

# GLOSSARY OF TERMS



## Relating To Breathing Air Products

### **ABSOLUTE PRESSURE:**

Pressure based on a zero reference point, the perfect vacuum. Measured from this reference point, the standard atmospheric pressure at sea level is an absolute pressure of 101.325 kPa (14.7 psia). Absolute pressure in the inch-pound system is commonly denoted in terms of pounds per square inch absolute (psia).

### **ACFM OR ACTUAL CUBIC FEET PER MINUTE:**

This is the measurement of a compressor's static cfm output, with the back-pressure on the compressor held constant at a certain pressure. When the ACFM is measured with the compressor working against its highest intended working pressure, a true comparison of the compressor's efficiency can be made. Another term used for this measurement is FREE AIR DELIVERY, (FAD), at a stated back-pressure.

### **ADSORPTION:**

The process in which a sorbate (hazardous liquid) interacts with a solid sorbent surface.

### **ACDS, (AUTOMATIC CONDENSATE DRAIN SYSTEM):**

By means of an electric timer, a solenoid valve is momentarily energized every 15-18 minutes of operation, and each of the system's separators automatically drained of accumulated liquid. Without this feature, the operator must manually drain the separators four times during each hour of operation. The ACDS is a very convenient feature, and also provides assurance that the separators will be drained. The consequences of the failure to timely drain these separators are mechanical damage to the compressor, or the disabling of the system's purification system, through saturation. However, the ACDS itself requires regular monitoring and routine maintenance.

### **ACTIVATED CARBON:**

Adsorptive carbon particles or granules usually obtained by heating carbonaceous material in the absence of air or in steam and possessing a high capacity to selectively remove trace and soluble components from solution.

### **AFTERCOOLER:**

Heat exchangers used for the cooling of the air after it leaves the final stage of the compressor. With air-cooled compressors, the aftercooler is usually a length of finned tubing, coiled in the flow of the cooling air.



### **AIR CONTROL PANEL:**

A consolidated arrangement of valves, regulators, gauges, and air system piping at a location that allows the operator to monitor and control the airflow and pressure within the air system from a centralized location.

### **AIR-COOLED COMPRESSORS:**

This design incorporates a fan or blower which directs a high-flow stream of air over the compressor block, heads, intercoolers and aftercooler.

### **AIR FLOW:**

Usually measured in cubic feet per minute, (CFM), in our applications; generally used to speak of the output of a compressor or the amount of air flowing through a line. It can be measured with a flow meter, or by means of timing the flow of a known quantity of air.

### **AIR LINE RESPIRATOR:**

This describes a breathing systems in which the user is provided air through an air line. Most often, the pressure in this hose is no more than 75-125 psi. The air can be supplied with a compressor, or from a bank of storage cylinders, or a combination of both. For extremely long runs of hose, using these relatively low pressures, larger hose interior diameters must sometimes be used. Consult the hose manufacturer for these recommendations. Air-line respirators differ from respirators in that an air supply is involved; generally, the description of a respirator means only a face mask with attached filter canisters.

### **AIR QUALITY ANALYSIS:**

The testing of breathing air produced by a compressor for use in self-contained breathing apparatus usually conducted in a lab, where test conditions can be controlled.

### **AMBIENT AIR:**

Someone's or something's surroundings; especially as they pertain to the local environment.

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### ● BLEEDER VALVE:

Usually smaller than a line valve, this valve is most commonly used to bleed the trapped air from a line of vessel. For example, when the supply valve to pressurized fill line is closed, and the full cylinder's valve is closed, the bleeder valve, positioned between the two, will relieve the pressure from the fill hose, so that an easier disconnection of the filter attachment can be made. Sometimes also referred to as a PURGE valve.

### BLOCK:

Used within the industry to describe the assembly comprised of the compressor crankcase with cylinders, cylinder heads, intercoolers, aftercooler, interstage separators, interstage safety relief valves, and drive pulley attached.

### BOOSTER PUMP:

An electrically driven, sealed gas, in-line, pressure-boosting device that supplies fuel that is consumed by a continuous process without intermediate storage.

### BURST DISC:

A one-time safety device, typically built into cylinder valves. Instead of a spring-loaded poppet valve, it is a disc of frangible metal, (often copper, or an alloy thereof), held in place over an orifice. The size of this orifice and the strength of the disc are such that the disc will burst, at a certain predetermined pressure. This design burst pressure is usually 5/3, (166%), of the cylinder's working pressure. Once ruptured the entire burst disc assembly must be replaced. In most modern cylinders, the air escaping from a ruptured burst disc will be directed in two or four opposing directions, so the cylinder will not be "jet propelled" violently. In cylinders that are repeatedly emptied and refilled, the burst disc can sometimes be flexed so often that some fatigue occurs, allowing the disc to eventually rupture at a pressure well below its design pressure. Burst disc assemblies are relatively inexpensive, and should be replaced periodically, if these conditions exist. Some authorities recommend that the burst disc assembly on a cylinder be replaced each time the cylinder is hydrostatically tested.

### BURST PRESSURE:

The pressure at which a component will rupture.

### BYPASS:

A device for diverting fluid flow away from or around a systems component, usually as a byproduct of pressure.

### CARBON MONOXIDE INDICATOR:

A device suitable for connection to a circuit having a sensor that responds to carbon monoxide and does not contain an integral notification appliance.



### ● CARBON MONOXIDE MONITOR:

A monitoring device that samples a purified air stream for trace elements of carbon monoxide (CO).

### COMPRESSOR BLOCK:

See BLOCK

### CAPACITY:

The maximum number or amount of exposed that a place or location can accommodate or the flow rate of exposed that a route or path can handle.

### CARTRIDGE:

Is a pre-packed with different materials for the removal of moisture, odor and carbon monoxide. Cartridges may vary for each model of compressor and have an expiration date that is meant to be discarded after it is used.

### CASCADE METHOD:

When multiple pressure vessels, cylinders, or containers are used for storage, it is the method for utilizing only one vessel at a time and closing the valve on the vessel before filling the next.

### CASCADE SYSTEM:

Serves as bulk storage of high pressure breathing air to be used to refill breathing apparatus cylinders.

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**CFM:**  
Cubic Foot per Minute

**CHASSIS:**  
The frame that the compressor block and driver are mounted.

**CHECK VALVE:**  
A valve that allows air flow in one direction only.

**CLOSED LOOP:**  
Air flow that is contained in a closed circuit without the possibility of contamination, from outside of the loop.



● **COMPOSITE CYLINDER:**  
A pressure vessel fabricated of two or more materials that interact to facilitate the container design criteria.

**COMPRESSED BREATHING AIR:**  
Oxygen or a respirable gas mixture stored in a compressed state and supplied to the user in gaseous form.

**COMPRESSOR:**  
A device used for increasing the pressure and density of a gas.

**CONDENSATE:**  
Any material that has been condensed from the vapor state to the liquid state.

**CONTAMINANT:**  
A foreign or unwanted substance that can have deleterious effect on system operation, life, or reliability.

**CYLINDER:**  
A supply tank containing high-pressure gases or gas mixtures at pressures that can be in excess of 2000 psi. The vessel must meet all U.S. Department of Transportation regulations or ANSI/IAS NGV2, Basic Requirements for Compressed Natural Gas Vehicle (NGV) Fuel Containers, or CSA B51, Boiler, Pressure Vessel and Pressure Piping Code.

**DESSICANT:**  
Used as the first element in the purification cartridge as a drying agent.

**DOT:**  
United States Department of Transportation



● **DOT CYLINDER:**  
A pressure vessel constructed and tested in accordance with 49 CFR 178.37 that is used for the storage and transportation of air under pressure.

**DRAIN CYCLE:**  
The interval between the recommended manual draining of the separator chambers, or between the automatic drain system's activation. It is suggested that the drain cycle interval be shortened, somewhat, under unusually high ambient humidity conditions.

**EXTENDED WARRANTY:**  
A contract with a supplier in which the original factory warranty is extended.

**FABRICATOR:**  
The entity performing off-site manufacture or assembly, or both, of construction components or systems.

**FILL HOSE:**  
Flexible hose plumbed to connect SCBA cylinders to the compressed air supply for filling purposes.

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### **FILL RATE:**

The time required to refill a cylinder.

### **FILL STATION:**

The protective device into which SCBA cylinders are placed for the refilling process.

### **FILTERS:**

The pre-inlet device that separates and removes dust and dirt before it enters the first stage of the compressor.

### **FLOW METER:**

A device for measuring volumetric flow rates of gases and liquids.

### **FLUID:**

Any gas or liquid. In hydraulic terms, a captured gas or liquid within a confined system.

### **GAS:**

The physical state of a substance that has no shape or volume of its own and will expand to take the shape and volume of the container or enclosure it occupies.

### **GAUGE:**

A round, analog pressure-indicating device that uses mechanical means to measure pressure.

### **GAUGE PRESSURE:**

Pressure measured by an instrument where the pressure indicated is relative to atmospheric pressure.



### **GPM (GALLONS PER MINUTE):**

An expression of fluid flow correlated to time.

### **HEAD:**

The assembled compressor unit (most commonly known in low-pressure compressors)

### **HEAT:**

A form of energy characterized by vibration of molecules and capable of initiating and supporting chemical changes and changes of state.

### **HIGH PRESSURE:**

Speaking in terms of compressors, is a pressure that is higher than 500 psi (pounds per square inch)

### **HOSE:**

Always shows the total number of operating hours on the compressor.

### **HOSE:**

A hollow fluid conductor constructed of a pliable material such as rubber or plastic, usually reinforced with steel or polymeric stranding.

### **HUMIDITY:**

The weight of water vapor in an air vapor mixture per pound of dry air.

### **HYDRAULIC COOLER:**

A device for reducing the temperature of the fluid within a hydraulic system. Coolers can be ambient air cooled, forced air cooled, water cooled, or refrigerator.

### **HYDRAULIC FILTER:**

A device for removing contaminants from a fluid, usually down to a very small particle size.

### **HYDRAULIC MOTOR:**

A device which produces a rotary output using the flow of fluid as a power source.



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### **HYDRAULIC STRAINER:**

A device, typically a wire mesh, for removing large particle contaminants from hydraulic fluid.



### ● **HYDROSTATIC TEST:**

Testing the elasticity of a high pressure cylinder. This done by pressurizing the cylinder to a prescribed pressure higher than its working pressure, and measuring the temporary expansion of its dimensions, and the permanent expansion that remains when it is de-pressurized.

### **INTERCOOLERS:**

Heat exchangers used for removing some of the heat of compression from the air between the stages of a compressor.

### **LOW PRESSURE:**

Speaking in terms of compressors, is a pressure that is lower than 500 psi (pounds per square inch).

### **MAINTENANCE AGREEMENT:**

An arrangement in which a technician visits the air system and performs work; including, but not limited to, repair, replacement, and service, is performed to ensure that equipment operates properly.

### **MAINTENANCE COORDINATOR:**

The individual who is responsible for scheduling the air system's maintenance.

### **MAINTENANCE PROCEDURES:**

A printed schedule of intervals that are to be performed and completed.

### **MOBILE AIR SYSTEM:**

An air refill system that is transported to the scene-of-the-need for operation.

### **MOISTURE MONITOR:**

Electronic devices that are capable of alarming the operator when a pre-set moisture level is exceeded.



### ● **MULTI-STAGE COMPRESSOR:**

Compressor employing two or more stages.

### **ON-SITE START-UP:**

With the installation of a new air system, a factory-certified technician shall make a post-delivery integrity check of the entire system, check correct installation and wiring, perform a thorough operational check of the entire system. And train personnel who will be operating and maintaining the system.

### **OPERATING PROCEDURES:**

A written set of instructions for the correct and safe operation of the system.

### **OXIDATION:**

The process or state of undergoing combination with Oxygen. This usually translates to rust or corrosion.

### **OXYGEN CLEAN:**

Applies to fittings, hoses, regulators, etc. that are intended for use with pure Oxygen. All equipment must be chemically cleaned to remove all traces of any type of oil or oil residue.

### **PPM:**

Parts per million

### **PRESSURE LUBRICATION:**

A feature in which the oil pressure from an oil pump is directed to the internal points of the compressor.

### **PSI (Pounds per square inch):**

The amount of pressure exerted on one square inch of surface.

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### **PUMP:**

Any type of device for producing fluid flow.

### **PURGE VALVE:**

See BLEEDER VALVE

### **PURIFICATION SYSTEM:**

A combination of mechanical, chemical, and physical devices such as separators, filters, absorbents, and catalysts designed to remove or alter contaminants within the compressed air stream to produce effluent air that is breathable.



### **QUARTER-TURN VALVE:**

A line valve that is fully open or fully closed with only a 90° rotation.

### **RECEIVERS:**

Tanks or vessels used for the storage of air discharged from compressors.

### **REGULATOR:**

Reduces a higher pressure to a lower pressure and is usually adjustable.

### **RESERVOIR:**

The vessel containing the fluid used in the system.

### **SAFETY RELIEF VALVE:**

A spring loaded valve which is normally in the closed position and releases air when the upstream pressure is greater than the pre-selected relief pressure.

### **SCBA:**

Self-Contained Breathing Apparatus

A fully contained breathing apparatus including the air cylinder, air regulator, high and low pressure air hoses, harness and full facemask. The SCBA is designed to supply a person with fresh breathing air in an emergency situation such as fire fighting. There is 2216 psi or 4500 psi of breathing air contained in the air cylinder which will last for 30 minutes to one hour. These cylinders can be made of wrapped fiberglass, carbon fiber, aluminum or steel. The amount of heat each cylinder can withstand varies with its composition.



### **SCUBA:**

Self-Contained Underwater Breathing Apparatus

The high pressure cylinder, the diver's regulator and mouthpiece, and the back-pack or assembly used for attaching the unit to a diver.

### **SEPARATOR:**

A chamber in which the moisture is removed from the air.

### **SERVICE AGREEMENT:**

See MAINTENANCE AGREEMENT

### **SPEED (or RPM):**

The speed of a compressor refers to the revolutions per minute of the compressor shaft.

### **STAGES:**

The steps of the compression of gas and usually requires a separate cylinder.

### **STANDARD AIR:**

Air at a temperature of 68°F, a pressure of 14.7 psi, and a relative humidity of 36%.

### **VALVE, CONTROL:**

A valve that is line-mounted or panel mounted and regulates the air flow and is usually manually operated.

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## VALVE, FLOW CONTROL:

Any type of valve used to control the path of flow or regulate the amount flow of a fluid.

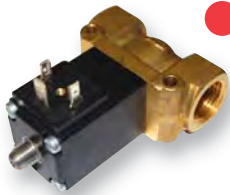
## VALVE, HEAD:

A valve that is used to control the flow of air in and out of the compression cylinders of the compressor.



## VALVE, PRESSURE RELIEF:

A valve to relieve pressure by diverting fluid flow away from the system.



## VALVE, SOLENOID:

A valve that is electrically operated.

## VALVE, TWO-WAY:

A line valve which is used to send the air flow in one direction or another.

## WORKING PRESSURE:

A product's design working pressure will be a fraction of the product's design burst pressure.