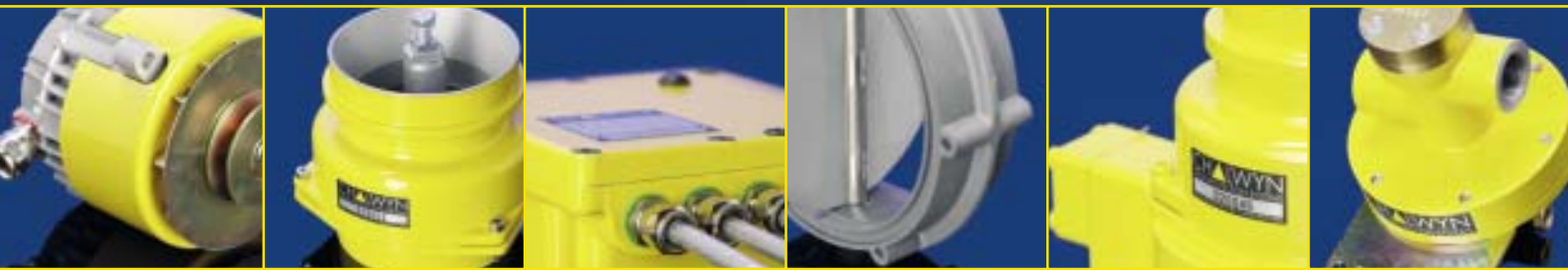


# CHALWYN

Protecting diesel engines in hazardous areas



**World proven safety solutions for diesel engines**

Engine Control Systems • Shutdown Valves • Alternators • Spark Arrestors

**Chalwyn has become  
a recognised leader  
in the specialised  
field of diesel engine  
safety and is  
supported by a  
worldwide network  
of distributors**

When operating in a hazardous area where combustible gas, vapour or dust may exist, diesel engines are a potential source of ignition and can cause catastrophic fires and explosions.

For over 30 years Chalwyn has been protecting people, equipment and the environment by designing and manufacturing diesel engine safety products to eliminate various sources of ignition present on diesel engines.



SHUTDOWN VALVES 'D' SERIES

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SHUTDOWN VALVES 'Z' SERIES

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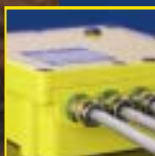
AUTOMATIC FUEL SHUTDOWN VALVES

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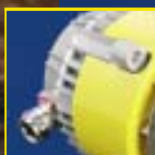
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EXHAUST SPARK ARRESTORS

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## More information

For more detailed information on an individual Chalwyn product, please visit our web site [www.chalwyn.co.uk](http://www.chalwyn.co.uk) Each product has a downloadable PDF with details and specifications. Simply select and open the appropriate PDF number in the download section of the website.

# CHALWYN AIR INTAKE AND FUEL SHUTDOWN VALVES

If flammable gas or vapour is drawn into the air intake of a diesel engine it acts as an additional uncontrolled fuel supply. This can result in uncontrolled engine overspeed followed by dangerous mechanical failure or flash back through the intake and the ignition of the surrounding atmosphere.

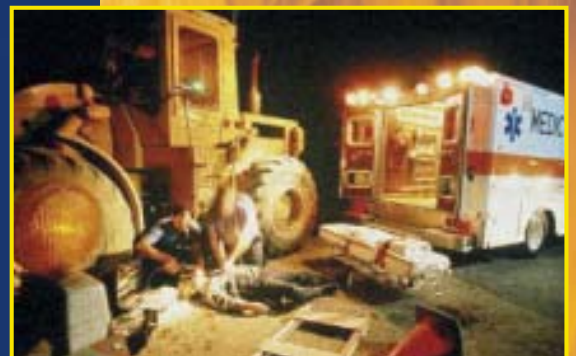
When a flammable mixture is being drawn into the intake of a diesel engine, it may not be possible to stop the engine by closing down the normal diesel fuel supply. The only guaranteed way to stop the engine and avoid the potential effects of overspeed is by the action of an air intake shutdown valve.

The original Chalwyn 'D' SERIES air intake valves were designed to automatically shut down if engine overspeed occurs. After extensive trials demonstrated its effectiveness, the 'D' series entered full production in 1972. The continuing success of this product has led to the wide range of sizes and optional features now available.

Chalwyn 'X' SERIES air intake shutdown valves were introduced for applications where a simple manually actuated intake shutdown valve is required. The 'X' valve range has subsequently been developed to include electrical, air pressure and oil pressure actuated options.

Chalwyn 'Z' SERIES air intake shutdown valves combine the proven automatic overspeed shutdown features of the 'D' series valves with cable operated manual shutdown and actuation by engine oil pressure or air pressure.

Recently introduced European legislation for hazardous area operation demands automatic diesel fuel supply shutdown in addition to air intake shutdown should engine overspeed occur. The Chalwyn FSX-100 automatic fuel shutdown valve meets this requirement when used in combination with Chalwyn 'D', 'X' or 'Z' valves.



# SHUTDOWN VALVES – 'D' SERIES

## Automatic and Auto-Manual Overspeed Valve Range

The Chalwyn type 'D' series valve range has become universally recognised as the first choice for reliable diesel engine overspeed protection. This self-contained valve works by air flow, so ensuring reliable automatic shutdown if operating speed exceeds a pre-set limit.



The main features of the 'D' series valves are:

- Automatically stops the engine before excess speed causes damage or flashback
- Valve resets once the engine has stopped, so the engine is ready for re-starting
- No speed signal sensing required
- No external power source required
- Wide range of sizes available
- Easy to fit by pushing into existing intake hose and securing with standard clips
- Easy to adjust speed setting using standard tools
- No need to run engine beyond normal speed range during valve adjustment
- Anti-flutter mechanism fitted to valves for small engines to give stable performance
- Low maintenance design with metal-to-metal seal that avoids any need to replace seals
- Can be used in combination with Chalwyn fuel shutdown valve for simultaneous automatic air and fuel shutdown
- Integral air filter options available for some smaller models
- Easy pull manual shutdown option available
- Meets US MMS Regulations for both continuously attended and unattended operation
- Suitable for Zone 1 hazardous area application

Optional Manual Stop Control shown

# Basic Automatic Type 'D'

D Series - Mini Valve



## Mini range

Suitable for engines rated between 0.7kW (1hp) and 21kW (28hp) and intake diameters between 32mm and 44mm.

## Bendix range

Designed for naturally aspirated engines rated up to 119kW (160hp) or turbocharged engines rated up to 107kW (143hp).

Available with intake diameters from 43mm to 108mm in 1mm steps.

## Spindle range

Used with larger engines rated up to 600kW (805hp) per intake pipe.

Manufactured to suit intake pipe sizes from 70mm to 229mm in 1mm increments.



D Series - Bendix Valve



Breather Kits are available for engines with internal breathers



D Series - Spindle Valve



## Integral Air Cleaner Types 'D -BF'

- Automatic overspeed valves with integral air cleaners
- Available as option for most Mini range valves
- Available as option for most Bendix range valves
- Auto-manual versions also available
- Applicable where restricted space prevents use of standard air cleaner
- Replacement air cleaner elements available ex-stock

Mini Valves with Air Cleaners

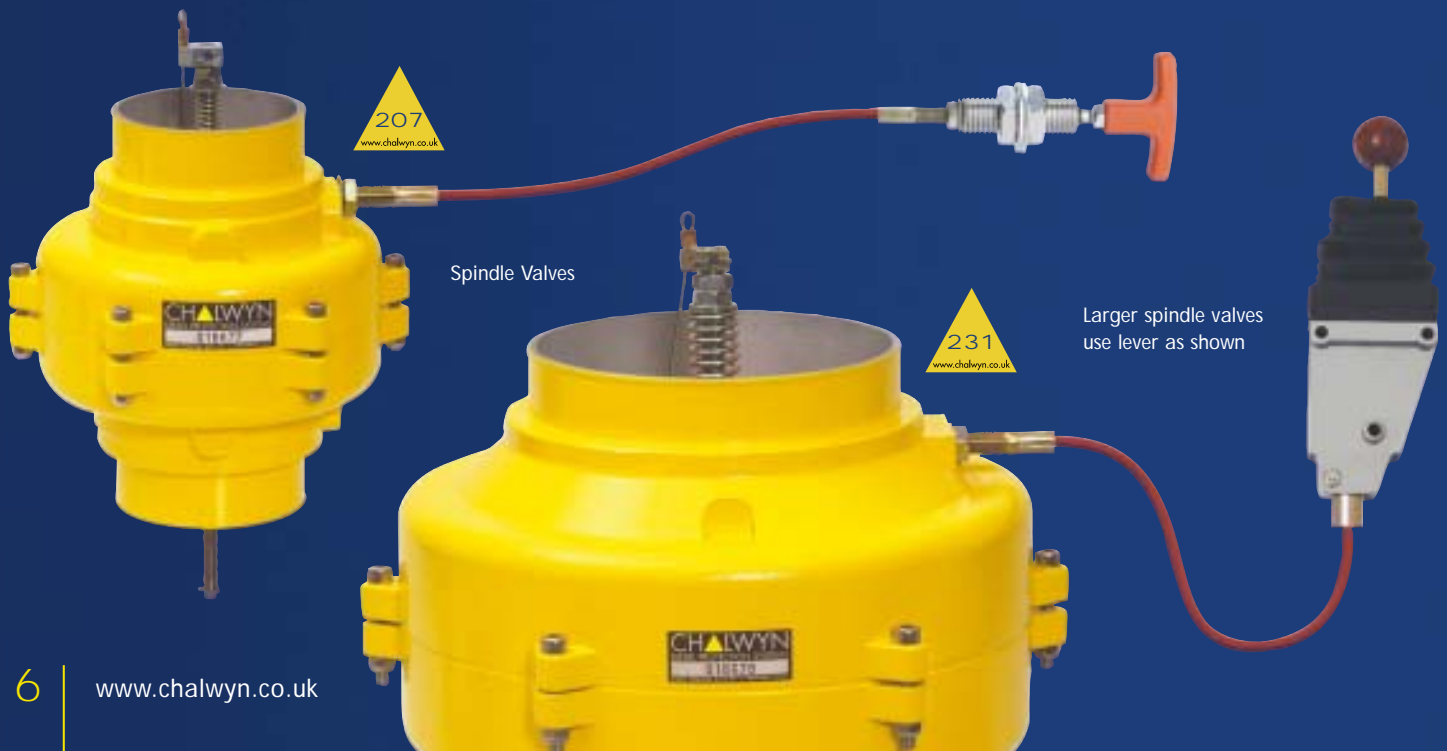


Bendix Type with Air Cleaner



# Auto-Manual Types 'D-AM'

- Automatic valves with the addition of manual shutdown via a cable and pull handle
- Available for all automatic and integral air cleaner valve types
- Meets US MMS regulations for both continuously attended and unattended operation
- The manual shutdown does not affect the automatic overspeed protection feature
- Secure 'T' pull handle ensures complete and easy shutdown
- Choice of cable lengths available



# SHUTDOWN VALVES – 'Z' SERIES

Based on the automatic overspeed closure mechanism of the 'D' Series valves, the 'Z' series valves also incorporate a flametrap housing and flanged air outlet. Options available include an input for a signal from an oil or air pressure engine shutdown control system and/or cable operated remote manual emergency shutdown.



- Automatic closure on engine overspeed
- Sizes to fit air intake pipes from 43mm to 96mm diameter
- Flametrap housing options to suit a 21mm or 40mm thick flametrap element
- Suitable for engines with power ratings from 9kW (12hp) to 75kW (100hp)
- Options include
  - Input to receive oil or air pressure signal from engine shutdown system
  - Cable and lever combining manual start override/emergency stop functions
  - Integral engine air cleaner
- Can be used in combination with the FSX-100 Chalwyn automatic fuel shutdown valve to meet the requirements of EN1834:2000 for engine overspeed shutdown in hazardous areas



# AUTOMATIC FUEL SHUTDOWN VALVE FSX-100

Designed for use in combination with the Chalwyn 'D', 'X' or 'Z' range air inlet shutdown valves, the FSX-100 automatically closes down the diesel supply to the protected engine simultaneously with the closure of the air intake valve.

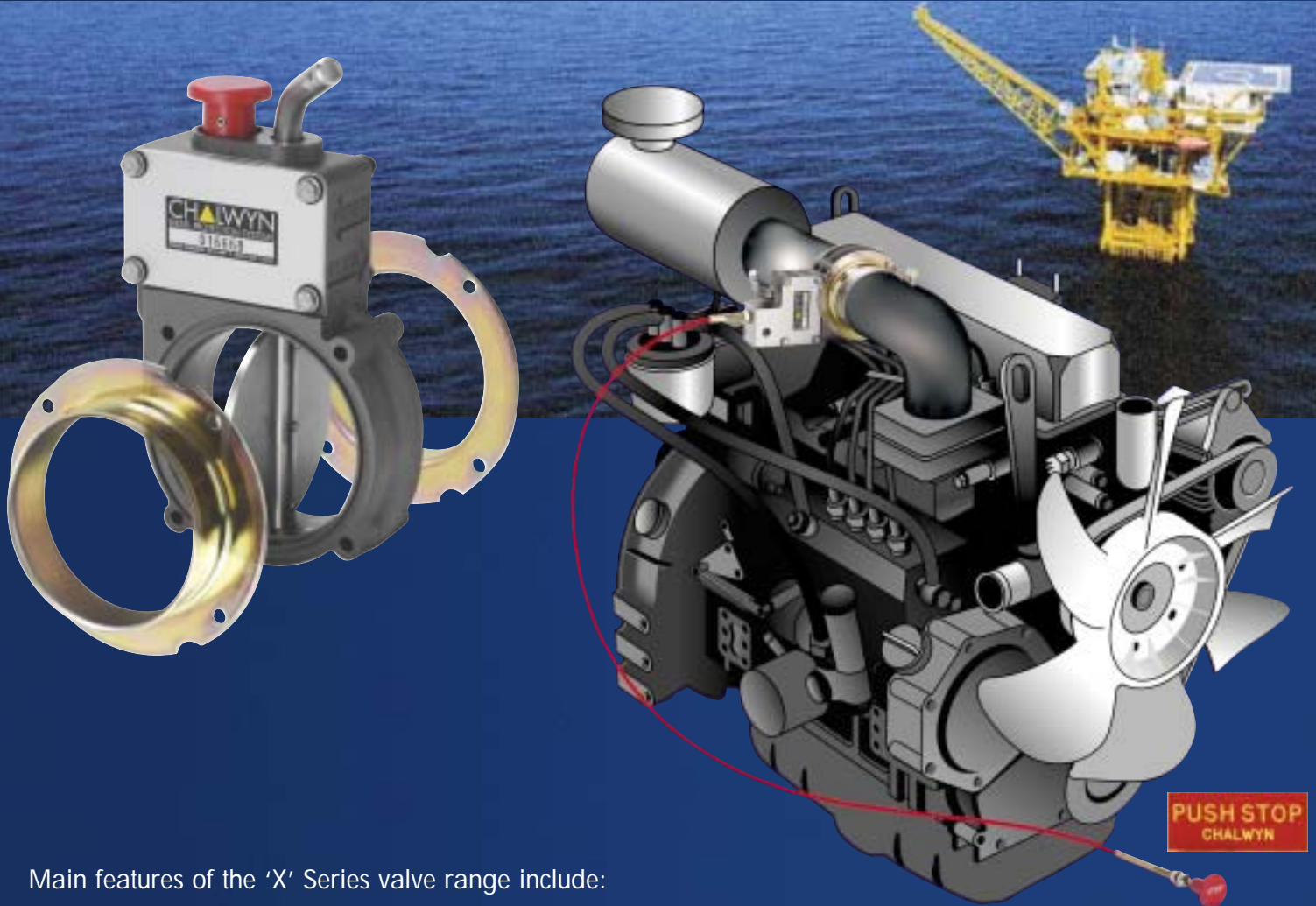
- Automatic shutdown of diesel fuel supply when used in combination with an air intake shutdown valve
- Manual reset latch
- Suitable for fuel system operating pressures up to 14 bar
- Fits up to 10mm (3/8") fuel pipe
- Compact and lightweight tamperproof design
- Mounting bracket included, fittings kits available
- Meets the requirements of EN1834:2000 for overspeed shutdown, when used in conjunction with a Chalwyn intake shutdown valve



# SHUTDOWN VALVES – 'X' SERIES

## Manually or Remote Actuated Shutdown Valves

Originally developed for the harsh demands of offshore rig applications, the popular X series valves have found favour where engine shutdown by remote signal or attended manual shutdown is required.



Main features of the 'X' Series valve range include:

- Slim fit butterfly valve design to take up minimum space
- Maintenance free design with metal to metal disc sealing, eliminating the wear associated with 'O' rings
- Hard Anodised and PTFE coated corrosion resistant finish designed for long life even when used offshore
- Modular design with interchangeable hose adaptors allows quick change to most standard sizes of flexible hoses
- Available with manual, electric, air pressure or hydraulic input for actuation
- 3 body sizes to cover all engines with intake diameters from 2" to 8" (using Chalwyn hose adaptors)
- Easily flange mounted giving slim space requirement
- Available with optional housing for flame trap element (not 8" models)
- Designed for air flow in either direction so allowing maximum versatility of installation
- Can be used in combination with the FSX-100 Chalwyn fuel shutdown valve to meet the requirements of EN1834:2000 for engine overspeed shutdown in hazardous areas

Optional Manual Stop Control shown

## MVX Manually Actuated Types

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- Simple manual reset lever to latch open
- Instant closure using 'push' or 'pull' button mounted on valve
- Alternative build with remote manual stop via push button and cable
- Optional stop cable lengths to suit installation
- Alternative positions on valve to connect remote stop cable for ease of installation
- Proven reliability in USA offshore market
- Meets US MMS requirements and suitable for Zone 1 installations

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## MPX Manually Latched Valves with Manual & Air Pressure Actuated Shutdown

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- Simple manual reset lever to latch open
- Closure using valve mounted stop button or the application of air pressure
- Optional build with remote stop (via button and cable) and air pressure actuated shutdown
- Choice of length of remote stop cable to suit installation
- Meets United States MMS and US drilling rig 'ESD' requirements



## PVX Air Pressure Operated Valves

- Fail safe type with air pressure 'on' to open. Loss of pressure to close
- Optional build with air pressure 'on' to close. Loss of pressure to open
- Easy single pipe connection for air pressure
- No manual reset action required
- Fail safe version is suitable for Zone 1 applications
- Air pressure to close version is suitable for drilling rig 'ESD' systems



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## HVX Engine Oil Pressure Latched Valves

- Start override cable and remote lever for manual hold open during engine start up
- Engine oil pressure latches valve in open (run) state
- Valve closes either on loss of oil pressure or manually by the start override control lever
- Suitable for use with engine oil pressure operated automatic shutdown system
- Basic valve protects engine from damage due to loss of oil/low oil pressure
- Suitable for Zone 1 use and meets US MMS attended engine requirements

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# SVX Series Solenoid Actuated Diesel Engine Valves

With an unsurpassed choice of options the SVX range is the perfect choice for engines requiring electrical air intake shutdown. Chalwyn's in-house design facility can also offer non-listed special valves to order with a short lead-time. The SVX range offers both standard and flameproof solenoids with either 12-volt or 24-volt operation. SVX valves are grouped into three basic families.



## SVX Energised to Run types

- Opens on application of electrical power
- Closes on loss of power
- Flameproof models certified for use in Zone 1 hazardous areas
- Non-flameproof models available with optional internally switched/ 2 wire connection, for easier installation

## SVX Energised to Run valves with manual stop and start override

- Flameproof models certified for use in Zone 1 and 2 hazardous areas
- Manually held open prior to starting via start override cable and lever
- Latched to hold open when electrical power applied
- Closes on loss of electrical power
- Manual emergency stop via reverse action of the start override cable and lever
- Choice of override cable lengths



## SVX Energised to Stop types

- Simple manual reset lever to latch open
- Closes on application of shutdown electrical power signal
- Simple two wire solenoid connection
- Optional micro switch to enable remote indication of valve status

# ENGINE SHUTDOWN CONTROL SYSTEMS

In addition to automatic overspeed shutdown, legislation/standards applicable to operation of diesel engines in hazardous areas generally also require automatic alarm or shutdown on low engine oil pressure, high coolant temperature and high exhaust temperature. Even where full flameproofing is not required, there are many diesel engine applications where for safety or other reasons automatic shutdown on one or more of these parameters is justified.

To meet these requirements Chalwyn developed the following control systems:

The **SERIES 110 AND 111** hazardous area systems can operate independently of other engine systems and electrics. A Chalwyn self-exciting 24-volt alternator provides the system power and speed signal. Up to 20 amps of the alternator output can also be used to power auxiliaries such as lights, or to charge a battery for starting or for powering the engine electrics during start up.

The **SERIES 210** hazardous area system is suited to applications where an engine start battery is available. This system is designed to be integrated with the customer's engine start system. The speed signal is generated by a 12-volt or 24-volt Chalwyn EExd alternator which also has sufficient output to charge a mid range engine start battery.

The **SERIES 300 AND 310** added safety systems are designed for non-hazardous area applications but where additional safety is still required. The system is powered from the existing engine electrics. The speed signal can be from an existing magnetic pick up or from the existing engine alternator.

One outstanding feature of all these systems is the ease of setting the overspeed trip by simple operation of a button once the system is installed and operating. No speed switch calibration or knowledge of alternator drive ratios is necessary. This represents a major advance over mechanical speed sensing devices that have always been difficult to mount and adjust.

Designed and built to operate reliably in the harshest environments, where outdated and often unreliable mechanical equipment has traditionally been the only choice, these new systems are a radical step forward in effective engine protection.

Series 110, 111 and 210 can be used in conjunction with other components to create an engine package that can be certified for use in 'Zone 1 or 2' hazardous areas. Please contact your local Chalwyn distributor for more details of the requirements for different international standards.

Designed and built to operate reliably in the harshest environments...

Simple 'One-Touch' overspeed type setting button. (Located under screw to protect from tampering)



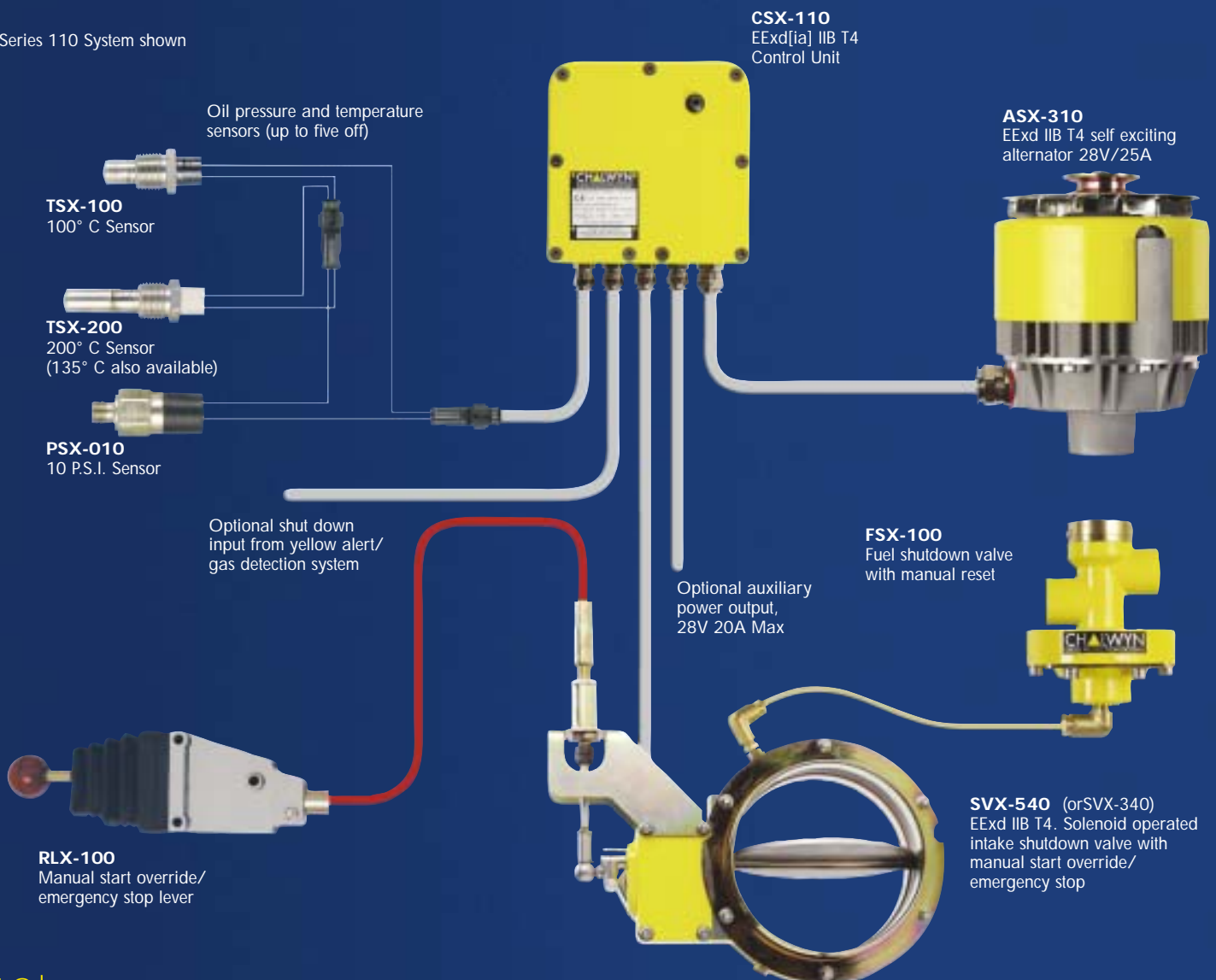
**CHALWYN**  
EExd IIC T4  
CHALWYN LTD CHALWYN RD ESTATE  
POOLE BH12 4PF ENGLAND  
TYPE 2511 2511 2511 2511  
SERIAL No 8000  
T<sub>a</sub> = -20°C TO 40°C  
IP66  
IS OUTPUT 24VDC 10A Max Power 60W  
CONTRIBUT 1m 15m 1.5m 21m  
RATING 33V 25A 100K  
DO NOT OPEN WHEN EXPLOSIVE GAS  
&/OR DUST ATMOSPHERE IS PRESENT  
DO NOT OPEN WHEN ENERGISED

# HAZARDOUS AREA ZONE 1 SHUTDOWN CONTROL SYSTEMS SERIES 110, 111 AND 210



- Fully approved for Zone 1 hazardous area applications in compliance with the EU ATEX Directive
- Suitable for fitting to all types of diesel engines
- Overspeed shutdown, with precise speed setting capability by simple push button operation
- Up to 5 temperature or pressure inputs available for shutdown signal
- Simultaneous intake air and fuel cut off in accordance with EN1834:2000
- Fail-safe system gives shutdown on loss of power or speed signal
- Gas detection or 'Yellow Alert' signal input option for remote shutdown (Series 110/210 only)
- Mechanical stopping capability using remote manual handle and cable (optional lengths)
- Can operate independently of other engine systems (Series 110/111) or integrated into the customer's flameproof start system and battery (Series 210)
- Series 110/111 - Auxiliary power output available - up to 20 amps at 24 volts. Requires no battery or other electrical power supply
- Series 111 is available for 'V' configuration engines with twin intakes
- Series 210 - Power and speed signal is from an EExd Chalwyn 12 or 24 volt battery excited alternator with sufficient alternator output to charge a medium sized diesel engine start battery

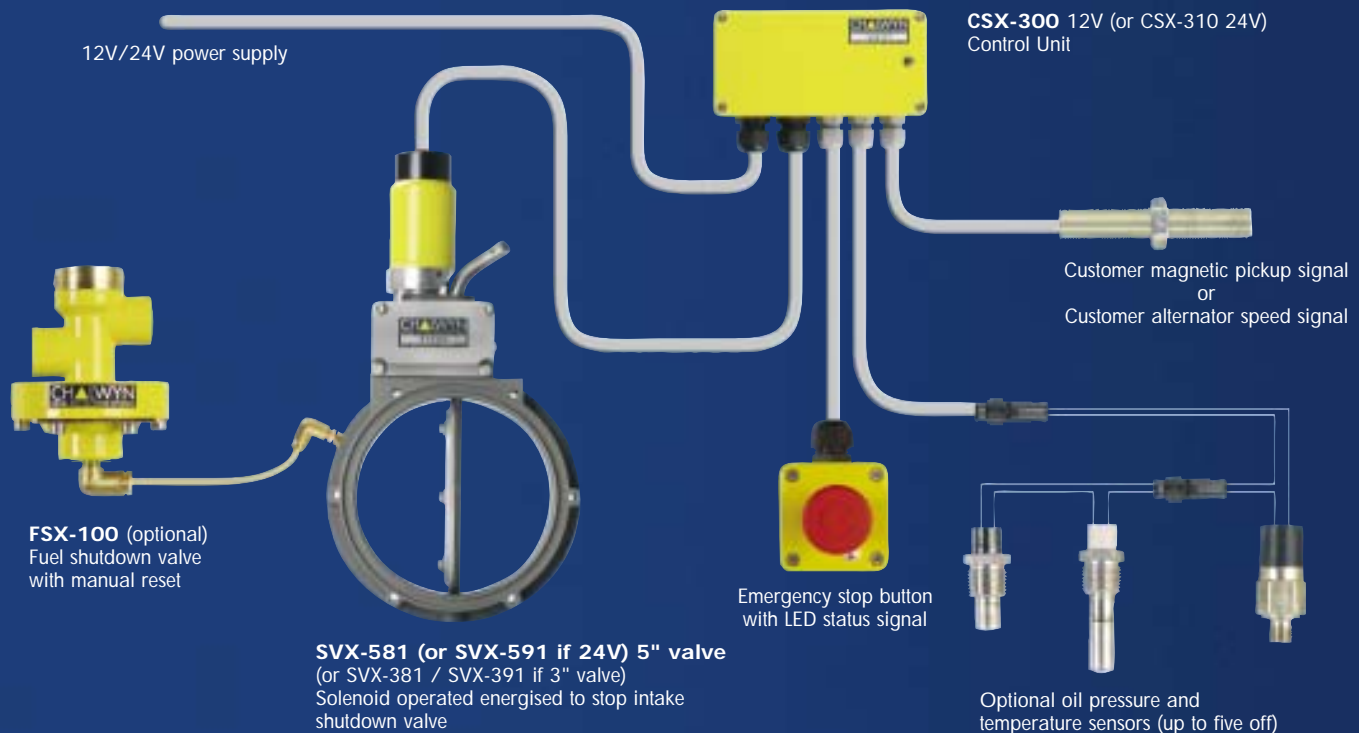
Series 110 System shown



# COMPACT DIESEL PROTECTION CONTROL SYSTEM SERIES 300 AND 310



- Suitable where fully certified hazardous area equipment is not required
- Simple and cost effective shutdown system where installation space is at a premium
- Overspeed shutdown with precise trip speed setting by simple push button operation
- Optional low oil pressure shutdown
- Optional high coolant temperature shutdown
- Optional automatic fuel shutdown
- Shutdown via a manually reset slim butterfly valve in the engine air intake
- Utilises speed signal from customer's existing alternator or flywheel magnetic pick up
- Manual emergency stop button
- System status indicator



# FLAMEPROOF ALTERNATORS

Standard automotive alternators give rise to a continuous potential source of ignition and should therefore never be fitted to engines likely to enter a hazardous area where combustible levels of gas, vapour or dust may occur. The safe solution is to fit one of the following range of Chalwyn ATEX Directive compliant EExd alternators.

## Battery Excited

ASX-200 14 volt/50 amp, ASX-300 28 volt/25 amp



- Sufficient output to power auxiliaries and charge a mid range engine start battery
- Standard automotive internal regulation
- Electrically isolated outer case
- Fits in place of standard alternator
- Sealed design suitable for hazardous gas, vapour or dust applications
- Optional output gland positions for simplified installation
- Choice of drive pulleys
- Battery or self excited models
- Speed signal output

## Self Excited

ASX-310 28 volt/25 amp



# EXHAUST SPARK ARRESTORS

Deposits which build up in a diesel engine exhaust system can be ejected from the tail pipe as glowing particles. These may well have sufficient energy to ignite any surrounding combustible concentrations of gas, vapour or other material. This makes fitting of an exhaust spark arrestor not only essential when operating in a hazardous area but also when operating sufficiently close by in order to prevent sparks drifting into the hazardous area.

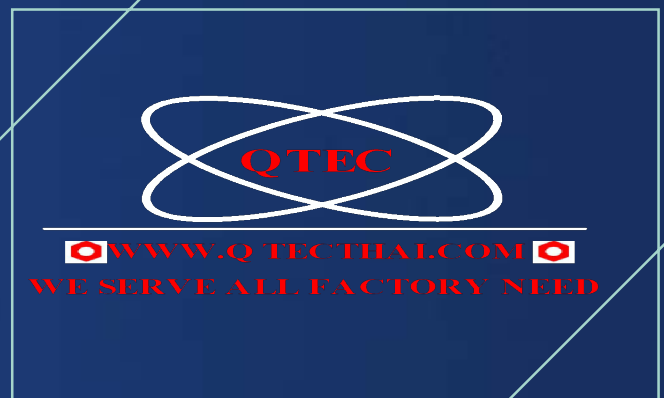
The SSL range of ATEX compliant Chalwyn spark arrestors are of the quenching type as defined in EN1834-1:2000. The main features of this range are:

- Sizes to suit engine ratings from 7.5kW(10hp) to 373kW(500hp)
- Manufactured in '316 grade' stainless steel
- Clamp-on pipe ends. Threaded or flanged pipe ends are available to special order.
- Range of body and bore sizes to meet the application requirements
- Industrial standard silencing to permit replacement of OE silencer
- Special custom designed versions to customer request
- Compact non-silencing types also available for limited space applications



## APPLICATIONS OF CHALWYN SAFETY PRODUCTS

Cranes	Jetting Pumps	Wire Line Units
Fork Lift Trucks	Diesel Mowers	Mud Pumps
Aerial Platforms	Vehicles	Marine Engines
Air Compressors	Vacuum Trucks	Aircraft Refuelling Trucks
Water Pumps	Hydraulic Power Packs	Generator Sets
Mining Machinery	Light Towers	Seismic Testing Trucks
Fuel Tankers	Welding Sets	Diggers & Back Hoes



# CHALWYN

Protecting diesel engines in hazardous areas