

- عند العمل □ When welding, use long gauntlet leather gloves. قفازات عازلة للحارة
- عند العمل مع المواد الساخنة □ Working with hot or cold substances, use thermally insulated gloves.
- العمل الكهربائي □ Electrical work requires the use of rubber gloves. تتطلب الاعمال الكهربائية استخدام قفازات مطاطية



اهوية السلامة

Safety Shoes: Below are a few recommendations

that are important when choosing the right pair of shoes for non-office employees. اصعب الفوم المصنوع عنو استعمال مع المواد

- Steel toe - when handling materials. قفازات كبرديا

قفازات كبرديا

- نعال مطاطية □ Rubber soles - when working on any part of an electrical system.

- مقاومة الصدمات الكهربائية □ Electric shock resistant - when working on live high power devices.

- Ankle support - when climbing ladders. دعم الكاحل عنو صعود السلالم

دعم الكاحل عنو صعود السلالم



السلامة الكهربائية

Electrical Safety

Many accidents are the result of carelessness. It is easy for a person to focus on the work and forget about safety. Therefore, you must train yourself to always do things in a safe manner. Look for the hazards around you and understand the safe work practices required to do the job properly.

قبل العمل عنو المعدات الكهربائية يجب عزلها

Prior to working on electrical equipment, you must:

- De-energize the equipment by unplugging it and shutting off the circuit breaker or the disconnect switch. فصل الجهاز عن الطاقة عن طريق فصله وإغلاق قاطع الدارة أو فصل الفصل

- Lock out the breaker or disconnect so no one else can restore power

while you are working. This can be accomplished with a lock system at the power panel or taping the panel shut. أغلق قاطع الدارة أو فصل الفصل حتى لا يتمكن أي شخص من أخذ من الطاقة

- Verify with a voltmeter that the power has been disconnected.

تحقق باستخدام الفولتميتر من فصل الطاقة



Ⓜ Ground the equipment or make sure the ground wire is connected to a good earth ground.
Ⓜ يجب ربط أجهزة الجهد أو التأكد من توصيل السلك الأرضي بأرض جيدة

Ⓜ Look for wires that are frayed, worn, or brittle and replace them.
Ⓜ ابحث عن الأسلاك التي أصبحت رقيقة أو البالية أو الهشة واستبدلها

Ⓜ Use tools that have insulated handles.
Ⓜ استخدم الأدوات التي لها مقابض عازلة

- Some Rules for Safe Practice and to Avoid Electric Shock

Ⓜ تجنب الوقوع في فخ التيار الكهربائي وتجنب الصدمات الكهربائية

1) Be sure of the condition of the equipment and the dangers present BEFORE working on the equipment "disconnected" circuits kill many people.
Ⓜ تأكد من حالة المعدات والأجهزة الموجودة قبل العمل

2) Never rely on safety devices such as fuses, relays, and interlock systems to protect you. They may not be working and may fail to protect when needed most.
Ⓜ لا تعتمد أبداً على أجهزة السلامة مثل الصمامات وأجهزة القفل وأنظمة التحكم

3) NEVER remove the grounding prong of a three-wire wall plug. This eliminates the safety-grounding feature of the equipment and makes it a potential shock hazard.
Ⓜ لا ترفع مطلقاً يانزاله الشق الأرضي لتقاسير الحامل الذي سلك هذه يلغي ميزة التيار الجهد

4) Do not work on wet floors. Your resistance to electrical shock is substantially reduced. Work from a rubber mat or on an insulated floor.

5) Don't talk when working on electrical systems. Don't let yourself be distracted.
Ⓜ لا تتحدث عن الأرضيات الرطبة
Ⓜ لا تتحدث عند العمل مع الأنظمة الكهربائية

6) Always move slowly when working around electrical circuits. Rapid movements may lead to accidental shocks.
Ⓜ تحرك ببطء دائماً عند العمل حول الدوائر الكهربائية
Ⓜ التحرك بسرعة قد يؤدي إلى صدمات كهربائية

Ladders

Even simple stepladders can be dangerous if not used properly. Follow these basic rules:
Ⓜ القواعد الأساسية

Ⓜ Never use a ladder that is damaged in any way and always inspect it before use.
Ⓜ لا تستخدم زبداناً ملماً أو تالفاً بأي شكل مما لا يشكل وافحصه دائماً



Always use safety features (safety feet, spreaders, locking devices) and do not use if they are missing or damaged.
 لمستخدم دائما مميزات الامان او مميزات الامان (مفتوحة او مغلقة) (مفتوحة او مغلقة) (مفتوحة او مغلقة)

Don't exceed the weight limit - there should be a label showing the maximum weight.
 لا تتجاوز حد الوزن - يجب ان يكون هناك ملصق يوضح الحد الأقصى للوزن
 واجه السلم عند الصعود او الهبوط

Face the ladder when going up or down.
 لا تحاول ان تهربك السلم انما وجودك فيه

Never try and move the ladder while you are on it.
 لا تحاول ان تحرك السلم عندما انت عليه

Do not use a metal ladder when working on live electrical wires
 اللحام والقطع والالحام بالنحاس

Welding, Cutting, and Brazing

The "Three Fs" of Welding
 Fire (from flame, sparks, and hot slag)
 النار
 اللمب والشرر
 1- تم بإزالة المواد القابلة للاحتراق من المنطقة

Remove combustible materials from the area.
 2- نظف جميع المواد القابلة للاحتراق من سطح العمل

Clean all flammable substances from the work surface.
 3- احتفظ ببولو رول وطلاء صلبة حديثة في مكان قريب

Keep a sand bucket and fire extinguisher nearby.
 4- ارتد ملابس مقاومة للحرق

Wear fire resistant clothing.
 Fumes (from heated metal)
 دخان
 من معدن مسخن
 5- يجب ان تكون منطقة العمل جيدة التهوية

Work area should be well ventilated.
 6- تم بإرتداد جهاز تنفس معصودا الدم الأمر

Wear approved respirator if required.
 7- توقف عن العمل اذا اشعرت بالمرض

Stop working if you feel ill.
 Face (prevent injuries to the face and eyes)
 الوجه
 منع اصابات الوجه والعيون
 8- ارتد واقيا للوجه للحماية من الشرر

Wear a face shield to protect against sparks and flying particles.
 9- ارتد نظارة واقية للوجه والعيون

Goggles may also be needed when chipping or cutting metal.
 10- قد تكون هناك حاجة الى نظارة واقية

Other Welding Dangers

Watch out for these other welding dangers:

Electric shock (when arc welding):
 الصدمة الكهربائية
 عن اللحام بالقوس
 11- Make sure equipment is in good condition and properly grounded.
 12- تأكد من ان المعدات في حالة جيدة

Don't work in wet areas.
 13- لا تعمل في اماكن الرطبة



❑ Don't wear metal items such as jewelry or watches.

لا ترتديه اشياء معدنية مثل
الساعات او الساعات
التي فيها قفازات عازلة

❑ Wear insulated gloves.

الاستخدامات
Explosions (when gas welding):

❑ Check the material safety data sheets for handling of the gas you are using.

تحقق من ارقام بيانات سلامة المواد لتسليم الغاز الذي أنت فيه تستخدمه

❑ Handle compressed gas cylinders very carefully.

تعامل مع اسطوانات الغاز المحفوظه
بهدوء شديد

❑ Always turn off the gas when not lit.

توقف دائما بالتحديد عن تشغيل الغاز عند عدم
الاحتراق

ادعوه المصنوعه والاشياء
PRESSURE VESSELS AND PIPING

المعدات المبردة
Refrigerant cylinders

Pressure vessels and piping are part of many systems that are serviced by refrigeration and air-conditioning technicians. For example, the temperature/pressure chart indicates that the pressure inside the cylinder at 110° is 226 psig. This pressure reading means that the cylinder has a pressure of 226 lb for each square inch of surface area.

Cylinders too large to be carried should be moved chained to a cart, Figure 1. If a refrigerant cylinder ever falls off the moving cart, the protective cap will protect the valve from breaking off and becoming a projectile. The cylinder will have a tendency to rock back and forth when it falls because of the momentum of the dense liquid contained within it. It is this rocking action that may cause the valve to break off. If the cylinder falls accidentally, the protective cap will also prevent the vaporization of all the liquid in the cylinder, which can displace the air we breathe and cause death or personal injury. The air is displaced because the refrigerant vapor is denser than the air. The protective cap must be secured.

لا يتم ازالة الكوبه عند سقوط الاسطوانات
لان بخار ماده التبريد اكثر كثافه من الهواء

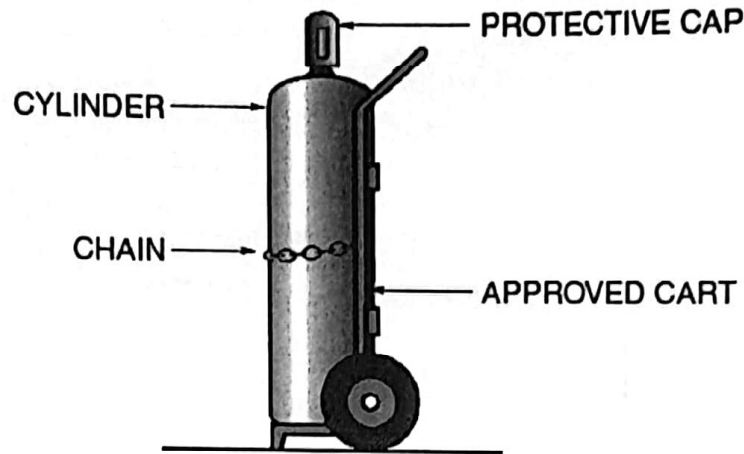


Figure 1. Pressurized cylinders should be chained to and moved safely on an approved cart.

The pressure in a cylinder can be thought of as a potential danger. It will not become dangerous unless it is allowed to escape in an uncontrolled manner. The cylinder has a relief valve at the top in the vapor space, Figure 2. If the pressure builds up to the relief valve setting, the valve will start relieving vapor. As the vapor pressure is relieved, the liquid in the cylinder will begin to vaporize and absorb heat from the surrounding liquid, producing a cooling effect. This will reduce the pressure in the cylinder. Relief valve settings are set at values above the worst typical operating conditions and are typically more than 400 psig.

The refrigerant cylinder has a fusible plug made of a material with a low melting temperature. The plug will melt and blow out if the cylinder gets too hot. This prevents the cylinder from bursting and injuring personnel and property around it.

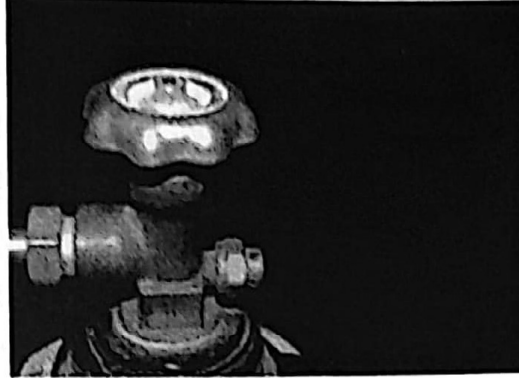


Figure 2. Relief valve

Applying heat to refrigerant cylinders while charging a system to keep the pressure from dropping in the cylinder is an extremely dangerous practice. It is recommended for the above purpose that the cylinder of refrigerant be set in a container of warm water with a temperature no higher than 90°F (see Figure 3).

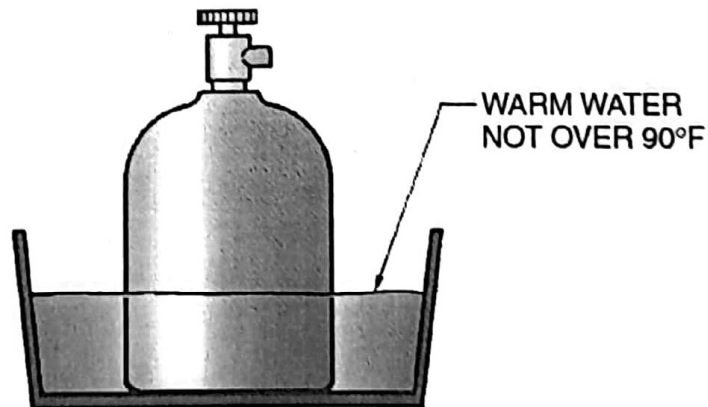


Figure 3. A refrigerant cylinder in warm water (not warmer than 90°F).

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نيتروجين و اوكسجين
Nitrogen and Oxygen cylinders

In addition to the pressure potential inside a refrigerant cylinder, there is tremendous pressure potential inside nitrogen and oxygen cylinders. They are shipped at pressures of 2500 psig and must not be moved unless the protective cap is in place. They should be chained to and moved on carts designed for the purpose, Figure 1. Dropping a cylinder without the protective cap may break the valve off the cylinder, and the pressure inside can propel the cylinder like a balloon full of air that is turned loose, Figure 4. The pressure of nitrogen must also be regulated before it can be used, Figure 5 because the pressure in the cylinder is too great to be connected to a system. If a person allowed nitrogen under cylinder pressure to enter a refrigeration system, some weak point in the system could burst, which could be particularly dangerous if it were at the compressor shell. Figure 4.9 shows nitrogen tank pressure of approximately 2200 psi being regulated down to about 130 psi. Notice the downstream safety pressure relief valve that protects the system and the operator. Oxygen also must be regulated because of high pressure. In addition, all oxygen lines must be kept absolutely oil free. Oil residue in an oxygen regulator connection may cause an explosion, which may blow the regulator apart in your hand.

موتور

انتفاخ

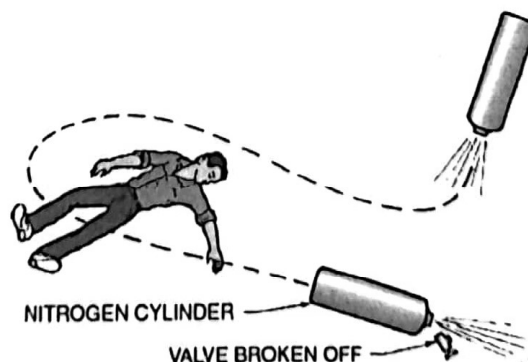


Figure 4. Cylinder valve is broken off, the cylinder becomes a projectile until pressure is exhausted.

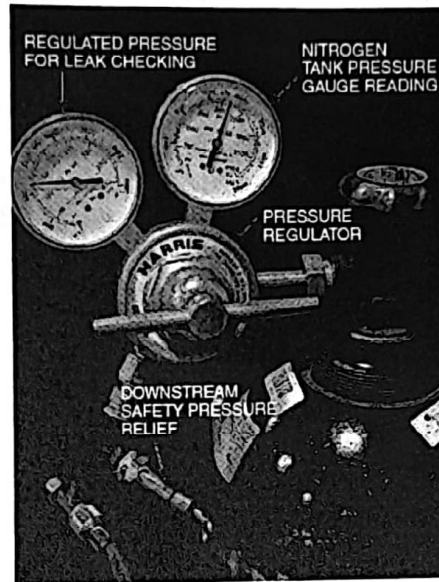


Figure 5. A nitrogen tank with pressure regulator and safety downstream pressure relief valve.

Oxygen is often used with acetylene. Acetylene cylinders are not under the same high pressure as nitrogen and oxygen but must be treated with the same respect because acetylene is highly explosive. A pressure-reducing regulator must be used, Figure 6.

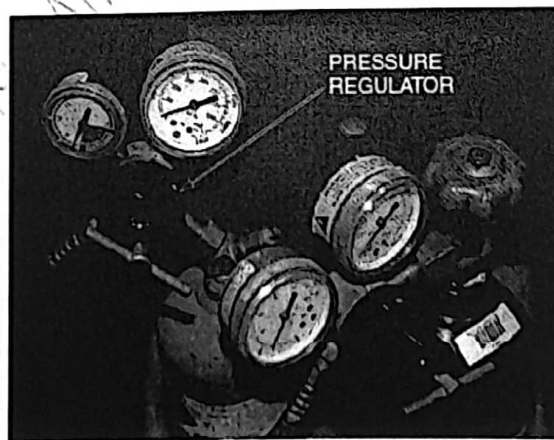


Figure 6. Pressure regulators on oxygen and acetylene tanks.