TROUBLE SHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
EXCESSIVE ELECTRODE CONSUMTION	1. Inadequate gas flow. 2. Improper size electrode for current required. 3. Operating of reverse polatiy. 4. Electrode contamination. 5. Excessive heating inside torch. 6. Electrode oxidizing during cooling. 7. Shield gas incorrect.	1. Increase gas flow. 2. Use larger electrode. 3. Use larger electrode or change polarity. 4. Remove contaminated portion, then prepare again. 5. Replace collet, try wedge collet or reverse collet. 6. Increase gas post flow time to 1 sec. per 10 amps. 7. Change to proper gas (no oxygen or Co2).
ERRATIC ARC	1. Incorrect voltage (arc too long). 2. Current too low for electrode size. 3. Electrode contaminated. 4. Joint too narrow. 5. Contaminated shield gas, dark stains on the electrode or weld bead indicate contamination. 6. Base metal is oxidized, dirty or oily.	1. Maintain short arc length. 2. Use smaller electrode or increase current. 3. Remove contaminated portion, then prepare again. 4. Open joint groove. 5. The most common cause is moisture or aspirated air in gas stream. Use welding grade gas only. Find the source of the contamination and eliminate it promptly. 6. Use appropriate chemical cleaners, wire brush, or abrasives prior to welding.
INCLUSION OF TUNGSTEN OR OXIDES IN WELD	1. Poor scratch starting technique.. 2. Excessive current for tungsten size used. 3. Accidental contact of electrode with puddle. 4. Accidental contact of electrode to filler rod. 5. Using excessive electrode extension. 6. Inadequate shielding or excessive drafts. 7. Wrong gas. 8. Heavy surface oxides not being removed.	1. Many codes do not allow scratch starts. Use copper strike plate. Use high frequency arc starter. 2. Reduce the current or use larger electrode. 3. Maintain proper arc length. 4. Maintain a distance between electrode and filler metal. 5. Reduce the electrode extension to recommended limits. 6. Increase gas flow, shield arc from wind, or use gas lens. 7. Do not use Ar-02 or Ar-Co2 GMA (MIG) gases for TIG welding. 8. Use ACHF, adjust balance control for maximum cleaning, or wire brush and clean the weld joint prior to welding.
POROSITY IN WELD DEPOSIT	1. Entrapped impurities, hydrogen, air, nitrogen, water vapor. 2. Defective gas hose or lose connection. 3. Filler material is damp (particulary aluminum). 4. Filler material is oily or dusty. 5. Alloy impurities in the base metal such as sulpher, phosporus, lead and zinc. 6. Excessive travel speed with rapid freezing of weld trapping gases before they escape. 7. Contaminated shield gas.	1. Do not weld on wet material. Remove condensation from line with adequate gas pre-flow time. 2. Check hoses and connections for leaks. 3. Dry filler metal in oven prior to welding. 4. Replace filler metal. 5. Change to a different alloy composition which is weldable. These impurities can cause a tendency to crack when hot. 6. Lower the travel speed. 7. Replace the shielding gas.
CRACKING IN WELDS	1. Hot cracking in heavy section or with metals which are hot shorts. 2. Crater cracks due to improperly breaking the arc or terminating the weld at the joint edge. 3. Post weld cold cracking, due to excessive joint restraint, rapid cooling, or hydrogen embrittlement. 4. Centerline cracks in single pass welds. 5. Underbead cracking from brittle microstructure.	1. Preheat, increase weld bead cross-section size, change weld bead contour. Use metal with fewer alloy impurities. 2. Reverse direction and weld back into previous weld at edge. Use Amptrak or foot control to manually down slope current. 3. Preheat prior to welding, use pure or non-contaminated gas. Increase the bead size. Prevent craters or notches, Change the weld joint design. 4. Increase bead size. Decrease root opening, use preheat, prevent craters. 5. Eliminate sources of hydrogen, joint restraint, and use preheat.
INADEQUATE SHIELDING	1. Gas flow blockage or leak in hoses or torch. 2. Excessive travel speed exposes molten weld to atmospheric contamination. 3. Wind or drafts. 4. Excessive electrode stickout. 5. Excessive turbulence in gas stream.	1. Locate and eliminate the blockage or leak. 2. Use slower travel speed or carefully increase the flow rate to a safe level below creating excessive turbulence. Use a trailing shield cup. 3. Set up screens around the weld area. 4. Reduce electrode stickout. Use a larger size cup 5. Change to gas saver parts or gas lens parts.
ARC BLOW	1. Induced magnetic field from DC weld current. 2. Arc is unstable due to magnetic influences.	1. Change to ACHF current. Rearange the split ground connection. 2. Reduce weld current and use arc length as short as possible.
SHORT PARTS LIFE	1. Short water cooled leads life. 2. Cup Shattering or cracking in use 3. Short collet life. 4. Short torch head life. 5. Gas hoses ballooning, bursting, or blowing off while hot.	1. Verify coolent flow direction, return flow must be on the power cable lead. 2. Change cup size or type, change tungsten position, refer to chart. 3. Ordinary style is split and twists or jams. change to wedge style. 4. Do not operate beyond rated capacity, use water cooled model, do not bend rigid torches. 5. Incorrect flowmeter, TIG flowmeters operate at 35 psi with low flows. MIG flowmeters operate with high flows at 65 psi of more.

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