

**CARAVAN INDUSTRY NATIONAL
COMPETENCY STANDARDS**

RECREATIONAL VEHICLE SERVICING



Unit THCSER01A

Repair/Service a Recreational Vehicle Chassis

Unit Descriptor This unit deals with the service and or repair of a recreational vehicle chassis other than a motor home.

Element	Performance Criteria
1 Inspect chassis for service/repair	<ul style="list-style-type: none"> • Appropriate drawing plans are selected and reviewed. • Under body inspection is carried out to assess the extent of service required.
2 Estimate and quote the job	<ul style="list-style-type: none"> • Requirements of the job are accurately determined. • Service and/or repair costs are accurately estimated and recorded. • Customers are informed of repair or service estimate. • Advice regarding recommendations on repair and/or service is provided to customers/clients, on request. • Additional services which may be required, are considered and recommended. • Quotation is prepared for customer.
3 Prepare for the job	<ul style="list-style-type: none"> • Transport of materials and components required is co-ordinated. • Materials and components are checked and safely positioned. • Safety hazards associated with repair/service are identified.
4 Service/repair chassis	<ul style="list-style-type: none"> • Repair and/or service is carried out as required. • Chassis is measured for squareness. • Chassis sections requiring repair are prepared for welding. • Sections are cut and jugged into appropriate locations. • Welding is carried out in accordance with established procedures. • All recent and existing welds are inspected to ensure soundness.
5 Service/repair wheel assembly and suspension	<ul style="list-style-type: none"> • Suspension is inspected and serviced in accordance with established requirements and procedures. • Wheel bearings are inspected, repacked or replaced if necessary. • Tyres are checked for unusual or abnormal tread wear. • Tyres are replaced and inflated if required, following established procedures.

Competency Standards

- 6 Service/repair brakes**
- Braking mechanisms are checked for appropriate operation and wear.
 - Electrical braking systems are tested to ensure correct operation.
 - Braking systems are repaired or serviced in accordance with manufacturers' and organisation standards.

Range of Variables

- The servicing organisation could include:
 - sole proprietor
 - sub-contractor
 - sub-contracting manufacturer
 - employer/manufacturer.

- The definition of a recreational vehicle will include:
 - caravan
 - pop-top caravan
 - camper trailer
 - tent trailer
 - 5th wheeler
 - slide-on camper
 - campervan
 - motor home.

- Customers may include:
 - tourists
 - recreational vehicle owners
 - park owners/managers
 - recreational vehicle retailers
 - recreational vehicle service contractors
 - insurance companies.

- Tools and equipment may include:
 - hand tools
 - powered static tools
 - powered portable tools
 - air tools
 - jigs
 - welding equipment.

Competency Standards

- Welding may include:
 - electric welding
 - oxy-acetylene welding
 - MIG
 - spot (pedestal and portable)
 - seam
 - robotic.

- Types of weld may include:
 - edge weld
 - butt weld
 - fillet
 - lap.

- Service may include:
 - general seasonal service
 - accident repair
 - maintenance repair
 - breakdown
 - fitting of accessories.

- Brakes may include:
 - hydraulic
 - electric.

- Suspension may include:
 - fixed
 - independent.

Evidence Guide

Underpinning Skills and Knowledge:

- To demonstrate competence, knowledge of and compliance with the Codes of Practice of the Recreational Vehicle Manufacturers' Association of Australia (RVMAA) is required.
- Work activities must be carried-out in accordance with OH&S statutory and organisational policy and procedures.
- To demonstrate competence, evidence of skills and knowledge in the following areas is required:
 - working drawings of components
 - instructions and specifications
 - correct and safe use of tools and equipment
 - components and products manufactured by the organisation
 - personal protective equipment
 - occupational health and safety regulations
 - general duty of care
 - welding
 - customer service and communication skills
 - recreational vehicle structural knowledge
 - recreational vehicle types and makes
 - planning and organisation of work
 - maintenance of the work area.

Context of Assessment:

- This unit can be assessed on or off the job. Assessment should include practical demonstration in the workplace or within a simulated environment, with access to all necessary equipment and materials. This should be supported by a range of methods to assess underpinning knowledge.

Competency Standards

Critical Aspects of Assessment:

- Evidence should include a demonstrated ability to:
 - deliver a high level of customer service
 - communicate effectively
 - complete work to specifications and plans
 - complete work to meet established timelines
 - comply with all occupational health and safety requirements
 - solve problems as they arise
 - rectify faults encountered
 - maintain a clean and tidy work area.
- Evidence of familiarity with organisation policies, processes and procedures, is also required.

Linkages to Other Units:

- There is a link between this unit and other units. Depending on the industry sector and workplace, combined assessment/training may be appropriate. For example:
 - THCSER03A Repairs Walls and Roof of a Recreational Vehicle

Key Competencies in this Unit	Level
Collecting, Organising and Analysing Information	2
Communicating Ideas and Information	2
Planning and Organising Activities	2
Working with Others and in Teams	2
Using Mathematical Ideas and Techniques	2
Solving Problems	2
Using Technology	-

Unit THC SER02A

Replace Floorcoverings in a Recreational Vehicle

Unit Descriptor This unit deals with the removal and replacement of floorcoverings for a recreational vehicle.

Element	Performance Criteria
<p>1 Estimate the job</p>	<ul style="list-style-type: none"> • Customer needs are determined. • Service and/or repair costs are accurately estimated and recorded. • Customers are informed of repair or service estimate in a professional manner. • Advice regarding recommendations on repair and or service is provided to customers/clients on request. • A range of options are considered and recommended to the customer.
<p>2 Plan and quote job</p>	<ul style="list-style-type: none"> • Plans are read and interpreted. • Floorcovering is selected in accordance with customer requirements. • Quotation is prepared and presented to customer. • Tools are selected to meet the job requirements. • Materials and components are safely moved and positioned to meet job requirements. • Quality of materials and components is checked.
<p>3 Cut and fit floorcovering</p>	<ul style="list-style-type: none"> • Old floorcovering is removed. • Floor is prepared. • Floorcovering is cut to the working drawings or measurements and placed in position to ensure correct fit. • Appropriate sealants and adhesives are applied to the floor. • Floorcovering is laid and trimmed. • Solvents are use to remove excess adhesives and sealants. • Completed job is checked to ensure a quality finish and that customer requirements have been met.

Range of Variables

- The servicing organisation could include: Sole proprietor, sub-contractor, sub-contracting manufacturer, employer/manufacturer.
- The definition of a recreational vehicle will include:
 - caravan
 - pop-top caravan
 - camper trailer
 - tent trailer
 - 5th wheeler
 - slide-on camper
 - campervan
 - motor home.
- Customers may include:
 - tourists
 - recreational vehicle owners
 - park owners/managers
 - recreational vehicle retailers
 - recreational vehicle service contractors
 - insurance companies.
- Tools and equipment may include:
 - hand tools
 - powered static tools
 - powered portable tools
 - impact guns
 - robotic equipment
 - air tools.
- Selected floorcovering materials may include:
 - vinyl – sheet or tiles
 - carpet – full cover of tiles
 - combination of both vinyl and carpet.

Evidence Guide

Underpinning Skills and Knowledge:

- To demonstrate competence, knowledge of and compliance with the Codes of Practice of the Recreational Vehicle Manufacturers' Association of Australia (RVMAA) is required.
- Work activities must be carried-out in accordance with OH&S statutory and organisational policy and procedures.
- To demonstrate competence, evidence of skills and knowledge in the following areas is required:
 - working drawings of recreational vehicles
 - instructions and specifications
 - correct and safe use of tools and equipment
 - components and products available
 - personal protective equipment
 - occupational health and safety regulations
 - general duty of care
 - plastic welding
 - types and properties of floorcovering
 - properties and safe use of sealants and adhesives
 - customer service and communication skills
 - recreational vehicle structure
 - recreational vehicle types and makes
 - use and care of portable and fixed power tools
 - planning and organisation of work
 - maintenance of the work area.

Context of Assessment:

- This unit can be assessed on or off the job. Assessment should include practical demonstration either in the workplace or within a simulated environment, with access to all necessary equipment and materials. This should be supported by a range of methods to assess underpinning knowledge.

Competency Standards

Critical Aspects of Assessment:

- Evidence should include a demonstrated ability to:
 - deliver a high level of customer service
 - communicate effectively
 - complete work to specifications and plans
 - complete work to meet established timelines
 - comply with all occupational health and safety requirements
 - solve problems as they arise
 - rectify faults encountered
 - maintain a clean and tidy workplace.
- Familiarity with organisation policies, processes and procedures should also be demonstrated.

Linkages to Other Units:

- There is a link between this unit and other units. Depending on the industry sector and workplace, combined assessment/training may be appropriate. For example:
 - THCSERO9A Repair Furniture for a Recreational Vehicle.

Key Competencies in this Unit	Level
Collecting, Organising and Analysing Information	2
Communicating Ideas and Information	2
Planning and Organising Activities	2
Working with Others and in Teams	2
Using Mathematical Ideas and Techniques	2
Solving Problems	2
Using Technology	-

Unit THCSER03A

Repair the Walls and Roof of a Recreational Vehicle

Unit Descriptor This unit deals with the repair of the walls and roof of a recreational vehicle.

Element	Performance Criteria
<p>1 Assess repair requirements</p>	<ul style="list-style-type: none"> • Damage and service or repair needs are assessed. • Service and/or repair costs are accurately estimated and recorded. • Customers are informed of repair or service estimate in a professional manner. • Advice regarding recommendations on repair and or service is provided to customers on request.
<p>2 Plan and quote job</p>	<ul style="list-style-type: none"> • Plans are read and interpreted. • Materials are selected in accordance with job and customer requirements. • Quotation is prepared and presented to customer. • Tools are selected to meet the job requirements. • Materials and components are safely moved and positioned to meet job requirements. • Quality of materials and components is checked.
<p>3 Repair walls and roof</p>	<ul style="list-style-type: none"> • Sheeting is removed as necessary. • Furniture, appliances and wall sections are removed as necessary. • Damaged framework is removed and undamaged framework is jigged. • New framework material is cut to required size in accordance with measurement and/or working drawings. • New framework is fitted. • 12V DC and 240V AC is assessed and repaired in accordance with organisation standards, National Electrical Standards and State licensing requirements. • New sheeting is installed. • Plywood is measured, cut, fitted and fixed. • Furniture and accessories are replaced.
<p>4 Repair pop-up roof</p>	<ul style="list-style-type: none"> • Pop-up roof is removed. • Materials are selected in accordance with requirements. • Tools are selected to meet the job requirements. • Required repairs to pop-up roof are carried out. • Roof extension mechanisms are serviced or replaced. • Repaired pop-up roof is fitted into place.

Competency Standards

Range of Variables

- The servicing organisation could include: Sole proprietor, sub-contractor, sub-contracting manufacturer, employer/manufacturer.
- The definition of a recreational vehicle will include:
 - caravan
 - pop-top caravan
 - camper trailer
 - tent trailer
 - 5th wheeler
 - slide-on camper
 - campervan
 - motor home.
- Customers may include:
 - tourists
 - recreational vehicle owners
 - park owners/managers
 - recreational vehicle retailers
 - recreational vehicle service contractors
 - insurance companies.
- Tools and equipment may include:
 - hand tools
 - powered static tools
 - powered portable tools
 - impact guns
 - robotic equipment
 - air tools.
- Jigs may include:
 - fixed
 - portable
 - quick-release grip
 - screwed grips
 - automatic grips.

- Selected materials may include:
 - chipboard
 - custom wood or other composite woods
 - marine ply
 - mechanical rises
 - gas rises
 - fibreglass
 - timber frames
 - aluminium extrusion frames
 - powder coated frames
 - hand painted frames
 - spray painted frames
 - pop rivets
 - nuts, bolts, screws, washers and fasteners, staples, varies lengths and tensions.

Evidence Guide

Underpinning Skills and Knowledge:

- To demonstrate competence, knowledge of and compliance with the Codes of Practice of the Recreational Vehicle Manufacturers' Association of Australia (RVMAA) is required.
- Work activities must be carried-out in accordance with OH&S statutory and organisational policy and procedures.
- To demonstrate competence, evidence of skills and knowledge in the following areas is required:
 - working drawings
 - instructions and specifications
 - correct and safe use of tools and equipment
 - components and products available
 - personal protective equipment
 - occupational health and safety regulations
 - general duty of care
 - customer service and communication skills
 - recreational vehicle structure
 - recreational vehicle types and makes
 - carpentry
 - welding
 - use and care of portable and fixed power tools
 - planning and organisation of work
 - maintenance of the work area.

Context of Assessment:

- This unit can be assessed on or off the job. Assessment should include practical demonstration either in the workplace or within a simulated environment, with access to all necessary equipment and materials. This should be supported by a range of methods to assess underpinning knowledge.

Critical Aspects of Assessment:

- Evidence should include a demonstrated ability to:
 - deliver a high level of customer service
 - communicate effectively
 - complete work to specifications and plans
 - complete work to meet established timelines
 - comply with all occupational health and safety requirements
 - solve problems as they arise
 - rectify faults encountered
 - maintain a clean and tidy work area.

- Familiarity with organisation policies, processes and procedures is also required.

Linkages to Other Units:

- There is a link between this unit and other units. Depending on the industry sector and workplace, combined assessment/training may be appropriate. For example:
 - THCSER03A Repair the Walls and Roof of a Recreational Vehicle

Key Competencies in this Unit	Level
Collecting, Organising and Analysing Information	2
Communicating Ideas and Information	2
Planning and Organising Activities	2
Working with Others and in Teams	2
Using Mathematical Ideas and Techniques	2
Solving Problems	2
Using Technology	-

Unit THCSER04A

Repair/Replace 12 Volt DC Cabling in a Recreational Vehicle

Unit Descriptor This unit deals with fault-finding, repair and replacement of 12 Volt DC electrical wiring of a recreational vehicle chassis and cabin.

Element	Performance Criteria
1 Diagnose 12 V DC electrical wiring fault	<ul style="list-style-type: none">• Fault is discussed and confirmed with customer.• Wiring is inspected and tested.• Electrical working drawings are interpreted.• Fault is identified and cost of repair estimated.• Quotation is communicated to customer.• Materials are selected in accordance with plans and organisation requirements.• Tools and equipment are selected to meet the job requirements and checked to ensure they are working safely.
2 Replace/service damaged 12 V DC wiring	<ul style="list-style-type: none">• Wiring is prepared in accordance with identified fault and/or drawings.• Switches, light fittings and terminal points are checked and replaced if necessary.• Wiring is repaired or re-cabled in accordance with fault and electrical drawings.• Fuse terminal box is checked for appropriate termination and fuses.• Replaced wiring is secured within the frame.
3 Check/repair/replace chassis wiring	<ul style="list-style-type: none">• Chassis lights are checked for correct operation and repaired or replaced if necessary.• Wiring is checked to ensure faultless operation and re-installed into conduit or re-clamped to the chassis if necessary, in accordance with electrical drawings.• Multiple-point pin is checked, tested and replaced if necessary.• Other chassis wiring faults are rectified.• Job is checked to ensure everything is completed, in working order and that all requirements have been met.

Range of Variables

- The manufacturing organisation could include: sole proprietor, sub-contractor, sub-contracting manufacturer, employer/manufacturer.
- The definition of a recreational vehicle will include:
 - caravan
 - pop-top caravan
 - camper trailer
 - tent trailer
 - 5th wheeler
 - slide-on camper
 - campervan
 - motor home.
- This Unit of Competency only applies to DC current. These competencies are not to be used for undertaking training and assessment dealing with AC current. State, National and Territory Authorities require those who repair, service and install AC wiring into a recreational vehicle be licensed in their respective State as an Electrical Contractor.
- Tools and equipment may include:
 - hand tools
 - powered static tools
 - powered portable tools
 - impact guns
 - robotic equipment
 - air tools
 - ohm meters
 - volt meters
 - circuit testers.
- Selected materials may include:
 - nuts, bolts, screws, washers and fasteners, rubber or nylon grommets
 - electrical connectors, terminal blocks, fuse blocks, fuses, 12V DC lights and switches
 - vehicle to chassis male & female connectors
 - chassis wiring conduit and clamps
 - manufactured wiring harness or free cabling.

Competency Standards

- Connection to appliances will include:
 - water heaters
 - water pumps
 - power point provisions will be made for 12 V AC radios and TV's.

Evidence Guide

Underpinning Skills and Knowledge:

- To demonstrate competence, knowledge of and compliance with the Codes of Practice of the Recreational Vehicle Manufacturers' Association of Australia (RVMAA) is required.
- Work activities must be carried-out in accordance with OH&S statutory and organisational policy and procedures.
- To demonstrate competence, evidence of skills and knowledge in the following areas is required:
 - electrical working drawings of components manufactured by the organisation
 - instructions and specifications
 - correct and safe use of tools and equipment
 - components and products manufactured by the organisation
 - personal protective equipment
 - occupational health and safety regulations
 - general duty of care
 - electrical circuits
 - 12v DC Wiring circuits methods and technology
 - use and care of portable & fixed power tools
 - planning and organisation of work
 - maintenance of the work area.

Context of Assessment:

- This unit can be assessed on or off the job. Assessment should include practical demonstration either in the workplace or within a simulated environment, with access to all necessary equipment and materials. This should be supported by a range of methods to assess underpinning knowledge.

Competency Standards

Critical Aspects of Assessment:

- Evidence should include a demonstrated ability to:
 - deliver a high level of customer service
 - communicate effectively
 - complete work to specifications and plans
 - complete work to meet established timelines
 - comply with all occupational health and safety requirements
 - Solve problems as they arise
 - rectify faults encountered
 - maintain a clean and tidy work area.
- Evidence should include familiarity with organisation policies, processes and procedures.

Linkages to Other Units:

- There is a link between this unit and other units. Depending on the industry sector and workplace, combined assessment/training may be appropriate. For example:
 - THTSER03A Repair Walls and Roof of a Recreational Vehicle

Key Competencies in this Unit	Level
Collecting, Organising and Analysing Information	2
Communicating Ideas and Information	2
Planning and Organising Activities	2
Working with Others and in Teams	2
Using Mathematical Ideas and Techniques	2
Solving Problems	2
Using Technology	1

Unit THCSER05A

Repair /Service LP Gas Systems in Recreational Vehicles

Unit Descriptor This unit deals with the skills and knowledge necessary to repair and service LP gas systems in a recreational vehicle. This unit is from the General Plumbing (Trades) - Services National Competency Standards 3011.

Element	Performance Criteria
<p>1 Assess repair requirements</p>	<ul style="list-style-type: none"> • Service or repair needs to LP gas systems are assessed. • System fault is diagnosed and customer is informed. • Service and/or repair costs are accurately estimated and recorded. • Customers are informed of repair or service estimate. • Advice regarding recommendations on repair and/or service is provided to customers on request.
<p>2 Assess system</p>	<ul style="list-style-type: none"> • Plans/specifications are obtained and interpreted. • All necessary and appropriate tasks are planned in conjunction with others involved or affected by the work. • Gas load/design requirements are determined from design drawing or given by qualified source are correct. • Storage capacity is checked through calculation using recognised formulae or tables acceptable to the relevant State/Territory authority. • Capacity is assessed to ensure that it is adequate for the load and does not exceed requirements of AG 601.
<p>3 Evaluate system design</p>	<ul style="list-style-type: none"> • Type of system is evaluated to ensure it is appropriate for given design information. • Regulator size is calculated using acceptable tables or formulae, to ensure the capacity is adequate for the load detailed in the design information. • Location of cylinders complies with Section AG 601 and job specification. • Location of appliance/s complies with Section AG 601. • Piping and ventilation used comply with Section AG 601.
<p>4 Evaluate the system's piping size</p>	<ul style="list-style-type: none"> • Size of piping used is calculated using a recognised formulae or tables. • Size in use for main run and branches is checked to ensure it provides minimum inlet pressure to each appliance in accordance with AG 601. • Piping system is checked to ensure it is not oversized for the dimensions and loads.

Competency Standards

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| 5 | Check position of piping system | <ul style="list-style-type: none">• Set out of piping system is checked to ensure it is in accordance with design drawing or instruction, and complies with AG 601.• Set out of piping system is checked to ensure correct position for appliances and cylinders. |
| 6 | Plan and prepare the job | <ul style="list-style-type: none">• Quotation is prepared and presented to customer.• Appropriate materials, equipment and appliances are selected for the job, and delivery is organised.• Materials, equipment, appliance/s and cylinder/s delivered are checked against the order form/delivery docket, to ensure they correspond and are in an acceptable condition. |
| 7 | Service/repair system | <ul style="list-style-type: none">• System is serviced, fault is repaired or appliance is installed in accordance with manufacturer's specifications and Section AG 601.• Piping system is installed, to comply with AG 601 and job drawing.• Appliances are positioned to ensure adequate air supply and ventilation, and compliance with AG 601.• Consumer instruction plates and labels are located in accordance with AG 601.• Compliance plates are checked and are in accordance with State/Territory requirements. |
| 8 | Test system | <ul style="list-style-type: none">• Regulator is adjusted to provide flow pressure which complies with AG 601.• Gas system tested in accordance with AG 601, and using appropriate apparatus for the work.• Gas system is lit in accordance with the State/Territory requirements.• Ventilation is checked to ensure compliance with requirements.• Test data is recorded in the format required by the State/Territory requirements or job specification. |

Range of Variables

- The manufacturing organisation could include: sole proprietor, sub-contractor, sub- contracting manufacturer, employer/manufacturer.
- The definition of a recreational vehicle may include:
 - caravan
 - pop-top caravan
 - camper trailer
 - tent trailer
 - 5th wheeler
 - slide-on camper
 - campervan
 - motor home.
- Licensing arrangements, as required by National, State and Territory Authorities.
- Systems may be one or two cylinders.

Evidence Guide

Underpinning Skills and Knowledge:

- To demonstrate competence, requirements of AG 601 (Section 4, 5 and 6) must be understood and complied with.
- To demonstrate competence, evidence of skills and knowledge in the following areas is required:
 - nature and characteristics of petroleum products
 - nature and characteristics of LP gas
 - safe application and handling procedures of LP gas
 - staff responsibilities and working practices with petroleum products
 - emergency procedures in the case of an LP gas leak
 - emergency procedures in the case of an LP gas explosion or fire
 - LP gas material safety data
 - applications for portable extinguishing equipment
 - HAZCHEM, HAZMAT signage.
- Evidence of the following skills and knowledge is also required:
 - working drawings of components
 - instructions and specifications
 - personal protective equipment
 - occupational health and safety regulations
 - general duty of care
 - safe use and care of portable & fixed power tools and equipment
 - safe handling & emergency management
 - calculation of storage capacity
 - types of systems
 - calculation of size of piping
 - installation procedures and processes
 - planning and organisation of work
 - maintenance of work area.

Context of Assessment:

- This unit can be assessed on or off the job. Assessment should include practical demonstration either in the workplace or within a simulated environment, with access to all necessary equipment and materials. This should be supported by a range of methods to assess underpinning knowledge.

Critical Aspects of Assessment:

- Evidence should include a demonstrated ability to:
 - deliver a high level of customer service
 - communicate effectively
 - complete work to specifications and plans
 - complete work to meet established timelines
 - comply with all occupational health and safety requirements
 - solve problems as they arise
 - rectify faults encountered
 - maintain a clean and tidy work area.

- Evidence of familiarity with organisation policies, processes and procedures is also required.

Linkages to Other Units:

- There is a link between this unit and other units. Depending on the industry sector and workplace, combined assessment/training may be appropriate. Examples may include but are not limited to:
 - THCMAN07A Install and Connect the Low Pressure Water System in a Recreational Vehicle
 - THCMAN05A Install LP Gas System in a Recreational Vehicle.

Key Competencies in this Unit	Level
Collecting, Organising and Analysing Information	2
Communicating Ideas and Information	2
Planning and Organising Activities	3
Working with Others and in Teams	2
Using Mathematical Ideas and Techniques	2
Solving Problems	2
Using Technology	1

Unit THCSER06A

Remove and Re-Install Furniture and Appliances in a Recreational Vehicle

Unit Descriptor This unit deals with the skills and knowledge necessary to remove and re-install furniture, conveniences, appliances and other products in a caravan. This unit is related to National Furnishings Industry Competency Standard - Hard Stream #HS 18.

	Element	Performance Criteria
1	Determine removal and re-installation requirements	<ul style="list-style-type: none">• Requirements of the job are accurately determined.• Service and/or repair costs are accurately estimated and recorded.• Customers are informed of repair or service required.• Plan or design specifications are interpreted.• Method and type of fixing of furniture, appliances and components are correctly identified.• Plans are made for efficient removal and minimisation of damage to other fixtures and fittings.• Special instructions are recorded.
2	Plan the job	<ul style="list-style-type: none">• Components and equipment required are selected and either ordered or arranged.• Components are checked to ensure all are complete, damage free and meets the requirements of the specification and or job sheet.• Discrepancies and/or faults in components are reported or appropriate action is taken to rectify them.• Appropriate protective materials are applied to existing fixtures and fittings to ensure adequate protection.• On-site difficulties and safety hazards are identified and appropriate action is taken to resolve them.
3	Remove furniture components and appliances	<ul style="list-style-type: none">• Furniture, components and appliances are disassembled and/or removed in accordance with specifications.• Suitable removal methods are applied according to specification.• Components and appliances are checked to ensure they have sustained no damage during removal.• Faulty appliances and/or components are repaired, or transported to a service organisation/manufacturer for service or repair.

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|----------|---|--|
| 4 | Re-install furniture components and appliances | <ul style="list-style-type: none">• Furniture, components and appliances are installed in accordance with specifications.• Suitable installation methods are applied.• Furniture, components and appliances are checked for correct operation, accuracy and stability in accordance with organisation requirements.• Damage caused by installation, or material faults are identified and reported, or, repaired. |
| 5 | Conduct final inspection on completion | <ul style="list-style-type: none">• Completed project is assessed against the requirements of the specification.• Installed furniture, components and appliances are assessed for quality of finish in accordance with requirements.• All paperwork required is completed. |
| 6 | Manage clean up procedures after installation | <ul style="list-style-type: none">• Work areas are cleaned.• All tools and equipment are maintained, cleaned and stored safely in designated locations.• Waste materials are disposed of safely. |

Range of Variables

- The service organisation could include: sole proprietor, sub-contractor, sub-contracting service, employer/manufacturer.
- The definition of a recreational vehicle will include:
 - caravan
 - pop-top caravan
 - camper trailer
 - tent trailer
 - 5th wheeler
 - slide-on camper
 - campervan
 - motor home.
- Tools and equipment may include:
 - basic hand tools
 - portable power tools
 - power operated equipment
 - air tools.
- Selected materials may include:
 - adhesives
 - aluminium
 - cardboard
 - fillers
 - finishes
 - flat boards, composites, ply wood etc
 - glass
 - laminates
 - metals
 - mouldings
 - plastics
 - solid timbers
 - veneers
 - vinyl, and other specified materials.

- Furniture, components and appliances may include:
 - cupboards
 - benches
 - frames
 - mountings
 - doors
 - refrigerator
 - beds
 - microwave oven
 - chemical toilets
 - shower cubicle
 - hand Basin
 - vanity
 - kitchen sink
 - curtains
 - water heater
 - air conditioner
 - fire extinguisher (ADR 44.8.3).

Evidence Guide

Underpinning Skills and Knowledge:

- To demonstrate competence, knowledge of and compliance with the Codes of Practice of the Recreational Vehicle Manufacturers' Association of Australia (RVMAA) is required.
- Installation of appliances must comply with the relevant standards and directives in force at the time of manufacture; e.g. AG 601 for gas appliances, and AS3001 for electrical appliances.
- Work activities must be carried-out in accordance with OH&S statutory and organisational policy and procedures.
- To demonstrate competence, evidence of skills and knowledge in the following areas is required:
 - working drawings of components
 - instructions and specifications
 - regulations and requirements for the disposal of toilet wastes
 - correct and safe use of tools and equipment
 - components and products manufactured by the organisation
 - personal protective equipment
 - occupational health and safety regulations
 - general duty of care
 - carpentry
 - fixing
 - licensing requirements
 - floorcoverings
 - use and care of portable and fixed power tools
 - planning and organisation of work
 - maintenance of the work area.

Context of Assessment:

- This unit can be assessed on or off the job. Assessment should include practical demonstration either in the workplace or through simulation, with access to all necessary equipment and materials. This should be supported by a range of methods to assess underpinning knowledge.

Critical Aspects of Assessment:

- Evidence should include a demonstrated ability to:
 - deliver a high level of customer service
 - communicate effectively
 - complete work to specifications and plans
 - complete work to meet established timelines
 - comply with all occupational health and safety requirements
 - solve problems as they arise
 - rectify faults encountered
 - maintain a clean and tidy workplace.

- Evidence of familiarity with organisation policies, processes and procedures is also required.

Linkages to Other Units:

- There is a link between this unit and other units. Depending on the industry sector and workplace, combined assessment/training may be appropriate. Examples may include but are not limited to:
 - THCMAN03A Construct and Install the Walls and Roof for a Recreational Vehicle
 - THCMAN09A Build Furniture For A Recreational Vehicle
 - THCMAN06A Install Furniture and Appliances.

Key Competencies in this Unit	Level
Collecting, Organising and Analysing Information	2
Communicating Ideas and Information	2
Planning and Organising Activities	2
Working with Others and in Teams	2
Using Mathematical Ideas and Techniques	1
Solving Problems	2
Using Technology	2

Unit THC SER07A

Service/Repair Water System within a Recreational Vehicle

Unit Descriptor This unit deals with the service and or repair of a water supply system within a recreational vehicle.

Element	Performance Criteria
1 Provide a professional level of customer/client service	<ul style="list-style-type: none">• Customers/clients are greeted and acknowledged in a warm friendly manner.• Relationships with customers/clients are established.• Customers/clients needs are met.• Customers/clients complaints are dealt with in an appropriate and professional manner.• Advice regarding recommendations on repair and or service is provided to customers/clients on request in a professional manner.• Up-selling of service/maintenance or repair is considered and conducted with a view to meeting customers/clients needs and carried out in a professional manner.• Client is informed and appropriate action taken if repairs or service is underestimated – such action is taken at a timely stage and in an appropriate manner with though given to clients loyalty and future business opportunities and appropriate action is taken.
2 Plan repair or service water system	<ul style="list-style-type: none">• Working drawings are interpreted.• Fault is diagnosed and customer is informed.• Service and/or repair costs are accurately estimated and recorded.• Customers are informed of repair or service estimate.• Service is planned and outlined to customer.• Tools and materials are selected to meet the requirements of the job.• Type and size of tubing and fittings is selected to meet the requirements of the job.• Tools and equipment are checked.

- 3 Repair/service water system**
- Components for the service and or repair are assembled.
 - Service /repair work is carried in accordance with customer requirements.
 - Replacement tubing is secured within the frame.
 - Water fittings are selected in accordance with design plans.
 - Water fittings are replaced in accordance with specifications.
 - System is pressure tested and leaks are identified and repaired.
 - Mains water inlet and water pump is tested.
- 4 Service/repair drainage**
- Drainage fittings are inspected, tested and replaced/repared if necessary.
 - Drainage outlets are checked to ensure they are secure and are re-saddled if necessary.
 - Drains are tested and faults rectified.
 - Job is checked to ensure that everything is completed, in working order, and that all requirements have been met.

Range of Variables

- The service organisation could include: sole proprietor, sub-contractor, sub-contracting service, employer/manufacturer.
- The definition of a recreational vehicle will include:
 - caravan
 - pop-top caravan
 - camper trailer
 - tent trailer
 - 5th wheeler
 - slide-on camper
 - campervan
 - motor home.
- This Unit of Competency only applies to the repair, service and tubing of water supply within a recreational vehicle and is not to be used for the development of training material for plumbing. In the event that a recreational vehicle is connected to a mains water supply, a non return valve approved by the State, National and Territory Authority must be installed at the water source.
- Tools and equipment may include:
 - hand tools
 - powered static tools
 - powered portable tools
 - impact guns
 - robotic equipment
 - air tools
 - water pressure test kit.
- Selected materials may include:
 - nuts, bolts, screws, washers and fasteners, saddles, clamps and rubber or nylon grommets
 - hard drawn tubing
 - silicon, sealants
 - O rings & fibre washers
 - PVC drainage, saddles & clamps.

Evidence Guide

Underpinning Skills and Knowledge:

- To demonstrate competence, knowledge of and compliance with the Codes of Practice of the Recreational Vehicle Manufacturers' Association of Australia (RVMAA) is required.
- Work activities must be carried-out in accordance with OH&S statutory and organisational policy and procedures.
- To demonstrate competence, evidence of skills and knowledge in the following areas is required:
 - working drawings of components manufactured by the organisation
 - instructions and specifications
 - correct and safe use of tools and equipment
 - components and products manufactured by the organisation
 - personal protective equipment
 - occupational health and safety regulations
 - general duty of care
 - welding
 - plumbing
 - work planning and organisation
 - use and care of portable and fixed power tools
 - maintenance of the work area.

Context of Assessment:

- This unit can be assessed on or off the job. Assessment should include practical demonstration either in the workplace or within a simulated environment, with access to all necessary equipment and materials. This should be supported by a range of methods to assess underpinning knowledge.

Critical Aspects of Assessment:

- Evidence should include a demonstrated ability to:
 - deliver a high level of customer service
 - communicate effectively
 - complete work to specifications and plans
 - complete work to meet established timelines
 - comply with all occupational health and safety requirements
 - Solve problems as they arise
 - Rectify faults encountered.

Competency Standards

- Evidence of familiarity with organisation policies, processes and procedures is also required.

Linkages to Other Units:

- There is a link between this unit and other units. Depending on the industry sector and workplace, combined assessment/training may be appropriate. Examples may include but are not limited to:
 - THCMAN05A Install an LP Gas System In A Recreational Vehicle
 - THCMAN06A Install Furniture and Appliances In A Recreational Vehicle.

Key Competencies in this Unit	Level
Collecting, Organising and Analysing Information	2
Communicating Ideas and Information	2
Planning and Organising Activities	2
Working with Others and in Teams	2
Using Mathematical Ideas and Techniques	2
Solving Problems	2
Using Technology	-

Unit THC9908A

Replace Damaged Sheeting and Glazing of a Recreational Vehicle

Unit Descriptor This unit deals with the replacement of sheeting and repair of windows, door, trims and decals of a recreational vehicle.

Element	Performance Criteria
<p>1 Plan and prepare the replacement of sheeting</p>	<ul style="list-style-type: none"> • Damage to sheeting is evaluated and required service and/or repair are determined. • Manufacturer’s specifications or drawings are reviewed and interpreted. • Service and/or repair costs are accurately estimated and recorded. • Customers are informed of repair or service estimate. • Replacement metal sheeting is selected. • Tools, materials and components are selected to meet the requirements of the job. • Components and materials are obtained if necessary, and quality is checked. • Materials and components are safely moved and positioned to meet production requirements.
<p>2 Assemble replacement components</p>	<ul style="list-style-type: none"> • Replacement metal sheeting is measured and marked in accordance with specifications and/or drawings. • Replacement windows and door are selected in accordance with specifications. • Components are assembled as required for replacement. • Jigs are used for specified components and/or products in a safe and effective manner. • Jigs are maintained, cleaned and safely stored in designated locations. • Sequence of assembly is conducted in accordance with organisation procedures. • Assembled components are checked for accuracy according to organisation procedures. • Quality control procedures are applied in accordance with organisation procedures. • Variation in product quality due to process or material faults is identified and reported in accordance with organisation procedures.

Competency Standards

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| 3 | Remove and replace damaged sheeting and windows | <ul style="list-style-type: none">• Damaged sheeting is removed.• Damaged glazing is removed.• Replacement sheeting is prepared for cutting.• Sheeting is cut to meet replacement requirements.• Framework of the recreational vehicle is prepared. |
| 4 | Fit windows, door and accessories | <ul style="list-style-type: none">• Replacement windows are fitted and sealed in accordance with requirements.• Replacement trims and flashings are fitted and sealed in accordance with manufacturer's procedures.• Replacement corners and edges of the recreational vehicle are flashed, trimmed and sealed in accordance with manufacturer's procedures.• Replacement door is swung, flashings are sealed and door locks are fitted in accordance with manufacturer's requirements.• Damaged accessories are replaced in accordance with requirements.• Excess sealant is safely removed with solvent. |
| 5 | Complete finishing procedures | <ul style="list-style-type: none">• Work is inspected and areas are touched-up where necessary.• Striping, branding and decals are applied if necessary in accordance with requirements.• Recreational vehicle is cleaned throughout.• A final inspection of the recreational vehicle is carried-out to ensure all specifications have been met and required quality achieved. |

Range of Variables

- The manufacturing/service organisation could include: sole proprietor, sub-contractor, sub-contracting manufacturer/service, employer/manufacture.
- The definition of a recreational vehicle will include:
 - caravan
 - pop-top caravan
 - camper trailer
 - tent trailer
 - 5th wheeler
 - slide-on camper
 - campervan
 - motor home.
- Tools and equipment may include:
 - hand tools
 - powered static tools
 - powered portable tools
 - air tools
 - robotic.
- Selected materials may include:
 - steel, aluminium
 - adhesives
 - aluminium trimmings, extrusions
 - moulded plastic or fibreglass, trimmings, extrusions
 - fillers
 - finishes
 - glass, plastic, perspex
 - mouldings
 - plastics
 - cleaning agents
 - solvents
 - polish
 - touch-up material
 - foam, rubber, nylon sealants
 - rivets, screws, nails, bolts, nuts, washers
 - adhesive striping and decals.

Evidence Guide

Underpinning Skills and Knowledge:

- To demonstrate competence, knowledge of and compliance with the Codes of Practice of the Recreational Vehicle Manufacturers' Association of Australia (RVMAA) is required.
- Work activities must be carried-out in accordance with OH&S statutory and organisational policy and procedures.
- To demonstrate competence, evidence of skills and knowledge in the following areas is required:
 - design requirements for caravan manufacture
 - working drawings of components
 - instructions and specifications
 - correct and safe use of tools and equipment
 - components and products manufactured by the organisation
 - personal protective equipment
 - occupational health and safety regulations
 - general duty of care
 - welding
 - carpentry
 - sheetmetal
 - work planning and organisation
 - use and care of portable and power tools
 - maintenance of the work area.

Context of Assessment:

- This unit can be assessed on or off the job. Assessment should include practical demonstration either in the workplace or within a simulated environment, together with access to all necessary equipment and materials. This should be supported by a range of methods to assess underpinning knowledge.

Critical Aspects of Assessment:

- Evidence should include a demonstrated ability to:
 - deliver a high level of customer service
 - communicate effectively
 - complete work to specifications and plans
 - complete work to meet established timelines
 - comply with all occupational health and safety requirements
 - solve problems as they arise
 - rectify faults encountered
 - maintain a clean and tidy work area.

- Evidence of familiarity with organisation policies, processes and procedures is also required.

Linkages to Other Units:

- There is a link between this unit and other units. Depending on the industry sector and workplace, combined assessment/training may be appropriate. For example:
 - THCMAN03A Construct and Install the Walls and Roof for a Recreational Vehicle.

Key Competencies in this Unit	Level
Collecting, Organising and Analysing Information	2
Communicating Ideas and Information	2
Planning and Organising Activities	2
Working with Others and in Teams	2
Using Mathematical Ideas and Techniques	2
Solving Problems	2
Using Technology	-

Unit THCSER09A

Repair Furniture for a Recreational Vehicle

Unit Descriptor This unit deals with the skills and knowledge necessary to repair recreational vehicle furniture. This unit is related to the National Furnishings Industry Competency Standard - Hard Stream #HS 14 & 15.

Element	Performance Criteria
1 Plan and prepare the job	<ul style="list-style-type: none">• Damaged furniture is evaluated and repair/replacement needs are identified.• Repair/replacement costs are accurately estimated and recorded.• Customers are informed of repair/replacement estimate.• Product specifications are read and assessed, and accurate information about components, parts and accessories is obtained.• Special instructions are noted.
2 Prepare working drawings and/or set out rods	<ul style="list-style-type: none">• Repair/replacement criteria are identified.• Set-outs and set-out rods are produced in accordance with requirements and replacement specifications.• Components shown on set-outs are labelled correctly and according to specifications.• Prepared working drawings are accurate, precise and legible.
3 Develop cutting lists for specified replacement furniture	<ul style="list-style-type: none">• Cutting lists are developed to meet the requirements of furniture for repair or replacement.• Cutting lists comply with set –outs or set-out rods.• Measurements prescribed for each component are accurate, concise, recorded legibly and within specified tolerances.• Quantities of each component are accurate.
4 Organise materials for the job	<ul style="list-style-type: none">• Materials, components, parts and accessories are evaluated and selected for suitability and durability, according to job requirements.• The movement of materials, components and equipment is organised.• Quality of materials and components is monitored during transportation.• Materials are safely positioned to meet repair and/or replacement purposes.

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| 5 | Select machines and equipment | <ul style="list-style-type: none">• Machines and/or equipment to prepare specified components are correctly selected.• Machines and/or equipment are set up in accordance with production objectives and manufacturer's instructions.• All guards, guides and feeding devices are set in accordance with relevant statutory regulations.• Safety and operational checks are performed in accordance with manufacturers' recommendation and relevant statutory regulations. |
| 6 | Prepare furniture components | <ul style="list-style-type: none">• Furniture components required for the job are produced, according to specified measurements, as stated on cutting lists.• Jigs for specified furniture components are prepared and used, where required.• Machines and/or equipment are monitored for unusual sound, vibration, worn or damaged parts, during production. |
| 7 | Lay out components, parts and accessories | <ul style="list-style-type: none">• Components, parts and accessories are laid out, correctly identified and labelled according to working drawings.• Materials and finish required for components and/or products are correctly identified.• Adhesives for bonding materials are selected in accordance with climatic conditions.• Furniture components are assembled for specified products in accordance with manufacturer's organisation procedures.• Assembled components are checked for accuracy according to replacement product set-outs. |
| 8 | Install replacement furniture and make repairs | <ul style="list-style-type: none">• Replacement furniture is installed in accordance with specifications.• Replacement parts are installed.• Replacement furniture and parts are installed securely, using appropriate methods and materials.• Accessories are attached where required.• Repairs required are completed.• Surface finishes are applied according to job specifications and requirements.• A final inspection of the recreational vehicle is carried-out to ensure all specifications have been met and required quality achieved. |

Range of Variables

- The manufacturing/service organisation could include: sole proprietor, sub-contractor, sub-contracting manufacturer/service, employer/manufacturer.
- The definition of a recreational vehicle will include:
 - caravan
 - pop-top caravan
 - camper trailer
 - tent trailer
 - 5th wheeler
 - slide-on camper
 - campervan
 - motor home.
- Tools and equipment may include:
 - hand tools
 - powered static tools
 - powered portable tools
 - jigs
 - lifting equipment.
- Selected materials may include:
 - adhesives
 - aluminium
 - cardboard
 - fillers
 - finishers
 - flat boards, composites, plywood etc
 - glass
 - laminates
 - metals
 - mouldings
 - plastics
 - solid timbers
 - veneers
 - vinyl, and other specified materials.

- Furniture components may include:
 - cupboards
 - benches
 - tables
 - frames
 - beds and bunks
 - mountings
 - partitioning
 - doors.

- Machines and equipment may include basic manually operated machines and equipment, advanced machinery, fully automated and computerised machinery and/or equipment.

Evidence Guide

Underpinning Skills and Knowledge:

- To demonstrate competence, knowledge of and compliance with the Codes of Practice of the Recreational Vehicle Manufacturers' Association of Australia (RVMAA) is required.
- Work activities must be carried-out in accordance with OH&S statutory and organisational policy and procedures.
- To demonstrate competence, evidence of skills and knowledge in the following areas is required:
 - working drawings of components
 - instructions and specifications
 - correct and safe use of tools and equipment
 - components and products available
 - personal protective equipment
 - occupational health and safety regulations
 - general duty of care
 - carpentry
 - cabinet making
 - floorcovering
 - planning and organisation of work
 - use and care of portable & fixed power tools
 - maintenance of the work area.

Context of Assessment:

- This unit can be assessed on or off the job. Assessment should include practical demonstration either in the workplace or through simulation, with access to all necessary equipment and materials. This should be supported by a range of methods to assess underpinning knowledge.

Critical Aspects of Assessment:

- Evidence should include an ability to:
 - deliver a high level of customer service
 - communicate effectively
 - complete work to specifications and plans
 - complete work to meet established timelines
 - comply with all occupational health and safety requirements
 - solve problems as they arise
 - rectify faults encountered
 - maintain a clean and tidy work area.
- Evidence of familiarity with organisation policies, processes and procedures is also required.

Linkages to Other Units:

- There is a link between this unit and other units. Depending on the industry sector and workplace, combined assessment/training may be appropriate. Examples may include but are not limited to:
 - THCMAN06A Install Furniture and Appliances in a Recreational Vehicle
 - THCMAN09A Build Furniture for a Recreational Vehicle.

Key Competencies in this Unit	Level
Collecting, Organising and Analysing Information	2
Communicating Ideas and Information	1
Planning and Organising Activities	2
Working with Others and in Teams	1
Using Mathematical Ideas and Techniques	2
Solving Problems	2
Using Technology	1