

# **Sabre-arc 100**

## **PT - 100 / PTM - 100**

### **Plasma Cutting & Gouging System**



**Please ensure that this  
Instruction Manual  
is made available  
to the user  
of the equipment.**

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## ⚠ WARNING ⚠

*This welding equipment has been designed, manufactured and tested to the highest quality standards to ensure long and trouble free life. However, regular maintenance is an essential part of keeping the machine operating in a reliable and safe manner and your attention is drawn to any maintenance instructions that are contained in this manual.*

*In general, all welding equipment should be thoroughly inspected, tested and serviced at least annually. More frequent checking will be required when the equipment is heavily used.*

*Wear and tear, particularly in electro-mechanical and moving components, are gradual processes. Caught in time, repair costs are small and the benefits in performance, reliability and safety are significant. Left alone, they can put the equipment, and you, at risk.*

*Have this equipment regularly inspected and maintained by an approved service centre.*

## ⚠ WARNING ⚠

**ARC WELDING/CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURERS' HAZARD DATA.**

### **ELECTRIC SHOCK - Can Kill**

- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves, or wet clothing.
- Insulate yourself from earth and work.
- Ensure your working position is secure.

### **FUMES AND GASES - Can be Dangerous to Health**

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to keep fumes and gases from your breathing zone and general area.

### **ARC RAYS - Can Injure Eyes and Burn Skin**

- Protect your eyes and body. Use correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

**READ AND UNDERSTAND THIS INSTRUCTION MANUAL  
BEFORE INSTALLING OR OPERATING AND SEE WMA PUBLICATION 237  
'The arc welder at work' AVAILABLE FROM THE MANUFACTURER.**

**PROTECT YOURSELF AND OTHERS**

## SAFETY

In any plasma cutting or gouging operation, it is the responsibility of the user to observe certain safety rules to ensure his personal safety and to protect those working near him.

Read all safety articles relevant to plasma cutting published by the WMA. Pay particular attention to any CAUTION or WARNING Notes included in this manual. CAUTION indicates possible equipment damage. WARNING indicates possible hazard to life.

### ⚠ WARNING ⚠

*The ON/OFF switch on this equipment does not isolate the unit from the mains electrical supply. AC POWER IS PRESENT ON THE ON/OFF SWITCH TERMINALS.*

*The On/Off lamp is an indication that the supply is switched on and does not imply that the unit is isolated from the supply. BEFORE REMOVING THE COVERS FOR MAINTENANCE, ISOLATE THE UNIT FROM THE MAINS ELECTRICAL SUPPLY.*

### 1. Electrical

- ⚠ Treat electricity with respect. The open circuit voltage of this equipment is a high dc voltage therefore contact with any live parts of the torch can be dangerous. Adjustments to the torch or replacement of torch parts should be undertaken with the mains supply isolated from the unit. If damaged torch cables or torch components are found, the unit must be disconnected from mains and defective parts must be replaced using only Murex spare parts.
- ⚠ Do not work on live circuits or cables. Disconnect the main power supply before checking the machine or performing any maintenance operation.
- ⚠ Be sure the case of the welding machine is properly connected to a good electrical earth.
- ⚠ Have the wiring for the welding machine installed by a qualified electrician. All connections must be made according to specifications in force and to general safety standards.
- ⚠ Do not stand in water or on damp floors while using an arc welder or cutter. Do not cut in the rain.
- ⚠ Do not operate with worn or poorly connected cables. Inspect all cables frequently for insulation failure, exposed wires and loose connections.
- ⚠ Do not overload cables or continue to operate with overheating cables. Cables which are too small for the current carried will overheat, causing rapid deterioration of the insulation.
- ⚠ Pay attention that live parts of the torch do not touch any metal which is connected to the earth cable. Fix an insulated hook to hang the torch on when it is not in use.

- ⚠ Switch off and isolate from the mains whilst changing cutting tips and electrodes.

### 2. Ventilation

- ⚠ Do not weld or cut on containers which have held combustible or flammable materials, or materials which give off flammable or toxic vapours when heated, without proper cleaning.
- ⚠ Locate the welding/cutting operation far enough from any vapour-type degreaser using trichlorethylene or other chlorinated hydrocarbons as solvents. The ultraviolet light from the arc can decompose these vapours into toxic gases at a considerable distance from the arc, even though the concentration of the gases is low enough to be undetectable by smell.
- ⚠ Be sure to provide adequate ventilation for removal and dilution of fume and gases. Fume exhaust facilities near the arc, or a ventilated helmet should be used when cutting in confined spaces or on toxic material.

### 3. Glare

- ⚠ Never look at the arc without wearing eye protection.
- ⚠ Always use the proper protective clothing, filter glasses, and gloves. Be careful to avoid exposed skin areas. Do not use cracked or defective helmets or shields.
- ⚠ Never strike an arc when there is someone near who is not protected from the strong light of the arc. Warn bystanders who are not aware of the dangers of ultra-violet light.

### 4. General

- ⚠ Take care when lifting the unit.
- ⚠ Ensure that cylinders are secured by chains.
- ⚠ Locate the unit so that there is adequate air flow to the ventilation louvres.
- ⚠ Always dress correctly to protect against glare, radiation and spatter.

### 5. Fire

- ⚠ Ensure that the correct type of fire extinguisher is available in the cutting area.
- ⚠ Do not cut near flammable materials or liquids, in or near explosive atmospheres, or on pipes carrying explosive gases.

### 6. Vehicle Electrics

- ⚠ When working on motor vehicles, remove the battery and any circuitry which may be damaged by the arc.
- ⚠ Whilst cutting be aware of the possibility of 'hidden wires' behind panels or bulkheads.

## INTRODUCTION

The Murex Sabre-arc 100 power source with the PT-100 plasma torch is a high power, high duty cutting or gouging equipment for industrial applications. Utilising factory air for both plasma and cooling gases the system will cut materials up to 25mm (1") thick at 100% duty and can also be used to make high quality gouges in carbon steels for reclamation and repair work.

### 1. Sabre-arc 100 Power Source

The Sabre-arc 100 power source operates from 3 phase 220/380/415V industrial supplies and incorporates power factor correction. Utilising electronic feedback control and thyristor technology the machine features continuous adjustment of cutting current, built in ammeter, pilot arc and High Frequency arc initiation. Although used with air-air operation with the Murex PT - 100 torch the Sabre-arc 100 power source is fully equipped for use with the optional PT - 150 torch and dual gases like Nitrogen or Argon Hydrogen mixtures for the cutting gas and Air, Carbon Dioxide, Nitrogen or Oxygen for the cooling gas. Separate gas inputs, each of which incorporate solenoid control, pressure and flow monitoring, are available on the rear panel.

### 2. PT - 100 Plasma Cutting Torch

The Murex PT - 100 torch is designed for operation using air as both the cutting (plasma) gas and cooling (secondary) gas. Rated at 100A at 100% duty it uses heavy duty front end parts, electrode, tips, nozzles etc and is used in a stand-off mode. A special "drag" type nozzle can be fitted enabling the operator to simply rest the torch on the work whilst cutting.

The PT - 100 torch is compact and light in weight and incorporates a 75° head angle for good visibility and handling, see Fig. 1. As standard with the Sabre-arc 100, the torch is supplied with a 7.6m cable but optionally a 15m version is available. Further for mechanical applications the PCM - 100 mechanised torch is available incorporating a rack and pinion height adjustment system.

The Sabre-arc 100 & PT - 100 torch also makes an excellent plasma gouging package for carbon steels. To this end special tips are available for the torch (supplied with package).

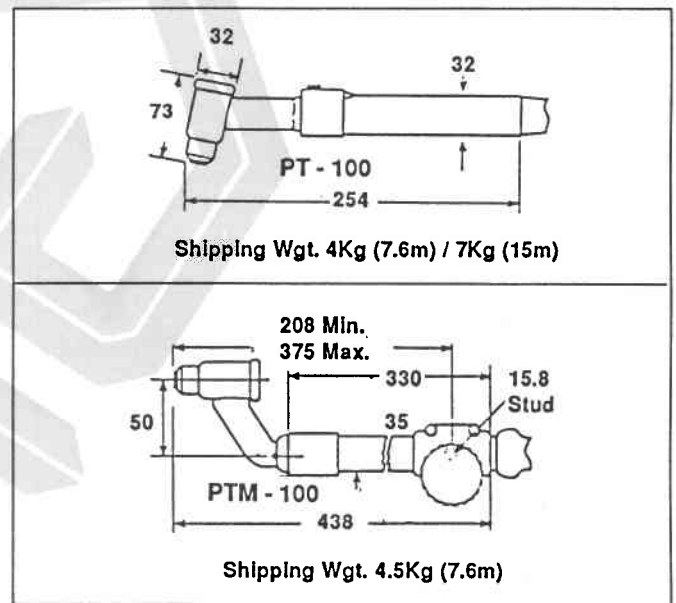


Fig. 1 PT - 100 & PTM - 100 Torches

## SPECIFICATION

### Sabre-arc 100 Power Source

#### Output:

Open Circuit Voltage	370V dc max.
Current Range	25-100A
	continuously variable
Output Rating 100%	100A/120V
Volt Ampere characteristics	See Fig. 2

#### Input:

Mains Voltage	220/380/415V
Frequency	50 Hz
Phases	3
Input Current	78/45/40A
Power Factor	76%
Fuse Rating at 415V	60A slow

#### Gas Requirements:

Plasma (cutting) gas	Air or N <sub>2</sub> or Ar/H <sub>2</sub> mix
Cooling (secondary) gas	Air or N <sub>2</sub> or CO <sub>2</sub> or O <sub>2</sub> or Ar
	(Usage depends on torch fitted)

#### Dimensions:

Length	813mm	} Excluding undergear
Width	554mm	
Height	788mm	
Weight	290kg	

### PT - 100 / PTM - 100 Torch

Rating	100A at 100% duty
Plasma (Cutting) gas	Air
Cooling (secondary) gas	Air
Cable Length	7.6m (15m Optional on PT - 100)
Air Requirements	5-6 bar, 160 lpm
Dimensions	See Fig. 1