

MIG/MAG (Metal Inert/Active Gas Arc Welding)

There must be a balance between the rate of melting of the electrode and the welding speed, if this is lacking, there will be the extinction of the arc-electric because of the short circuit or because the arc is too long. Divided into two groups: electric arc-constant (free-flight transfer) and transfer by short circuit.

		Brief description	Voltage applied (volts)	Intensity applied (amp)	Diameter of wire (mm)	Welding	Notes	Type of materials
Flight-free transfer	Globular	Gravitational forces are very important in the projection of the drop (greater than the diameter of electrode).	Moderate (20~25)	Moderate (180~250)	(1.0~1.2)	Flat and horizontal	Low rate of deposition. Welding speed ~100mm / s. Large residual stresses and distortion. High level of splashing.	Ferrous materials
	Spray	With high voltage and current, we have very small droplets and so don't occur the formation of splashes.	High (20~35)	High (200~350)	(1.7~2.4)	Avoid vertical or top steps. Appropriate to filling steps	Very good quality of the weld. High heat and high delivery rates of deposit. Are used active gases. Welding speed, 60mm / s.	Aluminum Stainless Steel
	Pulsed - spray	Uses the spray transfer but with pulsed current, which drops one drop per cycle (30 ~ 400 pulses per second).	High (20~30)	High (170~300)	(1.0~2.2)	All positions	Uses less intensity than spray and can weld thinner parts. Welding speed, 85 mm / s. Must use an inert gas for protection.	All metals
Short circuit transfer	Short-circuiting	Diameter of the electrode is lower and the electric-arc is protected by carbon dioxide (CO ₂). Between the creation and extinction of the arc we can have 90 ~ 100 drops / s.	Low (17~22)	Low (100~200)	(0.5~0.7)	All positions. Ideal for thin plates and root passes	Weld finer materials with small melting bath. Using CO ₂ instead of argon or helium, it has bigger penetration. Low Welding speed. Few residual stresses and distortion. High instability of the arc. Moderate levels of splashing.	Ferrous materials
	Modified short-circuiting	Eliminates problems of turbulence and lack of fusion in the bath of welding due to the instability of ignition and extinction of the arc-electric.	Low (17~22)	Low (100~200)	(0.5~0.8)			
	Pulsed transfer	Eliminates problem of having to use high voltage and current presents in the transfer by spray. Use a square wave pulsed current.	Low-Moderate (19~26)	Low-Moderate (100~250)	(1.7~2.4)	All positions	It has a low rate of deposition, similar to the transfer by spray. Improves the morphology of the weld.	Aluminum Stainless Steel