

Hazards associated with configuring the gas system and how to mitigate them

Do not enter the gas shack if the rotating red light at the entrance is on. This warns of an oxygen deficiency.

In General the Gas Mixing shack can be a hazardous place – BE AWARE OF YOUR ENVIRONMENT..

There are hazardous gas detectors that will cut off any gas flow at 10% of the lower explosive limit and oxygen deficiency monitors that will alarm if there is a less than 19% oxygen level.

Gas bottles are a hazard to move. Breaking the stem on a gas bottle can cause flying debris

Never move a bottle without the cap fastened. Always earthquake brace bottles at two points in the place they are to be used or stored. Always keep control of the bottle with two hands while moving.

The gases used in the calibration routine present a cryogenic hazard.

Be certain that the bottle is plumbed into the correct gas circuit and the fittings are tight before opening. When removing a bottle be certain to valve off the gas; At the bottle first, at the gas panel second. Slowly bleed the lines before disconnecting.

There is a marked step up both on to the gas pad and into the gas shack.

Be aware. It easy to trip while making a step into empty space when coming out of either one.

Side of racks must be removed.

To access some of the valves the side of the rack should be removed. This can fall rapidly and cause alarm or an injury. The rack side panel should be supported by one hand while turning the locking screw. Two hands should be used to lift and carry the side panel out of the way.

Initial Checkout

- Name: _____
- Date: _____ Time: _____
- Check that Rest Mode light on electrical rack is on.
- Valves on gas lines:*
- Open: ρ VVM-35 ρ VVM-37 ρ VVM-44 ρ VVM-45
- Close: ρ VVM-41 ρ VVM-46 ρ VVM-101
- Valves on rotameters, flowmeters:*
- Open: ρ VVM-73 ρ VVM-74 ρ VVM-75 ρ VVM-76 ρ VVM-77 ρ VVM-78
 ρ VVM-79 ρ VVM-80
- Close: ρ VVM-81
- Valves on security line:*
- Open: ρ VVM-34
- Close: ρ VVM-47
- Valves on filters:*
- Open: ρ VVM-49 ρ VVM-61
- Close: ρ VVM-33 ρ VVM-36
- Valves on Purifiers:*
- Close: ρ VVM-67 ρ VVM-71 ρ VVM-97 ρ VVM-98 ρ VVM-95 ρ VVM-96
 ρ VVM-65 ρ VVM-69 ρ VVM-94
- Valves on gain chamber:*
- Open: ρ VVM-89 ρ VVM-90 ρ VVM-93 ρ VVM-94
- Valves in Rack 10:*
- Open: ρ VVM-38 ρ VVM-40 ρ VVM-300
- Close: ρ VVM-39
- Valves on lines from gas hut:*
- Open: ρ shutoff valves at bottom of penetration ρ shutoff valves on roof
- Close: ρ bypass valve at bottom of penetration ρ bypass valve on roof

Compressor — Use compressor 1 (open VVM_87) with controller 1 and pressure sensor DPRT-9 unless hardware problems dictate otherwise.

Open one compressor inlet valve, close the other (VVM-87 = compressor 1, VVM_88 = compressor 2)
Valve opened: _____ Valve closed _____

Select a controller using switch on B636-02. Controller selected: _____

Select a variator. Variator selected: _____

Select a pressure sensor using switch on B636-02. Sensor selected: _____

Flowmeters, Rotameters and Regulators.

Set all controller mass flowmeters to zero (not output mixer).

Close helium high-flow and low-flow rotameters.

Close isobutane high-flow and low-flow rotameters.

Set security line rotameter to maximum flow.

Analysis

Set two analysis valves to ANALYSIS

Close inlet and outlet of gas sampling cartridge

Close Span gas inlet

Close N₂ Analysis inlet

Neutral Gas rack (B636-04)

Open N₂ supply valve, VVM-107

Close CO₂ valve, VVM-106

Set VVT-8 to N₂.

Adjust N₂ regulator to get 1.0 – 1.1 bar pressure on gauge at N₂ rotameter.

Set N₂ exhaust flow to 100 lt. / hour

Set front bulkhead flow to 24 lt. / min.

Set rear bulkhead flow to 24 lt. / min.

Set outer cylinder flow to 50 lt/hour.

Set “Chamber Air” input valve VVM-104 OFF.

Close “Chamber Air” rotameter.