GAS TUNGSTEN ARC WELDING (TIG) TROUBLESHOOTING TIPS

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PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Excessive electrode consumption	Inadequate gas flow	Increase gas flow
	Operating on DCEP	Use larger electrode or change to DCEN
	Improper electrode size or tip too sharp for required current	Use larger electrode or correct tip shape
	Excessive heating in holder	Check concentricity and contact with collet and tighten if necessary
	Contaminated electrode	Remove contaminated portion
	Electrode oxidation during cooling	Keep inert gas flowing for 15 seconds after extinguishing arc
	Using gas containing oxygen or carbon dioxide	Change to proper gas for the application
Erratic arc	Base metal dirty or greasy	Use appropriate cleaners, wire brush, or abrasives
	Joint is too narrow	Open joint groove; bring electrode closer to work: decrease voltage
	Contaminated electrode	Remove contaminated portion
	Arc is too long	Shorten arc
	Magnetic fields affecting the arc	Rearrange workpiece connection; use magnetic arc stabilizer; degauss metal and tooling
	Incorrect electrode size	Use electrode with minimal diameter that will handle maximum current
	Gas flow problems	Check flow control and sufficiency of gas supply
	Tungsten tip irregular, bad finish, or nonaxial ground	Prepare tip properly; consistent finish and angle
Porosity	Entrapped gas	Purge air from lines before striking arc: remove condensed moisture from lines and work; use welding-grade inert gas
	Defective gas hose or loose connection	Check hose and connections for leaks: do not use rubber hoses; viton or polyethylene hoses are acceptable; replace contaminated hoses
	Oil film on base metal	Clean with approved chemical cleaner. Do not weld while base metal is damp
	Contaminated filler metal	Clean filler metal or use fresh supply
	Base metal has high gas content or impurities	Use different base; use low-penetration passes
	Dye penetrant media not completely removed	Grind base metal until all traces of penetrant are removed
Cracking	Geometric restraint	Use joint designs that avoid excessive restraint
	Thermal stresses	Use more passes to reduce heat input
	Insufficient root thickness	Reduce travel speed or increase current
	Hot cracking	Use correct travel speed and current to reduce melting. Use filler metal that is free of low melting constituents Make sure filler metal is correct for base metal
	Metallurgical imbalances	Add filler metal at correct rate for current and travel speed
	Filler metal problems	
Tungsten contaminates weld metal	Contact starting with tungsten electrode	Use high frequency or other starter; use copper striking plate
	Electrode melting and alloying with base metal	Use less current (especially during starting) or larger electrode
	Touching electrode to molten pool	Use longer arc length
	Welding current too high or erratic	Reduce arc current or increase electrode size

Excerpted from C5.5/C5.5M:2003, *Recommended Practices for Gas Tunsten Arc Welding*, June 2007