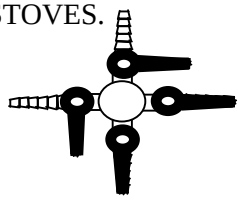
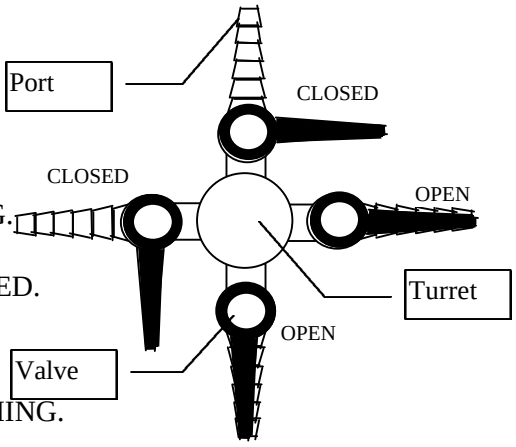
Lab Burners & Burner Safety



See larger diagram on page 2.

- THESE BURNERS ARE FUELED WITH THE SAME "NATURAL" GAS THAT IS SUPPLIED TO HOME FURNACES, CLOTHES DRYERS, WATER HEATERS AND KITCHEN STOVES. HOWEVER, LAB BURNERS DO NOT LIGHT AUTOMATICALLY!
- YOU MUST KNOW THE LOCATION OF THE FIRE BLANKET AND THE FIRE EXTINGUISHER.
- ALWAYS WEAR YOUR GOGGLES WHEN USING A BURNER OR WHEN CLOSE TO SOMEONE ELSE WHO IS USING A BURNER.
- NEVER HEAT ANYTHING UNLESS YOU HAVE INSTRUCTIONS FROM YOUR TEACHER TO DO SO. MANY CHEMICALS BECOME EXTREMELY DANGEROUS WHEN HEATED.
- KEEP FLAMMABLE MATERIALS AWAY FROM THE BURNER UNLESS THEY MUST BE USED WITH THE BURNER.
- DO NOT REACH ACROSS A FLAME.
- DO NOT TOUCH A BURNER NEAR THE TOP WITHOUT CHECKING TO SEE IF IT IS HOT (SEE NEXT ITEM).
- ALWAYS CHECK THE TEMPERATURE OF OBJECTS THAT HAVE BEEN HEATED BY HOLDING THE BACK OF YOUR HAND NEAR THE CONTAINER TO SEE IF YOU CAN FEEL HEAT BEING RADIATED FROM THE CONTAINER.
- TEST TUBES OR FLASKS THAT ARE BEING HEATED MUST BE POINTED AWAY FROM YOU AND EVERYONE ELSE.
- DO NOT HEAT SUBSTANCES IN A CLOSED CONTAINER UNLESS INSTRUCTED TO DO SO BY YOUR TEACHER.
- YOU MUST BE READY TO LIGHT YOUR BURNER WHEN YOU TURN THE GAS VALVE ON.
- IF YOUR FLAME GOES OUT, SHUT THE VALVE OFF IMMEDIATELY.
- ALWAYS WEAR GOGGLES AND APRON WHEN NEAR A BURNER THAT IS IN USE.
- NEVER LEAVE YOUR EXPERIMENT STATION WHEN YOUR BURNER IS FLAMING.
- YOU MUST PAY CLOSE ATTENTION TO YOUR EXPERIMENT WHILE YOUR BURNER IS FLAMING.
- DO NOT PICK THE BURNER UP OR TILT IT WHILE IT IS FLAMING.
- DON'T GET CARELESS! THE FLAME WILL BURN YOU BEFORE YOU CAN PULL YOUR HAND OR ARM BACK.

- TIE BACK LONG HAIR BEFORE USING BURNERS.
- DON'T WEAR FLOPPY CLOTHING (OPEN JACKETS, BIBS WITH STRAPS LOOSE, ETC.) WHEN USING BURNERS.
- NEVER PINCH A GAS HOSE WHILE THE BURNER IS FLAMING.
- DO NOT OPEN A GAS VALVE UNLESS A BURNER IS ATTACHED.



If There Is An Uncontrolled Fire

- DO NOT PICK THE BURNER UP OR TILT IT WHILE IT IS FLAMING.
- SHUT THE GAS VALVE OFF AT THE TABLE... OR SHUT OFF THE MAIN CONTROL VALVE (Ask your teacher to show you the main control valve.).
- IF YOUR CLOTHING CATCHES ON FIRE, DROP TO THE FLOOR, HUG YOUR ARMS TO YOUR BODY AND ROLL OVER AND OVER UNTIL FLAMES ARE SMOTHERED.
- IF YOU SEE ONE OF YOUR CLASSMATES ON FIRE, SHOUT FOR THE FIRE BLANKET (OR GET IT YOURSELF IF YOU ARE CLOSE ENOUGH).
- SHAKE THE FIRE BLANKET OUT UNTIL IT IS FULLY EXTENDED AND THROW IT AROUND THE PART OF THE PERSON THAT IS ON FIRE. THEN PAT THE BLANKET IN THE FLAME AREA TO SMOTHER THE FIRE.
- IF NECESSARY, USE THE FIRE EXTINGUISHER, BUT FROM A DISTANCE OF SEVERAL FEET. **THE FIRE EXTINGUISHER IS A CO_2 EXTINGUISHER.** WHEN THE CO_2 COMES OUT OF THE NOZZLE OF THE EXTINGUISHER IT IS **VERY COLD**. IT IS COLD ENOUGH TO CAUSE "**FROSTBITE**".

Other Things to Remember

- **Hot glass looks just like cold glass.**
- **Hot metal looks just like cold metal.**
- **Bunsen burner flames are very hot... well over 1,000°C (1832°F)**
- **Bunsen burner flames are sometimes hard to see.**
- **Carrying or passing flaming objects around the room is prohibited.**

Natural Gas

Natural gas is mostly methane with small quantities of ethane, propane, butane, and pentane added. It is non toxic, but is classified as an asphyxiate because it may displace normal breathing air and lead to asphyxiation. This mixture of gases has no odor of its own, but a chemical with a very distinctive odor is added by the utility company to aid in the detection of the gas. It is less dense than air so it will not collect in low places like LPG (liquefied petroleum gas) which is commonly known as "bottled gas". Natural gas is explosive in concentrations of about 4% to 17% in air. The flame temperature of a Bunsen burner burning natural gas is about 1600° C (about 2910° F).

Date _____Hour_____Name_____

1. Draw a picture of a gas valve in the off (closed) position.

2. Draw a picture of a gas valve in the on (open) position.

3. Draw a picture of a Bunsen burner and label the parts.