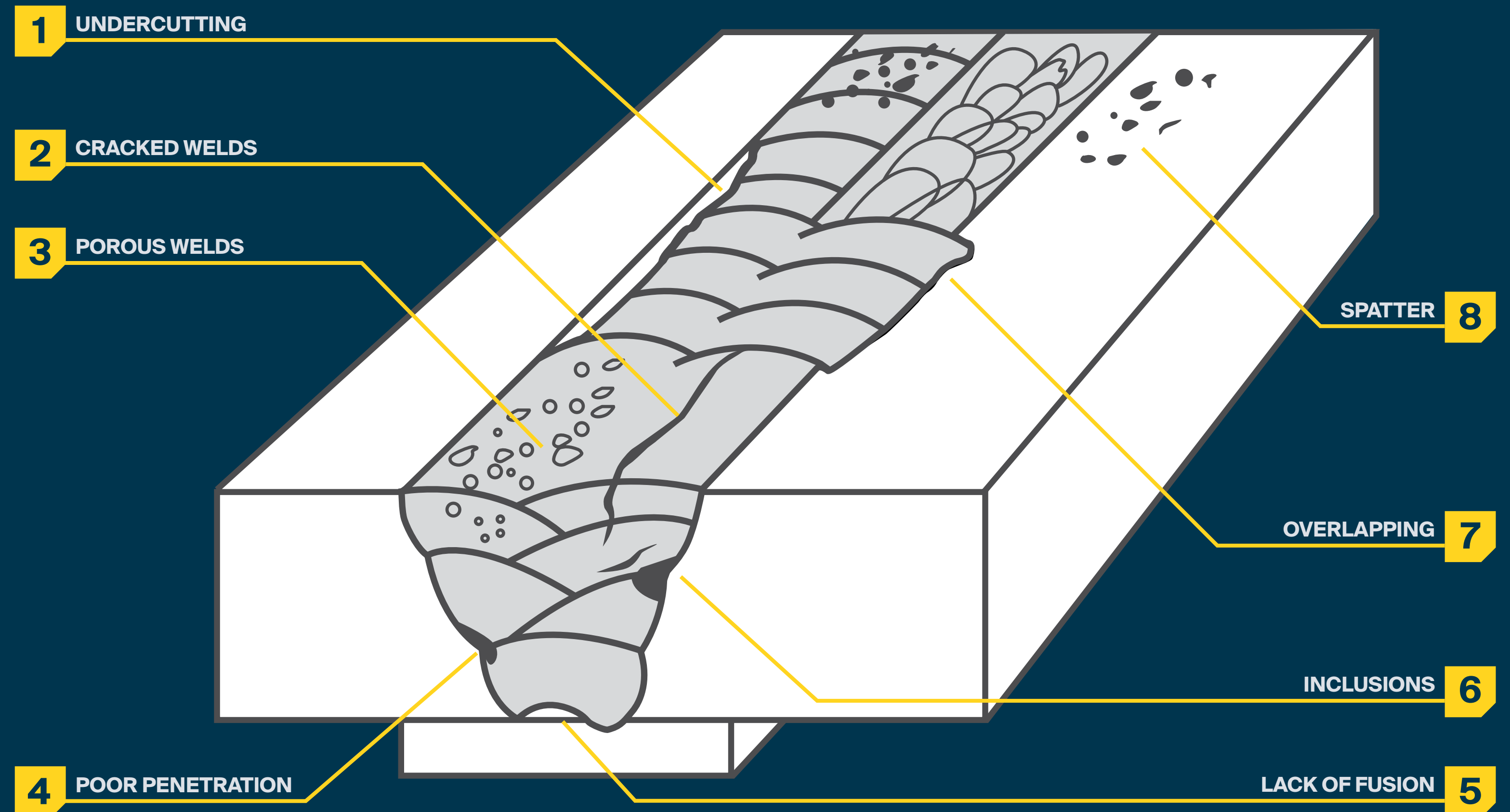


## GUIDE TO COMMON WELDING TROUBLES

Answers and solutions to common welding problems you can encounter when welding.



### 1 - UNDERCUTTING

#### WHY

- Faulty electrode manipulation
- Welding current too high
- Too long an arc length
- Too fast travel speed
- Arc blow

#### WHAT

- Pause at each side of the weld bead when using a weaving technique
- Use proper electrode angles
- Use proper welding current for electrode size and welding position
- Reduce arc length
- Reduce travel speed
- Reduce effects of arc blow

### 2 - CRACKED WELDS

#### WHY

- Insufficient weld size
- Excessive joint restraint
- Poor joint design and/or preparation
- Filler metal does not match base metal
- Rapid cooling rate
- Base metal surface covered with oil, grease, moisture, rust, dirt or mill scale

#### WHAT

- Adjust weld size to part thickness
- Reduce joint restraint through proper design
- Select the proper joint design
- Use more ductile filler
- Reduce cooling rate through preheat
- Properly clean base metal prior to welding

### 3 - POROUS WELDS

#### WHY

- Excessively long or short arc length
- Welding current too high
- Insufficient or damp shielding gas
- Too fast travel speed
- Base metal surface covered with oil, grease, moisture, rust, mill scale, etc.

#### WHAT

- Maintain proper arc length
- Use proper welding current
- Increase gas flowrate and check gas purity
- Reduce travel speed
- Properly clean base metal prior to welding
- Properly maintain and store electrode

### 4 - POOR PENETRATION

#### WHY

- Travel speed too fast
- Welding current too low
- Poor joint design and/or preparation
- Electrode diameter too large
- Wrong type of electrode
- Excessively long arc length

#### WHAT

- Decrease travel speed
- Increase welding current
- Increase root opening or decrease root face
- Use smaller electrode
- Use electrode with deeper penetration characteristics
- Reduce arc length

### 5 - LACK OF FUSION

#### WHY

- Improper travel speed
- Welding current too low
- Faulty joint preparation
- Too large an electrode diameter
- Magnetic arc blow
- Wrong electrode angle

#### WHAT

- Reduce travel speed
- Increase welding current
- Weld design should allow electrode accessibility to all surfaces within the joint
- Reduce electrode diameter
- Reduce effects of magnetic arc blow
- Use proper electrode angles

### 6 - INCLUSIONS

#### WHY

- Incomplete slag removal between passes
- Erratic travel speed
- Too wide a weaving motion
- Too large an electrode
- Letting slag run ahead of arc
- Tungsten spitting or sticking

#### WHAT

- Completely remove slag between passes
- Use a uniform travel speed
- Reduce width of weaving technique
- Use a smaller electrode size for better access to joint
- Increase travel speed or change electrode angle or reduce arc length
- Properly prepare tungsten and use proper current

### 7 - OVERLAPPING

#### WHY

- Arc blow
- Welding current too high
- Too long an arc length
- Wet, unclean or damaged electrode

#### WHAT

- Attempt to reduce the effect of arc blow
- Reduce welding current
- Reduce arc length
- Properly maintain and store electrodes

### 8 - SPATTER

#### WHY

- Too slow travel speed
- Incorrect electrode angle
- Too large an electrode

#### WHAT

- Increase travel speed
- Use proper electrode angles
- Use a smaller electrode size