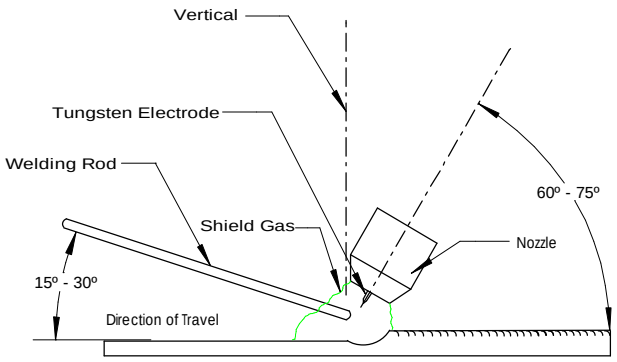
COLOR CODE AND ALLOYING ELEMENTS FOR VARIOUS TUNGSTEN ELECTRODE ALLOYS

AWS CLASSIFICATIONS	COLOR*	ALLOYING ELEMENT	ALLOYING OXIDE	NOMINAL WEIGHT OF ALLOYING OXIDE PERCENT
EWP	Green	-	-	-
EWCe-2	Orange	Cerium	CeO2	2
EWLa-1	Black	Lanthanum	La2O3	1
EWTh-1	Yellow	Thorium	ThO2	1
EWTh-2	Red	Thorium	ThO2	2
EWZr-1	Brown	Zirconium	ZrO2	.25
EWG	Gray	Not Specified**	-	-

***Color may be applied in the form of bands, dots, etc., at any point on the surface of the electrode.**
****Manufacturers must identify the type and nominal content of the rare earth oxide additions.**

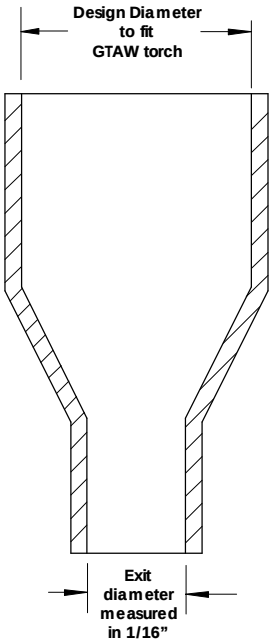
CORRECT TORCH AND ROD POSITIONING



The suggested electrode and welding rod angles for welding a bead on plate. The same angles are used when making a butt weld. The torch is held 60º - 75º from the metal surface. This is the same as holding the torch 15º - 30º from the vertical.

Take special note that the rod is in the shielding gas during the welding process.

SELECTING THE CORRECT TORCH NOZZLE



Most nozzles used for GTAW are manufactured from ceramic materials, alumina (pink colored) and lava (white colored). The exit diameter (diameter closest to the arc) is manufactured in a variety of sizes. GTAW nozzles are also made in various lengths from short nozzles to extra-long nozzles.

Alumina nozles are the most commonly used nozzles in GTAW. Alumina nozzles are molded from alumina oxide and the density of the alumina oxide determines the quality of the nozzle in relationship to impact resistance and thermal shock. Alumina nozzles are more inpact resistant than lava nozzles. The impact resistance of the alumina nozzles makes them more durable and are used for general applications.

Ceramic (lava) cups are recommend for use in applications where high reflective heat is present. Alumina nozzles tend to break when used in confined areas or when high reflective heat is present. If this type of usage is contemplated, we recommend the use of ceramic (lava) cups. When alumina nozzles are fired in the oven at 3000° F during manufacturing, they shrink 18% in length and 27% in diameter. If the nozzle is subsequently used in a confined area, excessive heat is transferred back into the nozzle causing it to expand. Cooling shrinks the nozzle back to normal. The large difference between expansion and contraction results in breakage.

The exit diameter for any nozzle is specified with a number that represents the diameter in 1/16” (1.6mm) increments. A number 5 nozzle is therefore 5/16” inside diameter. A number 6 nozzle is 3/8” or 6/16” and so on.

The diameter for any nozzle must be large enough to allow the entire weld area to be covered by the shielding gas. The exit diameter can be neither too large nor too small, or poor shield gas coverage will result. (Refer to page 3 for correct cup size.)

GAS LENS BENEFITS

A collet body with a gas lens can be very useful to a welder. The purpose of a gas lens is to make the shielding gas exit the nozzle as a column instead of as a turbulent stream of gas that begins to spread out after exiting. The column of gas allows the electrode to stick out farther for visibility, allowing for better access to the weld area, and a reduction in gas flow (CFH/L/Min).