***Ace:***

**In-line Check Valves** shall have threaded purge points of 1/8 inch NPT.

**Mains & Branches** in medical gas systems shall be no less than 1/2 inch NPS.

**Drops** to station outlets and inlets shall be no less than 1/2 inch NPS.

**Copper outlet tubes** on station inlets shall be no less than 1/2 inch O.D.

**Connecting Tubing** for gauges and alarms devices shall be permitted to be 1/4 inch NPS.

 **Chapter** 1: Is **Administration**.

**Category 1 Dental:** Facilities utilizing General anesthesia & Deep sedation

**Instrument Air Standby Headers:** Shall be sufficient for 1 hour of normal operation from attached cylinders.

**Reserves cylinders** for Liquid Ring compressors shall be sufficient for 1-hour normal operation, when installed.

**Quality of Medical Air:** Shall have not have Permanent particulates sized 1 Micron or larger in the air.

**Defective joints:** Allowed to be reheated 1 time before it must be replaced.

**Manufactured Assemblies** are subject to a standing pressure test to ensure a less than 1% lose in pressure.

**Oxygen analyzers:** shall read that there is less than 1% oxygen concentration in the system before any brazing can begin.

**Fittings may be re-cleaned** on-site using a solution of 1 pound of sodium carbonate to 3 gallons of water.

**Category 1 Space:** Is one in which failure of equipment or a system is likely to cause major injury or death of patients, staff, or visitors.

**Service valve**: Only 1 required off the riser for each branch.

**The installation** of Micro-Bulk & Small Bulk Cryogenic systems shall be compliant with CGA M-1.

**Reciprocating Compressors** shall provide an inspection opening no smaller than 1.5 shaft diameter in size.

**Category Dental 2 Initial pressure test** for oxygen and nitrous oxide shall **1.5** times operating pressure

**Instrument Air Filters:** shall be sized to allow for 100% of system design peak demand.

**Flammable liquid** has a flash point below 100°f.

**Final line pressure regulators** shall be sized for 100% of peak demand.

**EOSC** shall have an inlet that allows for 100% of the system demand.

**Medical Air Filters** shall be sized for 100% system peak demand.

**Medical Air Dryers** used on medical air compressors shall be sized for 100% of peak demand.

**NFPA 101:** Lifer and Safety code for Med gas facilities.

**Cylinders** in use and in storage shall be prevented from reaching temperatures in excess of 125°f.

**Cylinders in** use shall be prevented from reaching temperatures in excess of 125°f.

**Nitrous oxide & Carbon Dioxide Cylinders:** shall be prevented from reaching temperatures above 125°f.

**Medical Gas Piping:** May be located within tunnels with fuels gas lines or electrical lines if the ambient temperature is limited to 130°f.

**Initial pressure test** shall be 1.5 time the operating pressure but no less than 150 psi gauge pressure.

**Manufactured Assemblies** Hose or flexible connectors shall have a minimum burst pressure of 1000 psi.

**Metallic and nonmetallic flex** **connectors** shall have a minimum burst pressure of 1000 psi.

**Medical Gas Rails (MGR)** shall have a melting point of at least 1000°f.

**Central supply systems for carbon dioxide** using permanently installed containers with product capacities greater than 1000 lb. Shall comply with CGA G-6.1

**Braze joints** shall have a temperature rating of no less than 1000°f.

**Memory Metal fittings** shall have a temperature rating point of no less than 1000°f.

**Axially Swaged fittings** shall be able to withstand a temperature 1000°f.

**Metallic flexible joint** for seismic protection or thermal expansion shall withstand temperatures of 1000°f.

***Two:***

**Category 2 Space:** in which failure of equipment or a system is likely to cause minor injury to patients, staff, or visitors.

**Category 2 Dental:** facilities utilizing only Moderate and Minimal sedation

**Medical Air Supply** system shall have less than 2 ppm of Halogenated Hydrocarbons.

**Master Alarm Panels**: shall consist of 2 or more panels.

**liquid containers** shall have visible I.D. a minimum of letters 2” high.

**Chapter 2:** Referenced Publications

**Manifolds for gas cylinders** shall have 2 equal headers.

**Manifolds header** **for gas cylinders:** Shall have no fewer than 2 connections.

**Manifolds for cryogenic liquid** containers shall have 2 equal headers on the primary and the secondary.

**Micro-Bulk & Small Bulk Cryogenic** systems shall have 2 equal headers.

**Micro-Bulk & Small Bulk Cryogenic** systems shall have 2 main vessel relief valve and rupture disk downstream of the three-way valve.

**Central Supply Locations:** Shall have a minimum of 2 entry/exits

**EOSC** shall have 2 check valves (location 1 upstream of the EOSC & 1 upstream of the main valve).

**In Building Emergency Reserve** (IBER) shall have 2 equal headers.

**In Building Emergency Reserve** (IBER) Header connections shall be no less than 2.

**Medical Air Compressors:** There shall be no less than 2 in a Category 1 system.

**Instrument Air Compressors**: There shall be no less than 2 a Category 1 system.

**Medical Air Proportioning Systems** shall have 2 oxygen analyzers on the mixing devices.

**Medical Surgical Vacuum** shall have a minimum of 2 vacuum pumps in a category 1 system.

**Prohibited System Interconnections:** 2 or more medical gas or medical surgical vacuum systems shall be interconnected for any reason, except with an in-line valve between the systems.

**WAGD** **Source:** Shall be a minimum of 2 that produce sufficient serves at peak demand.

**Medical Air Supply** **System:** shall have less than 25 ppm of Gaseous Hydrocarbons.

**Brazing Procedures** & Brazing performance shall be qualified AWS B2.2.

**Pressure Differential Test Method:** The pressure test for a Gas Mixture medical gas system shall be pressurized to 20 psi.

**Pressure Differential Test Method:** The Vacuum medical system, test shall be to 20 inch HgV.

**Pipe Labels:** Shall be at intervals not more than 20 feet.

**ASSE 6020** inspector,

**Nitrous Oxide & Carbon Dioxide cylinders** shall be prevented from reaching temperatures below 20°f.

**Medical Air Intakes** shall be 20 feet above ground level.

**The Master Alarm** will activate when the medical gas pressure increases or decreases by 20% from normal operation.

**The Area Alarm** will activate when the medical gas pressure increases or decreases by 20% from normal operation.

**Earth’s atmosphere:** comprised with 21% of it being Oxygen.

**The Master Alarm & Local Alarm** will activate when the instrument air dew point is greater than -22°f.

**Materials in Central supply** systems intended to handle oxygen or nitrous oxide mixtures of these gases the mixture will have no more than 23.5% oxygen.

**WAGD** produced by the Medical surgical vacuum source shall maintain a total concentration of oxygen & Nitrous Oxide below 23.6%.

**Medical or Dental office**: Do not operate at 24 Hour of operations, so do fall under the NFPA 99**.**

**Nursing Home** are used on a 24-hour basis, therefore they fall under the NFPA 99 code.

**Medical Air Proportioning Systems:** Performance and air quality shall be recorded for a period no less the 24 hours.

**Medical Air Compressor Intakes**: The alternative air shall be at hand 24 hours per day, 7 days per week.

**Standing Vacuum Test for Vacuum:** shall be subject to a 24 hour standing vacuum test.

**Standing Vacuum Test for Vacuum:** The 24 hour standing pressure test on the vacuum **shall be witness by the AHJ** or its designee.

**Standing Pressure Test for Positive Pressure:** Medical gas piping shall be 20 % above normal system operating pressure.

**Standing Pressure Test for Positive Pressure** Medical gas piping shall be subject to a 24 hour standing pressure test.

**Standing Pressure Test for Positive Pressure:** The 24 hour standing pressure test **shall be witness by the AHJ** or its designee.

**Manufactured Assemblies:** Are subject to a 24 hour standing pressure test.

**Medical Air Proportioning Systems** system shall have less than 25 ppm of gaseous hydrocarbons.

**Medical Air Intakes** shall be 25 feet from ventilation exhaust, fuel vents, combustion vent, plumbing vents, vacuum & WAGD or areas where noxious fumes may collect.

**Medical Air Supply** system shall have less than 25 ppm gaseous hydrocarbons.

**Medical Surgical Vacuum Exhaust** shall be at least 25 feet from any doors, windows, air intakes or public assembly.

**Orbital welding joints** shall be purged during welding with 75% helium (-+ 5%) & 25 % argon (+-5%)

**Station Outlet:** operating at gauge pressure between 200 psi & 300 psi shall not be able to be removed until the pressure has been relieved from the system

**High Pressure:** is defined as pressure exceeding 200 psi or 215 psia gauge.

**Cylinder:** Is defined as supply tank contain High Pressure Gases at pressures in excess of 2000 psi.

**NFPA 99 Code:** 2015Is the latest edition.

**Bulk Inert Gas System** has a capacity of more than 20,000 Ft³.

**Micro-Bulk Cryogenic** has a storage capacity of less than 20,000 Ft³.

**Central supply systems for oxygen** with a total capacity of 20,000 ft³ or more outside of the facility at standard temperature and pressure shall comply with NFPA 55.

**Bulk Oxygen system** has a capacity of more than 20,000 Ft³

**Bulk Nitrous Oxide System** has a storage of more than 28,000 ft³.

**Medical Air Proportioning Systems** shall produce medical air with 19.5 % to 23.5% oxygen content.

**Three:**

**Copper outlet tubes** on station inlets shall be no less than 3/8 (NPS) Nominal Pipe Size.

**Copper inlet tubes:** On station outlets shall be no less than 3/8 inch O.D.

**Mains & Branches in Medical Surgical Vacuum Systems shall no less than** 3/4-inch NPS.

**Relief Valves:** shall have a vent discharge line no smaller than 3/4-inch NPS

 **Brazing Dissimilar Metals** 3/4 inch NPS or smaller shall be permitted to use flux coated brazing rods instead of flux.

**Compression fitting** used on Dental Air Systems shall no larger than 3/4-inch

**Operational Pressure Test:** The medical–surgical vacuum inlets shall draw at 3 Standard Cubic Feet per Minute without the vacuum pressure going below 12 inch HgV.

**Reserve headers** for cryogenic liquid containers shall have no fewer than 3 connections.

**Manifolds for cryogenic liquid containers** shall have an automatic means of controlling 3 headers.

**Micro-Bulk & Small Bulk Cryogenic:** The systems shall have no less than 3 gas cylinder connections.

**Micro-Bulk & Small Bulk Cryogenic liquid:** The systems reserve shall have no less than 3 gas cylinder connections.

**Bulk Cryogenic system**: Shall have a minimum of 3 feet clearance for work space around the storage container.

**EOSC connection**: there shall be a minimum 3 feet clearance around the outside connection.

**Fittings may be re-cleaned** on-site using a solution of 1 pound of sodium carbonate to 3 gallons of water.

**Category 3 Space** in which the failure of equipment or a system is not likely to cause injury to patients, staff, or visitors but can cause discomfort.

**Category 3 Dental:** facilities utilizing minimal or no sedation

**Category 3 Dental** gas and vacuum systems shall contain no medical gases

**Chapter 3:** Definitions

**Master, area & local alarms:** shall include a cancelable audible indicator with a minimum level of 80dBA at 3 feet.

**Operational Pressure test:** The oxygen, nitrous, medical air and carbon dioxide outlets with 50 psi shall deliver at 3.5 Standard Cubic Feet per Minute during the test.

**Piping Particulate Test,** During the test a minimum flow rate of 3.5 Standard Cubic Feet per Minute shall be used.

**Pressure Differential Method:** The pressure test for the Nitrogen/Instrument Air medical gas system shall be pressurized to 30 psi.

**Orbital welding test coupons** shall be inspected when the machine sits idle for more than 30 minutes.

**Medical Surgical Vacuum Receivers** shall be capable to withstand a 30 in. gauge HgV.

**Relief valves** shall be designed to ASME B31.3 Pressure Process Piping.

**Medical Air Dryers** used on medical air compressors shall provide a Dew Point of 32°f at any level of demand.

**Piping Particulate Test:** A minimum of 35 ft³ of gas shall be filtered during the

**Medical Air** shall not exceed a DEW point of +35°f at system delivery.

**A Local Alarm** shall activate when the DEW point exceeds +35°f.

**Minimum backfill** for medical gas piping outside of the building shall be 36 inches.

**NFPA 99 Code covers** medical gas systems below 300 PSI.

**Memory Metal Fittings** shall have a pressure rating of no less than 300 psi.

**Axially Swaged fittings** shall have a pressure rating of no less than 300 psi.

**Liquid oxygen** exist at a cryogenic temperature of -300°f.

**Station Outlet** operating at gauge pressure between 200 psi & 300 psi shall not be able to be removed until the pressure has been relieved.

**Metallic flexible joint** for seismic protection or thermal expansion shall be suitable for service at 300 psig.

**Stainless Steel for Vacuum Tubing** shall comply with ASTM A 312 or 316L.

**Liquid Containers:** Shall have visible Identification 360 degree visible.

**Materials in Central supply systems** intended to handle oxygen at pressure greater than 350 psi shall contain no polymeric materials.

**Relief valves** for compressed air systems having less than 3000 ft³ shall be permitted to diffuse locally.

**Bulk Nitrous Oxide System:** has a storage capacity of more than 3200 lb.

**Central supply systems for nitrous oxide** with a total capacity connected and in storage of 3200 lb. or more shall comply with the mandatory requirements of CGA G-8.1, Standard for Nitrous Oxide systems at Consumer Sites.

**Four:**

**Medical Air:** Shall be monitored on a 1/4 basis for Gaseous Hydrocarbons.

**Valves:** Shall be able to be turned on or off with a 1/4 turn.

**NPS ¼ sample** valve port shall be provided downstream of the final line pressure regulator and upstream of the shut off valve.

**Copper inlet tubes** on station outlets shall be no less than 1/4 (NPS) Nominal Pipe Size.

**Category 4 Space:** In which failure of equipment or a system is not likely to have a physical impact on patient care.

**Orbital welding test coupons** shall be inspected every 4 hours.

**Chapter 4** Fundamentals.

CGA G-4.1 is the **standard for Cleaning** Equipment for Oxygen Service.

**Atmosphere Absolute** is 14.7 psia.

**Pressure Differential Method:** The pressure test on a Nitrous Oxide medical gas system shall be pressurized to 40 psi.

**Instrument Air** shall have a dry Dew Point of -40°f.

**Five:**

**WAGD system** may be installed as part of the HVAC system, but that system is not covered in Chapter 5.

**WAGD vacuum producers,** such as fan, designed to operate below 5 in. of HgV will only be used for the WAGD service.

**Pressure digital indicators** shall be +- 5 %.

**DISS connectors:** Shall comply with standard CGA-V5 Diameter-index Safety System.

**Operational Pressure Test Support:** Gas outlets shall deliver at 5.0 Standard Cubic Feet per Minute with a pressure drop of no more than 5psi during the test.

**Maximum pipe support spacing for** 1/4 NPS shall be no more than 5 feet.

**Vacuum System & WAGD** if joined in the system shall be connected at a minimum distance of 5 feet from any vacuum inlet.

**Chapter 5** Gas and Vacuum systems.

**Dental Applications, flexible** **connectors** shall not exceed 5 feet in length.

**Maximum piping support spacing** for vertical risers will not exceed 15 feet.

**Initial Cross Connection Test** shall be with dry nitrogen NF at 50 psi gauge pressure.

**Pressure Differential Method:** The pressure test for the Oxygen medical gas system shall be pressurized to 50 psi.

**Operational Pressure Test:** The oxygen, nitrous, medical air and carbon dioxide outlets with 50 psi shall deliver at 3.5 standard Cubic Feet per Minute.

**EOSC:** Shall have a relief valve set at 50% above normal line pressure.

**Medical Air Compressors Pressure Relief valves**: Shall have a relief pressure set at 50% above normal system operating pressure.

**Micro-Bulk & Small Bulk Cryogenic** systems reserve shall have a pressure relief valve set 50% above normal operating pressure.

**Pressure Relief Valve** on Category 1 Dental Support gases shall be set at 50% above normal line pressure.

**Medical Air Dryers** used on medical air compressors shall provide a Dew Point of 32°f at 50psi to 55psi any level of demand.

**The Standard Operating Gauge Pressure** for Medical Air, Carbon Dioxide, Helium, Nitrous Oxide, Oxygen, Oxygen/Carbon Dioxide mixture shall be 50psi – 55psi.

**NFPA 55 Code:** covers Compressed Gases & Cryogenic fluids

**NFPA 5000 Code:** Is the Building Construction and Safety Code

**Micro-Bulk & Small Bulk Cryogenic Liquid systems**: Shall be installed to the requirements of NFPA 55.

**Central supply systems for oxygen** with a total capacity of 20,000 ft³ or more outside of the facility at standard temperature and pressure shall comply with NFPA 55.

**Bulk Cryogenic liquid: System** Shall be installed under the requirements set forth in the NFPA 55.

**Medical Air Proportioning Systems** comply with NFPA 55.

**Location for Medical Air Proportioning central** supply systems shall comply with NFPA 55.

**Medical Air Supply** system shall have less than 500 ppm of Carbon Dioxide.

**Verifiers Piping Purity Test:** Moisture concentration of outlet test shall not exceed 500 ppm.

**Indoor Locations** for Medical Air Proportioning Systems shall be constructed per NFPA 5000 Building Construction & Safety Code.

**Six:**

**Pressure Differential Test Method:** The pressure test for Medical Air system shall be pressurized to 60 psi.

**Maximum pipe support spacing for** 3/8 Pipe (NPS) shall be no more than 6 feet.

**Maximum pipe support spacing for** ½ Pipe (NPS) shall no more than 6 feet.

**Nitrogen & Instrument Air Standard Operating Gauge Pressure:**  Shall be a minimum of 160 psi – 185psi.

**The Horizontal Distance** limit of a patients bed which defines patient care vicinity is 6 FT.

**Central supply systems for carbon dioxide** shall comply with the mandatory requirements of CGA G-6.1.

**Medical Surgical Vacuum Receivers** shall be capable to withstand a gauge pressure of 60 psi.

**Solder Joint copper fittings** for med gas joints shall comply with ASME B16.22.

**Braze copper fittings** for med gas joints shall comply with ASME B16.50

**ASSE 6000** covers the Professional Qualification for medical gas personal.

**ASSE 6010** Medical Gas Systems installers.

**ASSE 6015** Bulk Medical Gas Systems installers.

**ASSE 6020** Medical Gas Systems inspector.

**ASSE 6030** Medical Gas Systems Verifier.

**ASSE 6040** Medical Gas Systems Maintenance Personnel.

**ASSE 6050** Medical Gas Systems Instructor.

**Micro-Bulk & Small Bulk Cryogenic systems:** Shall be installed by an **ASSE 6015** installer.

**Seven:**

**Brazing dissimilar Metals** 7/8 O.D. or smaller shall be permitted to use flux coated brazing rods instead of flux.

**Maximum pipe support spacing for** 3/4 NPS shall be 7 feet.

**Alternative Air for the** **Medical Air Compressor Intakes** is at hand it must be there 24 hours per day, 7 days per week.

**Patients Care Vicinity** shall have a vertical limit of 7’ – 6” above the floor.

**Central supply systems** electrical shall comply with NFPA 70.

**Medical Surgical Vacuum Pumps** shall be wired in accordance to NFPA 70.

**Electrical and wiring in a WAGD** system shall comply with NFPA 70.

**Orbital welding joints** shall be purged during welding with 75% helium (-+ 5%) & 25 % argon (+-5%)

**Noncombustible Material:** Is that which can withstand a Vertical tube furnace test of 750°C.

**Cylinder content identification:** Shall comply with CGA C-7 Guide to the preparation of Precautionary Labeling & Marking of Compressed Gas Containers.

**Eight:**

**Maximum pipe support spacing for** 1 inch NPS is 8 feet.

**Piping Purge Test:** The appropriate adaptor shall be used and the purge shall be at no less than 8 standard Cubic Feet per Minute (SCFM).

**Joints that have been cleaned** onsite shall be brazed within 8 hours.

**Medical Air Receivers** shall comply with ASME Section 8 (VIII)

**Copper inlet tubes** on station outlets shall extend no more than 8 inches.

**Copper outlet tubes** on station inlets shall extend no further than 8 inch.

**Medical Surgical Vacuum Receivers** shall comply with ASME Section 8.

**Central supply systems** for nitrous oxide with a total capacity connected and in storage of 3200 lb. or more shall comply with the mandatory requirements of CGA G-8.1 Standard for Nitrous Oxide systems at Consumer Sites.

**Micro-Bulk & Small Bulk Nitrogen system** shall comply with the mandatory requirements of CGA P-18, Standard for Bulk Inert Gas Systems at Consumer sites.

**Central supply** systems for bulk inert gases systems with a total capacity connected and in storage of 20,000 ft³ or more of compressed gas or cryogenic fluid at standard temperature and pressure, shall comply with the mandatory requirements of CGA P-18, Standard for Bulk Inert Gas Systems at Consumer sites.

**The minimum backfill** cover for medical gas pipe that is not subject to potential load damage is 18 inches.

**Maintenance Personnel** shall test flexible connections on booms for leaks every 18 months.

 **Station Outlets** operating in excess of 80 psi shall not accept an adaptor connector for an outlet at 50psi.

**Master, area & local alarms** shall include a cancelable audible indicator with a minimum level of 80dBA at 3 feet.

**Copper tubing for Vacuum** systems shall comply with ASTM B 88, ASTM 280 or ASTM B 819

**Copper Tubing** for medical gas systems shall comply with ASTM B 819 Standard Specifications for Seamless Copper Tubing for medical gas Systems.

**Type K copper** shall be used when the operating pressure exceeds a gauge pressure of 185 psi and the pipe size is larger than 3 1/8 O.D.

**Liquid Oxygen** will expand 860 times from its liquid state at room temperature.

**Nine:**

**Maximum pipe support spacing for** 1 ¼ inch NPS is 9 feet.

**Welding Qualification Procedures** for medical gas shall be qualified to ASME Section 9.

**Brazing Procedures** & Brazing performance shall be qualified to ASME Section 9.

**Ventilation for** outdoor and indoor medical gas systems shall comply with Chapter 9.

**Medical Air Proportioning Systems** shall produce medical air with 19.5 % to 23.5% oxygen content.

**Local Alarm** shall activate when the Proportion system content is outside of 19.5 % to 23.5%.

**Medical Air Filters** shall be sized for 100% system peak demand and be rated at 98% efficiency at 1 micron or greater.

**Nonflammable Anesthetic Agent:** inhalation agent at a vapor pressure of 98.6 °f & an atmospheric pressure cannot attain flammable concentration.

**NFPA** 99 is the code for the installation of medical gas systems.

**The Allowable analyzed Medical Gas Concentration** level for Oxygen is ≥99%.

**The Allowable analyzed Medical Gas Concentration** level for Nitrous Oxide is ≥99%.

**The Allowable analyzed Medical Gas Concentration** level for Nitrogen is ≥99% or ≤1% oxygen.

**The Allowable Medical Gas Concentration** level for Medical Air is 19.5% - 23.5% oxygen.

**Ten:**

**Verifiers Standing Pressure** test shall be subject to a 10-minute standing pressure test with no decrease shown.

**Maximum pipe support spacing:** For 1 1/2 inch NPS shall be no less than 10 feet.

**Gaseous Oxygen** is 10% heavier than air

**Local Alarm** shall activate when the Carbon Monoxide level exceeds 10 ppm in a medical air system.

**Master, Area & Local alarms** shall include a provision for automatic restart after a power loss of 10 seconds without giving false signals.

**Medical Air Supply** system shall have less than 10 ppm of Carbon Monoxide.

**Moisture concentration** during the Piping Purity Test shall not exceed 10°f.

**Pressure Differential Test Method:** Nonstandard pressure medical gas systems shall be pressurized to 10 psi.

**Pressure Differential Test Method:** Medical vacuum & WAGD systems shall be vacuum tested to 10 inch HgV.

**Jack (11):** **Wild Card**

**Queen(12):**

**Operational Pressure Test.** The medical–surgical vacuum inlets shall draw at 3 Standard Cubic Feet per Minute without the vacuum pressure going below 12 inch HgV. at any adjacent station inlets.

**Master Alarm:** Shall indicate when the medical surgical vacuum drops below 12 inches.

**Area Alarm:** Shall indicate when the medical surgical vacuum drops to or below 12 inches gauge HgV.

**Standing Vacuum Test** for Vacuum shall be between 12 inch HgV and full vacuum.

**Vacuum Indicators:** with normal range display Shall indicate normal only above 12 inches gauge HgV.

**Medical Air Compressors:** The air quality test shall be conducted after the system has been operating normally, the source valve closed for an elapsed time of 12 hours.

**Plastic Vacuum Piping:** Category 3 initial leak test on plastic piping shall be a minimum of 12 inches of HgV.

**Plastic Vacuum Piping:** Category 3 cross connection test on plastic piping shall be a minimum of 12 inches of HgV.

**King:**

**Piping Particulate Test:** A clean white **0.45 Micron Filter** shall be used during piping particulate test

**Abbreviation for Carbon dioxide** is C0₂

 **Absolute pressure:** Is 0 pressure in a system.

**Pounds per square inch gauge (psig):** under standard conditions, 0 is equal equivalent to 14.7 psia.

 **Valves used in pressure service:** shall have a maximum flow pressure drop of 0.2 pounds per square inch gauge (psig).

**Valves used in vacuum service:** shall have a maximum flow pressure drop of 0.15 Hg in vacuum service.

**Copper inlet tubes** on station outlets shall be no less than 0.3 inch minimum inside diameter.

**Copper outlet tubes** on station inlets shall be no less than 0.4 inch minimum inside diameter.