



Tacoma, Washington October 2007

It Can Happen! Are You Prepared?

Drive-Aways | Coupling Separation | Complete Hose Failure | Longitudinal Tear

 **LIFEGUARD**  Tri-Bolt Breakaway Hose Assembly



www.gpsafetyssystems.com

LIFEGUARD **SAFETY SYSTEM**

“There’s a Safer Way to Protect Against Catastrophic Hose Failure . . .”

Hoses will fail in time...this is an unfortunate truism. The most common types of hose failure are the Drive-Away and the Coupling Separation. How can we truly protect our personnel, facility and the environment from these types of failure?

From the inventors of Smart-Hose comes the next generation in Safety Hose Technology – the **LifeGuard™ Safety Hose**.

The **LifeGuard™ Safety Hose** technology* is designed to eliminate the consequences of the hazardous effect of a drive-away, coupling separation, hose rupture or failure during fluid or gaseous transfer operations...now with two critical new features – a **Tri-Bolt Breakaway Coupling** and an **Engineered Compression Spring (ECP)**. The (ECP's) axial force can be adjusted to address the flow force of the fluid or gas being transferred within the hose assembly to avoid premature checking. The spring unlike the previous invention, does not distort the inner housing tube and also provides internal construction support to the assembly.

LifeGuard™ Safety Hoses incorporate a coated ECP specifically designed for each applications unique flow and pressure. The ECP is installed within the hose bore and is connected to the seating mechanisms located in the Standard Safety Fitting and the Tri-Bolt Breakaway fitting. This ECP is a compression spring providing carefully engineered thrust in the direction of both ends of the hose, holding the valves open. Should this thrust be eliminated due to a drive-away, coupling separation, hose rupture or failure, the valves release and instantly seat, stopping flow in both directions. In the case of a drive-away, the patent pending Tri-Bolt design assures that two or more bolts will break in any failure mode, causing the system to immediately engage and instantly seat stopping the flow in both directions.

* International patents pending.

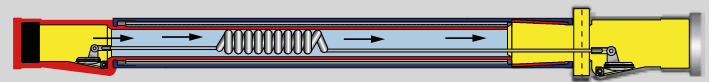


System works with the following hoses:

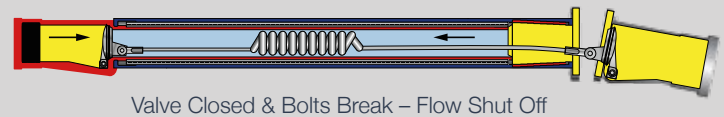
- **Metallic**
- **Rubber**
- **PTFE**
- **Thermal Plastic**

1/4" up to 8"

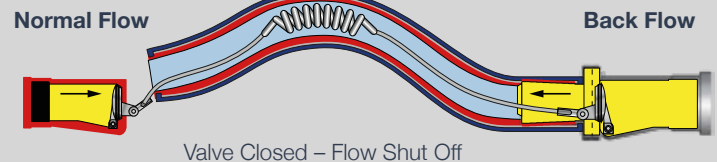
Working Hose – Intact **Normal Flow**



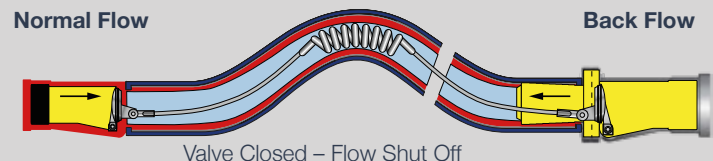
Hose Failure – Drive-Away **Normal Flow**



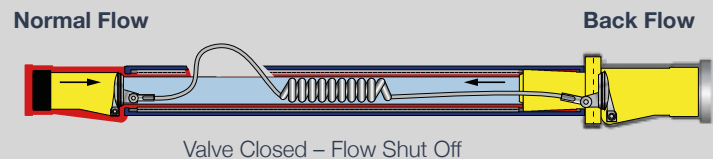
Hose Failure – Coupling Separation



Hose Failure – Hose Separation



Hose Failure – Longitudinal Tear *



*Subject to certain conditions



GPS²
GLOBAL PASSIVE SAFETY SYSTEMS
THE NEXT GENERATION IN SAFETY HOSES

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LIFEGUARD ™

Tri-Bolt Breakaway Hose

SUPERIOR DESIGN

The LifeGuard™ Tri-Bolt Safety-Hose system is the next Generation in Hose Safety.

The **LifeGuard™ Tri-Bolt Breakaway Hose** is designed to increase the safety of your hose and facility by incorporating protection against the unintended pull-away of tank trucks, railcars, barges and ships. Utilizing a Engineered Compression Spring system with two non-return valves installed within each fitting, we have now included a Tri-Bolt Flange System with three shear bolts on one fitting that separates under a controlled condition and prevents product loss in the event of an emergency separation. The **LifeGuard™ Tri-Bolt Breakaway Hose** is designed to separate at any angle when subjected to a designated pull force. In case of separation, its patent pending design assures that not less than two bolts will separate causing the internal valves to engage and the piping to remain intact with flow stopped on both ends of the hose.

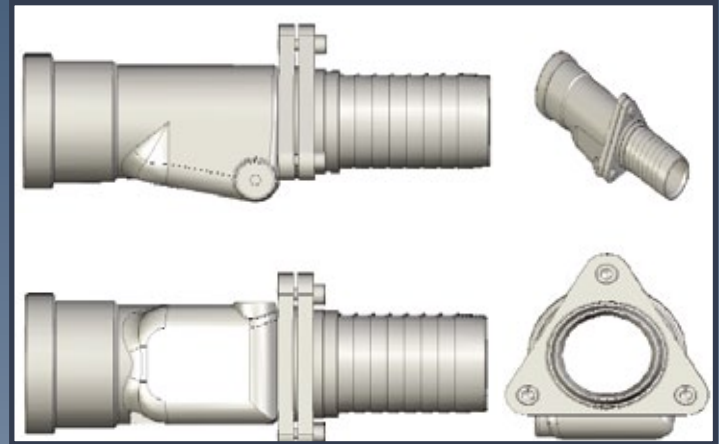
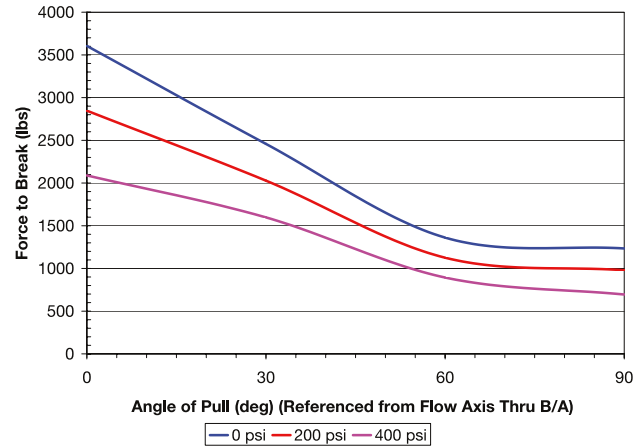
Shear bolts can be supplied in various sizes and materials to meet specific pressure and load requirements. With use of a rebuild kit, the hose assembly, upon separation, can be reset and returned to operation by one of our authorized assemblers. The **LifeGuard™ Tri-Bolt Breakaway Hose** is supplied standard in 316L stainless steel. It can also be specified in Alloy 20 and Hastolloy C, with end connections NPT, BSP, ASME flanged, and butt weld. The **LifeGuard™ Tri-Bolt Breakaway Hose** is a vast improvement from previous systems because this addresses the greatest concern with high loading and off loading but at an economical price.

Unlike other passive devices, this new technology provides the greatest degree of protection in the case of :

- 1) hose separation
- 2) coupling-to-hose separation
- 3) drive-away scenarios

In the past, if the facility or truck's piping systems were not sufficiently strong even a safety or standard hose could literally pull the piping apart. This concern has now been eliminated with the **LifeGuard™ Tri-Bolt Breakaway Hose**.

2" BREAKAWAY - 0.120" Studs (2)



GPS²
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Product Line

High Pressure Hoses

PRODUCT	APPLICATION	DIAMETER	LENGTH
GPS ² —HP Safety Hose	Cylinder Filling, Customer Station	1/4" - 1"	12" - 180"
GPS ² —Hydrogen Hose	Tube Trailer	1/4" - 1 1/2"	72" - 120"
GPS ² —Standard Fill Plant Hoses	High Pressure Cylinder Filling	1/4" - 1 1/2"	12" - unlimited
GPS ² —Customer Station Safety Hoses	Specialty Designed	1/4" - 1 1/2"	As requested

Metallic Hoses

PRODUCT	APPLICATION	TYPE
GPS ² —304	Gaseous, Cryogenic, High Pressure	1/4" to 4"
GPS ² —316	Gaseous, Cryogenic, High Pressure	1/4" to 4"
GPS ² —321	Gaseous, Cryogenic, High Pressure	1/4" to 4"
GPS ² —HIGH PRESSURE	200 Bar—450 Bar	Cylinder filling & Gaseous Transfer
GPS ² —CRYOGENIC	Gaseous, Cryogenic	Cryogenic, Air Separation
Specialty Fittings	High Pressure/Cryogenic	European/DIN/CGA
Welding acc to EN 287/288		CE-approved acc. to EN13480 97/23 EC

Petroleum/Chemical/LPG/NH3 Rubber Hoses

PRODUCT	APPLICATION	DIAMETER	LENGTH
GPS ² —LPG	Cargo Tanker, Facility, Carousel	1/2" to 8"	1' to 50'
GPS ² —NH3	Cargo Tanker, Facility,	1/2" to 8"	1' to 50'
GPS ² —UHMW	Cargo Tanker, Facility,	1/2" to 8"	1' to 50'
GPS ² —PETROLEUM	Cargo Tanker, Facility,	1/2" to 8"	1' to 50'
GPS ² —RUBBER COVERED TEFLON	Cargo Tanker, Facility,	1" to 8"	1' to 50'
GPS ² —BARGE UNLOADING	Facility,	6" to 8"	20' to 60'
Dry Break Couplings	Product data	Product data	Product data
GPS ² —BREAKAWAY SYSTEM		Product data	

