SQA/SNIJIB

Training and Assessment Programme for SVQ 3 SVQ level 3 Domestic Plumbing and Heating

H98L 04: Install Sheet Weather Protection

Stage 1

Syllabus Codes IWS 1.1–1.5

Stage 2

Syllabus Codes IWS 2.1–2.2

Learning and delivery guidance

This additional Unit covers practical skills required by the industry for the installation of sheet lead to common weathering situations; from initial theory input to practical installations. Delivering this Unit to a group of learners will involve many teaching and learning techniques and approaches.

It is recommended that teaching and learning take place in an environment where learners experience simulated roofing practices with the use of formers to enhance the learning experience. The use of modern teaching and learning aids, eg ‘smart’ boards and proprietary interactive teaching materials would also greatly enhance the learning experience.

The syllabus document is set out in a manner that allows the lecturer to determine the areas of work to be covered within a certain time frame. It is envisaged that this Unit will be offered over the first two years of ‘off the job’ training. It is presented in two syllabus sections with each section concluding with a summative assessment.

The programme structure (see Guidance for Assessors) outlines how the learner should progress through the Unit and how it integrates with the other Units of the qualification.

Assessment

A holistic approach has been adopted for the formative and summative aspects of the practical installation part of this Unit. Formative and summative practical assessments are supplied for Years 1 and 2.

Knowledge assessments will be undertaken using the SOLAR e-assessment method. This process is completed entirely online and randomly selects the assessment questions from a bank of questions which cover the Unit content. This Unit has five practical assessments over the two years of the Unit’s duration.

To attain the Unit, learners must successfully achieve the performance criteria identified in the following syllabus and assessment material.

Syllabus

IWS 1.1 Statutory and advisory documents relating to the safe handling and use of sheet lead

Assessment method: SOLAR e-assessment (to be delivered in the H&S Legislation Unit)

- Health and safety requirements as set out in the Health and Safety at Work Act and the Control of Lead at Work Regulations
- European Council Directive 82/605/EEC on the protection of workers from the risks related to metallic lead and its ionic compounds at work
- Risk assessment as required by the provisions of the Management of Health and Safety at Work Regulations
- Learners should be made aware of the necessity for high standards of personal hygiene to prevent the ingestion of lead substances, and for safe handling, storage and disposal
- Environmental friendly working procedures

IWS 1.2 Design consideration when using lead sheet for weatherings

Assessment method: SOLAR e-assessment

- Preparation of surfaces to receive the lead
- Calculate maximum areas of lead to be used to allow for thermal movement
- Reference to be made to weight, thickness and codes for given situations
- Resistance to corrosion of lead in contact with other materials: metals, timbers, sealants, concrete, masonry, mortars, lichen and moss growth, condensation
- Methods of providing ventilation for timber protection
- Patination, types of underlay for roof levelling
- Reducing condensation and noise reduction
- Fixing methods using copper and stainless steel clips, wedges
- Physical properties of lead
- Details LDA BS or BS ENs
- Tools used in sheet leadwork

IWS 1.3 Safe working practices in the use of oxy-acetylene equipment and lead welding procedures

Assessment method: SOLAR e-assessment/Practical

- Assemble and set up oxy-acetylene equipment
- Select appropriate torch and nozzle for lead welding
- Emergency procedures and leak detection in equipment
- Colour coding of cylinders, hoses, threads (left and right hand)
- Regulators, blow-back prevention devices
- Cylinder shapes and sizes
- Flame types: neutral, carbonising and oxidising
- Personal protective equipment (PPE)
- Safe use of equipment

IWS 1.4 Form a box gutter with drip edges by bossing and forming, perform lead welded seams for flat lead sheet

Assessment method: Practical

- Measure, mark and set out for the bossing and forming of internal corners and drip edges

The minimum criteria is one internal corner and one drip edge.

- Prepare and set up to lead weld a flat-butted seam

Regular observation by the assessor will be required to monitor that the assessment criteria are being achieved throughout the practical exercises.

IWS 1.5 Form a lead slate piece by bossing and welding sheet lead

Assessment method: Practical

- Measure, mark, set out and prepare for lead welding, a slate piece to suit a roof angle of 30° to 45° incline
- Providing methods of upturning the lead over a tilting fillet below slates or tiles

IWS 2.1 Form a chimney weathering by bossing and welding sheet lead

Assessment method: Practical

- Measure, mark and set out for the (part) completion of chimney weathering (ie aprons, side/stepped flashings, soakers, secret gutters, back gutter and cover flashings)
- Weathering of chimneys in sheet lead by bossing and lead welding
- Weathering details where chimney flashings adjoin pitched roof covering, marking and preparing of gusset pieces, insertion into raggles in brick or block types finishes
- Providing methods of upturning the lead over a tilting fillet below slates or tiles

IWS 2.2 Form a dormer roof weathering by bossing and welding sheet lead

Assessment method: Practical

- Measure mark and set out for the (part) dormer roof weathering details in sheet lead including methods of jointing bays (solid rolls)
- Details at drip edges and sloping roofs — solid roll details at drip edges and sloping roofs
- Intersections between dormer tops and sloping roofs at drip edges, dormer corners
- Lead welding of solid rolls, marking and preparing of gusset pieces
- Providing methods of upturning the lead over a tilting fillet below slates or tiles

The minimum criteria is the completion of the lead welded undercloak and the bossed roll end.

IWS Section 1.1 — Information for assessors

1.1 Statutory and advisory documents relating to the safe handling and use of sheet lead

This will enable the learner to list appropriate statutory instruments, BS/BS EN standards or other advisory documents relating to the safe handling and use of lead sheet in building.

Acceptable performance in this Unit will be satisfactory achievement of all the assessments:

- SOLAR e-assessment 1.1 (this will be delivered and assessed as part of the H94X 04 Apply Health and Safety and Environmental Legislation in the Building Services Engineering Sector Unit)
- Practical based activity work with health and safety monitoring observed throughout the Unit at all times

Performance Criteria

(a) The documents identified as relating to handling and use of sheet lead are correct in terms of statutory instruments.
(b) The stated hazards from working with lead are correct in terms of statutory and other regulations.
(c) Methods of preventing hazard from working with lead are correct in terms of statutory instruments.

Satisfactory achievement of Section 1.1 will be based on the learner completing the assessment in accordance with all the above Performance Criteria.

Content/Context

Corresponding to IWS 1.1

- Health and safety requirements as set out in the Health and Safety at Work Act, the Control of Lead at Work Regulations, European Council Directive 82/605/EEC on the protection of workers from the risks related to metallic lead and its ionic compounds at work
- Risk assessment as required by the provisions of the Management of Health and Safety at Work Regulations
- Learners should be made aware of the necessity for high standards of personal hygiene to prevent the ingestion of lead substances

Suggested learning and teaching approaches

Learners should be encouraged to assess the risks (in conjunction with the statutory instruments) whilst working with lead in the workshop/work environment. Health and safety requirements as set out in the Health and Safety at Work Act, the Control of Lead at Work Regulations, European Council Directive 82/605/EEC on the protection of workers from the risks related to metallic lead and its ionic compounds at work. Risk assessment as required by the provisions of the Management of Health and Safety at Work Regulations.

Learners should be made aware of the necessity for high standards of personal hygiene to prevent the ingestion of lead substances, and for safe handling, storage, and disposal, environmentally working procedures.

IWS Section 1.2 — Information for assessors

1.2 Design considerations when using sheet lead for weathering

This will enable the learner to develop skills in the selection of appropriate codes of sheet lead and in the design of layouts for sheet weathering to buildings.

Acceptable performance in this Unit will be satisfactory achievement of all the assessments:

- SOLAR assessment
- Practical based activity work with health and safety monitoring observed throughout the Unit at all times

Performance Criteria

(a) The code of lead selected is appropriate in terms of location and purpose.
(b) The maximum area stated for a single piece of lead is correct in terms of its code.
(c) The method stated for provision for expansion of the lead is appropriate in terms of location.
(d) The height stated for the step is appropriate in terms of preventing ingress of moisture due to capillary attraction.

Satisfactory achievement of Section 1.2 will be based on the learner completing the assessment in accordance with all the above Performance Criteria.

Content/Context

Corresponding to IWS 1.2

- Preparation of surfaces to receive the lead, maximum areas of lead to be used, methods of providing for expansion
- Details of weathering used for abutments, layouts for flat roofs, etc

Suggested learning and teaching approaches

Learners should be encouraged to study appropriate BS or BS ENs, Lead Development Association publications and textbooks for details of lead roof coverings, flashings etc. Use could be made of practical installations in workshop areas to demonstrate the use of raggles, tilting fillets, etc.

IWS Section 1.3 — Information for assessors

1.3 Safe working practices in the use of oxy-acetylene equipment and lead welding procedures

This will enable the learner to assemble and set up oxy-acetylene equipment, select appropriate torch and nozzle for lead welding, emergency procedures and leak detection in equipment, colour coding of cylinders, hoses, threads (left and right hand), regulators, blow back prevention devices, cylinder shapes and sizes, flame types, neutral, carbonising, and oxidising, PPE protection, safe use of equipment.

Acceptable performance in this Unit will be satisfactory achievement of all the assessments:

- SOLAR assessment
- Practical based activity work with health and safety monitoring observed throughout the Unit at all times

Performance Criteria

The learner:

(a) selects appropriate personal protective equipment
(b) assembles equipment properly
(c) tests equipment to ensure absence of leaks
(d) selects nozzle size appropriate to the task
(e) adjusts operating pressures appropriate to the task
(f) adjusts gas to obtain flame type appropriate to the task
(g) follows safe working practices relevant to the task.

IA Practical Assessment

The learner will be presented with the cylinders and all associated equipment required to form a typical oxy-acetylene plant.

The learner will be required to:

1 select appropriate personal protective equipment
2 assemble and test the plant
3 select appropriate nozzle
4 set operating pressures
5 light and adjust an appropriate flame type
6 select appropriate hoses and regulators for the completion of the oxy-acetylene plant

Satisfactory achievement of Section 1.3 will be based on the learner completing the assessment in accordance with all the above Performance Criteria.

Suggested learning and teaching approaches

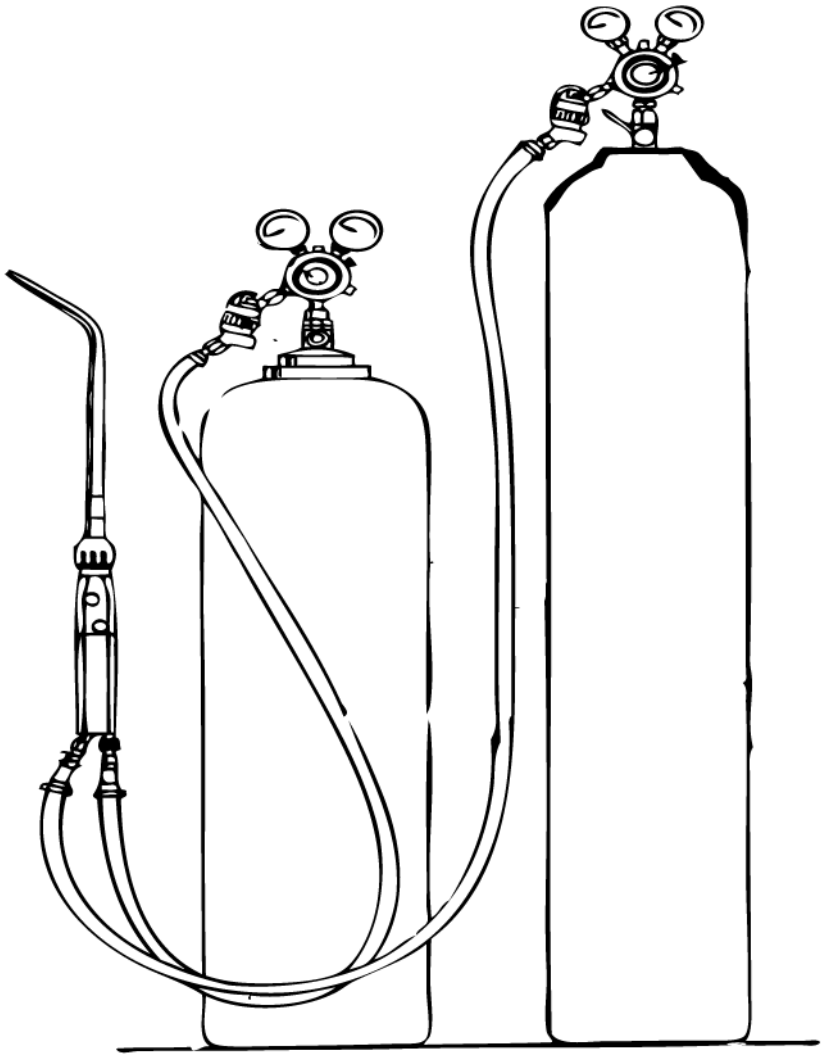
Learners should be encouraged to assess the risks (in conjunction with the statutory instruments) whilst working with oxy-acetylene equipment in the workshop/work environment.

IWS 1.3 — Practical assessment

Name:		Class:	Date:
Result:	Assessor:		Date:

1.3 Assemble and test oxy-acetylene welding equipment to joint metals

Assemble and test an oxy-acetylene welding plant as shown in the diagram below.



Marking schedule and learner feedback

IWS1.3 Assemble and test oxy-acetylene welding equipment to joint metals

Name:		**Class:**	**Date:**
Result:	**Assessor:**		**Date:**

Marking Schedule		**Yes**	**No**
(a)	Select appropriate personal protective equipment.		
(b)	Assemble and test the plant.		
(c)	Select appropriate nozzle for lead welding.		
(d)	Set operating pressures.		
(e)	Light and adjust an appropriate flame type.		
(f)	Safe working practices have been followed.		
(g)	Select appropriate hoses and regulators for the completion of the oxy-acetylene plant		
Learner feedback			
Learner's response			
Learner's signature			

Note to assessor: Learner feedback should relate to the marking schedule

Checklist: Install Sheet Weathering Protection

IWS1.3 Assemble and test oxy-acetylene welding equipment to joint metals											
Class: **Assessor:**		**Learner's name**									
Part	**Marking Schedule**										
(a)	Selects appropriate personal protective equipment.										
(b)	Assembles and tests the plant.										
(c)	Selects appropriate nozzle for lead welding.										
(d)	Sets operating pressures.										
(e)	Lights and adjusts an appropriate flame type.										
(f)	Follows safe working practices.										
(g)	Selects appropriate hoses and regulators for the completion of the oxy-acetylene plant.										

IWS Section 1.4 — Information for assessors

1.4 Form a box with drip edges by bossing and forming; perform lead welded seams for flat lead sheet.

This will enable the learner to develop skills in the selection of appropriate codes of sheet lead and design the layouts, and jointing of sheet lead for weathering to buildings.

Acceptable performance in this Unit will be satisfactory achievement of all the assessments:

- Practical based activity work with health and safety monitoring observed throughout the Unit at all times

Performance Criteria

The learner:

(a) Prepares lead sheets to be jointed.
(b) Selects equipment appropriate to the task.
(c) Assembles and tests equipment to ensure absence of leaks.
(d) Joints lead sheets at butt edge to specified tolerances.
(e) Follows safe working practices relevant to the task.

IWS 1.4 — Practical Assessment

The learner will be presented with a variety of practical exercises to test the application of knowledge and skills required to joint lead sheets at butt edge by lead welding.

The learner will be required to prepare and lead weld a variety of practical exercises throughout this Unit on BS Code sheet No 5 lead sheet.

Satisfactory achievement of Section 1.4 will be based on the learner completing the assessment in accordance with all the above Performance Criteria.

Checklist

1 Joint width is between 10 mm to 12 mm.
2 Joint loading is adequate for thickness of material used.
3 Joint is proud of material used.
4 Weld has penetrated the parent metal.
5 A consistent weld pattern is produced.
6 Safe working practices have been followed.

Suggested learning and teaching approaches

This Unit is essentially practical and it is anticipated that it will be centred in a workshop situation. Demonstrations should be given by the lecturer at each stage of the Unit, ie assembly and testing of oxy-acetylene equipment and the methods of preparing and manufacturing joints. The learner should be given adequate opportunity to practice the joint specified prior to attempting the assessments stipulated and be provided with positive learner feedback. Learners should commence on smaller lengths of welds, eg 150 mm, increasing in stages up to 300 mm in preparation for the lead welding practical exercises.

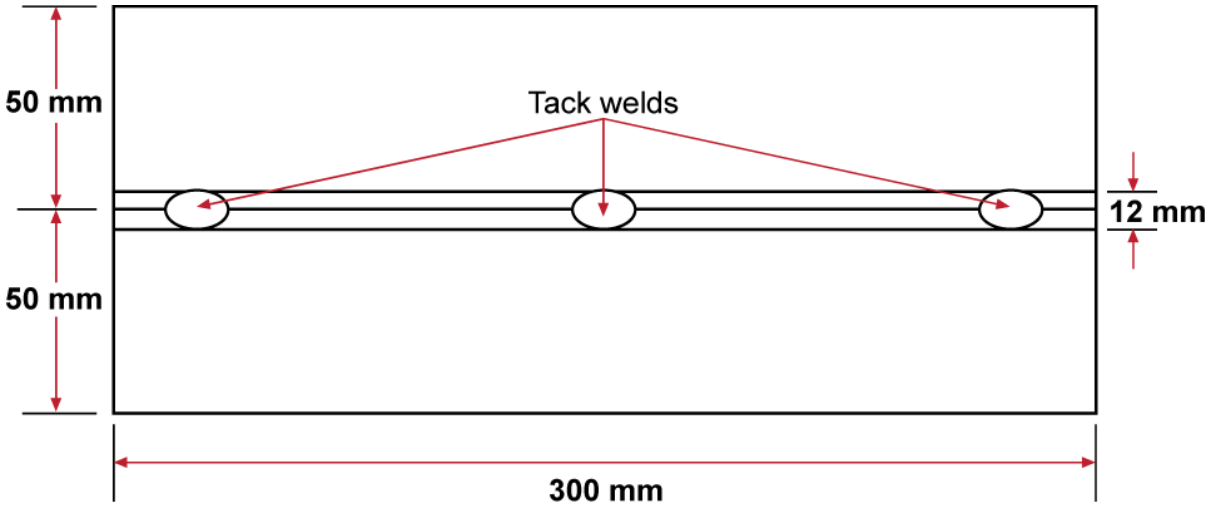
Learner feedback should be provided throughout the practice sessions.

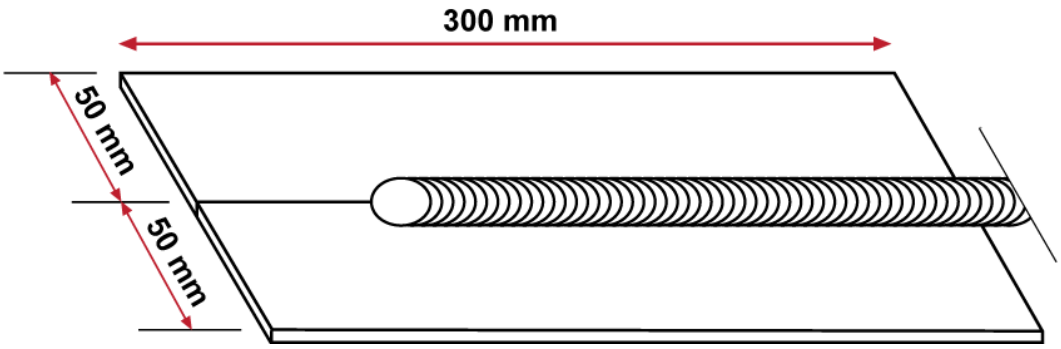
IWS1.4 Formative task

Name:		Class:	Date:
Result:	Assessor:		Date:

1.4 Joint lead sheets at butt edge by lead welding

Sizes are for guidance only.





Marking schedule and learner feedback

IWS1.4 Joint lead sheets at butt edge by lead welding

Name:		**Class:**	**Date:**
Result:	**Assessor:**		**Date:**

Marking schedule		**Yes**	**No**
(a)	Joint width is between 10 mm to 12 mm.		
(b)	Joint loading is adequate for thickness of material used.		
(c)	Joint is proud of material used.		
(d)	Weld has penetrated the parent metal.		
(e)	A consistent weld pattern is produced.		
(f)	Safe working practices have been followed.		
Learner feedback			
Learner's response			
Learner's signature			

Note to assessor: Learner feedback should relate to the marking schedule

Checklist: Install Sheet Weathering Protection

IWS1.4 Joint lead sheets at butt edge by welding in practical exercises																
Class: **Assessor:**			**Learner's Name**													
Part	**Marking Schedule**															
(a)	**Joint width is between 10 mm to 12 mm**															
	Slate Piece	Butt Weld	Lap Weld													
	Tick															
	Chimney gusset pieces (2 off)															
	Dormer under cloak/ roof Intersection*															
(b)	**Joint loading is adequate for thickness of material used.**															
	Slate Piece															
	Chimney gusset pieces/ roof Intersection*															
	Dormer under cloak/ roof Intersection*															
(c)	**Joint is proud of material used.**															
	Slate Piece															
	Chimney gusset pieces															
	Dormer under cloak/ roof Intersection															
(d)	**Weld has penetrated the parent metal.**															
	Slate Piece															
	Chimney gusset pieces															
	Dormer under cloak/ roof Intersection															
(e)	**A consistent weld pattern is produced.**															
	Slate Piece															
	Chimney gusset pieces															
	Dormer under cloak/ roof Intersection															
(f)	Safe working practices have been followed.															

*Roof Intersection is covered in the completed chimney and is not required in the dormer

IWS Section 1.4 — Information for assessors

1.4 Form a box with drip edges by bossing and forming; perform lead welded seams for flat lead sheet

This will enable the learner to develop skills in the selection of appropriate codes of sheet lead and design the layouts, and jointing of sheet lead for weathering to buildings.

Acceptable performance in this Unit will be satisfactory achievement of all the assessments:

- Practical based activity work with health and safety monitoring observed throughout the Unit at all times

Performance Criteria

(a) The learner works in a safe manner.
(b) The forming of the corners and drip edges is correct in terms of being:
  (i) sound and weatherproof
  (ii) free of excessive thickening
  (iii) free from wrinkles and kinks
  (iv) neat, tidy and without excessive markings

(c) The forming of the bossed corners and drip edges is accurate within a tolerance of ±10 mm.

IWS1.4 — Practical Assessment

The learner will be presented with an exercise designed to test the knowledge and skills required to form bossed corners and drip edges in sheet lead.

The exercise will consist of the formation of a parapet wall gutter outlet in BS Code No. 5 sheet lead and will incorporate the following:

1 Bossed external corners
2 Bossed drip edges to parapet wall/rainwater head

The gutter outlet dimensions should be a minimum of 300 mm × 250 mm with 100 mm high sides and 50 mm wide drip edges.

Satisfactory achievement of Section 1.4 will be based on the learner completing the assessment in accordance with all the above Performance Criteria.

Suggested learning and teaching approaches

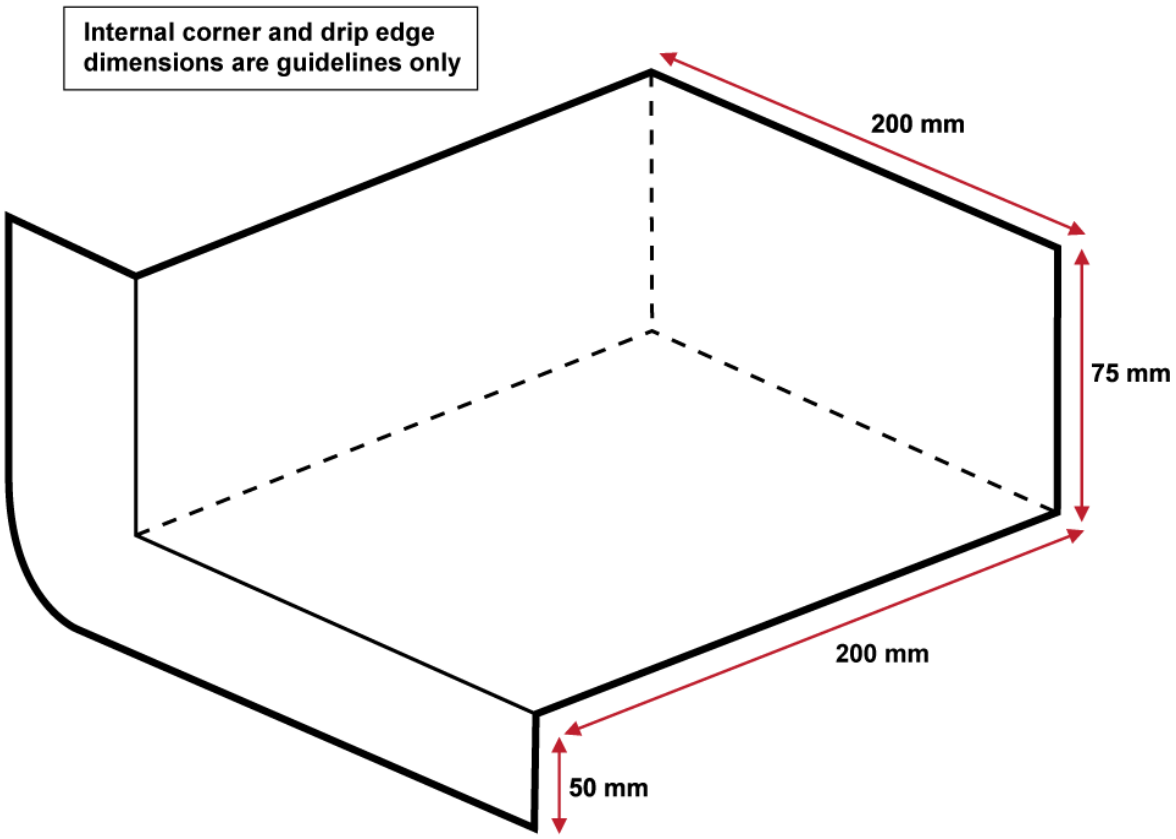
This is a workshop-based Unit and it is considered essential that adequate time is spent allowing the learner to attain skills by attempting practical exercises prior to attempting assessment exercises.

Demonstrations should be given by the lecturer and learners would be expected to work individually from detailed drawings to complete practice and assessment exercises. Wherever possible the use of formers simulating roofing details should be used. Learner feedback should be provided throughout the practice sessions.

Section IWS 1.4 Formative Task (bossing and forming)

1.4 Form a box with drip edges by bossing and forming; perform lead welded seams for flat lead sheet

A selection of practical tasks (formative) to provide the learner with feedback before the assessment begins. Centres can provide their own formative tasks.



Marking schedule and learner feedback

Formative exercise

Name:		**Class:**	**Date:**
Result:	**Assessor:**		**Date:**

Learner feedback
Learner's response
Learner's signature

Note to assessor: Learner feedback should relate to the marking schedule

IWS1.4 — Practical assessment

IWS1.4 Form bossed corners and drip edges in sheet lead

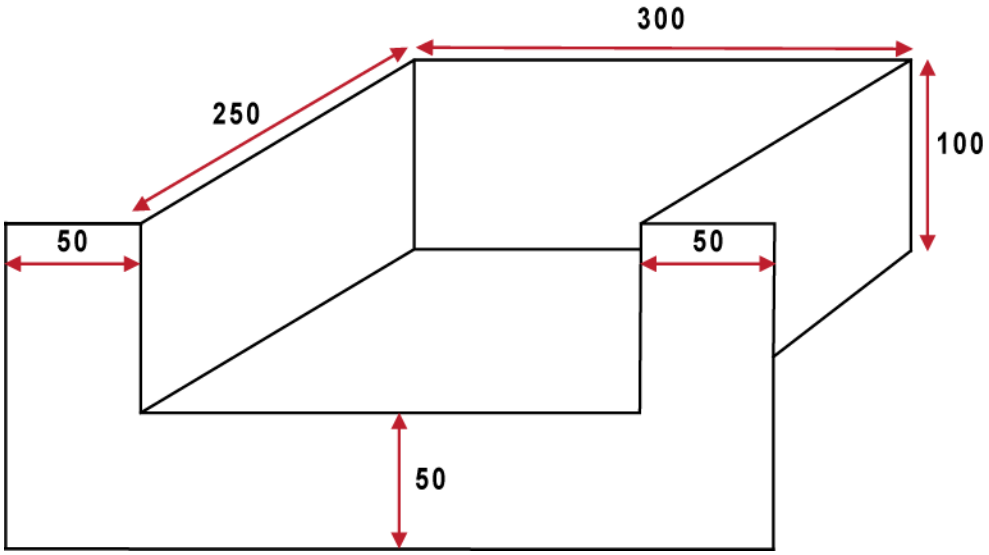
Name:		Class:	Date:
Result:	Assessor:		Date:

The learner will be presented with an exercise which consists of producing a gutter outlet in Code 5 sheet lead by bossing external corners and drip edges to the stated dimensions as shown below.

The forming of the bossed corners and drip edges has to be accurate within a tolerance of ±10 mm.

Gutter outlet in sheet lead

Material — Code 5 Sheet lead_____ mm × _____ mm



The minimum criteria is one internal corner and one drip edge.

Marking schedule and learner feedback

IWS1.4 Form bossed corners and drip edges in sheet lead

Minimum Criteria one internal corner and one drip edge.

Name:		**Class:**	**Date:**
Result:	**Assessor:**		**Date:**

Marking Schedule		**Yes**	**No**
(a)	The learner works in a safe manner.		
(b)	The forming of the corners and drip edges is correct in terms of being:		
	(i) sound and weatherproof		
	(ii) free of excessive thickening		
	(iii) free from wrinkles and kinks		
	(iv) neat, tidy and without excessive markings		
(c)	The forming of the bossed corners and drip edges is accurate within a tolerance of ± 10 mm.		
Learner feedback			
Learner's response			
Learner's signature			

Note to assessor: Learner feedback should relate to the marking schedule

Checklist: Install Sheet Weathering Protection

IWS1.4 Form bossed corners and drip edges in sheet lead											
Class: **Assessor:**		**Learner's name**									
Part.	**Marking Schedule**										
(a)	The learner works in a safe manner.										
(b)	The forming of the corners and drip edges is correct in terms of being:										
	(i) sound and weatherproof										
	(ii) free of excessive thickening										
	(iii) free from wrinkles and kinks										
	(iv) neat, tidy and without excessive markings										
(c)	The forming of the bossed corners and drip edges is accurate within a tolerance of ± 10 mm.										

Section IWS 1.5 — Information for assessors

1.5 Form a lead slate piece by bossing and welding lead

This will enable the learner to manufacture a slate piece in sheet lead using a combination of lead welding, bossing and forming methods.

Acceptable performance in this Unit will be satisfactory achievement of all the assessments:

- Practical based activity work with health and safety monitoring observed throughout the Unit at all times

Performance Criteria

(a) The learner works in a safe manner.
(b) The slate piece formed is:
  (i) of uniform thickness
  (ii) sound and weatherproof
  (iii) free from wrinkles, kinks, and excessive markings
  (iv) in compliance with the specified dimensions and angles of the roof.
(c) The weld width, pattern, reinforcement and penetration are sufficient to ensure that the strength of the joint is not less than that of the parent metal.

IWS 1.5 — Practical Assessment

The learner will be presented with an exercise designed to test the knowledge and skills required to form a slate piece by bossing and welding sheet lead.

The exercise will consist of manufacturing a slate piece to weather 110 mm diameter PVC pipe, penetrating a roof sloping between 30° and 45° using BS Code No. 5 sheet lead:

1 Lead welded joint between lead slate and collar.

Suggested learning and teaching approaches

This is a workshop-based Unit and it is considered essential that adequate time is spent allowing learners to attain skills by attempting practical exercises prior to attempting assessment exercises.

Demonstrations should be given by the tutor and learners would be expected to work individually from detailed drawings to complete practice and assessment exercises. Wherever possible the use of formers simulating roofing details should be used.

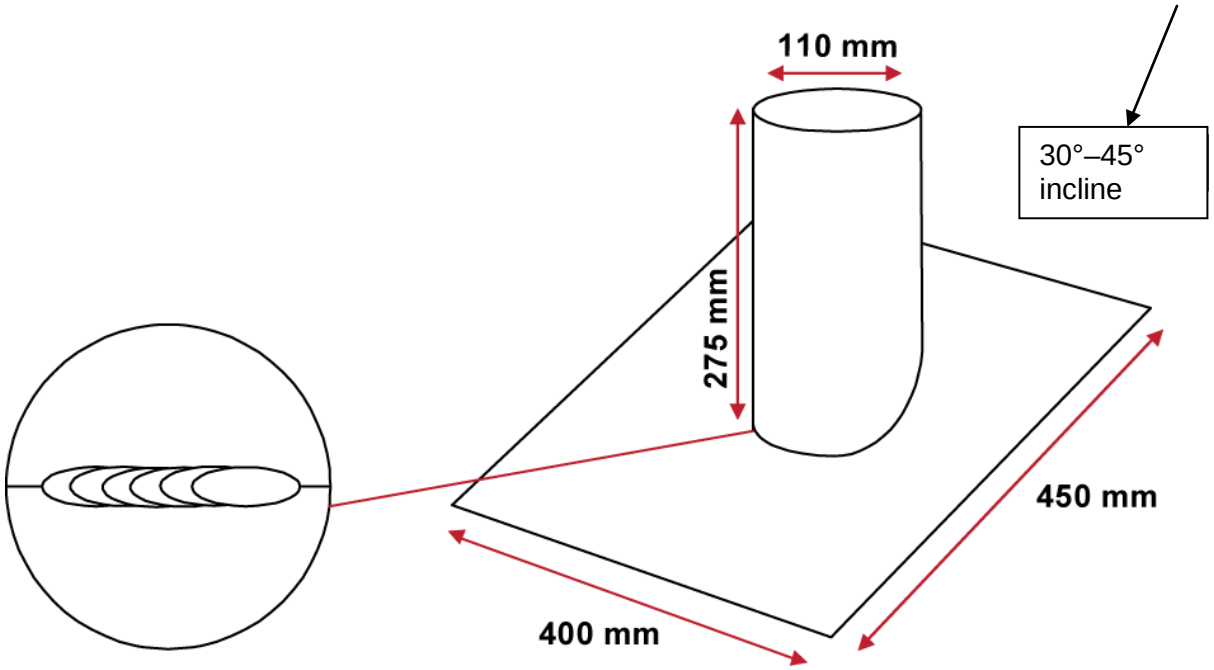
Learner feedback should be provided throughout the practice sessions.

IWS Section 1.5

1.5 Form a lead slate piece by bossing and welding lead

IWS1.5 — Practical Exercise

Form a lead slate piece by bossing and welding lead.



Marking schedule and learner feedback

1.5 Form a lead slate piece by bossing and welding lead.

Name:		**Class:**	**Date:**
Result:	**Assessor:**		**Date:**

Marking Schedule		**Yes**	**No**
(a)	Joint width is between 10 mm to 12 mm.		
(b)	Joint loading is adequate for thickness of material used.		
(c)	Joint is proud of material used.		
(d)	Weld has penetrated the parent metal.		
(e)	A consistent weld pattern is produced.		
(f)	Safe working practices have been followed.		
Learner feedback			
Learner's response			
Learner's signature			

Note to assessor: Learner feedback should relate to the marking schedule

Checklist: Install Sheet Weathering Protection

1.5 Form a lead slate piece by bossing and welding lead												
Class: **Assessor:**		**Learner's name**										
Part	**Marking Schedule**											
(a)	Joint width is between 10 mm to 12 mm.											
(b)	Joint loading is adequate for thickness of material used.											
(c)	Joint is proud of material used.											
(d)	Weld has penetrated the parent metal.											
(e)	A consistent weld pattern is produced.											
(f)	Safe working practices have been followed.											

Section IWS 2.1— Information for assessors

2.1 Form a chimney weathering by bossing and lead welding

This will enable the learner to manufacture lead flashings to weather a chimney in sheet lead using a combination of lead welding, bossing and forming methods.

Acceptable performance in this Unit will be satisfactory achievement of all the assessments.

- Practical based activity work with health and safety monitoring observed throughout the Unit at all times

Performance Criteria

(a) The learner works in a safe manner.
(b) The weathered chimney is:
  (i) of uniform thickness
  (ii) sound and weatherproof
  (iii) free from wrinkles, kinks, and excessive markings
  (iv) in compliance with the specified dimensions and angles of the roof.
(c) The weld width, pattern, reinforcement and penetration are sufficient to ensure that the strength of the joint is not less than that of the parent metal.
(d) The forming of the bossed corners is accurate within a tolerance of ±10 mm.

IWS 2.1 — Practical Assessment

The learner will be presented with an exercise designed to test the knowledge and skills required to complete the lead weathering of a chimney by bossing and welding sheet lead.

Suggested learning and teaching approaches

This is a workshop-based Unit and it is considered essential that adequate time is spent allowing learners to attain skills by attempting practical exercises prior to attempting assessment exercises.

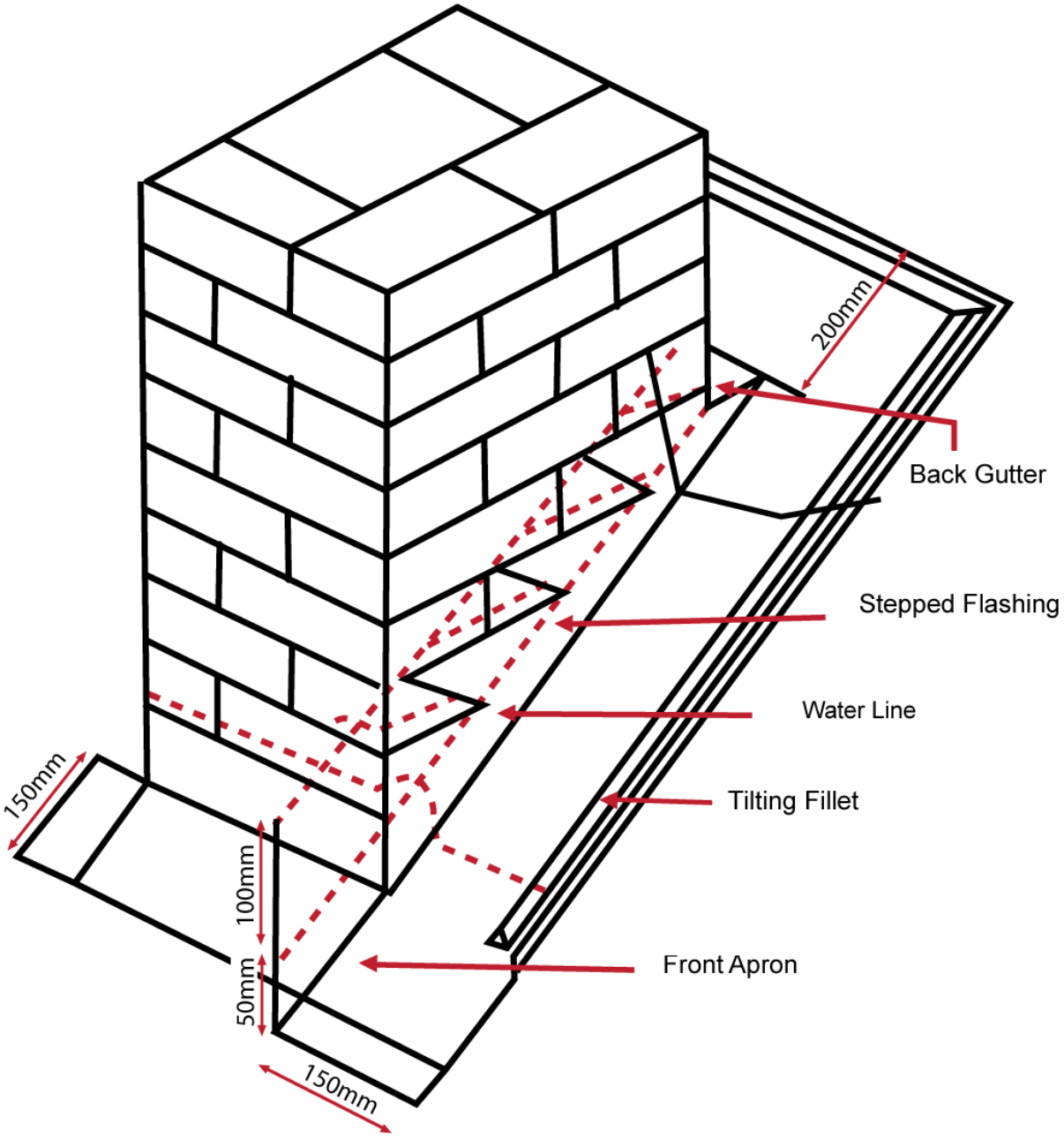
Demonstrations should be given by the tutor and learners would be expected to work individually from detailed drawings to complete practice and assessment exercises. Wherever possible the use of formers simulating roofing details should be used.

The completed chimney can be delivered to learners working in pairs with one learner completing one side and other learner the other side, making sure that each learner demonstrates all skills required to complete the chimney

Learner feedback should be provided throughout the practice sessions.

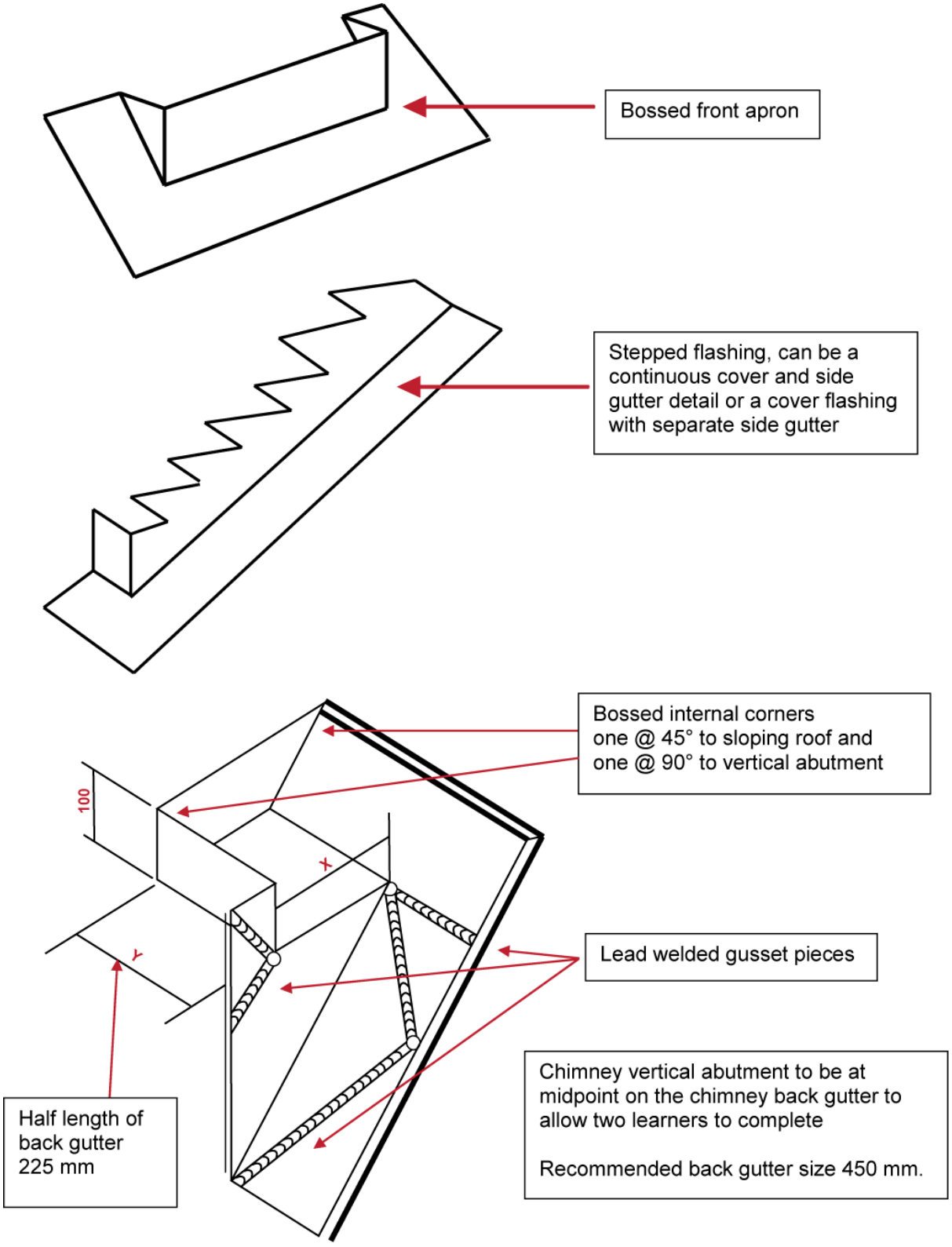
2.1 Form a chimney weathering by bossing and lead welding

Practical Exercise



Sizes can vary depending on centre set up.

Chimney details to be completed (learners to work in pairs to complete chimney)



Sizes can vary from centre to centre.

Marking schedule and learner feedback

2.1 Form a chimney weathering by bossing and lead welding

Name:		**Class:**	**Date:**
Result:	**Assessor:**		**Date:**

Marking Schedule		**Yes**	**No**
(a)	The learner works in a safe manner		
(b)	The weathered chimney is: (i) of uniform thickness (ii) sound and weatherproof (iii) free from wrinkles, kinks and excessive markings (iv) in compliance with the specified dimensions and angles of the roof.		
(c)	The weld width, pattern, reinforcement and penetration are sufficient to ensure that the strength of the joint is not less than that of the parent metal		
(d)	The forming of the bossed corners is accurate within a tolerance of ±10 mm		
Learner feedback			
Learner's response			
Learner's signature			

Note to assessor: Learner feedback should relate to the marking schedule

Checklist: Install Sheet Weathering Protection

2.1 Form a chimney weathering by bossing and lead welding												
Class: **Assessor:**		**Leaner's name**										
Part	**Marking Schedule**											
(a)	The learner works in a safe manner											
(b)	The weathered chimney is: (i) of uniform thickness (ii) sound and weatherproof (iii) free from wrinkles, kinks, and excessive markings (iv) in compliance with the specified dimensions and angles of the roof											
(c)	The weld width, pattern, reinforcement and penetration are sufficient to ensure that the strength of the joint is not less than that of the parent metal											
(d)	The forming of the bossed corners is accurate within a tolerance of ± 10 mm											

Section IWS 2.2 — Information for assessors

2.2 Form a dormer roof weathering by bossing and welding sheet lead

This will enable the learner to manufacture lead flashings to weather a dormer top in sheet lead using a combination of lead welding, bossing and forming methods.

Acceptable performance in this Unit will be satisfactory achievement of all the assessments.

- Practical based activity work with health and safety monitoring observed throughout the Unit at all times

Performance Criteria

(a) The learner works in a safe manner.
(b) The weathered dormer is:
  (i) of uniform thickness
  (ii) sound and weatherproof
  (iii) free from wrinkles, kinks, and excessive markings
  (iv) in compliance with the specified dimensions and angles of the roof.
(c) The weld width, pattern, reinforcement and penetration are sufficient to ensure that the strength of the joint is not less than that of the parent metal.
(d) The forming of the bossed corners is accurate within a tolerance of ± 10 mm.

IWS 2.2 — Practical Assessment

The learner will be presented with an exercise designed to test the knowledge and skills required to complete the lead weathering of a dormer top by bossing and welding sheet lead.

Suggested learning and teaching approaches

This is a workshop-based Unit and it is considered essential that adequate time is spent allowing learners to attain skills by attempting practical exercises prior to attempting assessment exercises.

Demonstrations should be given by the tutor and learners would be expected to work individually from detailed drawings to complete practice and assessment exercises. Wherever possible the use of formers simulating roofing details should be used.

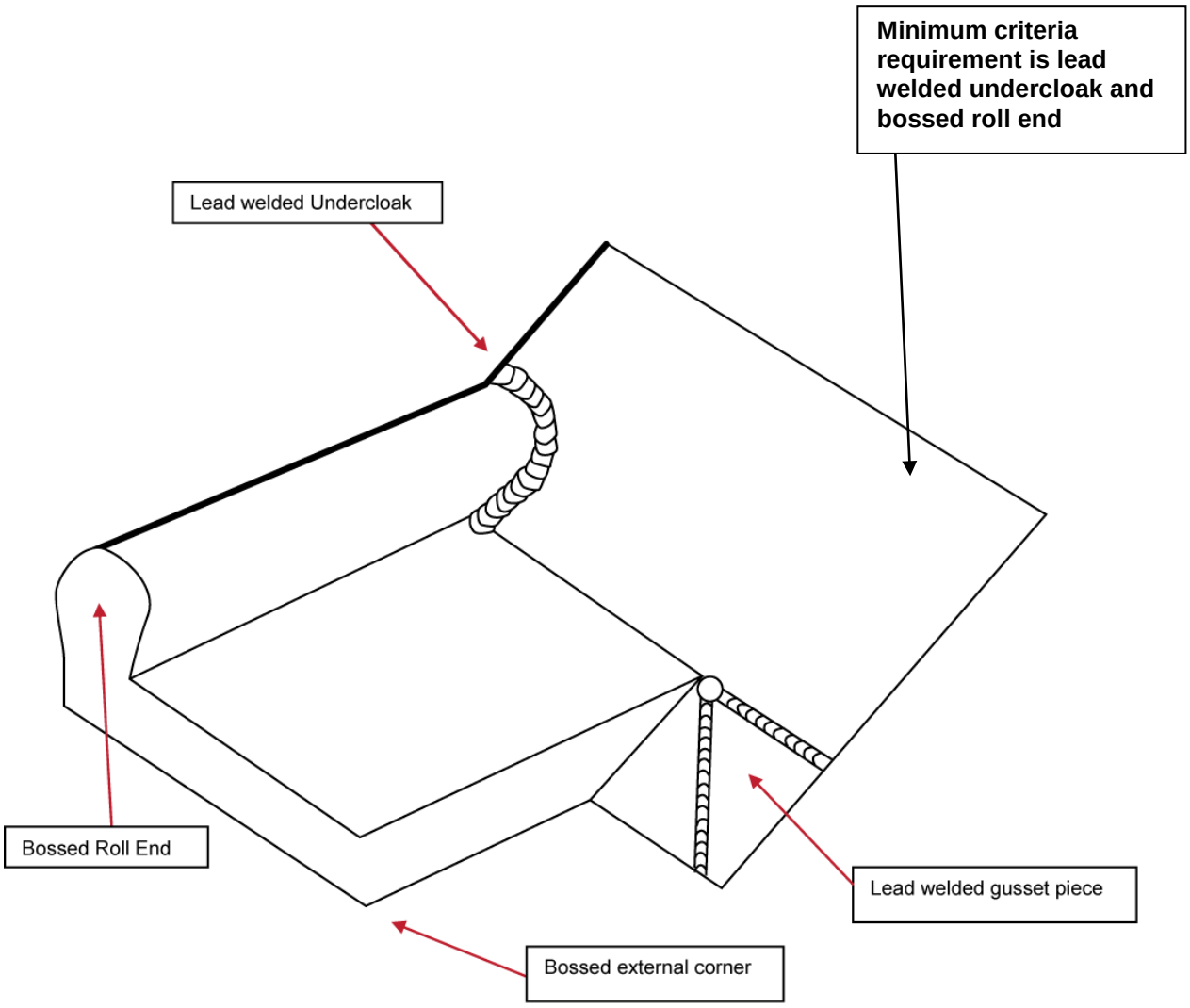
The exercise will consist of the weathering of a part dormer top including solid roll. Minimum size 350 mm deep × 320 mm wide penetrating a roof at 45° using code 5 sheet lead.

Learner feedback should be provided throughout the practice sessions.

IWS Section 2.2

2.2 Form a dormer roof weathering by bossing and welding sheet lead

Practical Exercise



Lead welded sold roll to 45°sloping roof
Bossed external corner and roll end
Lead welded gusset piece at rear of dormer to sloping roof at drip edge
Minimum size 350mm deep 320 wide

Marking schedule and learner feedback

2.2 Form a dormer roof weathering by bossing and welding sheet lead

Name:	**Class:**	**Date:**
Result:	**Assessor:**	**Date:**

Marking Schedule	**Yes**	**No**
(a) The learner works in a safe manner		
(b) The weathered dormer is: (i) of uniform thickness (ii) sound and weatherproof (iii) free from wrinkles, kinks, and excessive markings (iv) in compliance with the specified dimensions and angles of the roof		
(c) The weld width, pattern, reinforcement and penetration are sufficient to ensure that the strength of the joint is not less than that of the parent metal		
(d) The forming of the bossed corners is accurate within a tolerance of ± 10 mm		
Learner feedback		
Learner's response		
Learner's signature		

Note to assessor: Learner feedback should relate to the marking schedule

Checklist: Install Sheet Weathering Protection

2.1 Form a dormer roof weathering by bossing and welding sheet lead												
Class: **Assessor:**		**Leaner's name**										
Part	**Marking Schedule**											
(a)	The learner works in a safe manner											
(b)	The weathered chimney is: (i) of uniform thickness (ii) sound and weatherproof (iii) free from wrinkles, kinks, and excessive markings (iv) in compliance with the specified dimensions and angles of the roof											
(c)	The weld width, pattern, reinforcement and penetration are sufficient to ensure that the strength of the joint is not less than that of the parent metal											
(d)	The forming of the bossed corners is accurate within a tolerance of ± 10 mm											