

# USER'S GUIDE

## Gas welding equipment

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# 1 Introduction

## 1.1 Range of Welding Equipment



No.	REFERENCE	DESCRIPTION
1	80497	MINISYC D EQUIPMENT
2	80283	BUTASYC EQUIPMENT
3	80285	OXISYC 5 EQUIPMENT
4	80277	OXISYC 14 EQUIPMENT

## 1.1.1 Welding equipment features

### ■ MINISYC D EQUIPMENT - 80497



- **2 litres Oxygen cylinder** - 4010202002000
- **0,5 kgs Butane cylinder** - 80984
- **Trolley** - 80982
- **Butane valve** - 80976
- **Oxygen regulator** - 80165
- **Bitube hose** - 80127
- **Welding torch** - 80178
- **Welding nozzle O2/BUT no. 3N** - 80063

### ■ BUTASYC EQUIPMENT - 80283

- **5 litres Oxygen cylinder** - 4014005002000
- **2,7 kgs Butane cylinder** - 80299
- **Cylinder trolley** - 80090
- **Butane valve** - 80096
- **Oxygen regulator** - 80165
- **Bitube hose** - 80127
- **Welding torch** - 80178
- **Welding nozzle O2/BUT no. 3N** - 80063



# 1. Introduction

## OXISYC 5 EQUIPMENT - 80285



- 5 litres Oxygen cylinder - 4014005002000
- 5 litres Acetylene cylinder - 40140050C2H2000
- Cylinder trolley - 80087
- Oxygen regulator - 80165
- Acetylene regulator - 80166
- Oxygen Safety non-return valve - 80243
- Acetylene Safety non-return valve - 80242
- Bitube hose - 80128
- Welding torch - 80178
- Welding nozzle O2/AD no. 1 - 80058
- Welding nozzle O2/AD no. 2 - 80059
- Welding nozzle O2/AD no. 3 - 80060
- Welding nozzle O2/AD no. 4 - 80061

## OXISYC 14 EQUIPMENT - 80277

- 14 litres Oxygen cylinder - 40178140O2000
- 14 litres Acetylene cylinder - 40178140C2H2000
- Cylinder trolley - 80088
- Oxygen regulator - 80165
- Acetylene regulator - 80166
- Oxygen Safety non-return valve - 80243
- Acetylene Safety non-return valve - 80242
- Bitube hose - 80128
- Welding torch - 80178
- Welding nozzle O2/AD no. 1 - 80058
- Welding nozzle O2/AD no. 2 - 80059
- Welding nozzle O2/AD no. 3 - 80060
- Welding nozzle O2/AD no. 4 - 80061



\* For the purchase or replacement of missing components use reference codes.

## 1.2 Basic Safety Concepts

Keep the cylinders away as much as possible when welding.

Never hang open-welding torch on the trolley. Do not use any type of grease or oils to lubricate, preserve or smooth any component of the welding equipment.

Secure the cylinders to avoid beatings in case of accidental opening.  
Open the valves of the cylinders carefully, ensuring that the regulator is closed.

Do not transfer gas from any container to another, even when cylinders contain the same gas.

Do not use this equipment for uses not described in this manual.

Never hit the bottle or his components. This could produce acetylene porous mass break-up and the consequent ignition. The cylinder could explote 24 hours after hitting or heating.

The cylinders involved in fires or high temperatures should not be used.

Before using the equipment check up carefully.

In case of any doubt, consult your technical service or the manufacturer.

Always use protective equipment: wear mask with standard protective glasses to prevent the radiation, gloves, etc..

These equipments shall not be used by inexperienced and untrained staff.



### 1.3 Important Note

This operating instructions manual has been prepared to inform the user about the appropriate expertise and using of SYC Cylinders products. Carefully read the whole installation manual before you begin using it. SYC Cylinders, S.A. is not responsibility for any damage caused through misuse or rough handling.

If you have questions or concerns, contact with us by calling +34 93 336 36 17.

# 2 Component parts

## 2.1 Features



1	PRESSURE REGULATOR
2	OXYGEN CYLINDER (OXIDIZING GAS)
3	ACETYLENE OR BUTANE CYLINDER (FLAMMABLE GAS)
4	HOSE AND WELDING TORCH

## 2.2 Cylinders

Use the cylinders in upright position. Never lay down nor lean them during their use. Be careful not to hit them nor use them as roller or any misuse. Put only the essential cylinders in the consumption place. Take care to store cylinders in well-ventilated areas.

The accidental opening of the valve without regulator can cause the consequent risk of cylinder projection.

Keep away from sources of ignition or even static discharge. Examine the cylinder valves and check that all are exempted of oil or grease.

Always open the cylinder regulator slowly.

Fix the cylinders to the workbench, on the wall or keep them on the cylinder trolley to avoid from accidentally falling.

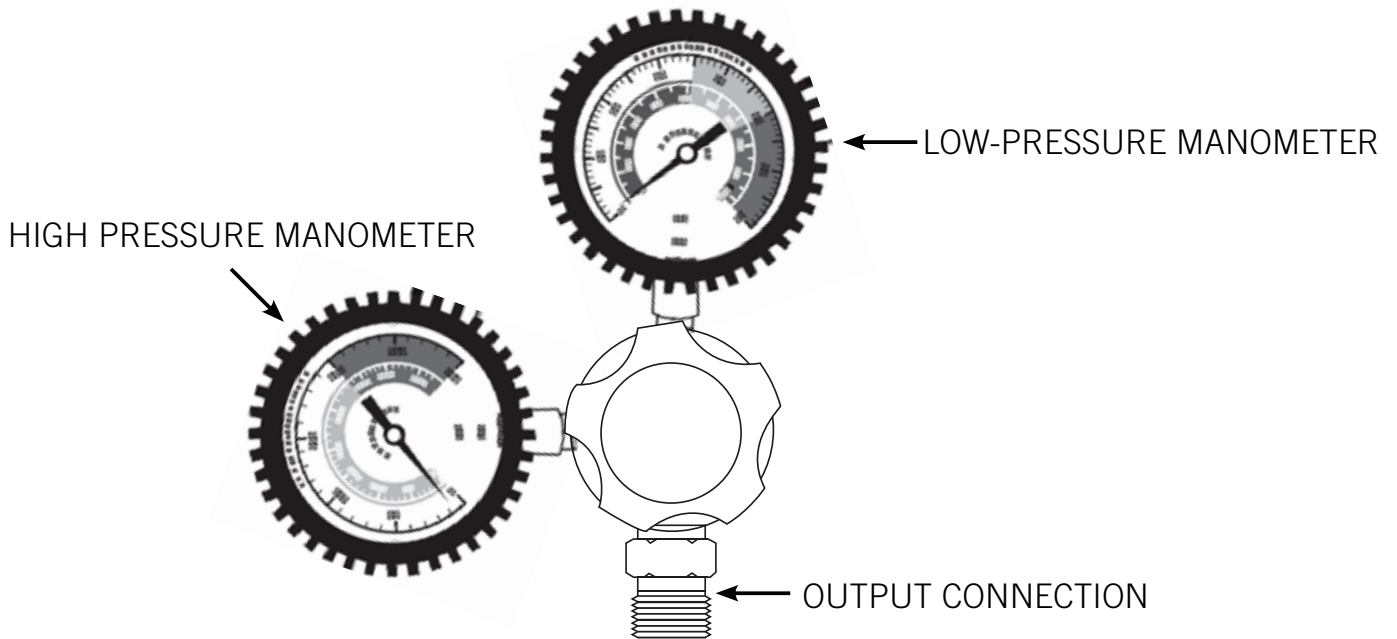
Never push out the welding electric arc over a bottle nor shall allow contact of any device or electric wire.

## 2.3 Pressure regulator

The pressure regulators are used to reduce the gas pressure coming from the bottle for an optimal working. The following table shows the flow rates depending on the output pressure:

GAS	P1 (bar)	P2 (bar)	Q1 (m <sup>3</sup> /h)	T (C°)
OXYGEN	200	7.0	35	-20/+60
ACETYLENE	18	1.4	6	-20/+60
BUTANE	*	3.5	11	-20/+60
NITROGEN	200	7.0	35	-20/+60





Low-pressure manometer: Indicates the output pressure.

High-pressure manometer: Indicates the internal pressure of the cylinder.

Connection thread: Allows to join the cylinder regulator to use.

Always consider the regulator as a precision device. Do not subject the device to severe impact, overpressures or pressure brutal elevation due to quick opening of the cylinder valve.

Make sure that the pressure regulator and its fittings have no damaged threads, dirt, dust, oil or grease.

Check the closing surface on the regulator entry. They must be free from defects or cracks.

If necessary, remove the dirt and dust with a clean, dry cloth. Do not use cleaners or aggressive disinfectants. NEVER use the regulator if you see oil, grease or any kind of defect. Never lubricate the regulator.

Be located on the side of the regulator for your own security, never behind or just in front.

Do **NOT** use the regulator without manometers or if they are damaged.

**NEVER** touch the regulator or the cylinder valve if you have grease on the hands/gloves. Before moving a cylinder, turn off the fuel valve and take out the regulator. Never handle the cylinder holding up on the regulator.

Do **NOT** allow the oxygen cylinder to keep less than 5 BARS. When it is empty, substitute it for a full cylinder with similar features to keep from gas returning.

It is recommended use non-return safety valves on the regulator output or in the equipment entrance (Oxygen-Acetylene-Propane) when you use gas mixtures.

Follow all these suggestions. Treat your regulator with respect, when you use it incorrectly might cause serious accidents.

NEVER use Acetylene of a working pressure of less than 1.5 BARS ( 1.5 Kg/cm )

The regulator must not be modified without the prior written consent of the manufacturer.

Loosen the pressure of regulation spring when the job is completed.

Never use a regulator for any gases except for which the product is designed, nor for higher operating pressures.

There are tare loss if the regulator miss gas when the regulation thread is loosen, if the pressure zone rise up when the torch valve is closed or if the manometer doesn't return to 0. In this case you'll need to change the regulator.

Make sure there no has external leaking using soapy water.

### **2.4 Welding torch**

On the handle are housed two micrometric valves.

On the right, the valve corresponds to the Oxygen, on the left to the Acetylene or Butane. Torch mixing chamber regulated through the injector and the micrometric valves, the exact amount that it need from the two gases ensure an appropriate combustion.

The nozzle size depends of the used material thickness that we need to weld or heat and the heating rate that we wish to obtain.

Always follow the manufacturer instructions if you want to enabling/disabling the torch.

If leakages are detected and you can't easily fixed, the torch must be immediately removed from service and returned to the manufacturer for repair.

Check its external seal with soapy water.

The welding and cutting using gas are safe procedures whenever the equipments are used in accordance to the standards defined, and if you maintain in good condition and if you use the device in accordance to the manufacturer recommendations.

The incidents described as "GAS RETURNING" can damage hoses and regulators.

### 2.5 Hoses

It must be exclusively use hoses manufactured in accordance with specific standards and whose working pressure is equal to or greater than the maximum pressure of its output regulator.

The connections of the hoses between torch and regulator must be carried out via permanent straps to ensure the perfect grip.

The hoses must be kept away from heating, weld spatters, oil or grease.

Sealing can be checked by immersion in water under working pressure or external application of soapy water.

Do not use copper tubes for the acetylene. Always will be better throw away the hose if you have doubts.

## 3 Operation

### 3.1 Preparation

Before using the equipment check the good state of all components.

Previous to the opening valves of the cylinders you should check that the regulators close the gas flow. That means that the wheel of regulator is loose and fully open, turning it to the left (anti-clockwise).

You have to check cylinder pressure. If pressure is lower than 5 BARS, you need to change the cylinder.

### 3.2 Operation

Open the valves of the cylinders carefully.

Check the cylinders status, observing the high pressure manometer of the regulators.

Turn the regulation wheels to the right (clockwise) until you obtain the desired pressure on the low pressure manometer (between 2 and 3 BARS for Oxygen and for a maximum of 1.5 BARS for the acetylene).

If it's your first time launching an equipment or you has replaced the cylinders, open the torch valves, to expel all the air inside of hoses.

Slightly open the valve located on the left of handle torch (Butane or Acetylene gas), ignite with sparks or flame the torch tip and control the combustion through the torch valve corresponding to the oxygen. Move the torch valves until you obtain the desired pressure and regulation.

Once the operation has been completed, close the flame closing the torch valve corresponding to the oxygen, immediately after close the torch valve corresponding to the combustible gas.

Then close the valves of the two bottles (handwheel counterclockwise). With the closed cylinders, open torch valves to expel all the air inside of hoses and the regulators (you will see that the manometer pressure is zero). When you notice that the manometers are to zero, you close the screw of the regulators (turning to the left) and close the torch valves. This will provide an a greatest guarantee of operation and no risk of leaks.

### **3.3 Maintenance**

Regularly check the expiration date of the cylinders and never use a expiry cylinder. Bring to an accredited centre to take the necessary measures.

Regularly check the absence of leaks.

Check the status of the torch verifying the valve sealing and the absence of elements which can block the nozzles.

When the high pressure manometer shows less than of 5 BARS, bring the cylinder to charge in authorised centre. Never attempt to transfer gases or any other method for the risk of doing that.