinists

Fit and assemble fabricated metal parts into products, set up machining tools and production machines, and operate machining tools and machines to shape metal stock and castings.

**OSCA skill level**

The occupations in this unit group have a skill level corresponding to the qualifications and experience below.

- Skill Level 3: AQF Certificate III including at least two years of on-the-job training, AQF Certificate IV, or at least three years of relevant experience

**Occupation**

### 332231 Fitter (General)

Fits and assembles metal parts and subassemblies to fabricate production machines and other equipment.

Car, bus, truck and other vehicle diesel engine mechanics are excluded from this occupation. Car, bus, truck and other vehicle diesel engine mechanics are included in Occupation 351433 Diesel Technician.

**Specialisations**

- Diesel Fitter-Mechanic
- Drill Fitter
- Fitter-Machinist
- Fitter-Mechanic
- Locomotive Maintainer
- Maintenance Fitter
- Mechanic (Diesel and Heavy Earthmoving Equipment)
- Stationary Plant Mechanic

## Skill level: 3

### Main tasks

- Reads and interprets engineering drawings and specifications
- Measures and fits metal components using hand tools, power tools and machines
- Prepares and configures machine tools for specific jobs, and ensures correct fixtures, settings and tools are applied
- Assembles metal parts and subassemblies according to engineering specifications
- Fits fabricated metal parts into products and assembles metal parts and subassemblies to produce machines and equipment
- Repairs and maintains machines and equipment by replacing or repairing faulty parts
- Operates machines and equipment to fabricate metal components
- Tests and adjusts machines and equipment to ensure proper functioning

#### Occupation

## 332232 Fitter and Turner

Fits, assembles, grinds and shapes metal parts and subassemblies to fabricate production machines and other equipment.

### Specialisation

- Fitter Armament (Army)

## Skill level: 3

### Main tasks

- Reads blueprints and technical specifications to understand the requirements for the metal component to be machined
- Prepares and configures machine tools for specific jobs, and ensures correct fixtures, settings and tools are applied
- Operates lathes to create cylindrical parts
- Fits and assembles metal parts and subassemblies according to engineering specifications
- Uses hand tools and power tools to grind, file and polish metal parts
- Tests and adjusts completed machines and equipment to ensure proper functioning
- Inspects finished products for quality and accuracy
- Performs operational maintenance of machinery

**Occupation**

## 332233 Fitter-Welder

Fits, assembles and welds metal parts and subassemblies to fabricate production machines and other equipment.

**Skill level: 3**

### Main tasks

- Interprets engineering drawings and specifications
- Measures metal components for cutting, shaping and welding
- Fits and assembles metal parts according to engineering specifications
- Cuts and shapes metal components using hand and power tools
- Welds metal components using various welding techniques
- Cleans welds by filing, chiselling and grinding
- Inspects and tests welded components for quality and compliance with specifications

**Occupation**

## 332234 Metal Machinist (First Class)

Sets up and operates machine tools to shape and form metal stock and castings to fine tolerances, using drawings and specifications.

### Specialisations

- Automotive Machinist
- Computer Numerical Control Machinist (Metal)
- Engine Reconditioner

**Skill level: 3**

### Main tasks

- Reads blueprints and technical specifications to understand the requirements for the metal component to be machined
- Prepares and configures machine tools for specific jobs and ensures correct fixtures, settings and tools are applied
- Forms metal stock and castings to fine tolerances using machining tools to press, cut, grind, plane, bore and drill metal
- Checks fabricated and assembled metal parts for accuracy, clearance and fit using precision measuring instruments

- Polishes, deburs and finishes the machined parts to ensure they meet the specified finish quality
- May program and operate computer numerical control machines to guide machine tools in producing parts

**Occupation**

## 332299 Metal Fitters and Machinists nec

This occupation group covers Metal Fitters and Machinists not elsewhere classified.

**Skill level: 3**

**Occupations in this group include:**

- Printing Engineer
- Sewing Machine Technician
- Textile Mechanic
- Valve Technician

**Unit Group**

## 3323 Precision Engineering Trades Workers

Fabricate, assemble, maintain and repair metal precision instruments, and make and repair tools, dies, jigs, fixtures and other precision parts and equipment.

**OSCA skill level**

The occupations in this unit group have a skill level corresponding to the qualifications and experience below.

- Skill Level 3: AQF Certificate III including at least two years of on-the-job training, AQF Certificate IV, or at least three years of relevant experience

**Occupation**

## 332331 Engineering Patternmaker

Constructs full-size engineering models, usually made out of timber, which are used in manufacturing to produce metal castings, copy models, vacuum form tooling, and tooling for automotive, aircraft or fibreglass industries.

**Skill level: 3**

**Main tasks**

- Interprets engineering drawings to determine pattern requirements

- Prepares materials for pattern construction
- Tests and modifies patterns for desired results
- Creates moulds and core boxes for casting processes
- Constructs engineering models using woodworking tools
- Maintains and repairs patterns

**Occupation**

## 332332 Engraver

Inscribes letters, figures and designs on metal, glass, wood, rubber, plastic and other surfaces.

**Skill level: 3**

**Main tasks**

- Prepares engraving equipment and materials
- Selects tools and techniques for engraving on various surfaces
- Inscribes letters, figures and designs on different materials
- Ensures accuracy and precision in engraving
- Inspects engraved surfaces for quality and adherence to specifications
- Collaborates with clients or designers on engraving requirements

**Occupation**

## 332333 Gunsmith

Modifies, services and repairs rifles, revolvers, other firearms, ammunition and protective gear, and conducts preventive maintenance of weapons used by defence, law enforcement and other organisations.

Registration or licensing is required.

**Specialisation**

- Armourer

**Skill level: 3**

**Main tasks**

- Inspects, tests, maintains and repairs firearms, ammunition and protective gear to ensure proper functioning and compliance with licensing and safety regulations
- Modifies, alters and calibrates rifles, revolvers and other firearms for optimisation

- Performs preventive maintenance tasks including cleaning and lubricating weapons to ensure proper functioning of weapons and armour
- Carries out destruction of obsolete firearms and other controlled items
- Maintains detailed records of equipment maintenance, repairs and inspections
- May oversee the storage, distribution and inventory of ammunition

**Occupation**

## 332334 Locksmith

Installs and maintains locks and related security devices and systems.

Registration or licensing is required.

**Skill level: 3****Main tasks**

- Inspects and assesses security requirements of premises
- Installs locks, deadbolts and other security devices on doors, windows and other entry points
- Repairs and maintains locks and security systems
- Cuts and duplicates keys
- Changes lock combinations and codes
- Installs and maintains electronic security systems, such as alarms and access control systems
- Provides advice and recommendations to clients on security measures
- Responds to emergency lockouts and provides lockout services

**Occupation**

## 332335 Precision Instrument Maker and Repairer

Assembles, calibrates, installs and overhauls mechanical precision instruments and equipment.

**Specialisations**

- Camera Repairer
- Scalemaker
- Scientific Instrument Maker and Repairer

## Skill level: 3

### Main tasks

- Assembles mechanical precision instruments and equipment according to specifications
- Installs precision instruments and equipment in designated locations
- Tests, calibrates and adjusts the performance of precision instruments for accuracy
- Diagnoses and repairs faults in precision instruments
- Cleans and maintains precision instruments and equipment
- Interprets technical drawings, diagrams and manuals for precision instruments and equipment

#### Occupation

## 332336 Saw Technician

Services, repairs, maintains and aligns saw blades, knives and guides for circular, band and other saws, and components of sawing machines.

### Alternative title

- Saw Doctor

### Specialisation

- Saw Sharpener

## Skill level: 3

### Main tasks

- Inspects saw blades to identify any damage or wear
- Dismantles and reassembles precision sawing instruments using hand and power tools, or specially designed machines
- Repairs and replaces defective parts by replacing or adjusting teeth on saw blades, welding or brazing
- Sharpens saw blades using grinding or filing techniques
- Tests the sharpness and performance of saw blades
- Cleans and maintains saw maintenance equipment

#### Occupation

## 332337 Toolmaker

Makes and repairs tools, dies, jigs, fixtures and other precision parts and equipment to fine tolerances for machine tools and other production machinery.

## Specialisations

- Die Caster
- Die Cutter
- Jigmaker (Metal)
- Plastic Mould Maker
- Press-tool Maker

## Skill level: 3

### Main tasks

- Interprets engineering drawings and specifications to determine tool requirements
- Sets up and operates machine tools such as lathes, milling machines and grinders to fabricate intricate tooling components
- Measures and marks out metal or plastic stock and castings using precision measuring instruments
- Fits and assembles parts to make machine tools and maintain industrial machines
- Inspects and maintains dies and moulds to ensure they meet quality standards
- Troubleshoots and maintains damaged or malfunctioning tooling equipment
- Collaborates with engineers and other professionals to develop new tool designs and improve existing tools

### Occupation

## 332338 Watch and Clock Maker and Repairer

Makes, repairs, cleans and adjusts watches and clocks.

## Skill level: 3

### Main tasks

- Diagnoses and repairs watch and clock malfunctions
- Adjusts timing mechanisms and calibrates timepieces
- Cleans, lubricates and assembles watch and clock components
- Repairs or replaces watch and clock parts
- Inspects and tests completed timepieces for accuracy
- Provides repair estimates and advice to customers