

Safety

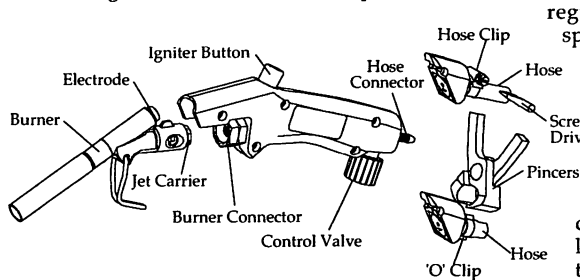
- Read these instructions and the Safety Precautions leaflet before using the equipment.
- Use only in accordance with these instructions and observe any local or national regulations in force.
- Use only in an adequately ventilated area and away from combustible material.
- Do not use the equipment if it is leaking, malfunctioning or has been damaged.
- Never modify the equipment or use it for purposes for which it was not designed.
- Keep the equipment away from children.
- Always stand gas cylinders on a level surface and keep them upright at all times.
- Always ensure that the gas is turned off at the cylinder when the equipment is not in use.
- The burners get hot in use; wear gloves when changing them.

Introduction

The Bullfinch Autotorch Brazing System consists of an LPG gas torch handle with a range of interchangeable burners, it is designed to bronze braise with only a single cylinder of propane. The system is designed to operate at 4 bar (58 psi) pressure and in combination with a flame retention system giving more intense and higher velocity flames that transfer their heat more efficiently to the component thereby raising the component temperature sufficient to bronze braise. It is a professional level system for use in demanding environments and tough working conditions. The product is fully supported by the Bullfinch 5 year guarantee and after sales service.

Assembly

The Bullfinch Autotorch Brazing System operates on propane only at 4 bar (58psi) and therefore a pre set 4 bar pressure regulator (Bullfinch Brazing Regulator No. 4041) and a suitable length (Minimum 2.75m) of high pressure LP gas hose (Bullfinch No. 1299) must always be used. Assemble the system as shown in the diagram on the front page. The hose should always be secured using the correct size of 'O' clip or worm drive hose clip to both the torch handle and the



regulator. The regulator should be spanner tight to the gas cylinder (3/4 BS spanner). When fitting a burner to the torch handle check that the spark electrode on the burner and the sealing washer and 'O' ring in the torch handle connector are clean undamaged and secure. The Brazing Burners connect to the torch handle with a left hand thread and will not accept the other Autotorch burners from the 2100 or 2300 range of burners. There

are three interchangeable burners ranging from the smallest burner No. 4103 to the largest burner No. 4105. The burner must operate on propane at 4 bar. Using a lower pressure or restricting the flow with the control valve will reduce the performance and cause overheating of the burner. The burners must be operated with the valve fully open. If a smaller flame is required, a smaller burner must be fitted.

Safety checks

Carry out these safety checks each time the equipment is assembled for use or if any gas connection has been remade. With the system assembled as shown in the diagram, ensure that the control valve on the torch handle is turned off (fully clockwise), then open the gas cylinder valve. Check the regulator and hose connections for gas leaks as described in the Safety Precautions leaflet and rectify all leaks before using the equipment. **Do not operate the equipment if it is leaking.** If you cannot rectify any leak please seek advice from your dealer or from Bullfinch (Gas Equipment) Ltd.

Operating the torch

1. Select and fit an appropriate burner to the torch handle. Ensure that the burner is spanner tight.
2. Open the gas cylinder valve.
3. Fully open the control valve.
4. To ignite burner, depress the igniter button to obtain ignition.

The flame can only be ignited with the automatic piezo-electric igniter. It cannot be ignited externally from a separate ignition source. If you cannot ignite the flame with the igniter, remove the burner and clean the electrode. If the burner will still not ignite, please consult your dealer.

Note: The igniter has an expected life of a minimum 50,000 operations. Operating the igniter without a burner fitted to the handle may overstress and damage the igniter.

To Shut Off The Torch

1. Close the control valve with a firm but not excessive pressure (fully clockwise).

Note: If you intend to hang the torch up by its hook, then ensure that the burner is kept away from any combustible material such as the hose.

Disconnection for storage

If the equipment is not in immediate use turn the gas off at the cylinder valve and burn off the gas in the torch system, then close the control valve on the torch handle (fully clockwise).

If the equipment is not required for use it should be disconnected from the gas cylinder and be stored away. Ensure that the burner is completely cool before storing the equipment.

Brazing:- Brazing Rods

Use general purpose bronze brazing rods for steel and copper brazing; either a flux coated rod or plain rod. For brazing brass, a copper phosphorous rod and flux should be used.

Joint Preparation

Overlapping joints are better than butt joints. At the joint the components should be rubbed down with emery paper and must be grease and dirt free. Where the components are large it may be necessary to lag them to prevent heat loss, and to surround the joint with heat reflecting materials, in order to get the joint to the right temperature.

Applying the Flux

- a). Mix a small amount of flux with water to form a paste and apply this to the joint.
- b). Dip the heated end of the rod into the flux powder before applying to heated joint, repeat if necessary.

Making the Joint

Heat the joint to a bright red heat before applying the brazing rod when it should melt and run into the joint. Use more flux as necessary. Flux coated rods can be used directly without additional flux. Difficulty in making a joint is usually due to insufficient flux or too low a temperature at the joint.

Silver Soldering:-

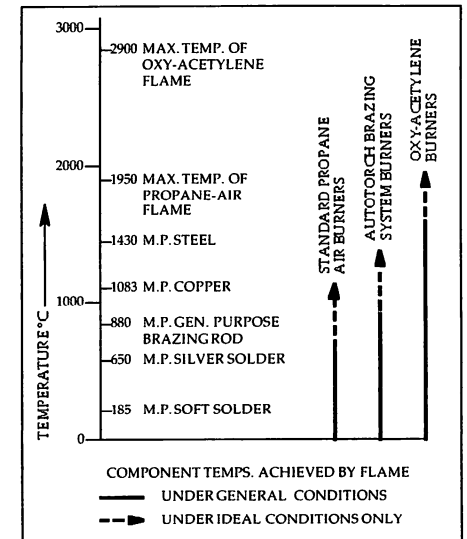
This torch will make excellent silver soldered joints and the general techniques are similar to those for bronze brazing. Use silver soldering rod and flux.

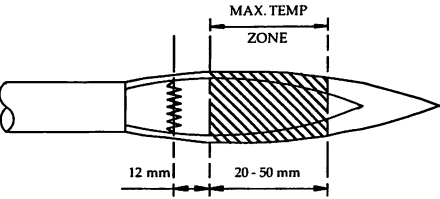
The main difference between bronze brazing and silver soldering are:-

- a). For silver soldering the joint gap needs to be about 0.05 mm (0.002 in) to give the capillary action for a strong joint. Bronze brazing rods can fill bigger gaps and can build up surfaces.
- b). Silver solder melts at 650°C compared with 880°C for bronze brazing rod – thus silver solder joints can be made at lower temperatures but they tend to be weaker.
- c). Silver soldering rod is considerably more expensive than bronze brazing rod.

Flame Temperature

The hottest flame temperature zone begins approximately 12mm (1/2") from the end of the bright blue flame area and extends for 20 – 50mm depending upon the burner size.





Maintain these distances from the workpiece for maximum heating effect.

Routine maintenance

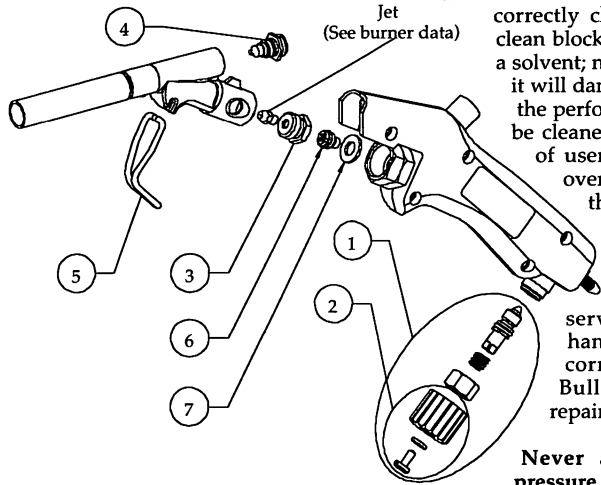
Keep the equipment clean. Wipe excess dirt and grime off the handle, especially around the burner connection. Keep the burners clean especially around the gas jet and the spark electrode. Regularly check the condition of the burner does not appear to be igniting or performing correctly check the jet for blockage. Always clean blocked jets with compressed air or with a solvent; never clean a blocked jet with wire as it will damage the calibrated orifice and affect the performance of the burner. If a jet cannot be cleaned then it should be replaced. A list of user replaceable spare parts is shown overleaf. After fitting a spare part, check that there are no gas leaks and that the equipment operates correctly.

Servicing

With the exception of items 1 & 2, there are no other user serviceable items in the gas torch handle. If the torch is not working correctly it should be returned to Bullfinch (Gas Equipment) Ltd for repair.

Never attempt to service or repair a pressure regulator; it cannot be reassembled without the use of special tools.

'O' ring seal and the rubber washer in the burner connector; replace the seal's if they become damaged or worn. Follow the instructions supplied with the spares kit. If the control valve will not shut off the gas without using excessive force it should be replaced. Follow the instructions supplied with the control valve spares kit. Always ensure that the spark electrode is secure and keep it clean to ensure good ignition. Replace the electrode if it is cracked or damaged.



Spare parts

- | | | | | | | |
|---|-----------|------------|------------------------|---|-----------|----------------------|
| 1 | SP 100 A | Spares kit | Std. Control valve | 2 | SP100 B | Valve Knob Assy. |
| 3 | SP 2100 F | Spares kit | Jet Carrier (less jet) | 4 | SP 2100 E | Spark Electrode |
| 5 | SP 2100 K | Spares kit | Ladder Hook | 6 | SP 2100 X | 'O' Ring Screw Assy. |
| 7 | SP 2100 U | Spares kit | Sealing Washer | | | |

Accessories

			gas consumption	Jet size
No. 4103	1.84 kW	Small flame burner	133g/h	A
No. 4104	4.76 kW	Medium flame burner	340g/h	10
No. 4105	6.16 kW	Large flame burner	440g/h	14
No. 4100	Torch handle			
No. 4041	4 bar Brazing Regulator ~ Propane (Max rated capacity at 4bar outlet 6.9kg/h) Inlet 5/8 BSP - LH male POL. Outlet Integral 4.8 mm hose end			

Bullfinch

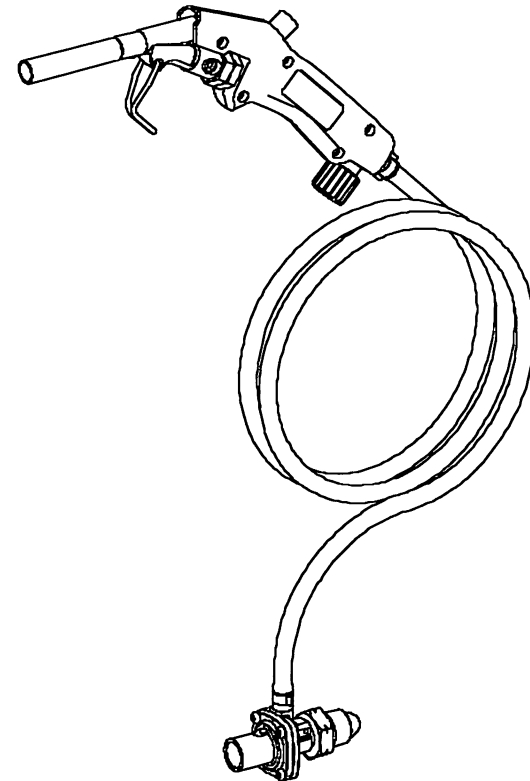
Bullfinch Autotorch Brazing System

For propane only at 4 bar



Q 09112

User Instructions



Bullfinch (Gas Equipment) Limited
 Diadem Works, Kings Road, Tyseley, Birmingham B11 2AJ England.
 Tel: 0121 706 6301 Fax: 0121 707 0995
 e-mail: sales@bullfinch-gas.co.uk
 Web: www.bullfinch-gas.co.uk