SAF-FRO

A passion for welding and cutting dating back to 1909.

Since there foundation in 1909 and 1924, SAF and FRO have never ceased to participate in the evolution of the welding and cutting profession. At the beginning, using the autogeneous oxyacetylene flame welding technique (hence numerous early partnership agreements with AIR LIQUIDE), SAF (La Soudure Autogène Française) and FRO (Fabbriche Riunite Ossigeno) were presented as the most important companies on welding the markets in France and Italy. Their main activity was focussed on ship repairs, this was soon joined by a boiler-making activity. As early as 1913, SAF recognised the advantages offered by the coated electrode welding process and in 1919 launched the first with an all-welded construction ship: the SAF 4 which facilitated the carrying out of ship repair activities.

Since then, the evolutions of the Submerged Arc, TIG, MIG/MAG, plasma, laser, electron beam technologies have progressively been used by SAF and FRO, and marketed to their customers.
Since 1993, SAF and FRO have been integrated into the **Air Liquide Welding** group (Air Liquide's equipment and consumables activity), which allows our customers to benefit from global solutions, processes, gases, equipment and consumables. Thanks to our experience in welding and cutting techniques, SAF and FRO can today propose innovative solutions aimed to improve the productivity of industrialists involved in metal working.

SAF and FRO are now united to provide the best of welding and cutting.

CTAS, a unique innovation capacity at the customer's service. Thanks to CTAS (Technical Centre for Welding Applications) and the design offices of our production units, we can offer innovative solutions to improve your productivity, your production quality as well as your industrial environment. By integrating and mastering the latest technologies, and by constantly improving the existing processes, equipment and consumables we create tomorrow's products.

Permanently listening to our customers
What helps us to create and propose these specific innovations is our capacity of listening to your needs and understanding your requirements thanks to the permanent feed-back of our technical and commercial teams. They understand perfectly that your company is under a constant competition pressure, on your specific markets and that you need to adapt your organization to a moving environment, the best answer being an improvement of productivity… Thanks to this innovation we are sure that we are able to help you in succeeding in your challenge of productivity optimisation.

In this catalogue, you will find the complete range of our equipment for manual welding and cutting applications (MMA, MIG/MAG, TIG, Plasma and Flame processes…) and the collective and individual protection products for welders. Dedicated catalogues are also available for welding consummables (coated electrodes, wires, rods, fluxes, etc...) and automatic application in welding and cutting, please request a copy.

A recognised quality. ISO certification
In order to permanently provide our customers with quality consumables and equipment, all our production units are ISO certified.
For the same reason of quality excellence, to warranty our customers an efficient handling of their orders, sales administration and customers service are also ISO certified.

Summary

CHAPTER 4
Plasma cutting

4 PAGE 53

CHAPTER 5
Gas welding and cutting

5 PAGE 61

CHAPTER 6
Welder's protection, accessories, extraction and treatment of fumes

6 PAGE 77

For automatic applications, see our special catalogue: Cat. no W 000 120 681

Power sources, general information

Protection index IP 23

Most of the SAF-FRO power sources have a protection index of type IP 23.

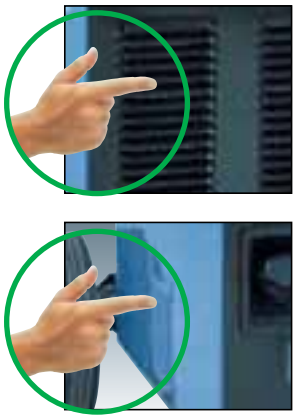
Signification: IP 2 3

2

An object with a diameter of more than 12.5 mm cannot penetrate and make contact with an internal element under dangerous voltage.

3

The power source is protected against any deterioration caused by water falling in raindrops with a maximum angle of 60° (IP 21: protection against vertical water projections).

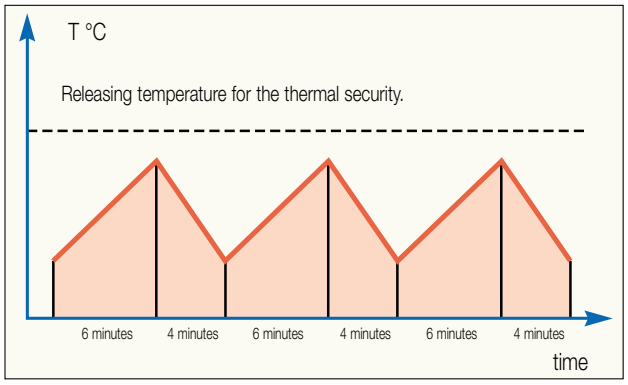


Duty cycle

(Defined by EN 60 974-1 standard)

Functioning cycle	10 min.
Ambient temperature	40 °C.

Example: 250 A at 60% means that, with a stabilised cycle and temperature, the power source will be able to deliver 250 A with a working cycle of 6 minutes and 4 minutes of pause (at an ambient temperature of 40 °C).



At a duty cycle of 100%, the power source can permanently deliver the corresponding intensity with an ambient temperature of 40 °C.