National Competitions

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SkillWeld 2026

Welding Technical Handbook

The SkillWeld competition is part of

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ENGINEERING SKILLS COMPETITIONS

The **SkillWeld 2026** competition is supported and sponsored by:

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1. Introduction

SkillWeld 2026 forms part of the WorldSkills UK competition cycle and is supported by a range of industry partners. This handbook outlines eligibility, competition rules, test specifications, marking criteria, and key procedures for competitors and representatives.

2. Eligibility & Entry Requirements

Competitors must meet WorldSkills UK Competition Rules and Terms & Conditions.
Key criteria include:

- Minimum age: 16 years old on 1 September 2026
  "Competitors must be at least 16 years of age on 1st September 2026…"
- Employed, studying, or an apprentice at the appropriate level.
- Educated or trained in a UK institution and holding or working toward a related UK qualification.
- Past competitors may re-enter if they meet eligibility requirements.

Not eligible:

- Previous Gold medal winners in the same competition and level.
- Current Squad UK or Team UK members.
- Competitors entering more than one competition/level per year.

Competitors must have the full support of their employer or training provider, including release for all competition activities.

3. Conduct & Expectations

3.1 Supporters

Supporters must not communicate with competitors during competition time.
"Supporters… must not make any form of contact or communication with competitors during the competition…"

Breaches may result in disqualification or penalties.

3.2 Competitor Responsibilities

- Arrive on time; additional time is not guaranteed.
- No communication with other competitors or the audience during competition.
- Start and stop work only when instructed.
- Request permission to leave the competition area.
- No re-entry once a competitor declares they have finished.
- Personal electronic devices, notes, sketches, or aids are prohibited unless authorised.
- Competitors must report any disadvantage or concern immediately.

3.3 Health & Safety

- All activity must comply with the Health & Safety at Work Act 1974.
- Mandatory PPE includes safety glasses, gloves, and ear protection.
- All personal electrical equipment must be PAT tested within 12 months.
- Unsafe practice may result in removal from the competition.

4. Competition Structure

4.1 Entry to National Qualifiers

Entry is by invitation only following the SkillWeld 2026 Entry Stage.

4.2 National Qualifier Tasks

Competitors must complete four mandatory weld tests within four hours:

Test No.	Process	Test Piece	Requirement
1	TIG Root / MMA Fill & Cap	Carbon steel pipe butt weld (H-Lo 45)	Mandatory
2	TIG	Aluminium pipe-to-plate fillet (PB)	Mandatory
3	TIG	Stainless steel plate fillet (PD)	Mandatory
4	MAG	Carbon steel plate fillet (PF)	Mandatory

Competitors receive one full set of materials. Judging occurs during the competition.

Top performers nationally (approx. 10) will be invited to the SkillWeld 2026 National Finals.

5. Technical Requirements (Summary)

5.1 Test 1 – TIG 141 Root / MMA 111 Fill & Cap

- Material: Carbon steel
- Max cap height: 3 mm
- Max root penetration: 3 mm
- No grinding after welding (except root/cap stop-start preparation)
- Position: H-L045
- MMA electrodes: E6013, E7016, or E7018
- Shielding gas: Argon (I1 Ar)

5.2 Test 2 – TIG 141 Aluminium Fillet (PB)

- Material: Aluminium 5XXX/6XXX
- Leg length: 4–6 mm
- No grinding or wire brushing
- Current: AC
- One run only

5.3 Test 3 – TIG 141 Stainless Steel Fillet (PD)

- Material: Stainless steel 300 series
- Leg length: 3–4 mm
- No grinding or brushing after completion
- One run only
- Current: DCEN

5.4 Test 4 – MAG 135 Carbon Steel Fillet (PF)

- Material: Carbon steel
- Leg length: 10–12 mm
- Convexity max: 4 mm
- Wire: 1.0 mm solid
- Shielding gas: Ferromaxx® 7 or similar
- 2–3 runs
- Wire brushing permitted

6. Marking Criteria (Based on BS EN ISO 5817:2023)

6.1 Test 1 – Pipe Butt Weld

- Root Penetration (6 marks)
  Full penetration required; max 3 mm.
  "Full marks will be awarded if the penetration is complete but does not exceed 3mm."
- Stop/Starts (4 marks)
  Smooth transitions required.
- Cap Height (4 marks)
  Overfill must be <3 mm.
- Undercut (4 marks)
  No undercut ≥0.5 mm; >26 mm in any 100 mm loses all marks.
- Appearance (7 marks)
  No grinding, porosity, lack of fusion, stray arcing, or cracks.

6.2 Fillet Welds – Tests 2, 3 & 4

- Leg Length (6 marks)
  1 mark lost per 10 mm outside tolerance.
- Stop/Starts (4 marks)
  Must be clearly visible and smooth.
- Convexity (4 marks)
  Max 2 mm (Tests 2 & 3), 4 mm (Test 4).
- Undercut (4 marks)
  Same rules as Test 1.
- Appearance (7 marks)
  Uniform bead; no defects; no grinding or brushing (except Test 4 brushing allowed).

7. Results & Progression

7.1 After Qualifiers

- 1st, 2nd, and 3rd places awarded locally.
- National finalists selected based on top scores nationally, not local ranking.
- Finalists announced July 2026.

7.2 National Finals

Awards include:

- Gold
- Silver
- Bronze
- Highly Commended
- Participation

Competitors receive a summary of marks by email.

7.3 Eligibility for WorldSkills Japan 2028

Competitors must:

- Meet age criteria (born on/after 1 Jan 2006 for welding).
- Have been resident in the UK for 2+ years.
- Hold relevant UK qualifications.
- Achieve 65%+ at National Finals.

8. Complaints & Appeals Procedure

Complaints must be submitted within five working days of the incident.
"The complaint must be sent within five working days… to competitions@worldskillsuk.org."

A complaint may be raised if there is evidence of:

- Unfair practice
- Prejudice or bias
- Breach of rules or ethics

Progression decisions (e.g., qualifier → final) cannot be appealed.

WorldSkills UK aims to resolve complaints within 20 working days.

9. Pre-Competition Preparation (Competitor Guidance)

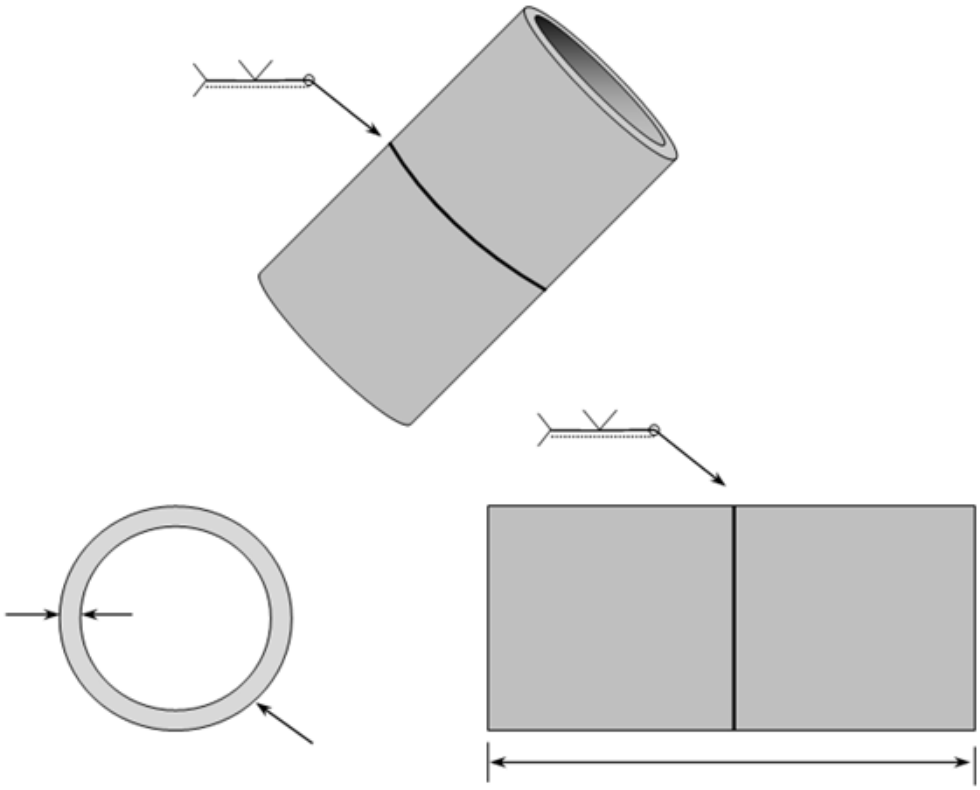
Competitors are encouraged to:

- Practise using the supplied drawings.
- Confirm support from employer/training provider.
- Understand where marks are gained and lost.
- Develop a clear, lean workflow plan.
- Request clarification from the COP where needed.
  "Understand where marks can be gained and lost…"

10. Key Contacts

- Technical Lead: Jake Rambaldini – office@rambaldiniwelding.com
- Lead Judge: Clive Slocombe – clive.slocombe@codeaweld.com
- Competition Manager: Stephen Haymes
  stephen.haymes@engineeringskillscomp.org

National Qualifier Test No. 1 (Mandatory) TIG 141 / MMA 111



Notes

Maximum cap height 3mm
Maximum root penetration 3mm
Pipe sizes as per 4-inch standard Sch40
Drawing symbols as per BS EN ISO 2653:2019

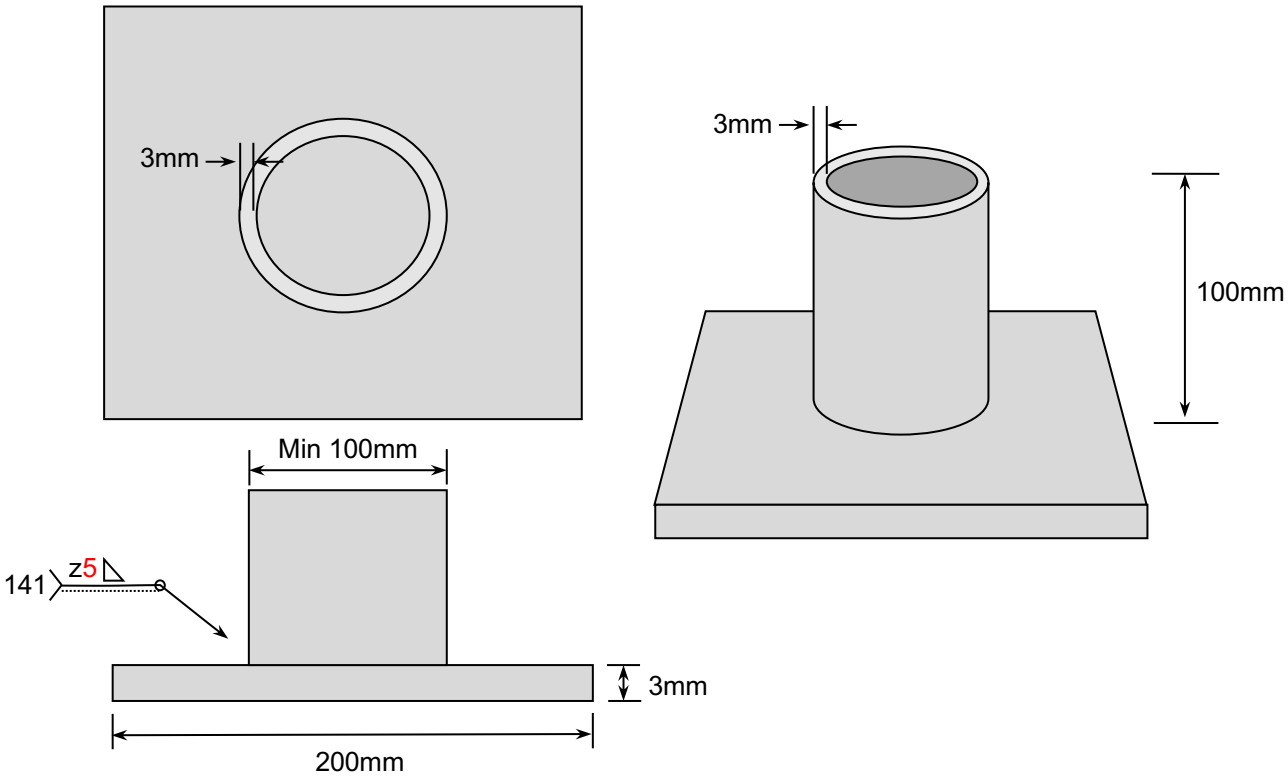
Materials	Carbon Steel
Weld Prep	30-37.5° bevel
Root Face	As required
Weld Gap	As required
Weld Process	TIG 141 & MMA 111
Current Type	141 – DCEN only 111 – AC or DC
MMA Electrode Type	E6013, E7016 or E7018
Electrode Diameter	As required
Shielding Gas for TIG as per ISO 14175	Argon Technical (I1 Ar) or similar
Number of Runs	As required
Weld Position (Fixed)	H-L045

Stop/Starts may be ground on root and cap.
No grinding on completed stop/start areas

Visuals

- 12 o'clock pipe position to be marked
- Root and cap stop and starts to be marked
- Root penetration - 3mm (max)
- Overfill - 3mm (max)
- All dimensions in millimeters
- No grinding after welding, wire brushing only.

National Qualifier Test Test No. 2 (Mandatory) TIG 141

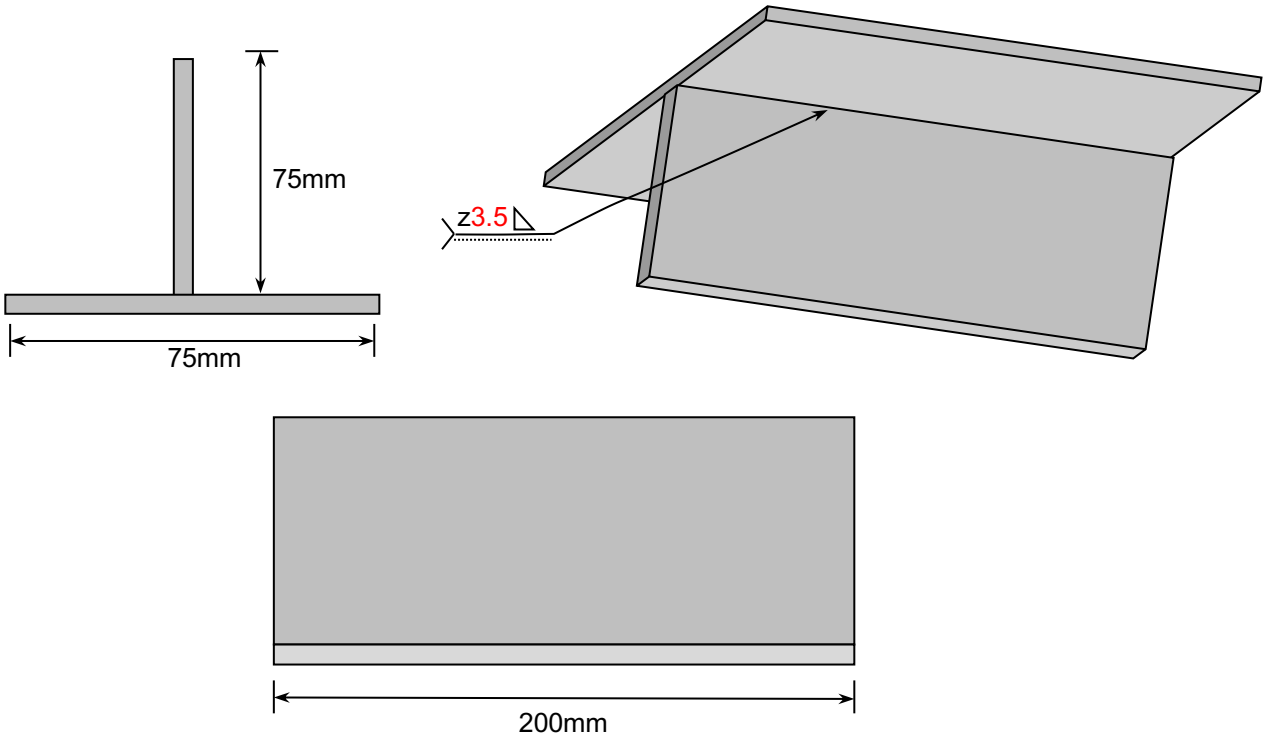


Notes

Leg length to be minimum of 4mm, maximum 6mm
Drawing symbols as per BS EN ISO 2653:2019

Materials	Aluminium – 5XXX/6XXX Series Plate & Tube	**Visuals**
Weld Process	TIG 141	• Weld stop and starts to be marked
Current Type	AC	• No grinding/brushing of re-starts
Electrode Dia	As Required, suitable for AC	• All dimensions in millimetres
Filler Dia	As Required	• No wire brushing during or after welding
Shielding Gas for TIG as per EN ISO14175	Argon Technical (I1 Ar) or similar	
Weld Position	PB	
Number of Runs	1	

National Qualifier Test Test No. 3 (Mandatory) TIG 141



Notes

Leg length to be minimum of 3mm, maximum 4mm
Drawing symbols as per BS EN ISO 2653:2019

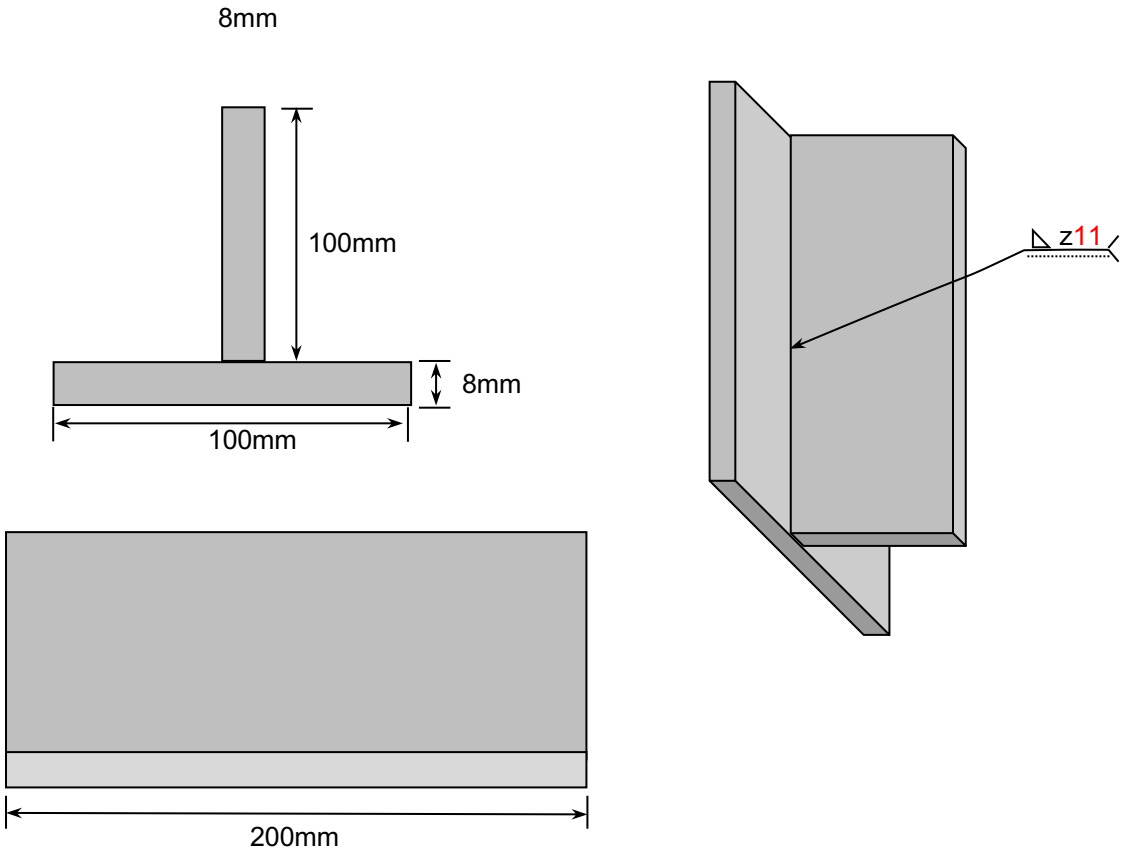
Material	Stainless Steel 300 series
Weld Process	TIG 141
Current Type	DCEN
Filler Dia.	As required
Electrode Dia	As required
Shielding Gas for TIG as per ISO 14175	Argon Technical (I1 Ar) or similar
Number of Runs	1 Run Maximum
Weld Position	PD

No Grinding of Stop/Starts

Visuals

- Weld stop and start to be made at weld in the middle of the plate
- No wire brushing once complete
- All dimensions in millimetres

National Qualifier Test Test No. 4 (Mandatory) MAG 135



Notes

Leg length to be minimum of 10mm, maximum 12mm
Drawing symbols as per BS EN ISO 2653:2019

Material	Carbon Steel	**Visuals**
Weld Process	Solid Wire MAG 135	
Filler Dia.	1.0mm	• Weld stop and starts to be made at weld mid-point and marked
Shielding Gas MAG as per ISO 14175	Ferromaxx® 7(M24 ArCO7/1.5) or similar	• No grinding once complete (wire brushing permitted)
Number of Runs	Minimum of 2, maximum of 3	• All dimensions in millimetres
Weld Position	PF	
Stop/Starts may be ground on root and cap. No grinding on completed stop/start areas		