DEADMAN/FILTER DIFFERENTIAL PRESSURE PROTECTION SYSTEM

- **DEADMAN AND FILTER DIFFERENTIAL PRESSURE PROTECTION IN ONE SYSTEM**
- **DEADMAN ONLY, OR FILTER DIFFERENTIAL PRESSURE PROTECTION ONLY, OR BOTH**
- **DEADMAN SHUT DOWN WHEN HIGH FILTER DIFFERENTIAL PRESSURE OCCURS**
- **DEADMAN TIMER**
- **EASY TO INSTALL AND OPERATE**
- **OPERATIONAL STANDARDISATION FOR NEW AND EXISTING VEHCILES.**

Background.

There are a number of Deadman systems, and also some dedicated filter Differential Pressure (DP) protection systems available. However, the DP protection systems which have been developed both monitor and correct the DP. The Aljac system is a combined system, so it can either be used as a Deadman system, or a simple DP protection system, or a combined Deadman and DP protection system.

The need for automatic DP correction is the subject of much debate, but it is universally accepted that the operator cannot consistently monitor the filter DP during a refuelling operation. In the event of a water slug passing into the filter monitor elements they will block very quickly causing a rapid rise in the filter DP with little or no warning. When this occurs it is very unlikely that the operator will be close enough to the DP Gauge to take action and shut the system down quickly. Also, after a rise in filter DP the operator can 'cheat' the system and reduce the DP by reducing the system flow rate. This is a very dangerous situation because although the filter DP can be reduced in this manner, the elements themselves will still remain blocked and the risk of element rupture will remain.

Although filter DP Switches are available, until now little consideration has been given to using the output from the DP Switch in the optimal manner. Also, new vehicles can be fitted with a system relatively easily, but retro fit to existing vehicles on site is not so easy, and if this task is carried out with insufficient consideration it is possible that the final system may not be satisfactory. It is also likely that there will be no standard operating mode if there is a mix of converted and new vehicles at a location, and this will lead to confusion among the operators.

The Aljac Differential Pressure Protection System.

Our system has been designed for operation as a combined DP Protection and Deadman system, or as a Deadman system only, or as a DP Protection system which can be easily retro fitted alongside any existing deadman system.
So:-
Connecting a Deadman Switch gives Deadman only.
Connecting a DP switch gives DP protection only.
Connecting a Deadman Switch and DP Switch gives Deadman and DP Protection. See schematic diagram.

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Deadman System Features.

Full Operational Control. Remote control of the refuelling operation with a Deadman Handswitch and coiled Suzie Cable.

Time Out. Warning every 1.1/2 minutes, times out and closes down the Deadman System unless the Deadman Handswitch is released and immediately reactivated within 30 seconds. This prevents system abuse by jamming the Deadman Handswitch closed.

Deadman Warning Lamp Output. Lamp 'On' when the Deadman System is activated, flashes during the Time Out period when reactivation is required.

Sounder Output. Constant output during the Time Out period to warn the operator of impending system shut down, unless the reactivation sequence is performed.

Remote Override. Automatically overrides the Deadman System when the trigger nozzle is unstowed (for dual pressure/overwing refuelling systems).

Remote Emergency Stop. Engine stop or full system shut down when activated (subject to exact installation details).

DP Protection System Features.

High Filter DP Protection. Activated by a signal from the DP Switch. Cuts power to the DP Output terminal. This terminal is used to power a solenoid actuated valve in the Deadman air system.

System Lock Out. Once the system is activated, when the high DP signal is removed (falling DP when flow decreases) the Deadman System remains fully locked closed.

DP Warning Lamp Output. Lamp 'On' to tell the operator that the system has closed down due to high filter differential pressure.

Reset/Override Switch. Key operated switch remotely located in the cab. Used to reset/override the system applying a 0 Volt signal. Switch operation On and then Off to reset. If the Switch remains in the On position the DP Protection System is overridden. Override is required in order to carry out the DP Gauge full scale deflection test. The DP Warning Lamp will flash to warn the operator that the DP Protection System is overridden.

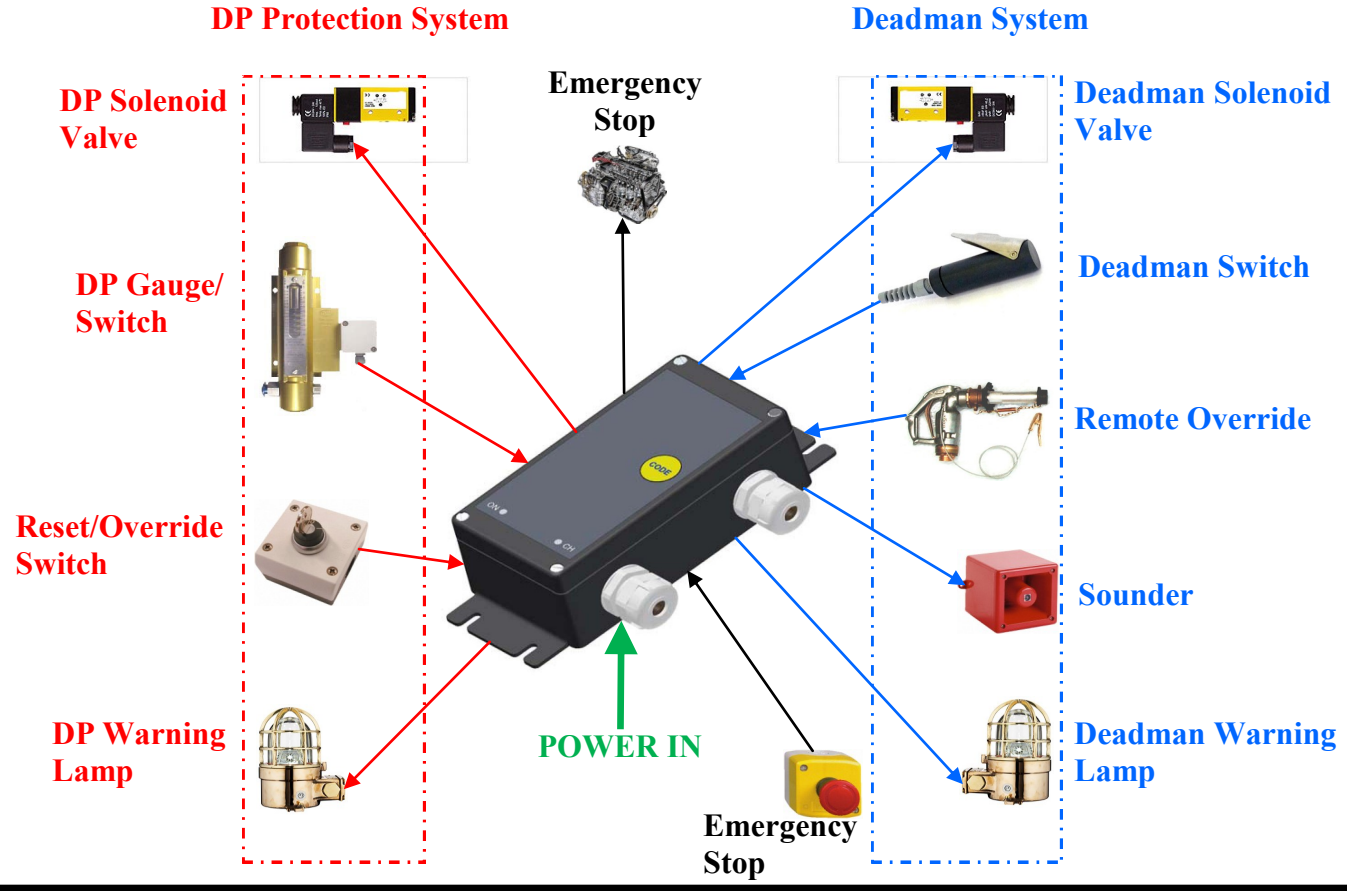
Operational Security. The DP Protection System **CANNOT** be overridden by operating the vehicle Deadman Override switch.

Fail Safe Design. The DP Protection System automatically closes down if the cable to the DP Switch is broken or disconnected.

Combined Deadman and DP Protection System.

When there is a high filter DP the combined system cuts power to main Deadman Output terminal and also to the DP Protection System Output terminal. All other features are as described above.

Schematic Diagram.



How To Order.

Aljac Combined Deadman and DP Protection system. Part number 0100302358.

Accessories.

Deadman switch, coiled suzie cable, plug, socket.
Deadman warning lamp, green.
DP warning lamp, red.
Sounder.
Emergency Stop switch.
Solenoid operated 3/2 pneumatic valve.
Key operated reset/override switch.
Gammon DP Gauge with switch fitted.
Gammon DP Gauge Switch retro fit kit for fitment to any existing Gammon DP Gauge.

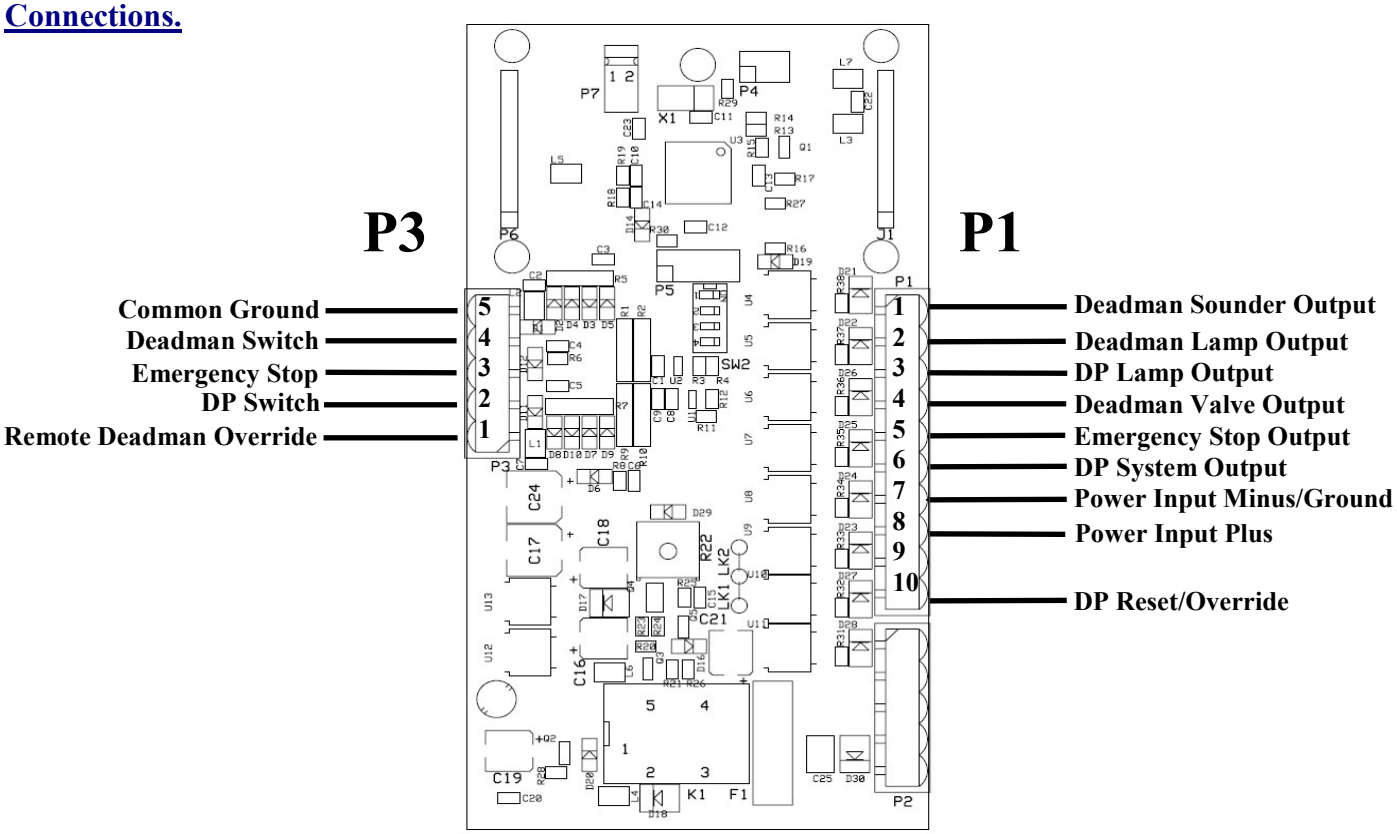
Dimensional Data.

Dimensions 205x110x57mm. Nett Weight 335g.

Technical Specification.

Power supply: Between 11V to 27V DC.
Output voltage: As supply voltage.
Maximum output current: 3.5A per terminal.
Maximum total load: 5A.
Maximum potential between minus pole and ground: 50V DC/AC peak.
Deadman and DP Switch Supply: 5 Volts DC, current limited to 0.5mA.
Time Out: Warning starts at 1.1/2 minutes, system shut down in 30 seconds if not reactivated.

Connections.



P1	SIGNAL	P3	SIGNAL
1	Sounder Output.	1	Remote Deadman Override. Active at 0 Volts.
2	Deadman Lamp Output.	2	DP Switch. Current limited supply.
3	DP Lamp Output.	3	External Emergency Stop Input. Active at 0 Volts
4	Deadman Valve Output.	4	Deadman Switch. Current limited supply.
5	Emergency Stop Output.	5	Deadman Switch, DP Switch/Common Ground.
6	DP Protection System Output.		
7	Power Supply Minus/Ground.		
8	Power Supply Plus.		
9	Not Used.		
10	DP Reset/Override Switch. Active at 0 Volts.		

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