Bethlehem Apparatus Company, Inc.
890 Front St., P.O. Box Y, Hellertown, PA 18055 • 610-838-7034 • 610-838-6333

BARRACUDA OPERATING INSTRUCTIONS:

The Bethlehem Barracuda Bench Burner was designed for use with gas and oxygen. Propane is the preferable gas, and is readily available from gas distributors. Be sure that your gas distributor can supply you with a pressure regulator. The regulator should be equipped with a gauge so you can see how much fuel remains in your fuel tank, and indicate the pressure you are sending to the torch.

BEFORE OPERATING ANY GAS BURNER YOU SHOULD BE FAMILIAR WITH THE ODOR OF THE FUEL YOU ARE USING. ALL GAS FUELS HAVE A DISTINCT ODOR. THE ODOR IS PURPOSELY ADDED BY THE MANUFACTURER SO YOU CAN EASILY DETECT A GAS LEAK. THE ODOR IS DIFFERENT FROM THE SMELL OF BURNED FUEL (CALLED PRODUCTS OF COMBUSTION). READ ALL INSTRUCTION MANUALS SUPPLIED BY YOUR GAS DISTRIBUTOR BEFORE OPERATING YOUR NEW BURNER.

HOSE CONNECTION

The Barracuda has two hose connectors at the rear of the burner. On the rear faceplate there are labels indicating which hose connector is for gas and which is for oxygen.

Use 1/4 inch inside diameter hose to connect to the burner. Both the gas and oxygen hose connectors are the same diameter. Be sure to use hose clamps to secure the hoses to the burner.

FUEL PRESSURE

Gas: 3 to 5 lbs.

Oxygen: 10 to 20 lbs.

DO NOT EXCEED 25 lbs. pressure on any feed. Excess pressure may cause gas or oxygen to leak through the valves and increase the chance of leakage through the hose connections.

THEORY OF OPERATION:

The Barracuda is designed to produce a wide variety of flame configurations so you can have the greatest versatility in your glass working. The flame is surface-mixed and operates without loud noise or flashback. Surface-mixed flames have the distinct advantage in that they are soft, quiet flames while producing a penetrating heat. Turning the precision needle valves easily changes flame settings. For best results, keep the fuel flow to a minimum. On Bethlehem burners, loud noise does not indicate more heat. The soft, intense blue flame will bathe your work in heat which will quickly penetrates the glass.

For best results, you should light the gas flame first. Once you have the yellow flame close to the burner head, you can slowly add oxygen. As soon as oxygen is added, the color will change from yellow to blue. This indicates complete combustion. As you change the flame height you should always keep the flame color as blue as possible. The individual jets (small cones of sharp color near the burner face) should be kept from giving off any yellow “candles”. Yellow candles indicate unburned fuel. They are usually caused by the addition of too much gas, either by volume or pressure.

Unburned fuel will cause carbon deposits in the face of the burner. Keep carbon deposits to a minimum. If a deposit builds up on the burner face, you will overheat the front face, causing the burner to deteriorate. Carbon deposits will also change the flame characteristics of your burner. Use the stainless steel cleaning wires (2 sizes) to remove all carbon deposits.

To extinguish the flame you should always turn off the oxygen before the gas. Do not over tighten the valves.

For more information about Bethlehem Burners visit our web site at http://bethlehemburners.com.

BETHLEHEM BARRACUDA BURNER
TECHNICAL CHARACTERISTCS:

Surface-Mixed Burner
All Bethlehem Burners are gas and oxygen surface-mixed. The gas and oxygen are kept separate until they leave the face of the burner. This style of burner allows for the greatest flexibility in operation without flashback.

Bethlehem's Barracuda allows the operator the freedom of regulating the flame size simply by turning the gas or oxygen valves. Whereas a standard pre-mix burner would require the operator to change burner tips to achieve similar results in performance.

Flashback
A flashback is when pre-mixed fuels burn inside the burner body, resulting in a flame blow out, or even an internal flame that will destroy a burner.

The surface-mixed burner, as in the Barracuda, is safer because they will not allow the fuel mixture to burn inside the burner body. Therefore, as in pre-mix burners fire checks and flame arrestors are not required with the Barracuda. To test your burner for proper performance, just simply turn off the oxygen flow, then re-open the oxygen very quickly. If there is a loud bang, then pre-mixing is occurring and the burner should be returned to Bethlehem Apparatus for repairs.

CAUTION
DO NOT USE BURNERS THAT MAKE A LOUD ***BANG*** WHEN THE OXYGEN SUPPLY IS ABRUPTLY CUT OFF.

Gases
Bethlehem's Barracuda is designed to either burn natural gas, hydrogen, propane or butane fuels. Do not use acetylene. Acetylene contains excess carbon that will clog the gas ports on the burner face.

Oxygen Pressure
Do not operate the Barracuda at low oxygen pressure. This will cause the front face of the burner to heat up and cause deterioration.

Carbon Build-Up
High carbon content fuels, like propane, will deposit carbon on the front face of the burner. Eventually, the gas holes will clog. Unless the carbon is cleaned away, the surface temperature of the burner face will get too hot. High burner front face temperatures will cause a rapid deterioration of the burner head and shorten the life of the burner.

On a daily basis, use the attached stainless steel cleaning wires to remove carbon buildup from the burner face. Push the wire through each hole on the front face of the burner. After cleaning, turn the burner onto high flame so the dirt generated from cleaning will be flushed out. A slight tapping on the burner with a piece of wood or soft-faced hammer during the high flame cleaning will also help loosen the dirt.

If the carbon is not cleaned away daily, the burner will begin to generate a localized hot spot at the carbon deposit. These hot spots will cause the tellurium copper front plate to deteriorate. Eventually the gas holes drilled in the front plate will become too large for proper gas and oxygen distribution causing an unbalanced flame.

Backsplash
DO NOT WORK GLASS TOO CLOSE TO THE FRONT FACE OF THE BURNER. Working glass too close will cause backsplash, which is when heat from the burner flame is reflected off the glass being heated. Too much back splash will cause the surface temperature of the burner face to get too hot. High burner front face temperatures will cause a rapid deterioration of the burner head and shorten the life of the burner.

Bench Burner Center Fire
The Barracuda has two independent burners in one burner barrel. One center surface-mixing flame and one ring surface-mixing flame with each operated with a separate set of gas and oxygen valves. Due to this unique design, NEVER OPERATE THE OUTER RING BURNER WITHOUT SOME GAS AND OXYGEN GOING THROUGHT THE CENTER FIRE BURNER. Operating the Barracuda with the outer ring burner only will cause a carbon build up over the center flame gas and oxygen ports.