PLASMA

MADE IN FRANCE

Technologies, Torches and Consumables

GYS

INVEST IN THE FUTURE

PLASMA : 4th STATE OF MATTER

Starting from the solid state, the more energy we add the more we tend to the gaseous. At this final stage, around 2000°C, the gas will ionise and become conductive. This 4th stage is called **Plasma**.

PLASMA CUTTING

A **Plasma cutting system** is composed of **a current source, an arc ignition circuit and a torche**.

The current source creates a short-circuit between the electrode and the tip. The air pressure establishes the necessary distance between these two parts to generate a pilot arc.

Approaching the torch to the conductive part to cut, an electric arc will cause ionisation of the gas and generate the Plasma jet.

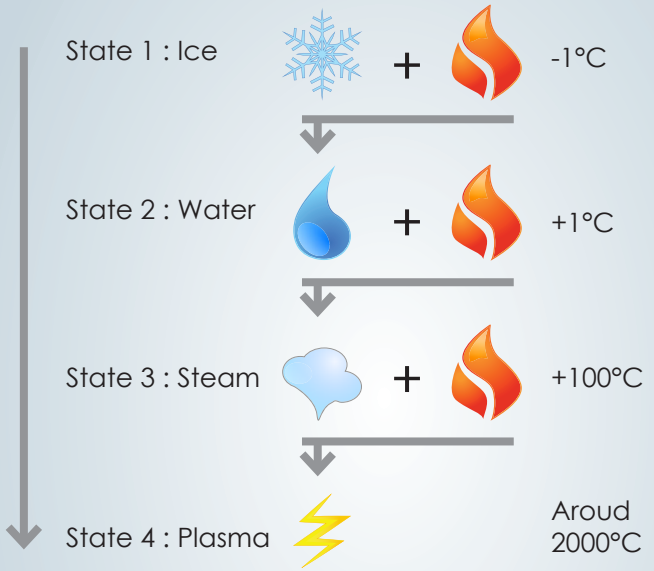
This Plasma generates such heat that the metal melts and will be ejected by the air flow, which will allow the separation.

ARC IGNITION TECHNOLOGY

• The low frequency ignition occurs without contact with the sheet. A pilot arc is created and initated the Plasma. This process is safe for surrounding devices that are sensitive to electromagnetism. All **GYS** devices are designed with this technology.

• The high frequency ignition occurs without contact with the sheet. It generates interference that disturb nearby equipment.

EXAMPLE: WATER WITH ENEGY ADDITION IN CALORIC FORM



THE TORCH, ESSENTIAL ELEMENT OF THE CUT

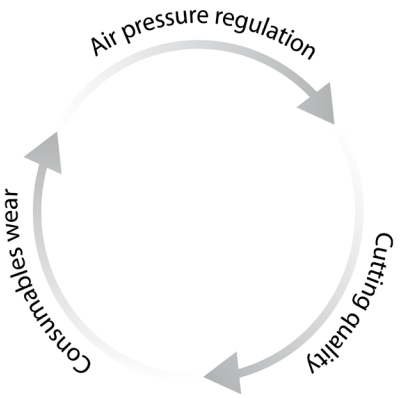
The design of a Plasma torch plays a crucial role in the cutting quality and speed. Fitted with different consumables that will create and maintain the arc. The torch is subject to high temperature and pressure. Its design influences consumable wear.

THE ROLE OF THE AIR

The air has two different roles :

- Creating and maintening the Plasma arc for cutting.
- Cooling-down the consumables.

Improper air pressure regulation is bad for the quality of the cut and for consumables.



CONSUMABLES

During cutting, consumables are subject to extreme heat, around 2000°C. They will then deteriote progressively after each use, affecting the pressure and cutting quality. It will then be necessary to replace sooner or later some consumables to get back to an optimum cutting quality.

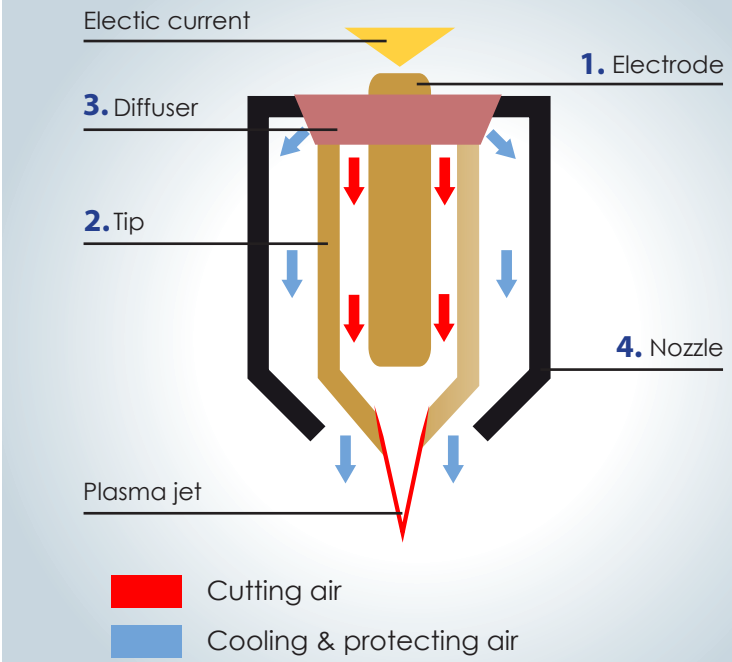
THE ROLE OF CONSUMABLES

1. Electrode : It transfers current from the power supply through the tip to create the Plasma. This is the consumable that wears the fastest. It must be replaced when the diameter of the hole increases (Ø depending of the torch model).

2. Tip : It enables air cutting circulation which when in short-circuit with the electrode will create the Plasma. It must be replaced when the hole is not rounded anymore.

3. Diffuser : It enables an efficient air regulation standardises the air flow. To replacei in case of distortion or if the holes are clogged.

4. Nozzle : It enables air circulation for cooling-down the torch. Its wear is due to projections of molten metal. To be replaced in case of distortion or significant impacts.



PLASMA WITH OR WITHOUT INTEGRATED COMPRESSOR

The integrated compressor enables to work without a fixed air supply and so gain mobility. This type of device is suitable for working on site and difficult access operation.

A device without an integrated compressor must be connected to an external compressed air supply. This source, more powerful, enables higher duty cycles and can integrate the Flexible Voltage technology to the device.

	CUTTER 25K	CUTTER 31FV	CUTTER 35K	CUTTER 40FV
Nozzle	040182	040236	040229	040236
Tip	040151	040212		
Diffuser	040175			
Electrode	040168			
Compressor		-		-

READY TO USE

With our premade boxes of consumables, you can have all you need at hand to equip your torch.

Box for 25K (ref. 039971) ➤ 1 nozzle, 3 tips, 1 diffuser and 3 electrodes

Box for 31FV (ref. 039964) ➤ 1 nozzle, 3 tips, 1 diffuser and 3 electrodes

Box for 35K and 40FV (ref. 039957) ➤ 1 nozzle, 3 tips, 1 diffuser and 3 electrodes

FOCUS ON THE CUTTER 85A TRI

TECHNICAL ADVANCES

The Plasma CUTTER 85A TRI is designed with an automatic air pressure regulation which enables an optimal cutting quality over a longer period even with wear consumables. It requires a torch with a more sophiticated design.

- Equipped with a shield, the torch can be in direct contact with the metal to cut. This shield protects the tip and enables to keep a steady distance for a consistent cutting. It must be replaced if it's deformed or blocked by projections.
- A tube is inserted in the electrode enabling to cool it down and to increase its lifetime.
- With special consumables and this new torch the CUTTER 85A TRI is suitable for gouging operation.

trafimet

	Sheld	Nozzle	Tip	Vespel® Diffuser	Electrode	Tube
	 x1	 x1	 x5	 x1	 x5	 x1
Z Torch 	040113	040090	040038	040083	040076	040069
	040052 Gouging		040045 Gouging			
Z Torch AUTO 	040021		040038			
			040045 Gouging			

BOX OF CONSUMABLES

READY TO USE

With the premade box of consumables, you can have all you need at hand to equip your torch.

Box 85A TRI (ref. 039940) ➤ 3 shields, 1 nozzle, 3 tips, 1 diffuser, 3 electrodes and 1 tube
(Gouging consumables not included)

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The last generation torches, **TRAFIMET Z serie** have been designed to get the best cutting quality and ensuring a high cutting speed on any thickness.

The **Trafimet Air Flux System** technology ensures maximum performance of the generator while increases efficiency with cooling extending consumable life.

These torches are low frequency torch and so safe for devices around that are sensitive to electromagnetism.

Several versions of **Z Torch AUTO** have been developped to be suitable for working on a mechanised cutting system.

To get the best from its product, **GYS** fits these last generation torches to its new Plasma **CUTTER 85A TRI**.