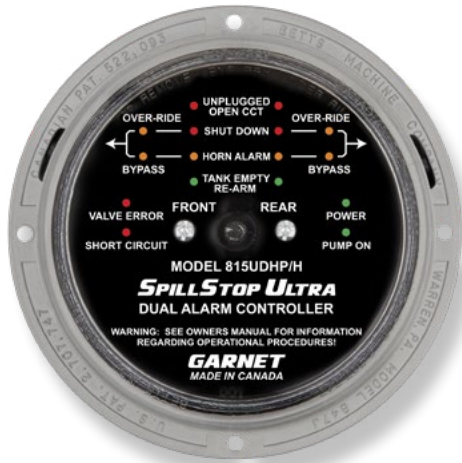


SPILLSTOP ULTRA™

Alarm Controller with Hose Protection Overfill Prevention System



MODEL 815-UDHP/H HYDRAULIC VERSION MANUAL

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SPILLSTOP ULTRA™

Hose Protection

Overfill Prevention System

MODEL 815-UDHP/H
HYDRAULIC VERSION MANUAL

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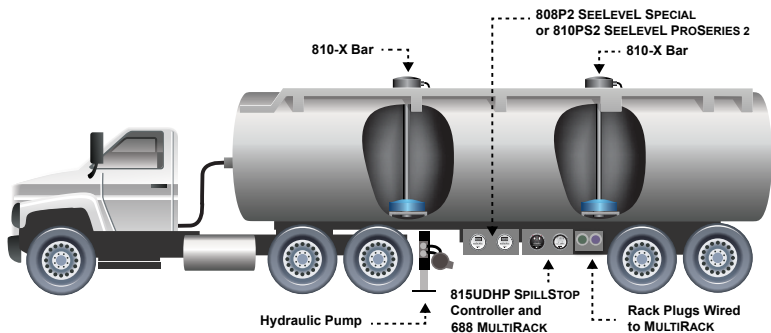
Congratulations on purchasing the Garnet Instruments Model 815UDHP/H SPILLSTOP ULTRA™ Dual Hose Protection Overfill Prevention System. The 815UDHP/H represents the state of the art in spill control for crude oil and chemical hauling. The SPILLSTOP™ is designed to work in conjunction with two Garnet Model 810PS2 SEELEVEL PROSERIES™ or Model 808P2 SEELEVEL SPECIAL™ systems to assist the truck operator with truck tank overfill protection in applications where the fluid is loaded with a hydraulic pump or an external pump. In addition to the tank overfill protection, the 815UDHP/H also assists in preventing spills due to blown hoses.

The 815UDHP/H system is designed as an emergency backup system. The operator should still be responsible for loading and unloading of the tank, but in the event that the operator is unable to shut down loading when the tank is full or makes an occasional error, the 815UDHP/H system can prevent a spill and damaged equipment.

The 815UDHP/H is easy to install and operate, and is designed to withstand the rigors of mobile applications. The Model 817 Truck Gauge Programmer is used to set the alarm points in the 810PS2 SEELEVEL PROSERIES™ or the 808P2 SEELEVEL SPECIAL™ gauges, which are programmed with the horn alarm and shutdown points. The system can shut down hydraulically operated loading pumps. A horn alarm is provided to warn of an impending full tank condition.

CHAPTER 2 - FEATURES AND OPERATION

The following diagram shows the basic components and connections of the 815UDHP/H for a tractor trailer application.



The SPILLSTOP controller works in conjunction with alarm signals sent by the 808P2 or 810PS2 level gauges and hose pressure sensors.



The 815UDHP/H alarm controller monitors and displays the alarm status of the gauges, the loading valve status, and the horn bypass status. Wiring faults between the controller and gauges are also monitored. The controller activates a warning horn and shuts off the hydraulic pump if the fluid level in either tank reaches the full point. In addition, if an attempt is made to pump against a closed valve, or overfill the tank, loading is shut down. Each 815UDHP/H controller accommodates two compartments.

WARNING: The 815UDHP/H is intended as an emergency backup system only, and is not intended as a substitute for operator diligence during the loading process.

The operation of the SPILLSTOP UDHP system during loading with a hydraulic pump is as follows: When the system is powered on and the tank is empty, the green EMPTY/RE-ARM indicator is on, the green POWER indicator is on, the green PUMP ON indicator is on, the horn is off, and the pump is allowed to run. If the hydraulic pump in engaged to load when there is a closed valve on the discharge side of the pump, this will be detected by a pressure sensor and will cause the red VALVE ERROR indicator to go on and the PUMP ON indicator to go off, resulting in an immediate pump shutdown. This prevents equipment damage, blown off hoses, spills, and possible operator injury. The horn is not activated for this condition, and this shutdown cannot be bypassed so the operator must correct the condition before loading can occur. If loading is able to proceed normally, the EMPTY/RE-ARM indicator will go off as the fluid level starts to rise. When the horn alarm point is reached, the orange HORN ALARM indicator turns on, the PUMP ON indicator turns off, the horn will start to sound, and the pump will shut down. Pressing the horn alarm BYPASS button on the corresponding side of the controller will turn on the orange BYPASS indicator, turn on the PUMP ON indicator, turn off the horn and allow the pump to restart. This allows the operator to clean out hoses or to continue to load to maximize the load volume. The bypass will not work below the horn alarm point. The HORN ALARM indicator stays on even when bypassed to remind the operator that the alarm condition still exists.

If loading is continued to the point that the SHUT DOWN alarm point is reached, then the red SHUT DOWN indicator turns on, the PUMP ON indicator turns off, and the pump will shut down. There is no bypass button for this condition so it is not possible to load higher than this alarm point due to the risk of an overflow spill. However, it is possible to unload with the hydraulic pump by pressing and holding the corresponding over-ride button. This allows the pump to operate as long as the tank level does not rise any further, so it can only be used to pump off product. As soon as the tank level drops below the shut down point, the over-ride button can be released. While the over-ride button is pressed, the orange indicator will turn on. If the over-ride indicator does not turn on, then the tank level is too high for the over-ride to work. If there is a valve closed on the discharge side of the pump for the unloading operation then the VALVE ERROR indicator will go on and the PUMP ON indicator will go off, causing an immediate pump shutdown just like during loading. Once loading is completed and the system is powered off, the horn is always off. This prevents sloshing or other disturbances from sounding the horn during driving.

The horn alarm bypasses are cleared whenever the system is powered up, regardless of the fluid level. This means that if the system is powered off prior to unloading and the fluid level is above the horn alarm point, then the pump will not be allowed to run on power up until the horn alarms are bypassed again. If unloading is being done in a noise sensitive area, be aware that upon power up the horn will sound since the bypasses will be off. Be ready to bypass the horn alarms as soon as possible after powering up. During unloading of the tank, as the fluid level drops below the alarm points the alarm indicators will go out, and the horn bypass will be cleared for that compartment (the system is re-armed) when the EMPTY/RE-ARM indicator comes back on. This automatic feature means that there is no need for the operator to re-arm the system, removing the possible operator error of forgetting to re-arm. The horn bypasses can also be cleared manually at any time by pressing both of the bypass buttons at the same time.

Either compartment can sound the horn or shut down the pump. If one compartment's status has resulted in a shutdown, the other compartment cannot be loaded until the shutdown condition has been removed from the first compartment. If the horn alarm has been bypassed on one compartment, a horn alarm condition on the other compartment will cause the horn to turn on and the pump to shut down again. This condition can be bypassed on the second compartment to silence the horn and restart the pump.

The 815UDHP/H system has a number of convenience and safety features built into it. When the tank level is below the horn alarm point, the horn alarm bypass will not work, preventing accidental bypassing below the alarm point. There is a green PUMP ON indicator which lights whenever the pump is allowed to run, so the operator knows when a pump restart can be done. Delays are incorporated into the system to prevent electrical noise or momentary bad connections from disrupting operation. A short circuit in the wiring to a gauge lights the red SHORT CIRCUIT indicator and shuts down the pump. An open circuit in the wiring to a gauge lights the red UNPLUGGED and VALVE ERROR indicators, sounds the horn, and shuts down the pump. The horn sounding can be bypassed but these shutdowns cannot be bypassed. The pulse signal between a gauge and the controller cannot be corrupted by poor connections or moisture in the wiring, if the signal is too badly degraded it defaults directly to an open or short circuit condition. A failure of a SEELVELE or SEELVELE SPECIAL gauge also causes the controller to default to a shutdown condition. The controller will operate at truck voltages from 8 to 16 volts, and draws less than 1/8 amp so it can operate from any

convenient 12 volt circuit. The controller is also fully weatherproof, so it can be mounted at a convenient place on the trailer.

If a valve on the discharge side of the hydraulic pump is not open when pumping is started, then the pump can generate enough pressure to blow off the rubber hose between the pump discharge and the closed valve. This can result in equipment damage, a product spill, or operator injury. The 815UDHP/H controller is able to recognize a valve error in two ways, both of which result in an immediate pump shutdown. A pressure switch sensing excessive hose pressure or a micro-switch sensing valve position can be wired to break the signal connection between the 808P2/810PS2 gauge and the controller, in this case a valve error will cause both the UNPLUGGED and VALVE ERROR indicators to turn on. Alternatively, the switch can be wired to break the ground connection on the hose protection wire on the controller, in this case a valve error will cause only the VALVE ERROR indicator to turn on. If desired, both techniques can be combined in the same installation, one for loading and the other for unloading.

Refer to the appropriate wiring diagram during installation of the 815UD1HP/H system. The wiring diagrams are in chapter 4.

1. Pick a spot for the 815UDHP/H to be mounted. It is normally mounted on the trailer. Do not mount the controller where it can be damaged and it should be easy to see and out of direct road spray. It is recommended that the controller be mounted close to the pump control.
2. Mount the display enclosure using the mounting flange holes, being certain to shim the enclosure away from the mounting surface with the spacers provided to allow water drainage.
Broken display enclosures caused by water freezing behind the enclosure are NOT covered by warranty.

IMPORTANT: When connecting wiring, all connections should be soldered or securely connected using crimp connectors. Do not use spade connectors as these will degrade over time.

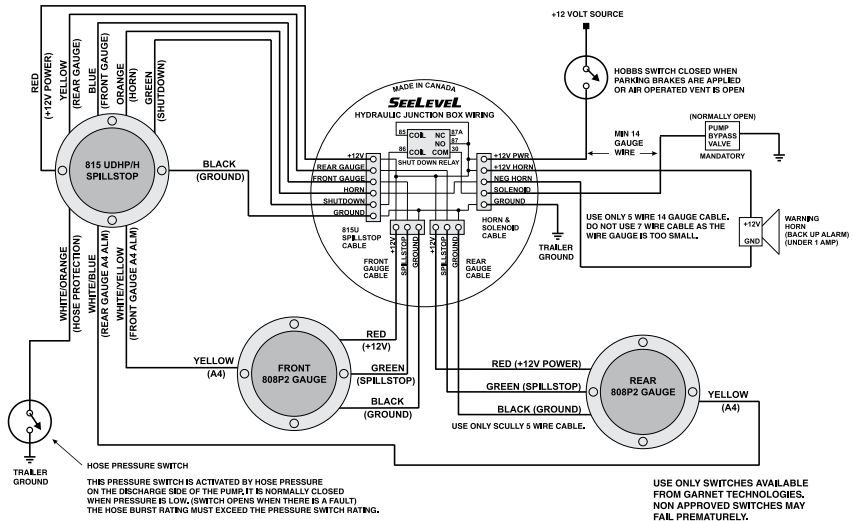
3. Connect the wiring in accordance with the applicable wiring diagram supplied by Garnet. The following chapter contains a few typical wiring diagrams.
4. Use cable such as 7 conductor Scully cable or similar. Use a strain relief where the cable enters the enclosure to create a weatherproof seal. To simplify the wiring, use a junction box available from Garnet. In addition, components such as cable, strain reliefs, horns, hydraulic solenoids, etc. are available directly from Garnet.
5. Program the alarm points in the gauges. Program alarm #1 as SHUT DOWN at the point beyond which loading is not permitted. Program alarm #2 as SHUT DOWN at the point where the horn alarm should activate. Program alarm #3 as SHUT DOWN at the point where the tank is considered empty, normally a few inches off the bottom. Do not program the empty point right at the bottom, since any buildup of debris on the anchor will prevent the system from clearing the bypasses. Program alarm #4 as SHUT DOWN just above alarm #1. See the 808P2 or 810PS2 manuals for programming details.
Example: The tank is 58 inches high, with a bottom reading of 4.6 inches. Suggested points would be alarm #1 (shutdown) at 55 inches, alarm #2 (horn) at 53 inches, alarm #3 (reset) at 6 inches, and alarm #4 at 56 inches.

WARNING: To properly determine the shutdown point, raise the SEELEVEL float to the top of the tank, and then lower the float by at least two inches. Record this point as the shutdown value. **Ensure that the truck operator is aware of this value. Ensure that this value and the empty reading are recorded in the provided area in the operator's manual. The truck operator must be given the owners manual upon delivery with the data entered on the back of the manual.**

6. Put the cover back on the SPILLSTOP, and test the system for proper operation by lifting the float. Verify the following points:
 - a. The horn sounds and the pump stops at the horn alarm point.
 - b. Pressing the bypass button at this point silences the horn and restarts the pump.
 - c. The pump shuts down at the shut down alarm point.
 - d. At this point, pressing and holding the over-ride button sounds the horn and allows pump restart.
 - e. Raising the float any higher than the shut down point causes the pump to shut down regardless of whether the button is pressed.
 - f. Position the float below the shut down point but above the horn alarm point, bypass the horn, and then verify that the bypass is removed with the float at least one inch above the bottom of the tank.
 - g. Repeat for the other compartment.

CHAPTER 4 - WIRING DIAGRAMS

WIRING DIAGRAM - TWO COMPARTMENT WITH 808P2 GAUGES, 815UDHP/H SPILLSTOP AND 815JBHD JUNCTION BOX HYDRAULIC TRAILER APPLICATION, ALL COMPONENTS MOUNTED ON TRAILER



Wiring Guide - Main Connector

Red:	+12V power
Black:	Ground
Orange:	Horn alarm output
Green:	Shutdown alarm output
Yellow:	SPILLSTOP signal from the rear 808P2/810PS2 gauge
Blue:	SPILLSTOP signal from the front 808P2/810PS2 gauge
Purple: (connected)	Rear horn bypass switch
White: (connected)	Front horn bypass switch

Wiring Guide - Sensor Connector

White/Orange:	Hose protection switch
White/Blue:	Front Gauge A4 alarm
White/Yellow:	Rear Gauge A4 alarm

If problems are encountered, check the following:

1. Is the controller getting at least 8 volts?
2. Are all the wires properly connected, with no short circuits?
3. Are the 808P2 or 810PS2 SEELEVEL gauges working properly?
4. Are the 808P2 or 810PS2 gauges programmed properly?
5. If the horn is not sounding, does the horn itself work?

To test the various components, substitute a known good component to see if the rest of the system is working. If the pump will not start, ground the green wire from the controller. If the pump still does not start, the problem is in the relay or associated wiring. If the pump now starts, and the controller indicates no shutdown alarm (or is bypassed), then the controller is bad. If the horn will not sound, ground the orange wire from the controller. If the horn still does not sound, the problem is in the horn or associated wiring. If the horn now sounds, and the controller indicates a horn alarm that is not bypassed, then the controller is bad.

The warranty will only apply if the warranty has been registered online from the Garnet Instruments registration web page.

Go online to seelevelsupport.com/ and select "Register Warranty".

DISCLAIMER OF WARRANTY ON HARDWARE

Garnet Instruments warrants equipment manufactured by Garnet to be free from defects in material and workmanship under normal use and service for a period of one year from the date of sale from Garnet or an Authorized Dealer. The warranty period will start from the date of purchase or installation as indicated on the warranty card. Under these warranties, Garnet shall be responsible only for actual loss or damage suffered and then only to the extent of Garnet's invoiced price of the product. Garnet shall not be liable in any case for labor charges for indirect, special, or consequential damages. Garnet shall not be liable in any case for the removal and/or reinstallation of defective Garnet equipment. These warranties shall not apply to any defects or other damages to any Garnet equipment that has been altered or tampered with by anyone other than Garnet factory representatives. In all cases, Garnet will warrant only Garnet products which are being used for applications acceptable to Garnet and within the technical specifications of the particular product. In addition, Garnet will warrant only those products which have been installed and maintained according to Garnet factory specifications.

LIMITATION ON WARRANTIES

These warranties are the only warranties, expressed or implied, upon which products are sold by Garnet and Garnet makes no warranty of merchantability or fitness for any particular purpose in respect to the products sold. Garnet products or parts thereof assumed to be defective by the purchaser within the stipulated warranty period should be returned to the seller, local distributor, or directly to Garnet for evaluation and service. Whenever direct factory evaluation, service or replacement is necessary, the customer must first, by either letter or phone, obtain a Returned Material Authorization (RMA) from Garnet Instruments directly. No material may be returned to Garnet without an RMA number assigned to it or without proper factory authorization. Any returns must be returned freight prepaid to: Garnet Instruments, 286 Kaska Road, Sherwood Park, Alberta, T8A 4G7. Returned warranted items will be repaired or replaced at the discretion of Garnet Instruments. Any Garnet items under the Garnet Warranty Policy that are deemed irreparable by Garnet Instruments will be replaced at no charge or a credit will be issued for that item subject to the customer's request.

If you do have a warranty claim or if the equipment needs to be serviced, contact the installation dealer. If you do need to contact Garnet, we can be reached as follows:

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