CHALWYN

World class manufacturer of safety solutions

Improving oil and gas site safety for half a century

Diesel Engine Safety Solutions

Product Selection Guide

Why diesel engine runaway must be prevented in the Oil & Gas Industry

Although diesel engines are safer than petrol / gasoline engines when working in hydrocarbon-rich environments, such as within refineries and gas processing plants, they can become an ignition source in certain situations*.

Diesel engine speed is controlled by an internal speed governor which meters the amount of fuel fed to the engine. The energy of the diesel fuel is exactly balanced to the drag and driven load on the engine.

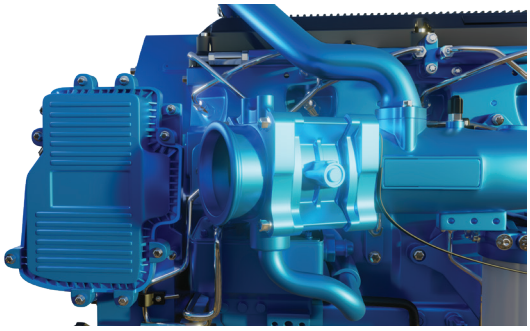
If any flammable vapours are present in the atmosphere, they are drawn into the intake system along with clean air. Then this additional uncontrolled fuel energy causes the engine to accelerate as the load is overpowered.

This dangerous cycle continues with the engine now running off the unmetered vapours as its only fuel source. As the engine speed rapidly increases, it draws in more air – and more vapours.

A standard engine without the protection of a Chalwyn valve

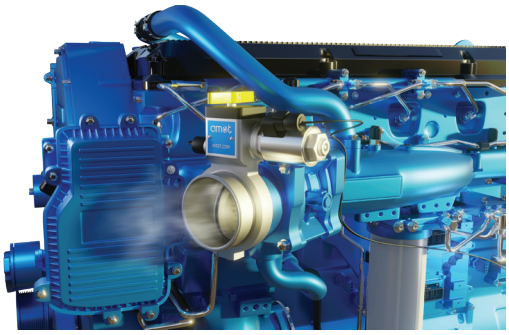
If this cycle is not stopped, it can cause the engine to overspeed, or runaway. This makes it a potential ignition source for the explosive atmosphere. Accident investigation studies conclude that this is the sequence of events:

1. Valves inside the engine bounce due to excess speed above manufacturer's normal limit
2. Flames exit the intake and exhaust pipes that will ignite a flammable mixture
3. Catastrophic injury or death occurs from the resulting explosion of the gas cloud



While some companies implement safety protocols to prevent diesel engine runaway, automatic positive air intake shutoff valves are the only reliable method to stop an engine once it has begun to overspeed. These are a legal requirement within many countries or to comply with many oil companies established safety policies.

Chalwyn valve stops this dangerous sequence



These devices work by positively blocking the engine's air intake system, cutting off the external fuel source and the air required to keep the engine running. The engine then stops safely, so removing the hazard.

For over 45 years, AMOT and Chalwyn have promoted better safety in hazardous industries by raising awareness of the risks of operating diesel engines in these environments and educating industry professionals about ways to protect their equipment and people.

We continue to invest in research and product technologies as diesel engines evolve to meet modern performance standards. This brochure presents our latest Chalwyn brand's product range.

** Confirmed by USA OSHA Fact Sheet 3589 and accident investigation reports – copies are available on request*

Automatic overspeed air intake shutdown valves

Chalwyn D valves are the international industry standard for oil companies and operators for dependable engine shutdown on overspeed. With patented air flow sensing design and lightweight construction they are easy to install and low maintenance.

Basic D models

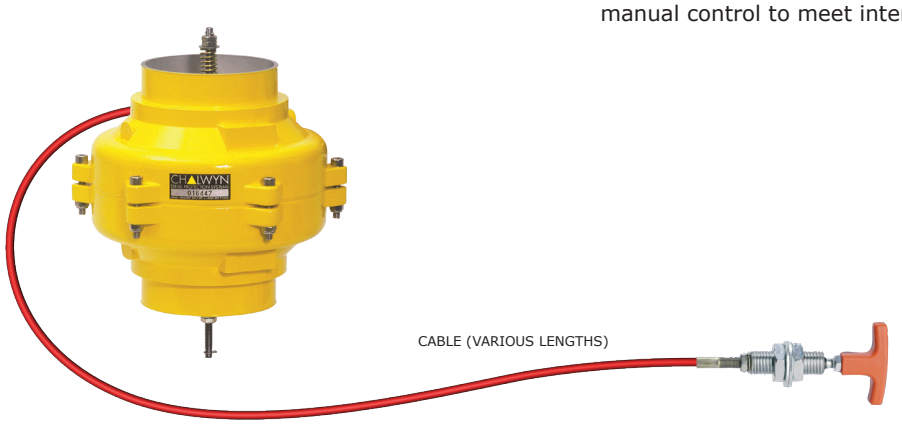
OVERSPEED TRIP ADJUSTER

HOSE ENDS
(TO CUSTOMER REQUIREMENTS)

D-F models with integral air cleaner

OVERSPEED TRIP ADJUSTER
UNDER AIR CLEANER COVER

OVERSPEED TRIP ADJUSTER

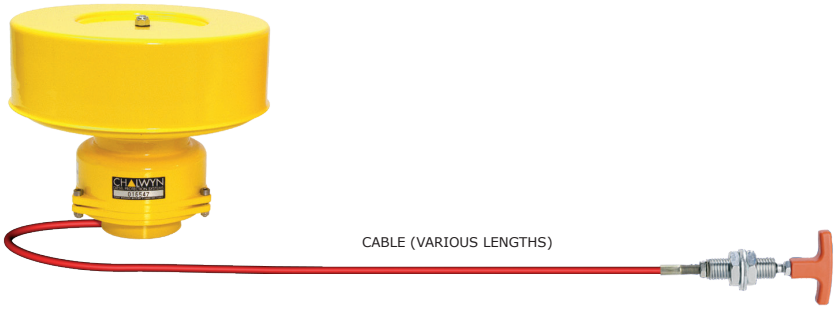


CABLE (VARIOUS LENGTHS)

PULL STOP
(LARGER VALVES HAVE
DIFFERENT DESIGN
STOP LEVER)

DF-AM models with remote manual stop and integral air cleaner

OVERSPEED TRIP ADJUSTER
UNDER AIR CLEANER COVER



CABLE (VARIOUS LENGTHS)

PULL STOP T HANDLE

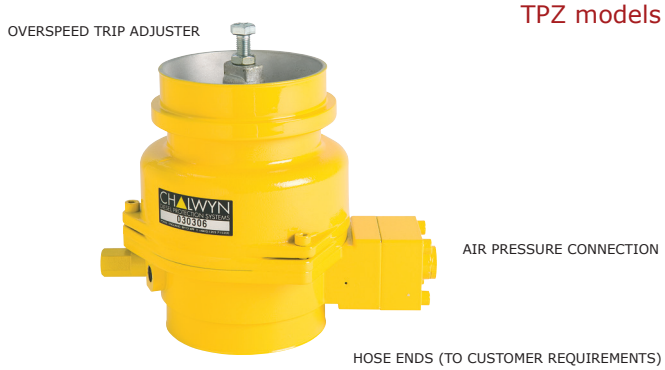
- Automatic reset after engine stops
- No speed signal or power input needed
- 'Mini' D range fits engines up to 27kW (36hp) and intake pipe diameters from 25 mm (1 inch) to 58 mm (2 1/4 inches)
- 'Bendix' range suits engines from 7.5kW (10hp) to 149kW (200hp) and intake hose bores from 40 mm (1 9/16 inches) to 108 mm (4 1/4 inches)
- 'Mini' D-BF range replaces air cleaner assembly on small engines
- Deutz special range valves are suitable for direct mounting to 1011 and 2011 series naturally aspirated engines up to 53kW (72hp) and with 70 mm (2 3/4 inches) standard inlet hose
- 'Spindle' range valves are suitable for engines with ratings from 80kW (107hp) to 392kW (525hp) and intake hose bores from 76 mm (3 inches) to 153 mm (6 inches)
- D200 range extends up to a maximum engine rating of 600kW (805hp) and intake hose bores between 152 mm (6 inches) and 229 mm (9 inches)
- All models available as D-AM versions to give remote manual control to meet international standards

Automatic engine air intake shutdown valves with air pressure control

Air intake valves with automatic shutdown on engine overspeed or on application of an air pressure signal for dependable engine shutdown. With air flow sensing design and lightweight construction they are easy to install and low maintenance.

- Air flow sensing valves combining automatic overspeed shutdown with air pressure operated shutdown
- Automatic reset after engine shuts down and air pressure signal removed
- TPZ range suitable for engine ratings from 7.5kW (10hp) to 149kW (200hp) and intake hose bores from 40 mm (1 5/8 inches) to 108 mm (4 1/4 inches)
- TPZ-AM adds remote manual shut down by T pull handle

TPZ models



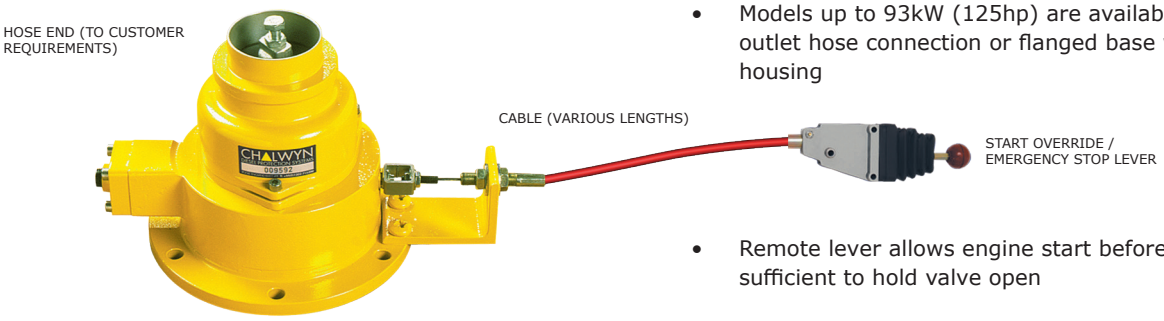
Automatic valves – Website datasheet references

			Hose to hose connection		Integral Air Filter		70mm Inlet hose	Hose to hose connection		
Engine Power	Hose Connection	Chalwyn Valve	Automatic	Manual / Auto	Automatic	Manual / Auto	Deutz 2011 - Flange Mounted	Auto / Air pressure to stop	Manual / Auto - Air pressure to stop	Oil Pressure to run
2kw to 27kw	> 25mm	Mini Series	D-XX	D-XX-AM	D-XX-BF	D-XX-BF-AM				
			CE209	CE209	CE209	CE209				
10kw to 149kw	40m to 108mm	Bendix	D-XX	D-XX-AM	D-XXF	D-XXF-AM	D-XX-F3L D-XX-F4L	TPZ-XXX	TPZ-XXX	TMZ-XXX
			CE204	CE207	CE206	CE206	CE246	CE237	CE237	CE208
90kw to 390kw	76 to 153mm	Spindle	D-XX	D-XX-AM						
			CE205	CE210						

Automatic engine air intake shutdown valves with oil pressure control

Air intake valves with manual shutdown combined with automatic shutdown on overspeed or loss of oil (or air) pressure signal with air flow sensing design and lightweight construction they are easy to install and low maintenance.

TMZ valves



SMALLER TMZ VALVES HAVE FLAMETRAP HOUSING / FLANGED AIR OUTLET CONNECTION (NOTE HOSE ADAPTOR OPTION AVAILABLE)

- TMZ range suitable for engine ratings between 7.5kW (10hp) and 149kW (200hp) and intake pipe bores between 40 mm (1 9/16 inches) to 108 mm (4 1/4 inches)
- Models up to 93kW (125hp) are available with either outlet hose connection or flanged base with flametrap housing
- Remote lever allows engine start before oil pressure is sufficient to hold valve open
- Can be combined with AMOT mechanical temperature sensors to also give shutdown on high temperatures
- Can be combined with Chalwyn FSX-200 fuel shutdown valve to give simultaneous shutdown of fuel and air

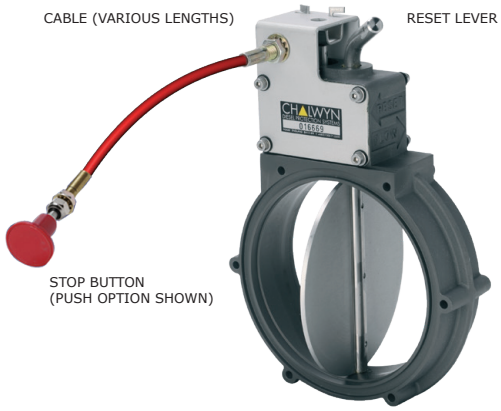
Butterfly type engine air intake shutdown valves

Manually operated air intake shutdown valves are suitable for attended applications where automatic overspeed protection has not been specified. Their lightweight construction makes them easy to install with low maintenance.

Basic MVX models

- Combination of body sizes and hose adaptors to suit air intake diameters from 38 mm (1 1/2 inches) to 203 mm (8 inches)
- Simple operation – rapid engine shutdown
- Push or pull shutdown button on basic MVX valve
- Can be flange or hose mounted
- Corrosion resistant, proven in offshore service

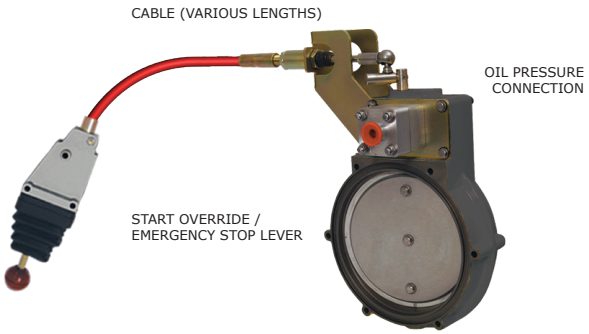
MVX models with remote stop control



- Remote stop control by either push or pull options
- Choice of cable lengths available
- Version with twin pull to stop cables available
- Choice or T handle or lever on pull to stop versions

Manually opened air intake valves with manual closure and automatic closure on loss of oil (or air) pressure signal

HVX valves



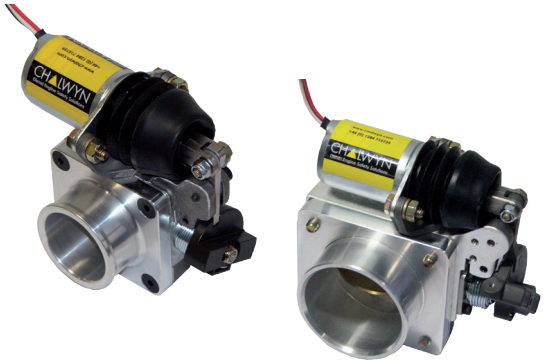
- Manually held open until oil (or air) pressure latches
- Direct acting remote manual emergency stop
- May be combined with AMOT mechanical sensors to give automatic shutdown on high temperatures or over-speed
- Combination of body sizes and hose adaptors to suit air intake diameters from 38 mm (1 1/2 inches) to 152 mm (6 inches)

Electrically operated valves - energised to close

Modern vehicles and industrial engines require compact low restriction air intake shutdown valves.
Chalwyn offers an extensive range of butterfly valves to incorporate with automatic overspeed control systems.

SVR energised to close models

- Compact design with manual reset control on valve
- Suitable for vehicles and smaller engines
- 2 body sizes with choice of end diameters
- Range covers from 44 mm (1 3/4 inches) to 77 mm (3 inches)
- Suitable for installation post-intercooler
- 12 volt and 24 volt versions
- Controlled by Chalwyn Revguard 2



SVX energised to close models

STANDARD SOLENOID

RESET LEVER TO LATCH OPEN

- Combination of body sizes and hose adaptors to suit air intake diameters from 38 mm (1 1/2 inches) to 203 mm (8 inches)
- 12 volt or 24 volt versions with two wire solenoid connection
- Simple manual reset to latch open
- Manual cable option for secondary operation method or testing
- Internal micro switch option for valve status monitoring
- Versions available with hazardous area SSX solenoid
- Slim, lightweight, corrosion resistant construction
- Can be flange or hose mounted
- May be combined with Chalwyn FSX-200 fuel shutdown valve to give simultaneous shutdown of intake air and diesel fuel supply using FKX-300 fitting kit

XT & XTB energised to close models

- Slim design with manual reset control
- 7 body sizes covering from 89mm (3 ½ inches) to 203mm (8 inches)
- XTB sizes from 76mm to 203mm
- 12 volt or 24 volt versions with 2 wire solenoid connection
- Quick release electrical plugs with short leads included
- Position switch options for valve status monitoring
- Approved for high vibration or severe corrosion applications

Electronic speed switch

Installations where butterfly valves are selected will require reliable sensing of the engine speed so that on detection of overspeed runaway the system will automatically signal the valve to close and safely stop the engine.

Revguard 2

- Dependable protection from overspeed conditions
- Monitors RPM by magnetic pick up
- Can also monitor alternator pulse signal output
- Trips when RPM exceeds desired set point
- Adjustable with 4 possible lower RPM test options
- 12 or 24 volt power source required
- Installation kits available to connect with butterfly valves
- Kit includes toggle switch, switch cover, relay, circuit breaker and LED status indicator light

EWK Enclosed Speed Switch options

Applications where the Revguard 2 cannot be easily protected from the effects of weather can be ideal for these kits.

- Weather resistant polycarbonate enclosure
- Combined LED and push-to-stop test button on top
- Available either loose or completely assembled in either 12 volt or 24 volt versions
- Relay and circuit breaker protected inside the enclosure
- Includes gland and 4 wires for simple installation

SVA-200

- 24 volt air pressure solenoid powered to open
- Suitable for trucks with air pressure braking systems
- Allows air to flow to Chalwyn valve when powered
- Suits MPX, PVX and PVA valves
- Resets automatically on loss of signal from Revguard 2
- Simple plumbing using available fittings kit SKA-100

Air pressure or manually operated intake shutdown valves with manual reset

For larger trucks, cranes and engines where air pressure is available, Chalwyn offer a wide range of butterfly valves which includes a choice of reset methods.

- Simple manual latch to open – air pressure releases valve to close and stop engine
- Manual shutdown by valve mounted stop button or by cable from remote shutdown control
- Push or pull remote shutdown options with choice of cable lengths
- Suitable for drilling rig ESD (emergency shutdown) air system installations
- Build option available with valve position switch
- Combination of body sizes and hose adaptors to suit air intake diameters from 38 mm (1 1/2 inches) to 203 mm (8 inches)

MPX models

STOP BUTTON (VALVE MOUNTED OPTION)
AIR PRESSURE CONNECTION
RESET LEVER TO LATCH OPEN

Air pressure operated intake shutdown valves with automatic reset

PVX models

- Simple direct air pressure operation
- Option to either open or close on the application of air pressure
- Automatic reset on loss of air pressure
- Valve status position visual indicator

POSITION INDICATOR

AIR PRESSURE CONNECTION

OPTIONAL HOSE ADAPTORS
(ALL PVX, AND MPX VALVES)

PVX models

- Combination of body sizes and hose adaptors to suit air intake diameters from 38 mm (1 1/2 inches) to 203 mm (8 inches)

PVA models

- Ultra slim design with integral hose ends
- 90 mm, 102 mm and 140 mm connection diameters

PVA models

POSITION INDICATOR

AIR PRESSURE CONNECTION

CHOICE OF FOUR HOSE
CONNECTION DIAMETERS

Electrically operated air intake shutdown valves - energised to open

Chalwyn SVX butterfly valves are available with failsafe solenoid operation where the technical specification or EU ATEX Directive requires a control system that is powered to run whilst holding the shutdown valve in the open position.

SVX energised to open models

STANDARD SOLENOID

- Externally switched 3 wire solenoids
- Automatic closure on loss of power - failsafe
- Internal micro switch option for valve status monitoring
- Combination of body sizes and hose adaptors to suit air intake diameters from 38 mm (1 1/2 inches) to 203 mm (8 inches)
- Optional timer module available

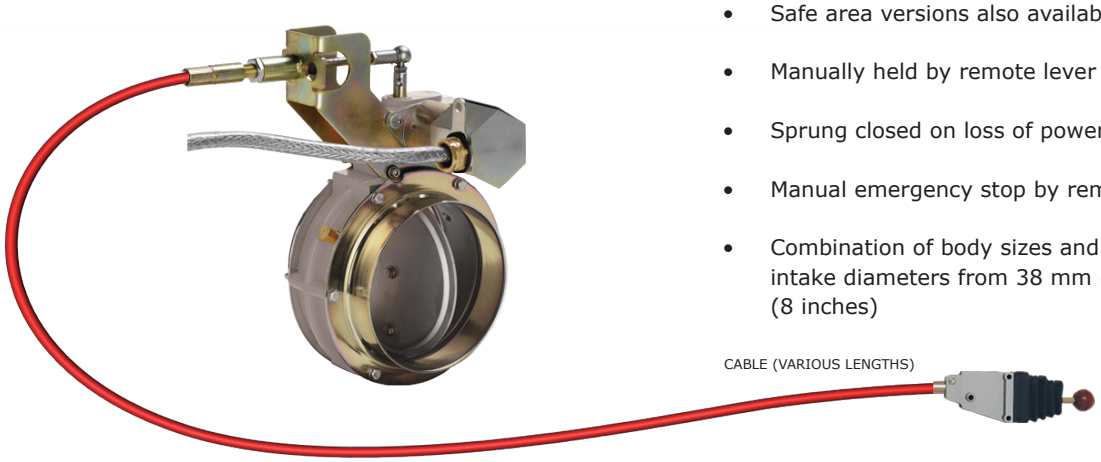
SVX hazardous area energised to open models

EExe SOLENOID

OPTIONAL HOSE ADAPTORS

- ATEX approved for Zone 1, IIB, T4 applications
- Externally switched 3 wire SSX solenoid with gland
- 3 core cable included
- Automatic closure on loss of power - failsafe
- Combination of body sizes and hose adaptors to suit air intake diameters from 38 mm (1 1/2 inches) to 203 mm (8 inches)
- Optional timer module available
- Optional Ex position switch available

SVX energised to latch open models



CABLE (VARIOUS LENGTHS)

START OVERRIDE / EMERGENCY STOP LEVER RLX-100

- ATEX approved for Zone 1, IIB, T4 applications
- Two wire holding SSX solenoid with 2 core cable
- Safe area versions also available
- Manually held by remote lever for engine starting
- Sprung closed on loss of power
- Manual emergency stop by remote lever
- Combination of body sizes and hose adaptors to suit air intake diameters from 38 mm (1 1/2 inches) to 203 mm (8 inches)

Hose kits

Whilst some valve installations can be made by cutting the original flexible hose, there are also many situations where a stronger silicone hose kit allows an easier installation to be made.

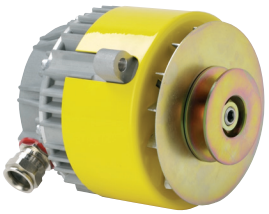
- High temperature silicone hose
- 2 clamps included
- Wide choice of popular sizes
- Suitable for both pre turbocharger and post turbocharger positions
- Hump hose kits 90mm and 102mm available
- Toyota and Isuzu vehicle kits available

Flameproof alternators

Standard automotive alternators are a continuous potential source of ignition when fitted to an engine operating in a hazardous area where combustible concentrations of gas, vapour or dust may exist. Always replace with a suitable flameproof type when operating in defined hazardous Zones.

- Exd IIB T4 ATEX compliant variants applicable to Group II hazardous gas, vapour and Group III dust applications
- Certified to IECEx Standards*
- Standard automotive internal regulation
- Wide choice of drive pulley options
- Speed signal output
- Optional gland positions for ease of installation
- Outputs – Group II Types:

Battery excited types
ASX-240 and ASX-340



Self exciting types
ASX-350

ASX-240: 12 volts / 30-46 amperes
ASX-340: 24 volts / 16-23 amperes
ASX-350: 24 volts / 16-23 amperes
ASX-405: 24 volts / 50 amperes

** Contact Chalwyn for details*

High output battery excited types
ASX-405

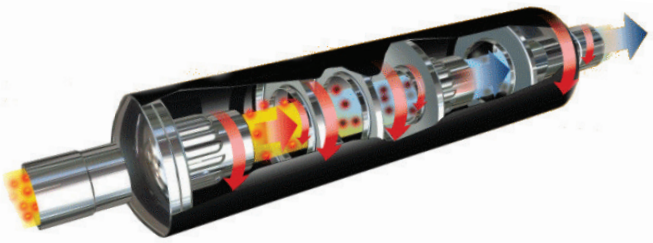
Exhaust spark arrestors

An exhaust spark arrestor is a key safety requirement for both hazardous areas and lower risk applications such as in oil refineries or gas plants where a stray spark can cause ignition of combustible hydrocarbons in the air.

Virtually all legislation for the use of diesel engines in Oil & Gas areas includes a mandatory requirement to fit a functional exhaust spark arrestor. Chalwyn's efficient cyclonic principle ensures that all glowing sparks are quenched and cooled to safe temperatures before safely exiting the tailpipe. By comparison, simpler products may collect only 80 to 95% of the hot sparks, so requiring period clean out maintenance. The remainder will pass out as a hot ignition source.

The types below have independent Notified Body test certification for zero sparks, hence are safer in Oil & Gas site operations than arrestors with forestry use approvals, such as from the United States Department of Agriculture.

Spark arrestor models



- Ideal for offshore and corrosive environments
- ATEX compliant for surface and mining applications
- SAB type certified for use in ATEX Zone 1 and 2 areas (the 316L range meets EN 1834 requirements)
- For use as a mandatory requirement globally in the oil and gas industry
- Constructed from corrosion resistant 304L stainless steel or 316L stainless steel for ATEX approved versions, the material is robust providing longevity
- Wide range of sizes available
- Meets engine manufacturers published back pressure specification providing emission conformance, and exceptional spark-arresting abilities

UBC
Body support clamps

Chalwyn has more than 45 years of experience and is the industry leader in manufacturing engine safety shut down valves to support the oil and gas industry. We have worldwide sales offices with manufacturing facilities in England, Canada and the United States to serve our global markets.

Our broad range of engine safety solutions include AMOT, Roda Deaco, Rigsaver and Chalwyn brands.

To obtain copies of all Chalwyn product data sheets, please visit www.chalwyn.com and select: "Installation, operation and maintenance."

For more information, please contact your local distributor or email the closest one of our company sales offices below:

Europe, Middle East and Africa

AMOT & Chalwyn – United Kingdom
Tel +44 (0) 1284 715739
sales@chalwyn.com

Americas

AMOT - USA
Tel +1 (281) 940-1800
customerservice@amot.com

AMOT & Roda Deaco - Canada
Tel +1 (780) 465 4429
customerservice@amot.com

Asia Pacific

AMOT - China
Tel +86 21 5910 4052
shanghai@amot.com

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www.chalwyn.com

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