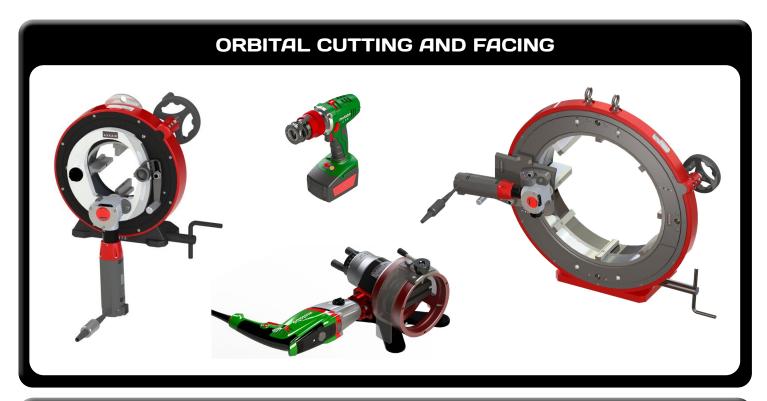




# ORBITAL WELDING PREFABRICATION







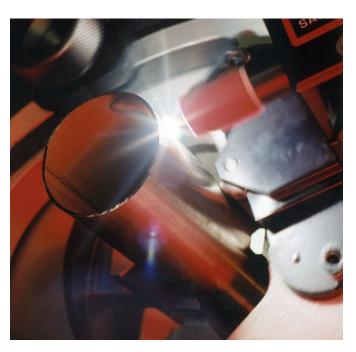


# **Orbital welding: Prefabrication**

Orbital welding involves rotating a Tungsten electrode around a tube to weld it to other tubes or accessories.

Our welding range incorporates a unique and atypical orbital welding machine for so-called "prefab" because it cannot be brought to the tube, it is the tube that is brought to the machine.

It is an axial loading machine which involves being able to pull out the tube as well as the welded accessory.



These machines that use standard cutting and bevelling frames have the advantage of being very robust and easy to use.

In fact, the SX range is mainly intended for workshop or building site prefabrication use. These machines are also used to carry out repeatable production welding on suitable elements.

Our machines can all be equipped with either an air-cooled torch or a water-cooled torch, with or without filler metal.

#### FLEXIBILITY, PRODUCTIVITY

Welding with a water or air cooled torch with or without filler metal. It allows production of medium to large series of welding sub-assemblies. The diameter range of each machine is very wide and does not require specific jaws.

#### QUALITY AND REPEATABILITY

TIG welding without tube distortion (multi-contact concentric clamping) ideal for thin walled stainless steel tubes. Mechanical tracking and axial adjustment optimize the quality of your welds.

#### **EASY TO USE**

Robust and intuitive, it is adapted to any operator profile.









Please do not hesitate to contact us for all enquiries relating to orbital welding technology.

We will be glad to share our know-how with you and to devise a solution that best meets your needs!



# SX122 - 172 - 222 - 322



# No tube deformation

Concentric clamping

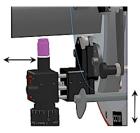


Basic and extra stainless steel jaws: no pollution of stainless steel tubes

# Accurate positioning

# Axial adjustment of

the electrode position: facilitates location of the parts to be welded Adjustment of the tube's axial position +/- 5 mm



# Micrometric adjustment of the height of the arc

Accuracy of adjustment without



# Air Cooled or **Water Cooled**









# **Rotating**

Connect to the SAXX range welding power sources

### **Constant distance:** electrode-tube

Mechanical tracking of tube ovalization from the outside.



specific tooling



Easy handling

and

# Compatible with the SAXX power sources



,	Opening capacity
122	ø12 - ø119 mm 0.25" - 4.5"
172	ø16 - ø173 mm 0.625" – 6.625"
222	55 - ø228 mm 2.375" – 8.625"
322	ø141 mm - ø328 mm 5.563" – 12.750"





# SX122 - 172 - 222 - 322

# **Technical characteristics:**

Machines for TIG orbital prefab welding.

Choice of: AIR cooling or WATER cooling

For optimum use, the ambient temperature must be between 0 °C and + 40 °C.

Compatible with AXXAIR's SAXX orbital power sources that have an automatic parameter calculation mode.

The power source will offer you parameters adapted to the characteristics of the tubes / accessories to be welded.

The machine can be supplemented by a wire feed system. For details, please refer to accessories.

For welding with an AVC / OSC system please refer to the catalogue for thick walled tubes.

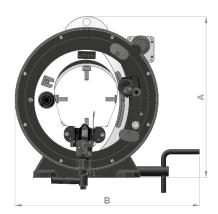






Model	100% Duty cycle
SX-xx2-E (WATER)	200 A
SX-xx2-A (AIR)	100 A





Product		Machine's jaw ope	ning capacity in mm		Dimensions
	Code	With basic jaws	With extra jaws (included)	Net weight	(AxBxC in mm)
	SX122-A	Ø29 - Ø119	Ø <mark>12</mark> - Ø99	45 kg	446 x 541 x 350
Cooling	SX172-A	Ø74 - Ø <mark>173</mark>	Ø <mark>16</mark> - Ø116	52 kg	493 x 566 x 350
AIR	SX222-A	Ø128 - Ø <mark>228</mark>	Ø <mark>55</mark> - Ø155	60 kg	548 x 594 x 350
	SX322-A	Ø230 - Ø <mark>328</mark>	Ø141 - Ø239	73 kg	649 x 644 x 350
	SX122-E	Ø29 - Ø119	Ø <mark>12</mark> - Ø99	45 kg	446 x 541 x 350
Cooling	SX172-E	Ø74 - Ø <mark>173</mark>	Ø <mark>16</mark> - Ø116	52 kg	493 x 566 x 350
WATER	SX222-E	Ø128 - Ø <mark>228</mark>	Ø <mark>55</mark> - Ø155	60 kg	548 x 594 x 350
	SX322-E	Ø230 - Ø <mark>328</mark>	Ø141 - Ø239	73 kg	649 x 644 x 350





# SX122 - 172 - 222 - 322 (simple wire)

# INNOVATIVE ORBITAL SOLUTIONS

# No tube deformation

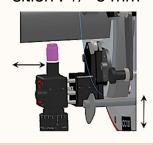
Concentric clamping

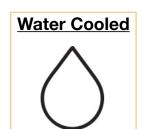


Basic and extra stainless steel jaws: no pollution of stainless steel tubes

# Accurate positioning

Axial adjustment of the electrode position: facilitates location of the parts to be welded Adjustment of the electrode's axial position: +/-5 mm







# **Automatic rotation**

Connected to the SAXX welding power sources

# **Constant distance:** electrode-tube

Mechanical tracking of tube ovalization from the outside.



# Micrometric adjustment of the height of the arc

Accuracy of adjustment without specific tooling



# Easy handling and transportation



# Compatible with the SAXX power sources



Оре	ening capacity
122	ø12 - ø119 mm 0.25" - 4.5 "
172	ø16 - ø173 mm 0.625" – 6.625 "
222	ø55 - ø228 mm 2.375" – 8.625 "
322	ø141 - ø328 mm







<mark>5.563"</mark> – 12.750 "



# SX122 - 172 - 222 - 322 (simple wire)



# **Technical characteristics:**

Machines for TIG orbital prefab welding, water cooled.

For optimum use, the ambient temperature must be between 0 °C and + 40 °C.

Compatible with AXXAIR type SAXX welding generators, we have an automatic parameter calculation mode.

The generator will offer you parameters adapted to the characteristics of the tubes / accessories to be welded.

The machine can be supplemented by a wire feed system. For details, please refer to accessories.

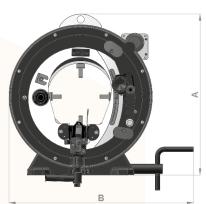
A welding generator with liquid cooling system must be used when welding using these weld module. Cf welding generator characteristics

For welding with an AVC / OSC system please refer to following pages of this catalogue in order to choose a machine already provided with this system.



Model	Operating factor of 100%
SX-xx2-E (WATER)	200 A.





	Product	Machine's jaw opening capacity in mm			Dimensions	
	Code	With basic jaws	With extra jaws h basic jaws (included)		(AxBxC in mm)	
	SX122-E	Ø29 - Ø119	Ø <mark>12</mark> - Ø99	45 kg	446 x 541 x 350	
Water	SX172-E	Ø74 - Ø <mark>173</mark>	Ø <mark>16</mark> - Ø116	52 kg	493 x 566 x 350	
coold EAU	SX222-E	Ø128 - Ø <mark>228</mark>	Ø <mark>55</mark> - Ø155	60 kg	548 x 594 x 350	
	SX322-E	Ø230 - Ø <mark>328</mark>	Ø141 - Ø239	73 kg	649 x 644 x 350	





# **AXXAIR**'s orbital welding

# **Sweep Multi-pass TIG welding**

- AVC/OSC system -

#### Motorised voltage control: AVC

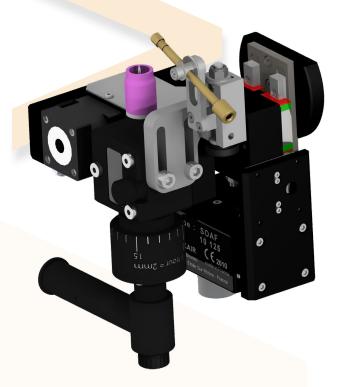
Motorised Arc Voltage Control is often abbreviated to AVC. Arc voltage is directly linked to the distance between the tube to be welded and the electrode. In other words, this option ensures the correct tube-electrode distance is maintained electronically during welding.

AVC can indeed be of huge benefit, especially in mechanised welding, and the more sensors there are to guide the machine, the less user intervention is required.

#### The two most frequent applications:

- When you do not wish to measure the external diameter physically using a feeler probe; AVC requires no contact with the tube and the sensor is more accurate and responsive than with physical tracking.
- When wire welding and the deposition rate beneath the electrode is not fully controlled. this can obviously affect the arc length. In this case, AVC means you never go near the soldering bath.





#### Fusion+OSC+wire:

This welding method combines AVC movement with oscillation of the torch and wire. This method is used for multi-pass welding of high thickness materials.

Torch oscillation is where the electrode is swung left and right in a linear motion so that each side of the joint can be kept liquid as welding progresses.

Oscillation brings an improvement in the number of passes, and therefore significantly improves productivity.

This system, when combined with AVC, is the only effective way of filling a tulip joint in multi-pass TIG welding.

These systems are available on prefabrication machines and open heads.







# SX122 - 172 - 222 - 322 (AVC/OSC)



# No tube deformation

Concentric clamping



Basic and extra stainless steel jaws: no pollution of stainless steel tubes

# **Water Cooled**

AXXAIR



#### **Automatic rotation**

Connected to the SAXX welding power sources

#### Control of the wire

regulation of the wire by the SAXX power source

# **Constant distance:** electrode-tube

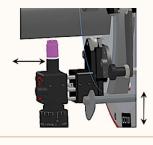
**Motorised setting** and control of the distance tubeelectrode (AVC)

regulates the arc voltage, the distance between the electrode and the tube

# Multi-pass welding

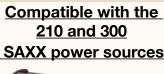
# Mortorised axial sweep (OSC)

Movement of the electrode's axial position: +/- 10 mm



# AVC/OSC system

Allows to weld tubes with up to 12.7 mm wall thickness





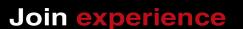
# **Opening capacity** ø12 - ø119 mm 122 0.25" - 4.5 " ø16 - ø173 mm 172 0.625" - 6.625 " ø55 - ø228 mm 222 2.375" - 8.625 " ø141 - ø328 mm 322 <mark>5.563"</mark> – 12.750 "

# Easy handling and transportation









# SX122 - 172 - 222 - 322 (AVC/OSC)



**Operating factor of 100%** 

200 A

#### **Technical characteristics:**

Orbital TIG welding machine for prefabrication with AVC/OSC system, water cooled.

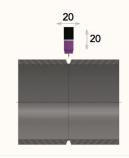
For optimum use, the ambient temperature must be between 0 °C and + 40 °C.

These machines are intended for orbital TIG welding. This range of products may be used for tube-to-tube, tube-to-elbow, tube-to-ferrule and T-joint welding, as well as SMS connectors and other work pieces.

Compatible with AXXAIR type SAXX-210 and SAXX-300 welding generators, we have an automatic parameter calculation mode.

The generator will offer you parameters adapted to the characteristics of the tubes / accessories to be welded.

Oscillation range: 20 mm, AVC range: 20 mm Max speed: 15 mm/s

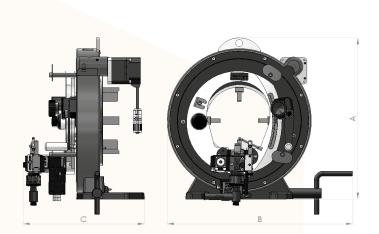


°C.			
		_	•

Model

SX-xx2-NAOF

(WATER)



		Machine's jaw	opening capacity in mm		Dimensions	
	Product Code	With basic jaws	With extra jaws (included)	Net weight	(AxBxC in mm)	
	SX122-NAOF	Ø29 - Ø119	Ø <mark>12</mark> - Ø99	46 kg	446 x 541 x 346-371	
Water	SX172-NAOF	Ø74 - Ø <mark>173</mark>	Ø <mark>16</mark> - Ø116	53 kg	493 x 566 x 346-371	
Cooled	SX222-NAOF	Ø128 - Ø <mark>228</mark>	Ø <mark>55</mark> - Ø155	61 kg	548 x 594 x 346-371	
	SX322-NAOF	Ø230 - Ø <mark>328</mark>	Ø141 - Ø239	74 kg	649 x 644 x 346-371	







Our support legs and stands have been designed to further facilitate welding by ensuring that the machine is stable in varied conditions: in the workshop or on site.

The great advantages of these products are:

- lightness
- flexible handling
- ease of use



<b>Product Code</b>	Description	Net weight	Dimensions (in cm)
CCPS21	Support legs	10 kg	103 x 32 x 11

Support legs for orbital welding machine:

- quick assembly and dismantling
- height adjustment with screws

√SX122-A	√SX172-A	√SX222-A	√SX322-A	√SX122-E	√SX172-E	√SX222-E	√SX322-E
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<b>Product Code</b>	Description	Net weight	Dimensions (in cm)
CCSER1	Stand	10 kg	60 x 26 x 10

Simple stand for supporting tubes with height adjustment:

- quick assembly and dismantling
- height adjustment

√SX122-A	2-E	√SX322-E



<b>Product Code</b>	Description	Net weight	Dimensions (in cm)
CCSER2	Stand (with chrome steel bearings)	11 kg	60 x 26 x 10

Stand with chrome steel bearings for supporting tubes with height adjustment:

- quick assembly and dismantling
- height adjustment

	√SX122-A	√SX172-A	√SX222-A	√SX322-A	√SX122-E	√SX172-E	√SX222-E	√SX322-E
п								





Our support benches help you to position and feed your tubes without the aid of stands.

The height-adjustable table helps you easily and precisely set the height of your machine, for welding tubes placed on the support bench.

The additional tube support bench allows you to position your longest tubes in a stable manner on all benches. We also recommend that you support the cut section in front of your machine using one or more additional benches, depending on the length of the tube.



√SX172-A

<b>Product Code</b>	Description	Net weight	Dimensions (in cm)
CCBSB-X1	Height adjustable tube support bench	57 kg	184 x 95 x 51

#### Height-adjustable support bench, 1.5m:

√SX322-A

- stainless steel rollers
- height adjustment handle
- maximum load 350 kg
- min tube ø: 5 mm

√SX122-E

max tube ø: 321 mm

√SX172-E

√SX222-E

√SX322-E

SX122-A

<b>Product Code</b>	Description	Net weight	Dimensions (in cm)
CCBSB-X2	Additional support bench	38 kg	150 x 95 x 51

#### Additional tube support bench:

- stainless steel rollers
- 1.5 m long

√SX222-A

- m
- min tube ø: 5 mm max tube ø: 321 mm

.5 III long	- max tube b. c
naximum load 350 kg	

√SX122-A	√SX172-A	√SX222-A	√SX322-A	√SX122-E	√SX172-E	√SX222-E	√SX322-E
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<b>Product Code</b>	Description	Net weight	Dimensions (in mm)
CCBSB-B005	Connecting bar	3 kg	100 x 80 x 402

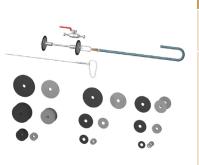
#### Connecting bar for CCBSB-X1 and CCBSB-X2:

- Allows the height-adjustable table to be connected to a bench placed in front of the machine

√SX122-A
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<b>Product Code</b>	Description	Net weight	Packaging (in cm)
SKIF-01	Gas protection KIT	4.5 kg	35 x 30 x 9.5

#### Gas membrane protection KIT for tubes <u>Ø 40 to 120 mm</u>

- consists of: 9 sets of membranes with washers, 1 gas pipe 6 m,
- 1 metal cable, 1 1/4 turn gas valve, 1 carabiner

Inerting the tubes during welding allows more gas savings as we only inert the area to be welded.

 ✓SX122-A
 ✓SX222-A
 ✓SX322-A
 ✓SX122-E
 ✓SX172-E
 ✓SX222-E
 ✓SX322-E



<b>Product Code</b>	Description	Net weight	Packaging (in cm)
SKIB-01	Gas protection KIT	1.7 kg	35 x 30 x 9.5

#### Gas plug protection KIT for tubes Ø 6 to 41 mm

- Consists of: 10 sets of perforated plugs, 1 gas inlet connector,
- 1 hose Ø 4/6 length 5 metres

Facilitates and accelerates inerting. Avoids the use of adhesive paper.



<b>Product Code</b>	Description	Net weight	Dimensions (in mm)
SADFP-02	Wire guide	0.05 kg	51 x 90 x 65
Wire guide for S	X		



<b>Product Code</b>	Description	Net weight	Dimensions (in cm)
SADF2X	Wire dispenser	12 kg	59.7 x 38.4 x 24

#### Wire Dispenser for SAXX, cable sheath 5 m max:

- Supplied with SAXX power supply-connection cable and teflon sheath to guide the wire
- Drive pressure adjusted by adjustable spring, with handle.

√SX122-A	√SX172-A	√SX222-A	√SX322-A	√SX122-E	√SX172-E	√SX222-E	√SX322-E
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<b>Product Code</b>	Description	Net weight	Plastic box (in cm)				
SKTDI-30	Inclined torch	0.3 kg	12 x 17.5 x 4				
30° inclined torch kit							

√SX122-A	√SX172-A	√SX222-A	√SX322-A	√SX122-E	√SX172-E	√SX222-E	√SX322-E	
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<b>Product Code</b>	Description	Net weight	Plastic box (in cm)				
SKTDI-45	Inclined torch	0.3 kg	12 x 17.5 x 4				
45° inclined torch kit							

	√SX122-A	√SX172-A	√SX222-A	√SX322-A	√SX122-E	√SX172-E	√SX222-E	√SX322-E	
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# Accessories (electric clamping)





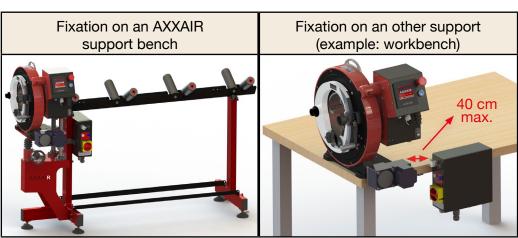
You realize **important series** in your company and want to be more effective during your projects? Our electric clamping is the ideal answer for the preparation and / or welding of your tubes.

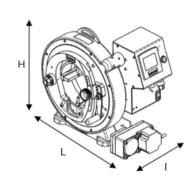
The electric clamping makes it possible to carry out a **repetitive and constant force tightening** on tubes with identical diameters and thicknesses.

The **clamping force is adjustable**, it prevents the tubes from being deformed or marked.

#### **Technical specifications:**

- 24Vdc brushless motor, motor torque: 34N.m
- Tightening force on the tube: 850 kg maximum, adjustable from 15 to 100%
- Clamping speed: 86 mm / min (diameter)
- The electric clamping is sold with the body frame and the automatic rotation





Product code	Body frame, automatic ro Machine's jaw ope	Net weight	Dimensions (HxLxI in mm)	
	With basic jaws	Weigiit	(FIXEXI III IIIII)	
122-AU	Ø29 - Ø119	Ø <b>5</b> - Ø99	51 kg	470 x 498 x 359
172-AU	Ø74 - Ø <mark>173</mark>	Ø <mark>16</mark> - Ø116	58 kg	520 x 530 x 359
222-AU	Ø128 - Ø <mark>228</mark>	Ø <mark>55</mark> - Ø155	66 kg	575 x 575 x 359
322-AU	Ø230 - Ø <mark>328</mark>	Ø <mark>141</mark> - Ø239	80 kg	675 x 662 x 359

<u>Caution:</u> Remember to order one or more motors (cutting, beveling or welding torch) and the consumables needed with the sets listed above.





# **Prefab - Consumables**

Our electrodes are specifically sharpened at 20° with a flat.

This increases the life of the electrodes.



<b>Product Code</b>	Description	Net weight	Plastic box (cm)
SCE16-50	Electrodes	0.02 kg	5.5 x 4.5 x 1

Electrode diameter 1.6 mm, length 50mm

- Box of 10 electrodes



<b>Product Code</b>	Description	Net weight	Plastic box (cm)				
SCE24-50	Electrodes	0.05 kg	5.5 x 4.5 x 1				
Electrode diameter 2.4 mm, length 50mm							
- Box of 10 electrodes							



√SX172-A

√SX122-A

<b>Product Code</b>	Description	Net weight	Plastic box (cm)
SKTD-xx	Replacement torch	0.3 kg	12 x 17.5 x 4

#### Replacement kit for straight torch Ø 1.6 mm or Ø 2.4

- consists of: 5 nozzles, 2 plugs 9/20, 2 long electrode clamps, 10 electrodes (Ø 1.6 mm  $\underline{or}$  Ø 2.4) and 2 mesh diffusers

	Ø electrode Kit Product Code		t Code				
1.6 mm		SKTD-01					
2.4 mm		SKTD-02					
	√SX222-A	√SX32	2-A	√SX122-E	√SX172-E	√SX222-E	√SX322-E



# GLOBAL PROCESS 1 machine - 3 applications



The AXXAIR Group was the first to offer a triple and exclusive solution, from preparation to orbital welding:

global process

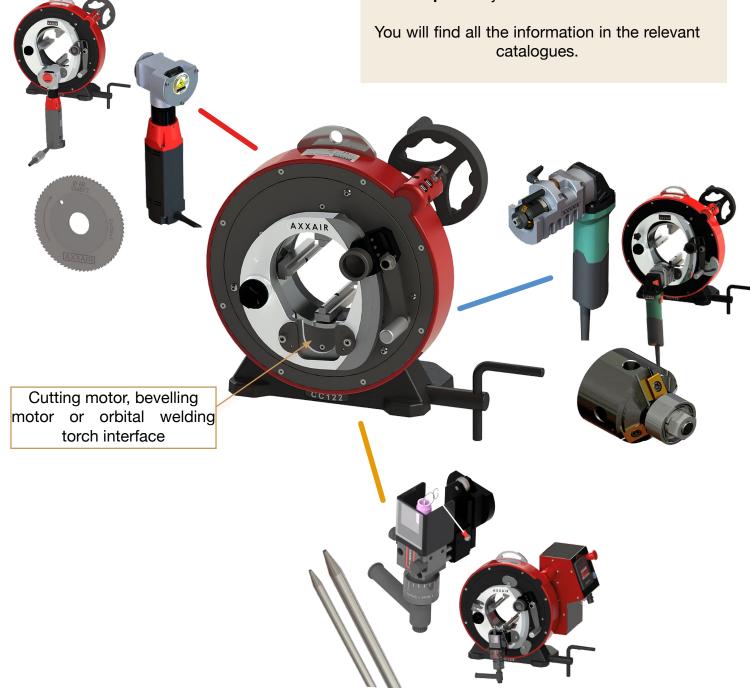
For more than 20 years, a single machine frame (122, 172, 222 and 322) has enabled three operations to be carried out:

cutting, bevelling and orbital welding

# **BUT CAUTION,**

The SX-xx2 machine is dedicated to prefab welding. Its automatic rotation allows only orbital welding work.

To use the machine frame for several operations (prefab welding, cutting and / or bevelling), a cutting or bevelling machine must be ordered with the welding KIT adapted to your needs.







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#### SFE VIETNAM

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#### **OUR BRANDS**











