

→ Included with Smoothcut Plasma 100 machine

Smoothcut

Plasma 100 Torch Operating manual



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1.0 Description

The Smoothcut Plasma 100 torch is designed for plasma cutting applications up to 100 amps.

The torch requires air pressure of 5 bar for optimum operation. It has been designed for stand off cutting up to 30 mm in thickness.

The Smoothcut Plasma 100 torch has a 6 m hose length, making it suitable to reach even the most difficult places.

It is recommended to use the BOC Smoothcut Plasma 100 machine with this torch to form one of the most portable cutting units on the market.

2.0 Torch breakdown and cutting consumables

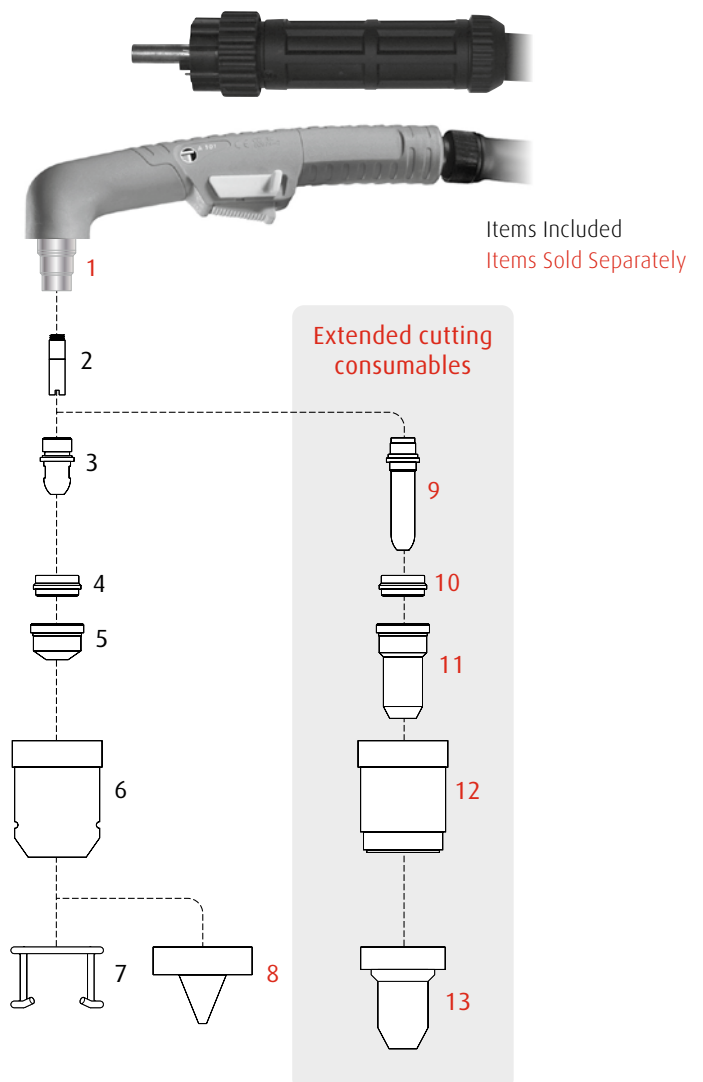
2.1 Plasma Cutting Torches

Plasma torches are rated in accordance to the maximum current that the consumable tips will handle. The diagram above shows a typical plasma torch with its consumable items. BOC stock a range of plasma torches and consumables to suit any need.

Consumables and Spares	Part Number
1 Torch Head and handle (spare)	BOC100/7004
• O-Ring 5PK (spare)	BOC100/0100
• Torch Switch (spare)	BOC100/7001
2 Diffuser 2PK	BOC100/0302
3 Electrode 5PK	BOC100/0400
4 Swirl Ring	BOC100/0500
5 Cutting tip 1.1 0-50A 5PK	BOC100/0600
5 Cutting tip 1.4 50-80A 5PK	BOC100/0601
5 Cutting tip 1.7 80-120A 5PK	BOC100/0602
6 Retaining cap	BOC100/0703
7 Spacer Spring	BOC100/0901
8 Double point spacer	BOC100/0807
9 Electrode extended 5PK	BOC100/0402
10 Swirl Ring extended 2PK	BOC100/0501
11 Cutting tip 1.1 extended 5PK	BOC100/0604
11 Cutting tip 1.4 extended 5PK	BOC100/0605
11 Cutting tip 1.7 extended 5PK	BOC100/0606
11 Cutting tip 1.9 extended 5PK	BOC100/0607
12 Retaining cap connector	BOC100/0704
13 Extended Spacer connector for hand cutting 2PK	BOC100/0803

Accessories	Part Number
Swirl Ring extractor	BOC100/1000
Electrode wrench	BOC100/1001
Complete cutting guide	BOC-CP2061
Roller guide	BOC-TJ1542
Circle guide	BOC-TJ1261

Plasma Torch Exploded View

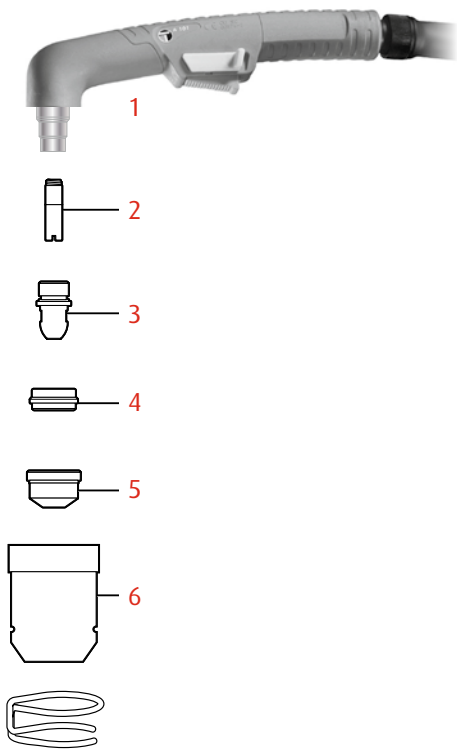


3.0 Torch Ratings

Torch Ratings

Ambient temperature	40°C
Duty Cycle	60% @ 100A
Maximum current	100A
Cooling requirement	Air
Gas type	Air or Nitrogen CAUTION Never use Oxygen
Gas/air operating pressure	5 bar
Gas/air flowrate	180 L/min

4.0 Torch assembly



4.1 Fitting the consumables



- 1 Place the diffuser **2** into the torch head **1**
- 2 Place the electrode **3** over diffuser
- 3 Place the swirl ring **4** over the electrode
- 4 Place the tip **5** onto the swirl ring
- 5 Screw the retaining cap **6** over the parts and hand tighten onto the torch head. **Do not over tighten the retaining cap.**

IMPORTANT

As a safety feature of the torch, the cutting torch will not operate unless the retaining cap is fitted properly.



4.2 Fitting the torch to the power source

- 1 Fit torch connection **A** to connection point on machine indicated as . Screw torch connection in firmly but do not overtighten.
- 2 Fit the work return lead and clamp to the terminal indicated as .

4.3 Selecting the correct air pressure and flow rate

Compressed air from compressed air lines is often contaminated with moisture and oil residue. Contaminants such as these shorten the life of the consumable torch parts. It is therefore recommended that an inline filter drying system be fitted to all air delivery lines.

When air is supplied from a portable air compressor, it is important to ensure that the compressor has adequate pressure and airflow rate capacity such as the BOC 14 (and upwards) air compressors.

Air supply requirements for BOC Smoothcut Plasma 100 Torch

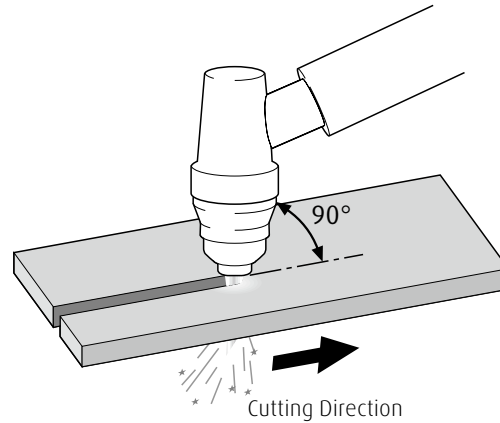
Pressure	5 bar
Draw-off rate	180 L/min

5.0 Cutting Technique



Typical Plasma Cutting Guide Kit

Diagram 1



5.1 Cutting

As a general rule for cutting amperages below 40A the cutting tip can be dragged on the cutting surface. Higher amperages require a stand-off distance and torch manufacturers normally supply a stand-off guide or 'drag shield'. Some operators prefer to use an extended electrode to improve visibility when cutting. BOC supplies guides that can be purchased to assist in straight line, circular and bevel cutting.

For straight edge cutting the torch should be held at a 90° angle to the plate and dragged along the plate (Refer to Diagram 1). The cutting speed will depend on the material thickness, amperage and airflow rate.

For bevel cutting the torch should be angled on the plate to the required bevel angle and dragged on the plate surface. (Note that the bevel angle will influence the material thickness).

Diagram 2

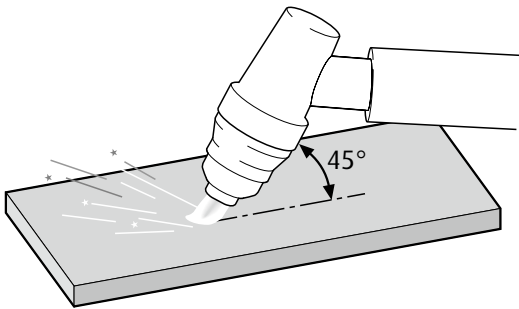
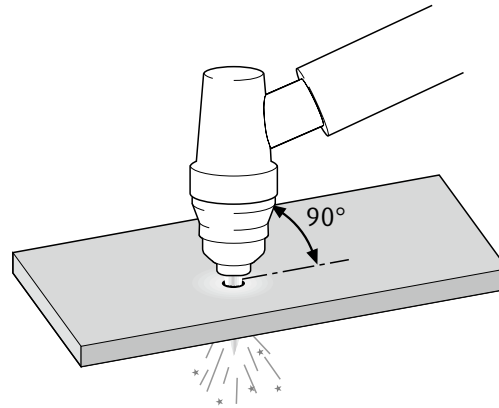


Diagram 3



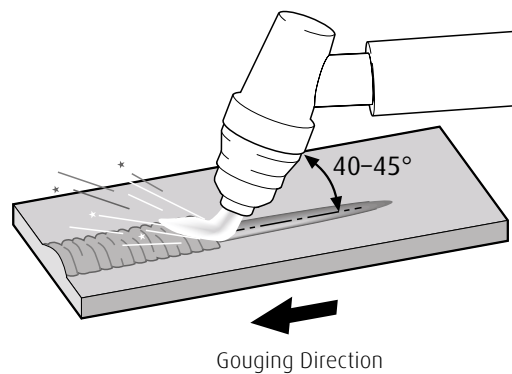
5.2 Piercing and Gouging

To pierce material the cutting torch should be held at an angle of 45° to the pierce surface (Refer to Diagram 2). Once the arc is established the torch is turned to 90° (Refer to Diagram 3) and cutting is carried out in a normal manner. Piercing thickness is dependent on the output of the machine and is generally 50% of the rated cutting thickness of the power source.

It is important to direct the arc away from the operator when establishing the arc as sparks and molten material will be ejected from the point of contact. Care must also be taken to protect the surrounds from these sparks.

When gouging with plasma it is advisable to use a plasma gouging tip supplied by the torch manufacturer. The torch should be held at an angle of $40-45^\circ$ from the plate surface (Refer to diagram 4). An arc length of up to 15 mm can be employed whilst the torch is moved in the direction of the material to be removed. Several small cuts should be made to remove the unwanted material.

Diagram 4



6.0 Warranty

The BOC Smoothcut Plasma torch carries a 12 month warranty from the date of purchase.

This warranty excludes any consumables and apparent misuse of the torch.

7.0 Safety Guidelines

Diagram and safety explanation



Cutting sparks can cause explosion or fire.



Keep flammable materials away from cutting. Do not cut near flammable materials.



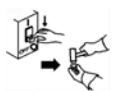
Cutting sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it.



Do not cut on drums or any closed container.



The plasma arc can cause injury and burns.



Turn off power before disassembling torch.



Do not grip material near cutting path.



Wear complete body protection.



Electric shock from torch or wiring can kill.



Wear dry insulating gloves. Do not wear wet or damaged gloves.



Protect yourself from electric shock by insulating yourself from work and ground.



Disconnect input plug or power before working on machine.



Breathing cutting fumes can be hazardous to your health.



Keep your head out of fumes.



Use forced ventilation or local exhaust to remove fumes



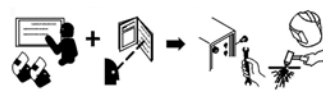
Use ventilating fan to remove fumes.



Arc rays can burn eyes and injure skin.



Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.



Become trained and read the instructions before working on the machine or cutting.



Do not remove or paint over (cover) the label.

For more information contact the BOC Customer Service Centre.

BOC Australia
131 262
www.boc.com.au

BOC New Zealand
0800 111 333
www.boc.co.nz

BOC Limited
10 Julius Avenue, North Ryde NSW 2113, Australia
970-988 Great South Road, Penrose, Auckland, New Zealand

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