

LIFEGUARDTM SAFETY SYSTEM

HYDROGEN HOSES | CRYOGENIC LIQUID CYLINDER HOSES | METAL PIGTAILS | LIFEGUARD COMPRESSED GAS HOSES | CARBON DIOXIDE BULK LIQUID TRANSFER HOSES

Instruction of installation and use of LifeGuard Safety Hoses®



This instruction manual deals with a proprietary hose design used to drain or fill cylinder(s) or bundle(s) of compressed, liquefied and dissolved gases. It includes Oxygen and Air for medical/breathable application as well as inert gases.

What is LifeGuard Safety Hose?

LifeGuard Safety Hose® is a safety device built into a hose fitting and that is internal to a typical industrial hose that will shut off the flow of product transferred in both directions in the event of a hose coupling ejection, hose stretching to an unsafe condition, and hose separation minimizing the release of gas or liquid being transferred. **LifeGuard Safety Hose®** is a transfer hose assembly that includes a hose with couplings on each end and a cable

routed through the hose connecting a plunger, wedge, or flapper in each coupling. The cable provides force in the direction of both ends of the hose, holding the shut off device open. Should the force be eliminated due to coupling ejection, hose stretching, or hose separation, the shut off devices are released and seat, stopping flow in both directions.



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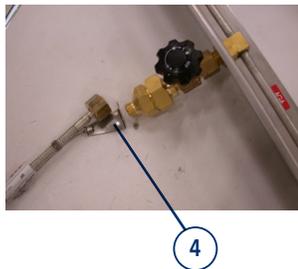
Fitting of high pressure hoses to valve

1. Place the loop [1] on the safety wire over the hand wheel on the cylinder or cylinder bundle valve.
2. Fit the bent reinforced pipe [2] to the valve by hand. See picture below.
3. Adjust the loop [3] so that it is impossible to take the loop off when the high pressure hose is connected to the valve. NOTICE! The loop must be big enough to pass the hand wheel when the high pressure hose has been loosened from the valve.
4. Fit the straight end of the hose, to the shut-off valve on the connecting pipe, by entering the fixing bracket [4], at the end of wire, before the coupling nut. The nut is adapted to fix the bracket.
5. Tighten the connections. Use leak detection spray
6. The hose may not be exposed to other force than internal pressure.

Normal tightening torque 50-60 Nm.

When changing cylinders or cylinder bundles always replace the old washer.

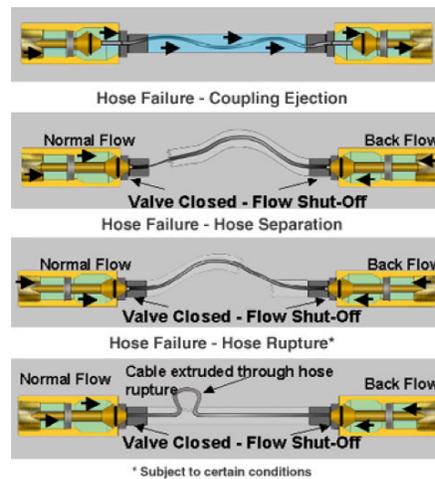
For part details, please read the hose label.



Safe-Loops

All LifeGuard Safety Hoses® come with Safe-Loops® which are attached to both the cylinder valve and the manifold valve to protect against hose thread failures. In some cases, the Safe-Loops will come unattached end to end so that you can attach them at the customer location.

GRAPHIC EXPLANATION



SIDE-BLOW OUT DURING CTE TEST



The Do's and Don'ts of Hose Installation

THE DON'TS Hose Installations at customer sites



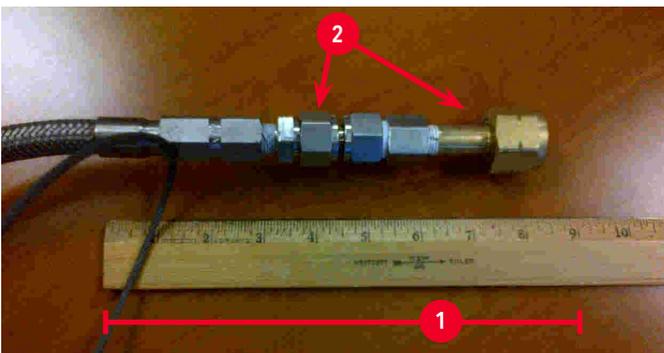
PIGTAIL IS TOO SHORT, TOO MANY FITTINGS.



1 GOOD INSTALLATION NOTICE THE "SLACK" IN THE HOSE

- 2
- PIGTAIL IS TOO SHORT. REPLACE WITH 60" HOSE.
 - NOTE LENGTH OF OTHER PIGTAIL.
 - SAFETY LOOP SHOULD BE INSTALLED OVER VALVE.

PACK END - FAILURE AT CGA NIPPLE



1 INSTALLATION HAD 9 INCHES OF ADAPTORS

- 2
- MINIMIZE ADAPTORS AT BOTH ENDS
 - USE STAINLESS CONNECTORS, EXCEPT FOR O2.
 - USE 90 DEG STREET ELBOW ON THE CGA NIPPLE

HOUSE END CONNECTOR



DUE TO TOO MUCH HOSE STRESS CONNECTOR BENT.
CONNECT HOSE (WITH PLENTY OF SLACK) DIRECTLY TO C/O VALVE

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THE DO'S Hose Installations at customer sites Summary

- Hoses should hang loosely from the pack to the house connection.
- Minimize adaptors at both ends. Adaptors add unnecessary leak points and stress on the hose.
- Always use safety loop – should drape over valve.
- For hydrogen and inert products, use 316 Stainless fittings. May still use the bronze nut. 316 Stainless steel is stronger than bronze, and compatible with hydrogen, as it is non-sparking. **Use bronze or copper for Oxygen.**
- Install a 90 degree street elbow on the pack end so that the hose hangs from the fitting, and does not protrude outward. See hose installation guidelines.
- **If the installation at your delivery does not meet these requirements, report the situation to your supervisor as an accident prevention technique – APT.**
- Disconnect any hoses before placing Moffett forks under packs.
- Walk around the cylinder pack before driving off with it to ensure that you have the right one, and that it is disconnected.
- Always Notify Company Contact to verify that Pack or Packs are empty and ready to be exchanged.

Hose Installations at customer sites guidelines

Avoid Torque

Torque or twisting is harmful to hose and substantially reduces service life. Installation torque can be avoided by using a floating flange or union at one end of an assembly in place of a rigid connection. Always install hose so that flexing takes place in one plane.

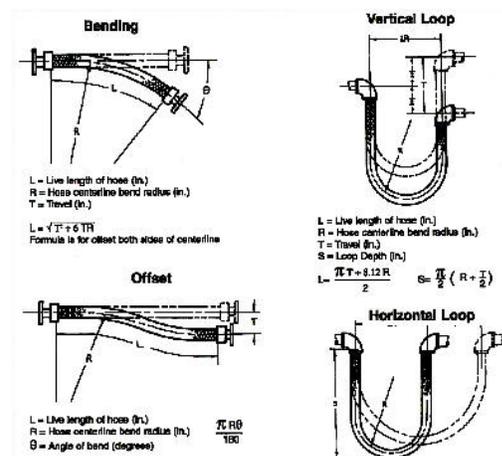
Avoid Over Bending

If metal hose is bent below the minimum recommended bend radius, fatigue and premature failure can result. This bending often occurs at end connections and can be avoided by installing an interlock guard or elbow.

Avoid Improper Handling

Always lift hose, do not drag. Do not permit hose to be stored in an area where it is subject to spills, corrosive sprays, etc.

Proper Installation Formulas and Diagrams



HOSE SHOULD BE INSTALLED TO DRAPE OR LOOP FROM ONE CONNECTION TO ANOTHER. USE 90 DEGREE STREET ELBOWS IF NEEDED.