



# Gases

## 1- Gases & Refrigerants



### 1A- ACETYLENE

ACETYLENE ( $C_2H_2$ ) is a slightly lighter than air, flammable, colorless gas, with a distinct garlic-like odor. When mixed with Oxygen, it gives flame temperatures up to  $3100^{\circ}C$  ( $5.612^{\circ}F$ ). It is spontaneously combustible in air, at pressures above 2 BAR (30psi). • Boiling point:  $-83.8^{\circ}C$  ( $-118.8^{\circ}F$ ). • Trade name: Acetylene.

### 1B-ARGON

ARGON (Ar) is a slightly heavier than air, colorless and odor free gas.

It is an inert gas, commonly used as a shielding gas for the Tungsten Inert Gas (TIG) welding, primarily to clean the molten pool. It is non-toxic and non-combustible.

### 1C- ARGON -CO<sub>2</sub> MIXTURES

ARGON-CO<sub>2</sub> mixtures are very useful in MIG/MAG welding as shielding gases.

80-20 mixture (80% Argon and 20% CO<sub>2</sub>) is ideal for welding the unalloyed and low-alloyed carbon steels. It protects the molten pool against contaminants in the atmosphere

### 1D- NITROGEN

Nitrogen ( $N_2$ ) is a colorless, tasteless, and an odorless inert gas, slightly lighter than air; it is used for purging tanks and pipelines and for the removal of moisture from refrigeration systems. It does not react with any substance or gas and is non toxic. Nitrogen is also non combustible and does not burn nor does it affect the respiratory system. It is slightly soluble in water and most other liquids and is a poor conductor of heat and electricity. It can also be used for providing a safe blanket for cargo, preventing reactions with Oxygen.

### 1E- OXYGEN

OXYGEN ( $O_2$ ) is a gas heavier than air, colorless, odorless and taste free. Although it is a non-flammable natural born gas oxygen, can still enforce combustion.

Boiling point:  $-182.97^{\circ}C$  ( $-297.35^{\circ}F$ ).

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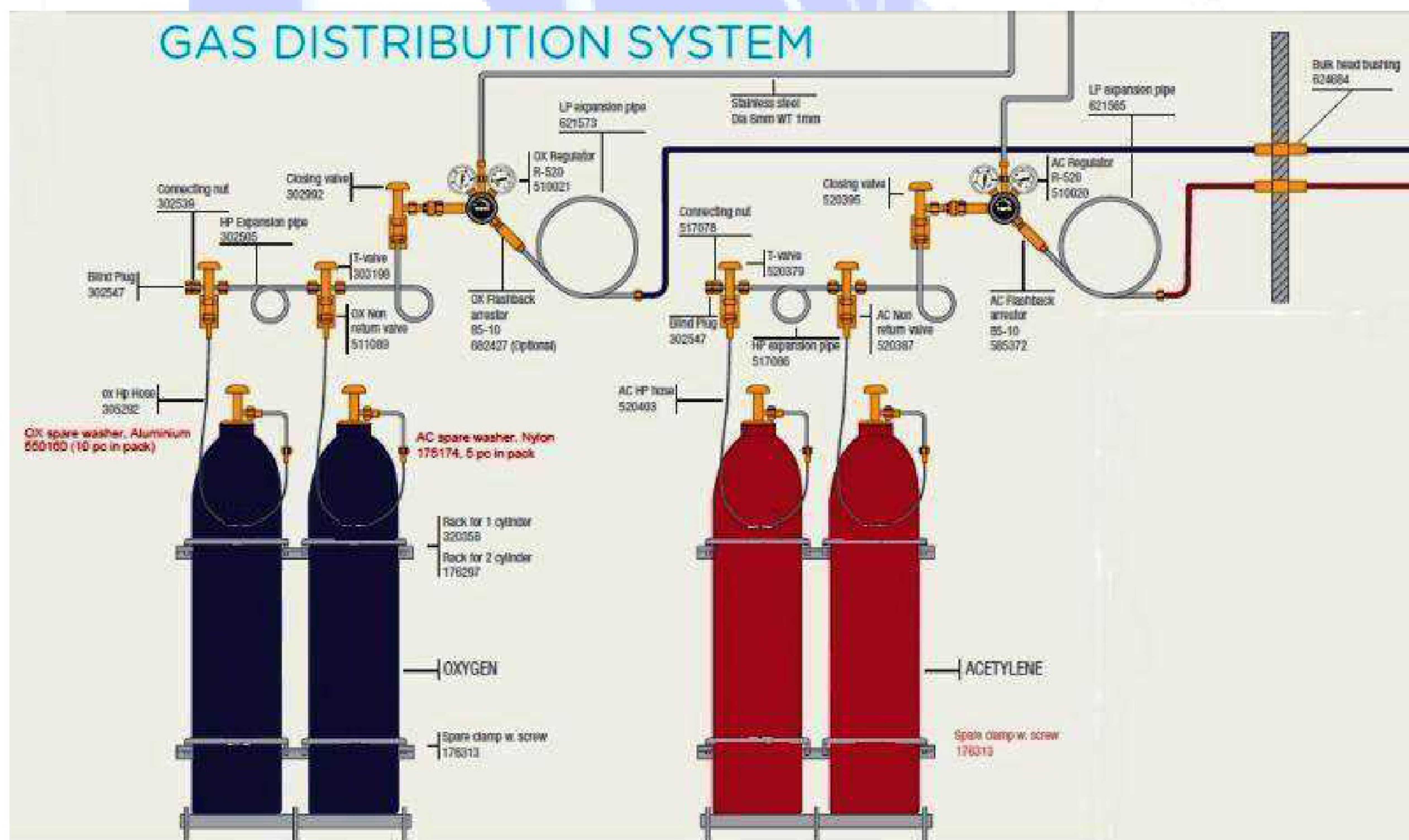
## 1F- REFRIGERANTS

EGYCO. supplies a wide range of refrigerants worldwide. HCFCs and HFCs ozone friendly refrigerants are available in most of the ports, for short notice supplies. R-404A: R-404A is intended as replacement for R-502 in medium and low-temperature refrigeration systems (ET-45/+8°C). It is a mixture based on all-HFC refrigerants, which results in no ozone depletion factor.

R-407C (Replaces R-22): A long-term HFC replacement for HCFC-22 in positive displacement equipment. R407C offers similar performance to R-22 and can be used to retrofit existing R-22 air-conditioning equipment (similar to R-22 in capacity and energy efficiency). It is suitable for low, medium and high temperature applications (ET-25/+13°C).

R-134a: R-134a is an environmentally friendly refrigerant introduced as a replacement for CFCs (R-12). It has an ozone depletion potential (ODP) of zero. It is suitable for medium and high-temperature applications (ET-20/+25°C).

R-417A (Replaces R-22): A blend of R-125, R-134a and R-600 (butane), intended for retrofitting R-22 air conditioning and refrigeration systems. Runs slightly lower suction pressure and lower discharge pressure than R-22. There will also be a drop in discharge temperature compared to R-22. Lower pressures can affect valve operation or selection of orifice tube. The blend will produce lower capacity than R-22, especially at lower suction temperatures. Addition of hydrocarbon to the blend improves oil return with mineral oil and alkyl benzene oil, however the lubricant may still separate from the refrigerant. In some applications polyolester (POE) lubricants may be needed.



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## 2- Gas Distribution Systems

### 2A- NITROGEN HIGH PRESSURE SUPPLY SYSTEM

The EGYCO NITROGEN HIGH PRESSURE SUPPLY SYSTEM is used to compensate the loss of Nitrogen during the voyage and to ensure a safe position pressure of at least 0.07 bar in the cargo tanks (padding operation).

It is also used to provide the Nitrogen needed for the purging operation, when required. Nitrogen is a colorless, odor and flavor free, non-toxic and almost totally inert gas.

Nitrogen padding is used to exclude oxygen from the cargo tanks to prevent dangerous situations and maintain the quality of the cargo.

Another use of Nitrogen, is purging and draining pumps, cargo pipes and valves, air cooling systems etc. The EGYCO NITROGEN HIGH PRESSURE SUPPLY SYSTEM consists of manifold pipes, cylinder holders, cylinder hoses and a reducer cabinet.

The reducer cabinet is used for reducing the cylinder pressure to 5–10 bar, appropriate for distribution. It includes regulators with built in safety relief valves, inlet/outlet closing valves and two outlets, one for purging and one for padding. Manifold pipes can be connected together in order to form a connector pipe. Cylinders are connected to manifold pipes via non-return valves.

### 2B- CENTRAL GAS SUPPLY SYSTEM

EGYCO. CENTRAL GAS SUPPLY SYSTEM consists of the cylinders, the cylinder batteries with the connecting hoses, the cylinder holders, the gas outlet stations and the pipeline network. A central gas supply system offers several major advantages:

- With cylinder batteries having two header pipes, there is no work interruption at cylinder exchange.
- Important gas reserve and better utilization of cylinder content.
- Higher stability of working pressure than with a single cylinder.
- Safety in the work area by elimination of high-pressure fittings.
- Better survey of gas consumption and gas reserve.
- Reduced costs with accelerated cylinder rotation.
- Central surveillance of gas reserve. The cylinder batteries include:
  - Header pipe (color sprayed) with stop valves.
  - Header pipe support (zinc plated).
  - Master manifold valve.
  - Wall bracket.

EGYCO. CENTRAL GAS SUPPLY SYSTEM components are manufactured in Europe and they are in accordance with the latest European regulations. They are manufactured under the highest quality standards and they are available at all major ports. EGYCO. GAS OUTLET STATION is designed to ensure maximum safety and high grade efficiency. It includes a high quality twin valve unit and two flashback arrestors (one for oxygen and one for acetylene) complete with nuts and fittings. The gas outlet station is recommended to be protected in a cabinet.

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### INDUSTRIAL GAS CYLINDER

AIR	OXYGEN	NITROGEN	OXYGEN FREE NITROGEN	ARGON	CARBON DIOXIDE	HYDROGEN	HELIUM	BALLOON GAS	DISSOLVED ACETYLENE

### MEDICAL GAS CYLINDER

CYCLOPROPANE	AIR	OXYGEN & HE MIXTURE	OXYGEN	CARBON DIOXIDE	HELIUM	OXYGEN & CO2 MIXTURE	NITROUS OXIDE	ENTHONOX	NITROUS OXIDE

### SPECIALTY GAS CYLINDER

KRYPTON	SULPHUR HEXAFLUORIDE	CHLORINE	CARBON MONOXIDE	METHANE	ETHANE	ETHYLENE	FUMIGAS	AMMONIA	BUTANE OR PROPANE

### PURIFIED GAS CYLINDER

OXYGEN PURIFIED	NITROGEN PURIFIED	ARGON PURIFIED	CARBON DIOXIDE PURIFIED	HELIUM PURIFIED

### MIXTURE GAS CYLINDER

ARGOWELD (ARGON+ CO2)	ARGOWELD (ARGON+ O2)	LASER GAS	NITROGEN + OXYGEN	HYDROGEN + NITROGEN

### REFRIGERANTS

CFCs						HCFCs									
R11	R12	R13	R13B1	R113	R114	R500	R502	R503	R22	R123	R124	R401A	R401B	R402A	R402B

### REFRIGERANTS

HCFCs					HFCs										
R403B	R408A	R409A	R414B	R416A	R23	R134a	R404A	R407C	R410A	R417A	R422A	R422B	R422D	R507	R508B

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