

YOUR SOURCE FOR HYDRAULIC SAFETY AWARENESS NEWS, TIPS & INFORMATION

## News & Events

### ➤ COMING SOON

**Compressed Air Safety Awareness Course Home & Office, and Industrial.** These awareness modules are designed to bring an understanding of how dangerous and deadly compressed air can be. Compressed air is an energy hazard that most occupations are exposed to. The course outlines and more details will be available Summer 2014.

### ➤ WANTED

The Hydraulic Safety Authority of Canada is offering opportunities for health & safety providers and consultants to expand their program portfolio and increase economic growth by offering HSAC courses and services. Please contact us for more information on becoming a partnered training provider.

➤ **Levitt-Safety** an authorized provider of HSAC Hydraulic Safety Training Courses has successfully delivered open enrollment in Edmonton, Oakville, Sudbury, Canmore, Kingston, Ottawa, London, Trenton and Winnipeg. Contact [training@levitt-safety.com](mailto:training@levitt-safety.com), for additional course dates and locations.

### ➤ Hydraulic Safety Refresher Training

Being aware and understanding the hazards within your work environment will greatly reduce the risk of injury. Hydraulic systems pose many safety hazards and the Hydraulic Safety Authority of Canada would like to congratulate those who completed the High Risk Maintenance or Exposure Level Training course in 2011. HSAC emphasizes that hydraulic safety awareness training and education are essential and advise you to continue enrollment in refresher courses to stay current on the latest developments. You may contact HSAC or your local training provider for instructor led courses. You may also complete any of the Hydraulic Safety Courses available online to attain your 3 year refresher certificate.

Visit us at [www.hsac.ca](http://www.hsac.ca). This new site is full of resources and information on hydraulic safety.

## International Fluid Power Society

HSAC is pleased to announce that the International Fluid Power Society IFPS is now an authorized provider of HSAC's Hydraulic Safety Awareness E-Learning courses.

The International Fluid Power Society (IFPS) is a non-profit professional organization of individuals dedicated to enhancing the quality of certifications, educational opportunities, technology evolution, and professionalism within the fluid power and motion control industry. The IFPS was started in Detroit, Michigan, in 1960 by a group of 30 professionals interested in supporting the future of the fluid power industry. Today IFPS membership boasts nearly 4,500.

Beginning with the first Fluid Power Hydraulic Specialist Certification in 1980, the IFPS has become the recognized industry leader in fluid power and motion control certifications. Fifteen different certifications are currently offered with two certifications in development. These certifications cover diverse job descriptions within the industry including mechanic, technician, specialist, system designer, and engineer. The IFPS has nearly 10,000 active certification holders throughout the United States and in many countries around the world.

For further information contact:

International Fluid Power Society; [www.ifps.org](http://www.ifps.org)

E-mail: [AskUs@ifps.org](mailto:AskUs@ifps.org)



## Key to Surviving Hydraulic Failure

For this edition of the Hydraulic Safety Press I wish to discuss seal failure. Seal failure is inevitable and seals are 99% less likely to be on the inspection list. If seals are in an inspection program then it has been determined that these seals in your particular application are critical. A critical seal would be one that if failure occurs would create a hazard for personnel, and or the public. In most cases where components have to be disassembled for inspection seals should be replaced rather than performing an inspection.

The costs of hydraulic seals are pennies in comparison to the time and resources put into disassembling components to merely inspect the seals.

Seals deteriorate over time and it may not be obvious by inspection to determine the condition of the seal without laboratory analysis.

Critical in regards to safety would include components such as; pumps, valves, and actuator seals. These seals in these critical components would be utilized in aircraft, amusement park rides and elevating devices. Failure of a seal in these critical areas could lead to injury and death. If a critical seal failure occurs in an aircraft survival could be less likely.

Risk is reduced by a maintenance plan where critical seals are replaced after so many service hours or a combination of non-service hours. Seals that are not in service for long periods undergo deterioration therefore it cannot be assumed that seals will last longer if not in use.

Four common causes of seal failure are:

- Improper Installation
- System Contamination
- Misapplication
- Chemical Breakdown & Heat Degradation

To avoid any thought of surviving hydraulic seal failures, consider how hydraulic seals and safety are closely related. For more about seal safety refer to the HSAC High Risk Maintenance Level course.



## Poster Campaign A Success

HSAC is pleased to hear many organizations are making awareness of hydraulic hazards through the use of HSAC safety posters. To view the free safety posters please visit us at [www.hsac.ca/safety-posters/](http://www.hsac.ca/safety-posters/)

All safety posters are available for printing from the HSAC website. Please forward this link to colleagues, supervisors and field personnel for posting on bulletin boards and for use in safety meetings.



### Upcoming issues

- Hydraulic safety in Amusement Parks
- Key to surviving hydraulic failure

## ONLINE SAFETY COURSES

HSAC is very pleased to offer many more online safety training courses. Visit [www.hsac.ca](http://www.hsac.ca)

- Aboriginal Awareness
- Alcohol and Drug Awareness
- Arc Flash Awareness
- Backing Safety Fundamentals
- Bear Awareness
- Bloodborne Pathogens
- Bloodborne Pathogen Exposure
- Boiler & Pressure Vessel Design Registration
- Boom Truck
- Chainsaw Safety – Ontario
- Compliance, Safety and Accountability for Non-Drivers
- D.R.I.V.E
- Electric Safety Training
- Fall Protection Awareness
- Fall Protection Professional Series
- Firefighting Safety
- First Aid Awareness
- First Aid Interactive Refresher
- Forklift Fundamentals
- Forklift Operator Safety
- Four-wheel Drive Fundamentals
- GHS Hazcom 2012
- Goal Setting
- Hazard Assessment
- Lithium Battery Safety
- Lithium Battery Transport
- Personal Protective Equipment: Safe at Work
- Propane Cylinder Handling and Exchange
- Safe Slinging and Rigging
- Safety Moments
- Sexual Harassment for Supervisors
- Scaffolding Safety: Construction
- Stand Up Forklift
- Shipping Dangerous Goods by Air
- Shipping Dangerous Goods by Sea
- The Effects of Stress on Driving
- The Supervisor: OH&S and the Law
- Time Management
- Traffic Control Person for Construction
- Transportation of Dangerous Goods TDG
- Trip Inspection
- Utility Bucket Rescue
- WHMIS
- Winter Driving
- Winter Driving Fundamentals
- Workplace Harassment- The Real Deal

**Your company can now have a custom-branded system and access to an entire safety course library, there are more than 140 courses now available through HSAC.**

## Non Conductive Hydraulic Hose

A thermo plastic hose does not have metal wire reinforcement. This type of hose has been designed as a non-conductive hose, meaning it will not transmit or conduct electricity and is commonly used on equipment exposed to high voltage.

Utility bucket trucks used to elevate workers to access electrical and phone services are built using non-conductive hydraulic hoses. The boom on bucket trucks have a non- conductive boom section, along with non-conductive hydraulic hoses, this prevents any contact with high voltage from grounding to the earth. Grounding high voltage is extremely dangerous. Utility companies are highly trained and are aware of the importance of non-conductive hydraulic hoses. Rigorous inspections include determining the presents of the correct hoses. The thermoplastic hose does not contain any steel wire reinforcement. The steel wire in a traditionally constructed hydraulic hose will conduct electricity.

Utility workers receive great amounts of training on this subject however not all users of bucket trucks are aware of the related hazard. Bucket truck use has expanded to tree service and sign companies. Smaller contractors will purchase used utility bucket trucks from auctions which had been previously owned by utility companies. When these used bucket trucks are put into service by workers who are not trained or made aware of the differences between conductive and non conductive, the risk becomes extreme. Non- conductive hoses that fail must be replaced by non conductive hoses. Many times I have seen conductive hoses in place of non conductive because the worker was not trained.

Typically the non-conductive hose is orange in colour and has SAE and DIN information printed on it. If you have equipment requiring non-conductive booms, be sure to inspect for non-conductive hydraulic hoses and train personnel on this subject.





## FAQ

We encourage our viewing audience to send us questions which can be shared to assist others.

HSAC received this question from an entertainment company

**Q;** We use scissor lifts for various things in our business, for such things as elevation stage hands to access trussing, as well as supporting lighting and sound equipment. My concern is if a hydraulic hose breaks will the lift drop or descend? My one concern is when we have wiring or props passing from a lift to a platform or truss during a show. I read about our lifts having a velocity fuse to prevent them from dropping.

**A;** I stress that all equipment should be operated within the safety guidelines of the manufacturer and direct safety inquires to them about your specific equipment and applications. To prevent injury there are many more



considerations and requirements should the velocity fuse be activated, always refer to the manufacturer's instructions for manually lowering lifts and resetting fuses.

I will begin with describing how a velocity fuse functions. There are many manufacturers of velocity fuses and they are used in many elevating devices including forklifts or any device used in a critical application.

The velocity fuse is designed to stop hydraulic fluid which is being used to hold a hydraulic cylinder's load; in your case the elevated lift, should a hydraulic hose, tube or seal rupture. When a

hydraulic fluid line breaks the fuse detects this and closes blocking fluid from exiting through the break, this is a very general description. The detection is a sudden change in pressure or flow. When a rupture occurs the fluid holding the load is under pressure and this pressure forces the fluid to the breach. The sudden fluid pressure drop or the velocity of the fluid traveling towards the breach signals the fuse to close. The trigger occurs at approximately 30% over the normal function flow rate. Do not rest assured the velocity fuse will work under all failure circumstances. The velocity fuse will only function within certain flow and pressure parameters. For example it will be ineffective against slow leaks because the velocity of the fluid is not high enough to activate the fuse. In some situations the fuse could close when it is not supposed to, an example is a change in fluid viscosity from cold conditions.

Lifts and elevating devices play a large role in arts and entertainment and each of your applications must consider the risks should a lift lower or fail. For example if a prop is connected to a lift and a truss or platform and the lift lowers slowly from a failed hose or seal, would the lift pull the truss and platform down with it? This could pose a very dangerous situation!

A velocity fuse is not completely reliable and will not function in all failure conditions. So yes it is possible that your lift could drop or descend even if it has a velocity fuse installed.