

The welding process: MIG/MAG

Metal inert gas welding

Inert shielding gases (reactionless gases):
Argon, helium; used in particular with
aluminium and copper alloys

Metal active gas welding

Active shielding gases (reactive gases): CO₂, argon + oxygen and/or CO₂; used with steel, but also chrome-nickel steels

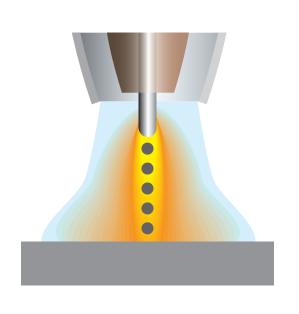
Contact tip Contact tip Contact tip Dip transfer arc Wire electrode Sheilding gas Contact tip Dip transfer arc - For welding light-gauge sheets - Very good for root passes - Little spatter

In —

Intermediate arc

Very easy to control

- For medium-thickness sheets
- For position welding of thick sheets
- Very high spatter build-up
- Should be avoided

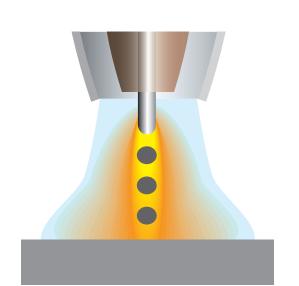


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Pulsed arc

- Very little spatter
- Creates very flat fillet welds
- Can be used with larger wire diameters
- Universally applicable



Spray arc

- Only for thick sheets
- High amperages required
- Can create flat seams
- Barely any spatter

Welding torch

The welding torch forms the interface (incl. hosepack) to the power source and guides the filler metal and the arc. The gas nozzle focuses the stream of outflowing gas, ensuring clean shielding of the weld seam. Depending on the power range and duty cycle, gas-cooled or water-cooled torches are available.

2 Wirefeeder

The wirefeeder ensures constant, precise and smooth transport of the filler metal. It is either integrated into the power source housing or located externally in its own housing.

3 Gas pressure regulator

The gas pressure regulator regulates and stabilises the desired shielding gas flow rate.

4 Filler metal

Solid wires and flux core wires function as filler metals.

5 Cooling unit

The cooling unit ensures optimum cooling of the welding torch.

6 Power source

Transformation: High mains voltage is transformed into low welding voltage Rectification: AC is converted into DC Regulation: Welding parameters are adapted to suit the welding task at hand

Advantages

- High deposition rate
- High welding speed
- Deep penetration
- Constant wire diameter
- Complete mechanisation possible

Application areas

- Unalloyed and low-alloy steels (MAG)
- Increasing use with CrNi steels (MAG) and aluminium materials (MIG)
- In steel construction, shipbuilding, rail
 vehicle construction, container construction...

The Process

The arc burns between a consumable electrode

material. The protective gas shield protects the

and the workpiece. The "endless" electrode

functions both as an arc carrier and a filler

arc from the ingress of atmospheric oxygen.

ISO 4063 131 (MIG) ISO 4063 135 (MAG)