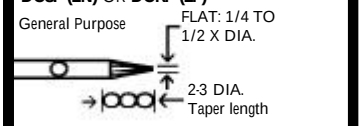
TUNGSTEN ELECTRODE SELECTOR CHART

BASE METAL TYPE	THICKNESS RANGE	DESIRED RESULTS	WELDING CURRENT	ELECTRODE TYPE	SHIELD GAS	TUNGSTEN PERFORMANCE CHARACTERISTICS
ALUMINUM ALLOYS AND MAGNESIUM ALLOYS	All	General Purpose	ACHF	Pure (EW-P)	Argon	Balls easily, low cost, tends to spit at higher currents, used for non-critical welds only.
				Zirconiated (EW-Zr)	Argon	Balls well, takes higher current, with less spitting and with better arc starts and arc stability than pure tungsten.
				2% Thoriated (EW-Th2)	75 Argon 25 Helium	Higher current range and stability, better arc starts, with lower tendency to spit, medium erosion.
	Only thin sections	Control penetration	DCRP	2% Ceriated (EW-Ce2)	Argon Helium	Lowest erosion rate, widest current range, AC or DC, no spitting, best arc starts and stability.
	Only thick sections	Increase penetration or travel speed	DCSP	2% Thoriated (EW-Th2)	75 Argon 25 Helium	Best stability at medium currents, good arc starts, medium tendency to spit, medium erosion rate.
				2% Ceriated (EW-Ce2)	Helium	Low erosion rate, wide current range, AC or DC, no spitting, consistent arc starts, good stability.
COPPER ALLOYS, Cu-NI ALLOYS AND NICKEL ALLOYS	All	General Purpose	DCSP	2% Thoriated (EW-Th2)	75 Argon 25 Helium	Best stability at medium currents, good arc starts, medium tendency to spit, medium erosion rate.
				2% Ceriated (EW-Ce2)	75 Argon 25 Helium	Low erosion rate, wide current range, AC or DC, no spitting, consistent arc starts, good stability.
	Only thin sections	Control penetration	ACHF	Zirconiated (EW-Zr)	Argon	Use on lower currents only, spitting on starts, rapid erosion rates at higher currents.
	Only thick sections	Increase penetration or travel speed	DCSP	2% Ceriated (EW-Ce2)	75 Argon 25 Helium	Low erosion rate, wide current range, AC or DC, no spitting, consistent arc starts, good stability.
MILD STEELS, CARBON STEELS ALLOY STEELS STAINLESS STEELS AND TITANIUM ALLOYS	All	General Purpose	DCSP	2% Thoriated (EW-Th2)	75 Argon 25 Helium	Best stability at medium currents, good arc starts, medium tendency to spit, medium erosion rate.
				2% Ceriated (EW-Ce2)	75 Argon 25 Helium	Low erosion rate, wide current range, AC or DC, no spitting, consistent arc starts, good stability.
				2% Lanthanated (EWG-La2)	75 Argon 25 Helium	Lowest erosion rate, widest current range on DC, no spitting, best DC arc starts and stability.
	Only thin sections	Control penetration	ACHF	Zirconiated (EW-Zr)	Argon	Use on lower currents only, spitting on starts, rapid erosion rates at higher currents
	Only thick sections	Increase penetration or travel speed	DCSP	2% Ceriated (EW-Ce2)	75 Argon 25 Helium	Low erosion rate, wide current range, no spitting, consistent arc starts, good stability.
				2% Lanthanated (EWG-La2)	Helium	Lowest erosion rate, highest current range, no spitting, best DC arc starts and stability.

TUNGSTEN TIP PREPARATION

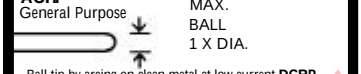
DCSP (EN) OR **DCRP (EP)**

General Purpose



ACHF

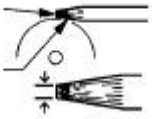
General Purpose



Ball tip by arcing on clean metal at low current **DCRP** (EP) then slowly increase current to form the desired ball diameter. **Return setting to AC**.

TUNGSTEN GRINDING

Shape by grinding longitudinally (never radially). Remove the sharp point to leave a truncated point with a flat spot. Diameter of flat spot determines amperage capacity. (See below)

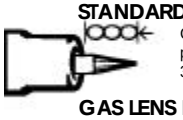


The included angle determines weld bead shape and size. Generally, as the included angle increases, penetration increases and bead width decreases.

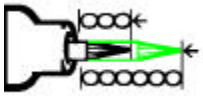
Use a medium (60 grit or finer) aluminum oxide wheel.

TUNGSTEN EXTENSION

STANDARD PARTS



GAS LENS PARTS



(IN DRAFT-FREE AREAS)

TUNGSTEN ELECTRODE TIP SHAPES AND CURRENT RANGES

Thoriated, ceriated, and lanthanated tungsten electrodes do not ball as readily as pure or zirconiated tungsten electrodes, and as such are typically used for **DCSP** welding. These electrodes maintain a ground tip shape much better than the pure tungsten electrodes. If used on AC, thoriated and lanthanated electrodes often spit. Regardless of the electrode tip geometry selected, it is important that a consistent tip configuration be used once a welding procedure is established. Changes in electrode geometry can have a significant influence not only on the weld bead width, depth of penetration, and resultant quality, but also on the electrical characteristics of the arc. Below is a guide for electrode tip preparation for a range of sizes with recommended current ranges.

ELECTRODE DIAMETER MM	ELECTRODE DIAMETER IN	DIAMETER AT TIP MM	DIAMETER AT TIP IN	CONSTANT INCLUDED ANGLE, DEGREES	CURRENT RANGE A	PULSED CURRENT RANGE A
1.0	.040	.125	.005	12	2-15	2-25
1.0	.040	.250	.010	20	5-30	5-60
1.6	1/16	.500	.020	25	8-50	8-100
1.6	1/16	.800	.030	30	10-70	10-140
2.3	3/32	.800	.030	35	12-90	12-180
2.3	3/32	1.100	.045	45	15-150	15-250
3.2	1/8	1.100	.045	60	20-200	20-300
3.2	1/8	1.500	.060	90	25-250	25-350