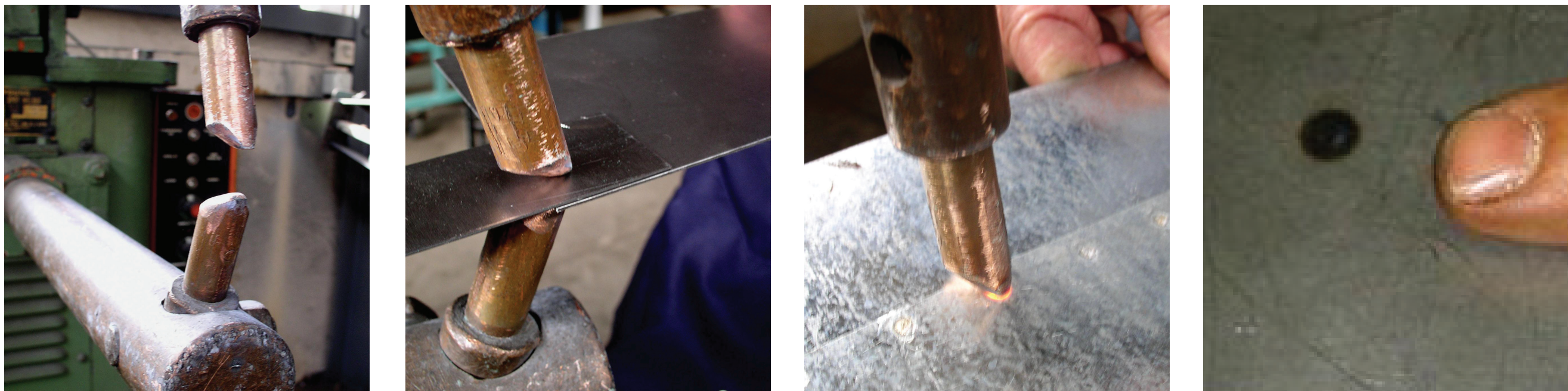




Spot welding

Te hono maitai



Check the welding unit is switched off. Inspect and clean the copper electrodes.

Hold the work pieces securely against the lower electrode.

Close the upper electrode down firmly to initiate the welding current circuit and join the work pieces.

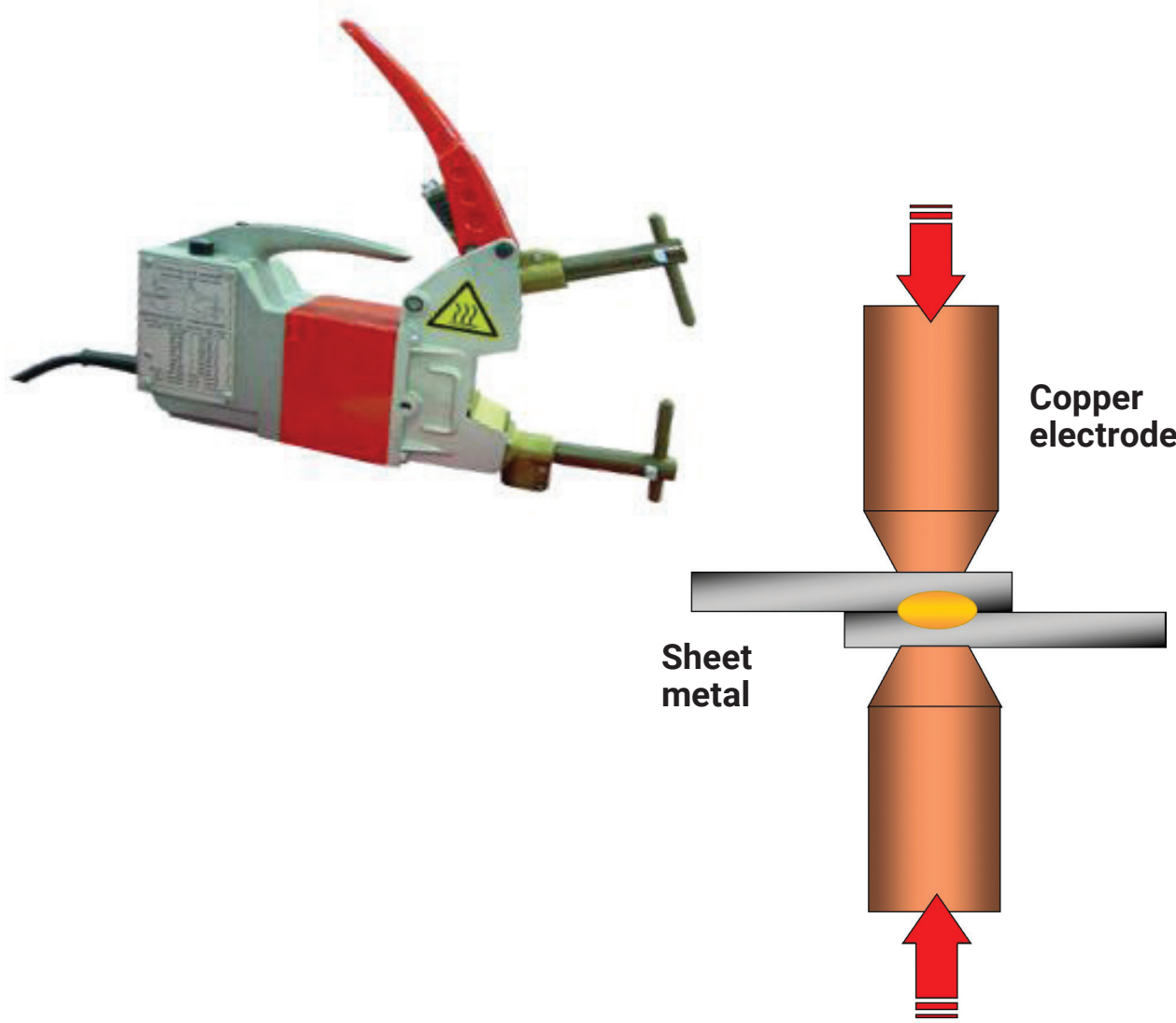
Allow the joint-spot to cool. Check each spot weld is firmly joined and measures approximately 6 mm – 8 mm.

Smart tip

Before starting, wipe the work pieces with a rag to remove oil and dirt.

WARNING KIA TŪPATO

Use a file to remove sharp edges from the work pieces.
Whakamahia te whaiuru kia maheni ai ngā tapa koi.

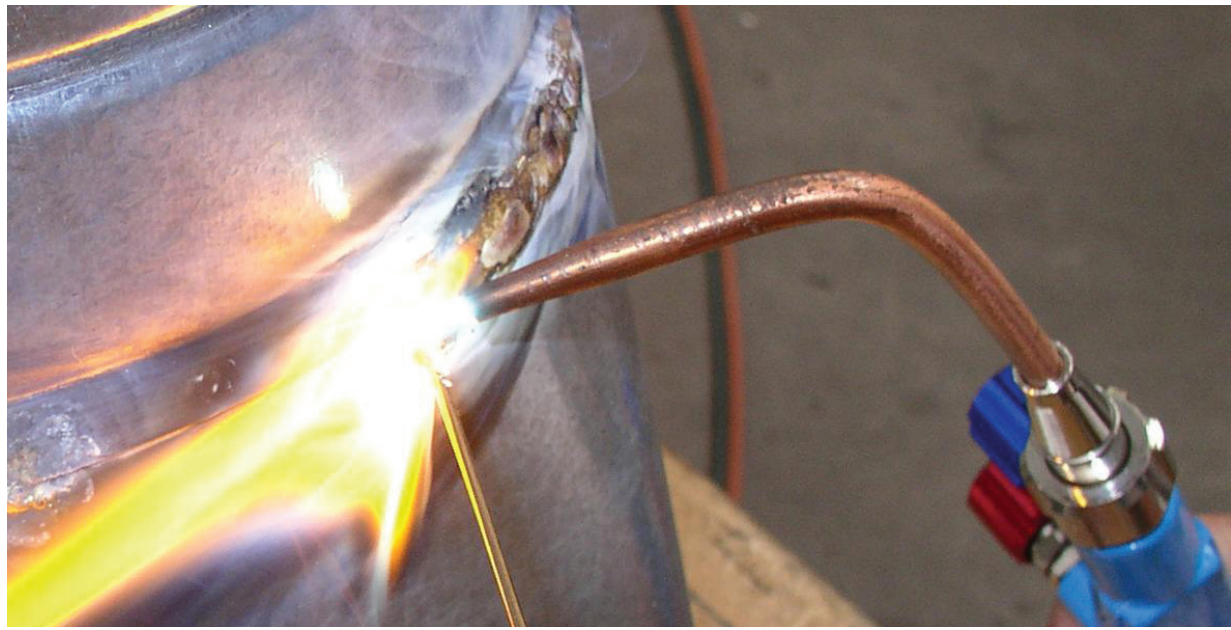


Problem	Solution
No joint formed	<ul style="list-style-type: none">No power to welderNot enough pressure between electrodesSurface of metal dirtyElectrode surface dirty.
Weak joint formed	<ul style="list-style-type: none">Not enough welding timeNot enough cooling timeSurface of metal dirty or coating not removedElectrode surface dirty.
Joint burn through	<ul style="list-style-type: none">Welding time too long.

Oxy-acetylene welding

Te hono maitai ki te korohū

Oxy-acetylene welding uses a flame created by burning a mixture of oxygen and acetylene. The two edges of the metals being joined are melted till they flow together to form a weld pool. A filler wire is added to the weld pool, providing additional mass and increasing joint strength.



To create a good weld, the different variables need to be balanced correctly. They are;

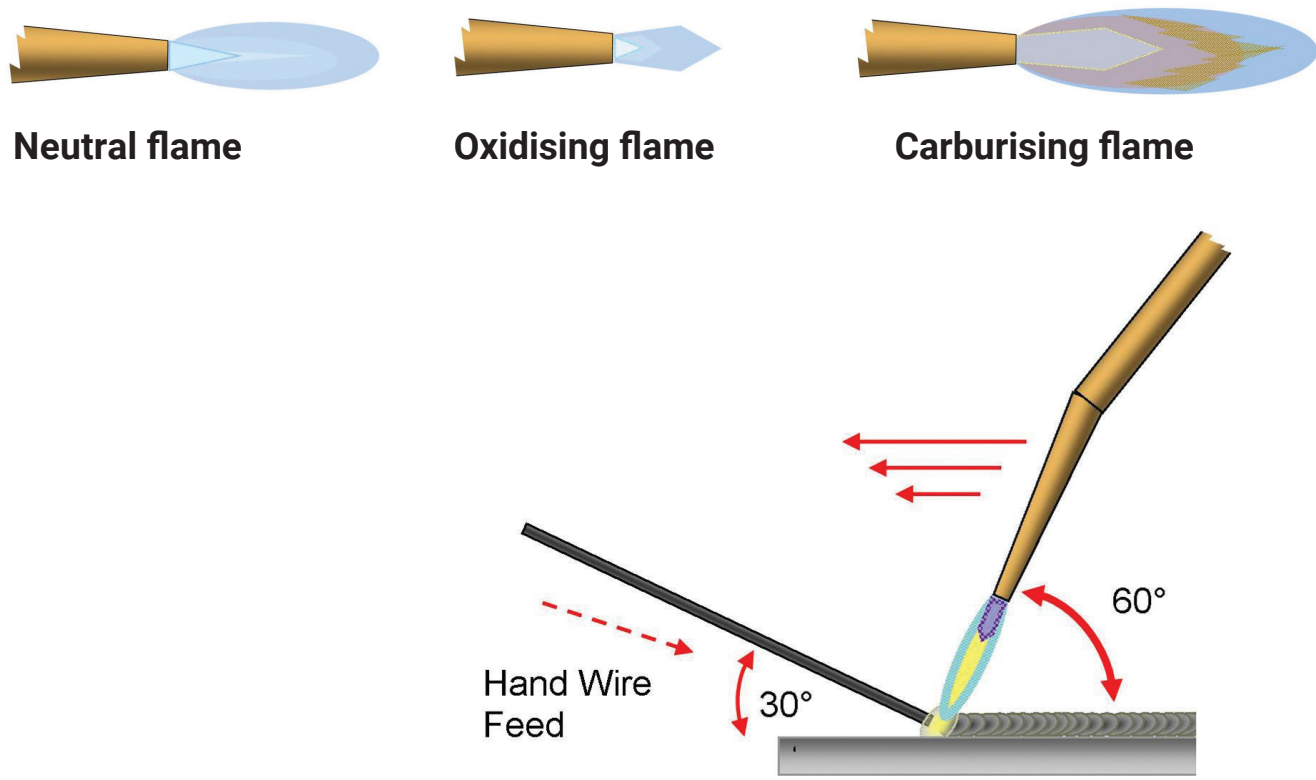
- Nozzle size
- Gas pressures
- Gas mixture ratio
- Filler wire used
- Frequency of feeding of the filler wire
- Speed of the torch across the material.

Thoroughly clean the surfaces to be welded, as this dramatically improves both the ease of welding the two surfaces, as well as the quality of the finish. Some material may require flux paste or powder to create a clean weld.

When preparing to weld, adjust the gas pressure settings. Open the acetylene knob on a quarter turn, purge the system for 2 seconds and turn off. Repeat for the oxygen.

- Turn on the acetylene a quarter turn and ignite.
- Quickly turn up the acetylene until no smoke is made by the flame.
- Add oxygen to the flame, turning it's colour from bright yellow to blue. The amount of oxygen must be varied until the light blue inner cone (about 10 mm long) merges with the main flame, without any grey outer cone between them. This is a neutral O/A flame.
- Hold the handset at approximately 60°, 2-3 mm above the surfaces to be welded.
- After about 5 seconds a weld pool should form.
- Add a little filler wire to the pool. After the weld pool has recovered, move the torch forward, away from the formed weld bead.
- Repeat until the complete joint is formed.

Most faults which occur during oxy-acetylene welding can be rectified by using a neutral O/A flame and adjusting the speed and angle of the torch and filler wire.



Smart tip

Practice on sheet metal without using filler wire, until you can produce weld beads of even width.

Problem	Solution
Difficulty in forming a weld pool or slow welding speed	<ul style="list-style-type: none">Nozzle too smallTorch angle too shallowFiller wire too large.
Weld pool too large or difficult to control	<ul style="list-style-type: none">Nozzle too largeMoving torch too slow.
Lumpy weld beads	<ul style="list-style-type: none">Filler wire too large.
Weld pool or melted filler wire rolls away from weld pool	<ul style="list-style-type: none">Work piece on too steep an angleWrong type of filler wire.