**NZQA**

**Approved**

Achievement standard: 91057 Version 3

Standard title: Implement basic procedures using resistant materials to make a specified product

Level: 1

Credits: 6

Resource title: Casing the joint

Resource reference: Construction and Mechanical Technologies VP-1.20 v2

Vocational pathway: Manufacturing and Technology

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| Quality assurance status | These materials have been quality assured by NZQA. NZQA Approved number A-A-02-2015-91057-02-7320 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material.Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

Achievement standard: 91057

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Learner instructions

# Introduction

This assessment activity requires you to implement basic procedures using resistant materials to make a casing for a chemically resistant sensor. The sensor is used to measure the temperature of irrigation solutions containing fertiliser and acid.

You are going to be assessed on how efficiently you implement basic procedures using resistant materials to make the casing.

The following instructions provide you with a way to structure your work so you can demonstrate what you have learnt and achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions and modify them if necessary to suit their learners.

# Task

You are going to make a casing for a chemically resistant sensor used to measure the temperature of irrigation solutions containing fertiliser and acid. Your independence, accuracy and efficiency (including how well you economise time, effort and materials) will be taken into account as you implement procedures to make the casing.

The casing must meet the specifications given/agreed to by your assessor/educator. You must follow a step-by-step guide. This may be provided or you may develop it yourself and have it checked by your assessor/educator.

## Specifications

Read the specifications provided or devise your own. If your assessor/educator has provided specifications, read them and, if necessary, talk to your assessor/educator to ensure you understand them. Alternatively, devise your own (see Resource A) and check with your assessor/educator that the specifications and the materials you intend using are suitable.

## Step-by-step guide

Read the step-by-step guide provided or write your own step-by-step guide for making your casing.

## Techniques

Familiarise yourself with the techniques you will need to use as you make your casing.

The following range of techniques must be used:

* one or more of measuring/marking out
* one or more of sizing/shaping/forming
* one or more of joining/assembly
* one or more of finishing.

## Materials

Select your materials. Make sure you are familiar with the testing required to ensure your final casing meets your specifications.

Decide how you will keep evidence of what you did, how it worked, and how you addressed any problems. For example, this might include making notes on your step-by-step guide to show the results of the tests you carried out and taking photographs to show the process you followed.

## Make your casing

Make your casing to meet your specifications, following your step-by-step guide.

Your assessor/educator will need to:

* see evidence of the accuracy of your completed casing
* know about the tests you carry out to make sure your casing meets your specifications
* make a judgement about how independently you work as you carry out your techniques and tests and how well you make use of time and materials and the effort you put in.

# Resource A

## Sample specifications

The casing is:

* made using appropriate construction for the materials selected
* made to finished size as shown in drawings
* functional for its intended purpose/s (this/these might be, for example, about housing and protection of the electronic components).

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material. Using this assessment resource without modification may mean that learners’ work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This activity requires learners to efficiently implement basic procedures using resistant materials to make a casing for a chemically resistant sensor.

# Conditions

This is an individual assessment task.

Assessors/educators are required to assess the ways in which the techniques and tests are implemented as well as the quality of the outcome.

# Resource requirements

You will need to provide:

* access to a workshop with the necessary fixed machine, hand tools and equipment to meet specifications
* materials such as wood, screws, glues, nails, oils, stains and paints that are needed to meet specifications
* the electronic equipment that the casing will house
* workshop manuals and codes of safety for the machines used
* specifications and a step-by-step guide – or examples that learners can refer to when creating their own
* access to a camera (so that learners can take and annotate photographs to use as evidence).

# Additional information

The work environment must provide the tools, equipment and materials that learners need in order to work safely to make their casing.

The materials and the techniques followed must provide sufficient scope for the learner to implement basic procedures using resistant materials to make a casing that meets specifications (or to make another negotiated product). These specifications should be short statements that describe the function of the finished casing. They should not describe a particular skill or efficiency.

# Assessment schedule: Construction and Mechanical Technologies 91057 – Casing the joint

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner implements basic procedures using resistant materials to make a specified product by:* following a set of techniques to make a casing that meets specifications

For example:The learner uses one or more techniques from each of the following categories:* + measuring/marking out e.g. uses a ruler and marking pencil to measure material correctly and to mark out points and centre lines
	+ sizing/shaping/forming e.g. moulds resin to match their plan; makes grooves; files to get the right shape
	+ joining/assembly e.g. they glue/staple/nail/ bolt/weld
	+ finishing/detailing e.g. sand, paint/oil/stain, buff and polish.

The learner makes the casing to the size of the drawings; it fits the sensor etc. However not all joints may meet the tolerances of the drawings; and there may be some machining blemishes and glue still apparent.* undertaking a range of appropriate tests to demonstrate the casing meets specifications

For example:The learner carries out testing of joints; visually checks the mating of pieces before gluing, the straightness of edges, the alignment of the component cavities, surface quality measured to check the pieces are the right thickness and the corners are at right angles; temperature dissipation from the electronics.* applying techniques to comply with the relevant health and safety regulations

For example:The learner follows the workshop code of conduct and the instructions for safe use of machines.*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner skilfully implements basic procedures using resistant materials to make a specified product by:* showing independence and accuracy in following a set of techniques to make a casing that meets specifications

For example:The learner independently uses one or more techniques from each of the following categories:* + measuring/marking out e.g. uses a ruler and marking pencil to accurately mark out points and centre lines and to measure material correctly
	+ sizing/shaping/forming e.g. cuts pieces precisely to the plan; makes tidy grooves to fit the sensor accurately; files and sands to get a neat finish
	+ joining/assembly e.g. clamps with no excess glue showing; they staple/nail/bolt/weld so pieces are joined precisely
	+ finishing/detailing e.g. sand; paint/oil/stain, buff and polish to achieve a neat finish.

The learner independently makes the casing to the size of the drawings; it fits the sensor etc. * independently and accurately carrying out a range of appropriate tests to demonstrate the casing meets specifications

For example:The learner independently tests joints to ensure they perform exactly as intended; visually checks to ensure precision in the mating of pieces before gluing, the straightness of edges, the alignment of the component cavities, surface quality; measures to check the pieces are the right thickness and the corners are at right angles.* applying techniques to comply with relevant health and safety regulations

For example:Without prompting, the learner follows the workshop code of conduct and the instructions for safe use of machines.*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner efficiently implements basic procedures using resistant materials to make a specified product by:* showing independence and accuracy in following a set of techniques to make a casing that meets specifications, in a manner that economises time, effort, and materials

For example:The learner independently uses one or more techniques from each of the following categories:* + measuring/marking out e.g. uses a ruler and marking pencil to accurately mark out points and centre lines and to measure material correctly and to ensure minimum wastage
	+ sizing/shaping/forming e.g. cut pieces precisely to the plan with minimal wastage of materials; uses jigs to save time and effort in making tidy grooves to fit the components accurately; files and sands to get a neat finish
	+ joining/assembly e.g. clamps with no excess glue showing; they staple/nail/bolt/weld so pieces are joined precisely, not using trial and error
	+ finishing/detailing e.g. sand; paint/oil/stain; buff and polish to achieve a neat finish.

The learner independently makes the casing to the size of the drawings; it fits the sensor etc. It is completed in the agreed time frame.* independently and accurately carrying out a range of appropriate tests to demonstrate the casing meets specifications, in a manner that economises time, effort, and materialsFor example:

The learner independently tests joints to ensure they perform exactly as intended; visually checks to ensure precision in the mating of pieces before gluing, the straightness of edges, the alignment of the component cavities, surface quality; measures to check the pieces are the right thickness and the corners are at right angles. These tests are done at such a point to ensure that materials, time and effort are not wasted redoing things.* applying techniques to comply with relevant health and safety regulations

For example:Without prompting, the learner follows the workshop code of conduct and the instructions for safe use of machines.*The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.