

CHALWYN
by AMOT

World class diesel engine safety solutions



Product Selection Guide

World class diesel engine safety solutions

Diesel engines are a potential source of ignition when used in areas where combustible gas, vapours or dusts may exist. The resulting conflagration can lead to catastrophic consequences for personnel, production and the environment.

This problem has been recognised for many years. It led to the introduction of the original Chalwyn air intake shut down valve, a device designed to automatically and safely stop a diesel engine should it start to overspeed due to a combustible mixture being drawn into the engine intake.

Following the success of this product, Chalwyn have subsequently developed a wide range of diesel engine safety equipment and are today one of the leading specialists in this field.

Popular applications for Chalwyn safety solutions

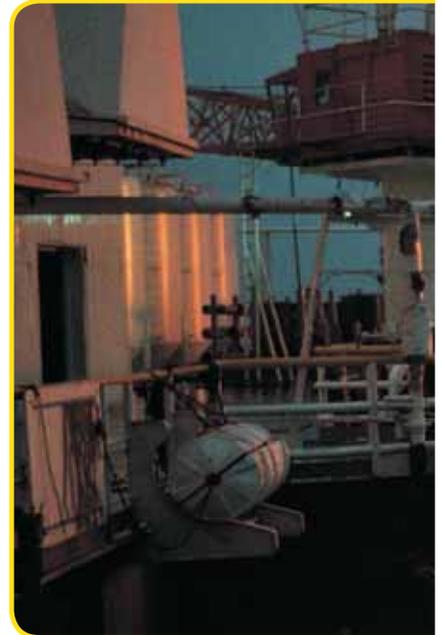
- Aerial Platforms
- Air Compressors
- Aircraft Refuelling
- Cranes
- Diesel Mowers
- Diggers
- Fork Lift Trucks
- Fuel Tankers
- Generator Sets
- Hydraulic Power Packs
- Jetting Pumps
- Light Towers
- Marine Engines
- Mining Machinery
- Mud Pumps
- Siesmic Testing Trucks
- Vacuum Trucks
- Vehicles
-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

Additional information

To obtain copies of all Chalwyn publications in the following pages, please visit www.dieselsafety.com and select 'Technical brochure downloads'.

Alternatively please contact Chalwyn (see back cover) or your local distribution representative. These can be found on the website by selecting 'distributors'.

e-mail: sales@chalwyn.com



Helping to make hazardous areas safer

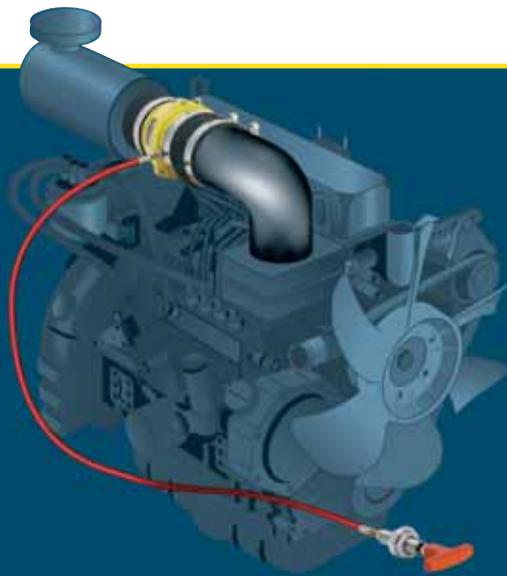


Contents

Page

Air intake shut down valves	4
Manual	4
Electrical	5
Oil/air pressure – auto or manual reset	6
Automatic overspeed	7
Automatic overspeed and air pressure	8
Automatic overspeed and oil/air pressure	9
Typical full mechanical shut down control system	9
Mechanical valves	10
2-way mechanical valves	10
3 and 4-way mechanical valves	11
Fuel shut down valves	12
Typical simple mechanical shut down system	12
Mechanical overspeed valve	13
Electrical sensors	14
Electronic speedswitch	15
Electro-mechanical shut down controls	16
Examples of electro-mechanical shut down systems	17
Flameproof alternators	18
Exhaust spark arrestors	18

Chalwyn engine air intake shut down 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 may result in uncontrolled engine overspeed followed by dangerous mechanical failure or flash back through the intake and the ignition of the surrounding gas or vapour cloud.

Once a flammable mixture is being drawn into the engine intake it may not be possible to stop the engine by closing down the fuel supply. For this reason an air intake valve must be fitted to ensure a guaranteed rapid and safe engine shut down.

Manually operated air intake shut down valves

- Suitable for US MMS attended installations
- Simple operation – instant engine shut down
- Push or pull shut down on basic MVX valve
- Remote stop control by either push or pull options
- Suitable for Canadian remote positive air shut off regulations
- Version with twin pull cables available
- Slim, light weight construction
- Flange or hose mounted
- Corrosion resistant, proven in offshore service
- Combination of body sizes and hose adaptors to suit air intake diameters from 38mm (1 1/2 inches) to 203 mm (8 inches)
- Metal to metal seals – avoids wear associated with 'O' ring



Electrically operated air intake shut down valves

SVX hazardous area energised to open models

see publication CE239

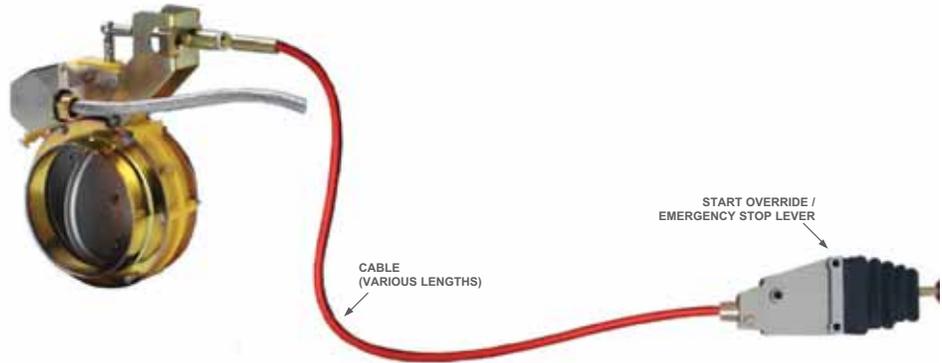


- ATEX approved for zone 1, IIB, T4 applications
- Externally switched solenoid
- Automatic closure on loss of power
- Combination of body sizes and hose adaptors to suit air intake diameters from 38mm (1 1/2 inches) to 203 mm (8 inches)

SVX hazardous area manual override, energised to latch open models

see publication CE230

note: safe area versions also available



SVX safe area energised to open models

see publication CE240



- Externally or internally switched solenoid options
- Automatic closure on loss of power
- Internal microswitch option for valve status monitor
- Combination of body sizes and hose adaptors to suit air intake diameters from 38mm (1 1/2 inches) to 203 mm (8 inches)

SVX safe area energised to close models

see publication CE228



- Simple manual reset to latch open
- Two wire solenoid connection
- Manual cable option for secondary operation method or testing
- Internal microswitch option for valve status monitor
- Combination of body sizes and hose adaptors to suit air intake diameters from 38mm (1 1/2 inches) to 203 mm (8 inches)

All SVX valves

- Are available with 12 or 24 volt options
- Are of slim, light weight, corrosion resistant construction
- Can be flange or hose mounted
- May be combined with Chalwyn FSX-200 fuel shut down valve to give simultaneous shut down of intake air and diesel fuel (see page 12)

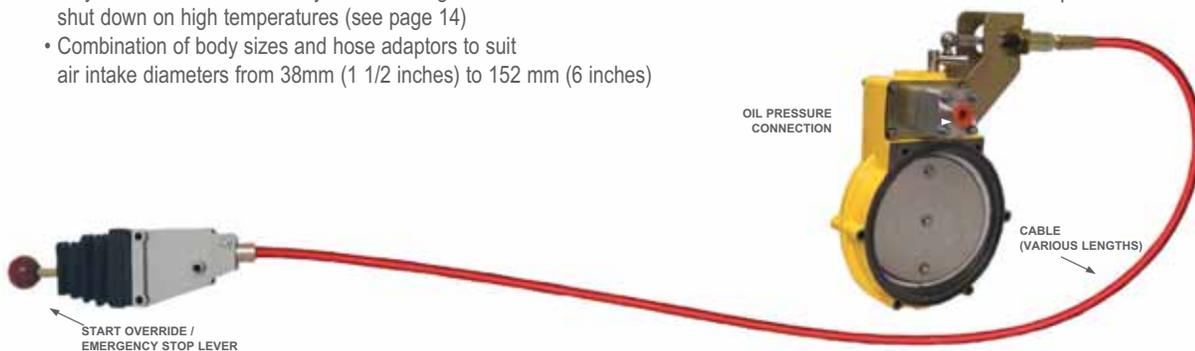
Chalwyn engine air intake shut down valves

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

- Manually held open until oil (or air) pressure latches
- Direct acting manual emergency stop
- May be combined with Chalwyn sensors to give automatic shut down on high temperatures (see page 14)
- Combination of body sizes and hose adaptors to suit air intake diameters from 38mm (1 1/2 inches) to 152 mm (6 inches)

HVX valves

see publication CE229



Air pressure operated intake shut down valves with automatic reset

- Simple direct air pressure operation
- Build options to either open or close on the application of air pressure
- Automatic reset on loss of air pressure
- Valve status indicator
- Combination of body sizes and hose adaptors to suit air intake diameters from 38mm (1 1/2 inches) to 203 mm (8 inches)

PVX models

see publication CE218



Manual reset air intake shut down valve with air (or oil) pressure and manual shut down

- Simple manual latch to open – air pressure releases valve to close
- Manual shut down via valve mounted stop button or via cable from remote shut down control
- Suitable for drilling rig ESD air system / US MMS offshore installations
- Push or pull remote shut down options with choice of cable lengths
- Build option available without manual shut down
- Combination of body sizes and hose adaptors to suit air intake diameters from 38mm (1 1/2 inches) to 203 mm (8 inches)

MPX models

see publication CE236



All HVX, PVX and MPX valves

- Are of slim, light weight, corrosion resistant construction
- Can be flange or hose mounted
- Are suitable for US MMS and zone 1 or 2 installations
- May be combined with Chalwyn FSX-200 fuel shut down valve to give simultaneous shut down of intake air and diesel fuel (see page 12)

Automatic overspeed air intake shut down valves

Basic D models

see publications
 CE209 (Mini range)
 CE204 (Bendix range)
 CE246 (Deutz flanged)
 CE205 (Spindle range)
 CE231 (D200)

note: overlap between ranges



HOSE ENDS (TO CUSTOMER REQUIREMENTS)

- Simple cost effective engine shut down on overspeed
- No speed signal or power input needed
- Light weight construction
- Easy to install
- Automatic reset after engine stops
- Low maintenance
- Metal to metal seat seal

D-AM models with remote manual stop

see publications
 CE209 (Mini range)
 CE207 (Bendix range)
 CE210 (Spindle range)
 CE231 (D200)



CABLE (VARIOUS LENGTHS)

- 'Mini' range covers engine up to 27kw (36hp) and intake pipe diameters from 25mm (1 inch) to 58mm (2 1/4 inches)
- 'Bendix' range suits engines from 7.5kw (10hp) to 149kw* (200hp) and intake hose bores from 40mm (1 9/16 inches) to 108mm (4 1/4 inches)
- Deutz special range valves are suitable for 1011 and 2011 engines up to 53kw (72hp) and with 70mm (2 3/4 inches) standard inlet hose



DF models with integral air cleaner

see publications
 CE209 (Mini range)
 CE206 (Bendix range)



- 'Spindle' range valves are suitable for engines with ratings from 80kw (107hp) to 392kw (525hp) and intake hose bores from 76mm (3 inches) to 154mm (6 1/16 inches)
- D200 range extends up to a maximum engine rating 650kw (805hp) and intake hose bores between 152mm (6 inches) and 229mm (9 inches)

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

see publications
 CE209 (Mini range)
 CE206 (Bendix range)
 CE207 (Bendix range)



CABLE (VARIOUS LENGTHS)

- Suitable for zone 1 or 2 and all US MMS offshore installations
- Combines with Chalwyn FSX-200 fuel shut down valve to give simultaneous shut down of intake air and diesel fuel (see page 12)
- Zinc body versions available for underground mining use

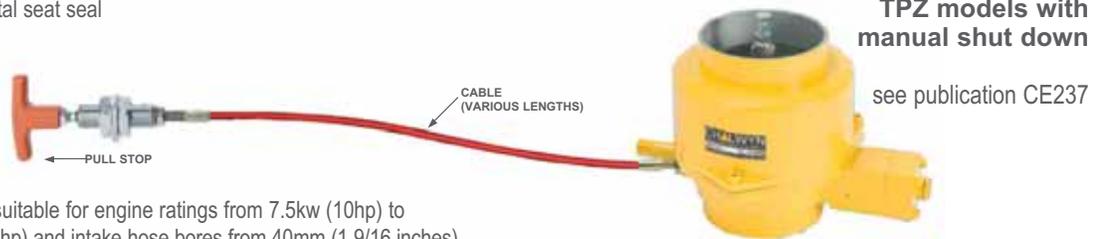
*based on turbocharged engines



Chalwyn engine air intake shut down valves

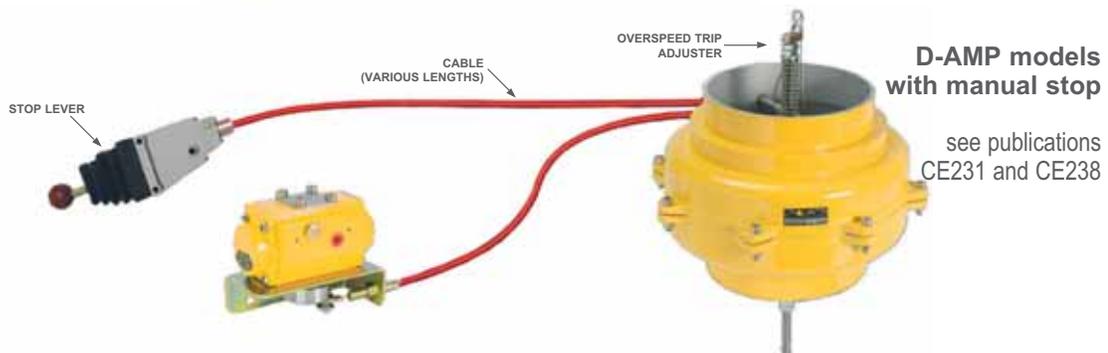
Air intake valves with automatic shut down on engine overspeed or on application of an air pressure signal

- Simple cost effective valves combining automatic overspeed shut down with air pressure operated shut down
- No speed signal or power input needed
- Light weight construction
- Easy to install
- Easy to adjust
- Automatic reset after engine shuts down and air pressure signal removed
- Low maintenance
- Metal to metal seat seal



- TPZ range suitable for engine ratings from 7.5kw (10hp) to 149kw* (200hp) and intake hose bores from 40mm (1 9/16 inches) to 108mm (4 1/4 inches)
- D-AP/ D-AMP valves can be selected to suit engine ratings from 80kw (107hp) up to 605kw (805hp) and engine air intake hose bores from 76mm (3 inches) to 229mm (9 inches)
- Suitable for zone 1 or 2 and US MMS offshore installations including air operated ESD systems
- Combines with Chalwyn FSX-200 fuel shut down valve to give simultaneous shut down of intake air and diesel fuel (see page 12)

*relates to turbocharged engines



Air intake valves with manual shut down combined with automatic shut down on overspeed or loss of an oil (or air) pressure signal

TMZ valves

see publication CE208



- Cost effective valve combining automatic overspeed shut down with shut down on loss of oil (or air) pressure and manual shut down
- Can be combined with Chalwyn FSX-200 fuel shut down valve to give simultaneous shut down of fuel and air (see page 12)

- Can be combined with AMOT mechanical temperature sensors to also give shut down on high temperatures (see below)
- Easy to set overspeed trip point / requires no speed signal input
- Lightweight construction / metal to metal seal / manual start override

- TMZ range suitable for engine ratings between 7.5kw (10hp) and 149kw* (200hp) and intake pipe bores between 40mm (1 9/16 inches) to 108mm (4 1/4 inches)

- Suitable for zone 1 / US MMS installations
- Zinc body versions available for mining use

*relates to turbocharged engines

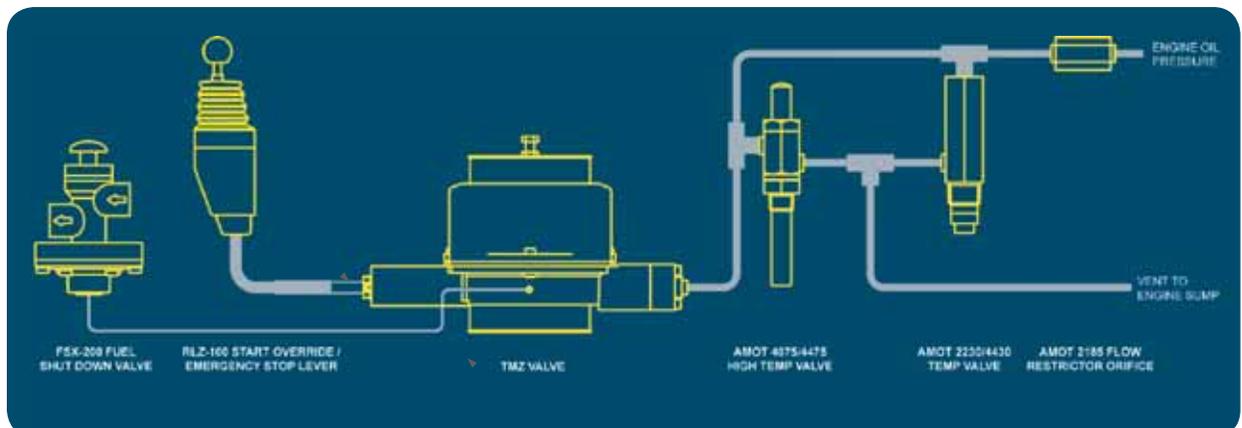
D-AMZ valves

see publications CE243 and CE231

- D-AMZ range suitable for engine ratings from 80kw (107hp) up to 605kw (805hp) and engine air intake hose bores from 76mm (3 inches) to 229mm (9 inches)

Typical TMZ valve installation

Example of arrangement to give manual shut down plus automatic shut down of both fuel and intake air on overspeed, low oil pressure and high coolant and exhaust temperatures



AMOT 2-way temperature and pressure sensing valves

Temperature sensing valve

For incorporating jacket water and lubricating oil temperature sensing into a Chalwyn mechanical automatic shutdown system

- Temperature range from 19°C to 129°C (65°F to 265°F)
- Factory set and field adjustable (8 increments available)
- Multiple installation depths available
- For use in pneumatic or hydraulic control systems
- The 2230 is available in brass or nickel plated brass
- The 4430 is available in stainless steel

AMOT 2230/4430 temperature valve

see publication DS_AM_2230



High temperature sensing valve

For incorporating exhaust, jacket water, and lubricating oil temperature sensing into a Chalwyn mechanical automatic shutdown system

- Temperature range from 54°C to 260°C (130°F to 500°F)
- Factory or field adjustable
- Multiple installation depths available
- For use in pneumatic or hydraulic control systems
- The 4075 is available in anodised aluminum
- The 4475 is available in stainless steel

AMOT 4075/4475 high temperature valve

see publication DS_AM_4075



Pressure sensing valve

For incorporating engine pressure sensing into a Chalwyn mechanical automatic shutdown system

- 2-way normally open sensor
- Dual purpose construction can trip on rising or falling pressure
- Field adjustable pressure set points (7 increments available)
- Field changeable trip on rising or falling pressure
- Falling pressure range 0.35 – 227.5 bar (5 – 3300 psi)
- Rising pressure range 0.55 - 248.2 bar (8 - 3600 psi)
- For use in pneumatic or hydraulic control systems

AMOT 1672 pressure sensing valve

see publication DS_AM_1672



3-way and 4-way valves

AMOT 4057/4457 3-way valves

see publication DS_AM_4057



Designed for use in manual or automatic hydraulic or pneumatic control systems

- Available with a variety of manual or pressure operators and with manual, pressure, or spring returns
- Balanced force design – pressure can be applied to any port without danger of a seal blow out
- The unique porting design eliminates seal ring cutting
- The standard valve has a small centre dead spot that isolates the ports when moving from one position to the other
- Port overlap during transition is optional
- Suitable for either bracket or panel mounting
- The 4057 and 4058 have anodised aluminium bodies
- The 4457 and 4458 have stainless steel bodies

AMOT 4058/4458 4-way valves

see publications DS_AM_4058



3-way solenoid valve

AMOT 10424X 3-way solenoid

see publication DS_AM_10424



Designed for use in systems with electronic speed sensing and overspeed switching and pneumatic actuated shutoff valve

- Links the diesel equipment electronic speed system with the pneumatic system
- When energised, the 3-way solenoid valve pressurises the air intake shutoff valve to close
- 12 VDC operated
- 3.5 to 14 bar (50 to 200 psi) operating pressure
- Compact rugged design
- No maintenance required
- NEMA 4 enclosure (watertight)
- CSA certified
- UL listed

Chalwyn fuel shut down valves

The European standard EN 1834-1:2000 covering diesel engine operation in zone 1 or zone 2 hazardous areas where flammable gas or vapour may exist, requires that both the engine fuel and intake air supply are automatically shut down if engine overspeed occurs.

Air intake depression operated fuel shut down valve

- Used in conjunction with Chalwyn air intake shut down valves
- Instant closure when intake valve shuts
- Does not require reset following a normal engine shut down
- Kits of parts available for the connection to the air intake valve
- Tamperproof setting
- Light weight

FSX-200

see publication CE226



Oil (or air) pressure operated fuel shut down valve

- Instant closure on loss of oil (or air) pressure signal
- Reset not required following a normal engine shut down
- Can be used in conjunction with other AMOT sensors (see below)
- Tamperproof setting
- Light weight
- Suitable for hazardous area installations

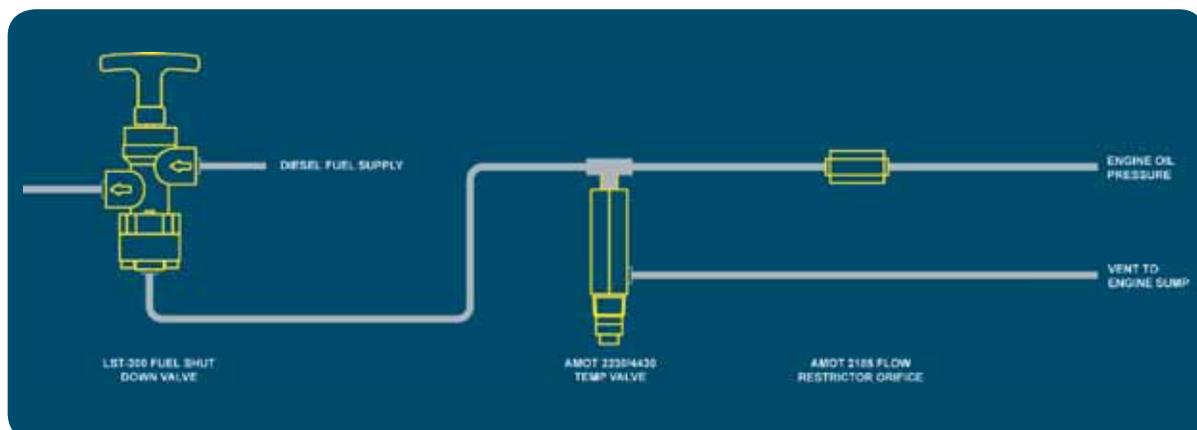
LST-200

see publication CE226



Typical LST-200 valve installation

Example of a simple arrangement to give engine shut down on loss of oil pressure or high coolant temperature



Mechanical overspeed valve

AMOT 4110 overspeed valve

see publication DS_AM_4110



Dependable protection from overspeed for engines and rotating equipment

- Available settings from 800 – 4200 RPM
- Trip point is field adjustable
- Operates in hydraulic or pneumatic systems
- Can be mounted in-line with existing tachometer cable
- Can be mounted in any position
- Has several mounting extensions and adapters including flexible shafts and 90° cable drives
- Body is constructed with anodised aluminum

Mechanical control system accessories

Control system accessories

AMOT 2185 orifice



The mechanical control system accessories shown are examples of some of safety and sequencing components available for use in pneumatic or hydraulic engine control systems.

AMOT 2185 orifice

Used to restrict flow in timing circuits or used to prevent damage due to sudden application of pressure. Available in multiple diameters.

AMOT 2790B shuttle valve



AMOT 2790B shuttle valve

Enables continuous pressurisation of a single device in a circuit as the pressure transitions from one source to a different source.

AMOT 2768 quick release valve



AMOT 2768 quick release valve

Used on dump pressure quickly on devices with large volumes such as valve bonnets or long tubing runs.

AMOT 2690 accumulator (not shown)

Used in timing circuits in conjunction with the 2185 orifice. It is used to delay the pressure build up required to open or pressure loss to close a valve.

AMOT 2760 check valve (not shown)

Used in circuits to dump pressure quickly or control the direction of flow.

AMOT 4125 vent closure (not shown)

Used on vent ports, it allows flow in a single direction to prevent dirt, corrosive atmospheres, and insects from entering the control system.

Electrical sensors

In order to provide complete electro automotive shut down control systems for engines operating in hazardous areas, Chalwyn and AMOT offer a range of electrical sensors.

Electrical switch type sensors

- Suitable for incorporation into Chalwyn Series 110, 111, 210 and 300 electro-mechanical systems
- Twin 4m long flying leads
- Electrically isolated cases
- Corrosion resistant construction
- Gold or fine silver contacts
- Standard factory setting for coolant temperature sensor 100°C (212°F)
- Standard factory settings for exhaust temperature sensors 135°C (275°F), 150°C (302°F) and 200°C 392°F)



TSX coolant temperature sensor

see publication CE306



TSX exhaust temperature sensor

see publication CE304



PSX pressure sensor

see publication CE305

Magnetic pickups

- Permanent magnet RPM sensor
- Fits in standard 3/4 inch UNF hole in flywheel housing
- Sends pulse signal to CSX-300 or AMOT 8210 range speed switches
- Rubber boot included for sensor leads on AMOT 11408X
- AMOT 11408X is for general purpose use
- AMOT 8017 is ATEX and CSA approved for hazardous area use
- Available installation kit includes toggle switch, dashboard label and shielded cable

AMOT 11408X magnetic pickup

see publication DS_AM_11408



AMOT 8017 magnetic pickup

see publication DS_AM_8017



Electronic speed switch

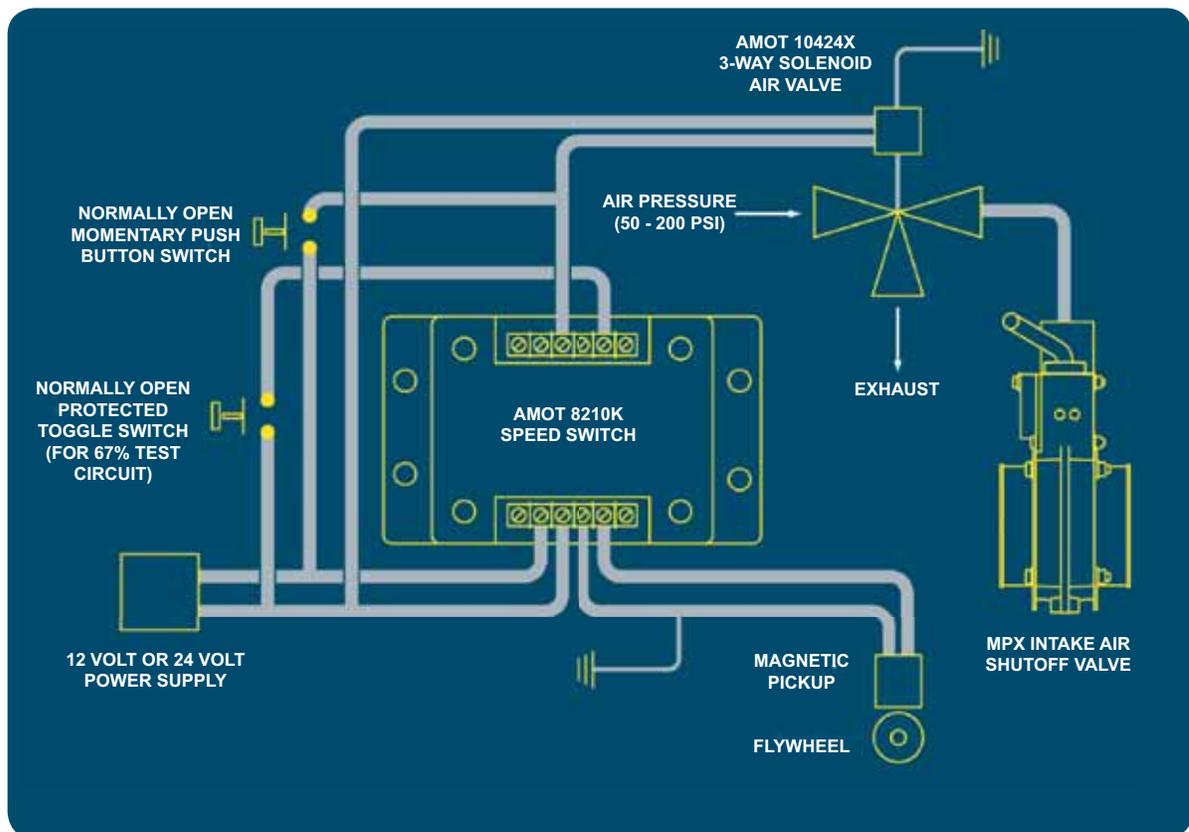
AMOT 8210K SpeedTrap™



Dependable protection from overspeed conditions on engines and other rotating equipment in electric or electric/pneumatic systems

- Monitors RPM via AMOT magnetic pickup
- Can also monitor alternator pulse signal
- Trips when RPM exceeds set-point
- Adjustable using 67% speed test circuit
- 12 or 24 volts power source required
- Built in 5 amp relay
- Compact weatherproof design
- Installation kit available

Typical AMOT 8210K installation



Electro-mechanical automatic shut down systems

In addition to automatic shut down of engine intake air and fuel on overspeed, flameproof requirements for diesel engines operating in hazardous areas also usually call up alarm or automatic engine shut down on low engine oil pressure, high coolant and high exhaust temperatures. Direct manual stop is also a standard requirement.

Self contained zone 1 hazardous area electro-mechanical shut down systems

- Automatic shut down on overspeed, low oil pressure and up to four temperature settings
- Responds to 'rig yellow' alert or 'gas detection' input shut down signals
- Direct manual shut down control
- Precision overspeed trip speed setting via simple press button
- Simultaneous shut down of both intake air and fuel
- May be installed and operated completely independently of other engine systems
- No battery/power input required
- Speed signal generated by system alternator
- Useful output of 24 volts / 20 amperes available
- Only powered whilst engine running
- ATEX / EMC compliant system

Series 110 and Series 111 systems

see publication CE233



Zone 1 hazardous area systems for integration with other engine systems

- Automatic shut down on overspeed, low oil pressure and up to four temperature settings
- Responds to 'rig yellow' alert or 'gas detection' input shut down signals
- Precision overspeed trip speed setting via simple press button
- Simultaneous shut down of both intake air and fuel
- Speed signal generated by system alternator
- EExe alternator output available for start battery charging etc.
- Run/stop signal from control unit may be used to control EExe solenoid operated or pneumatically operated intake and fuel shut down valves
- ATEX / EMC compliant components

Series 210 systems

see publication CE234



Compact added safety shut down systems

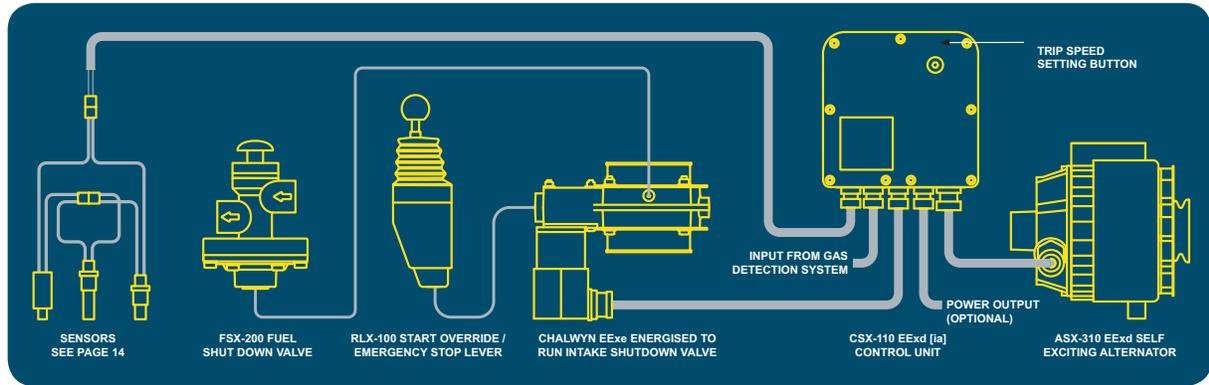
- Suitable for vehicle or other attended engine applications not requiring hazardous area compliant equipment
- Automatic intake valve shut down on overspeed
- 12 volt (CSX-300) or 24 volt (CSX-310) systems
- Optional sensor circuit (CSX-301 or CSX-311) versions for shut down on low oil pressure and up to four temperature settings
- Can be tripped by gas detector added to normally closed sensor circuit
- Precision overspeed trip speed setting via simple press button
- Powered by existing engine start battery
- Speed signal input from existing alternator or flywheel magnetic pick up
- Manual shut down button

Series 300 systems

see publication CE235

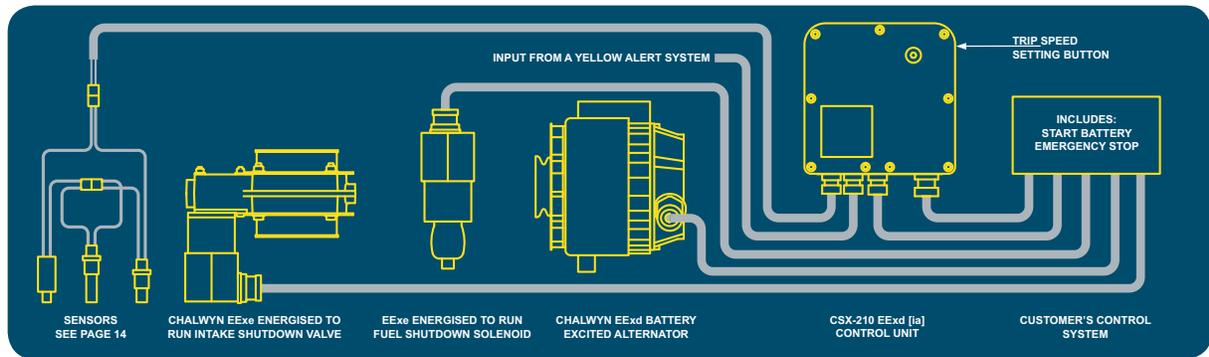
Typical Series 110 installation

Arrangement to give automatic air and fuel shut down on engine overspeed, low oil pressure, high coolant and exhaust temperatures and on a shut down signal from a gas detection system



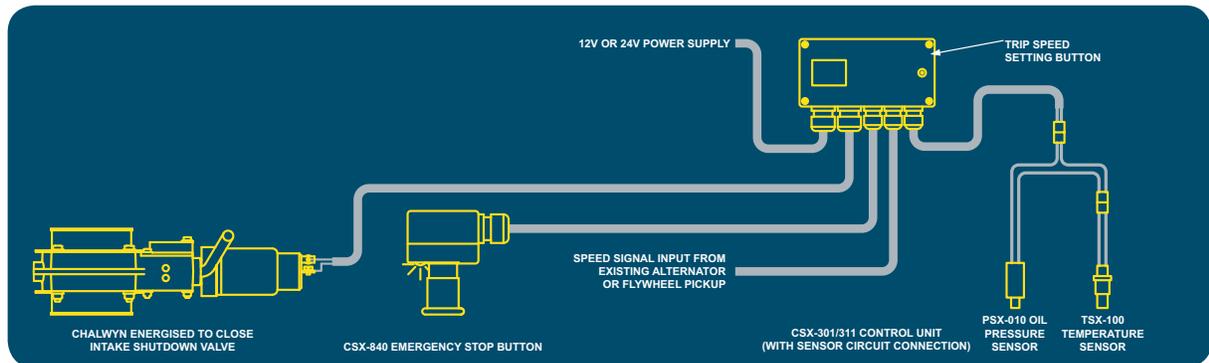
Typical Series 210 installation

Arrangement to give automatic air and fuel shut down on engine overspeed, low oil pressure, high coolant and exhaust temperatures and on a rig 'yellow alert' signal



Typical Series 300 installation

Arrangement to give automatic intake air shut down on engine overspeed, low oil pressure and high coolant temperature



Chalwyn alternators and spark arrestors

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.

- EExd IIB T4 ATEX compliant variants generally applicable to Group II hazardous gas, vapour and dust applications
- EExd I ATEX compliant variants generally applicable to Group I mining applications
- Fits in place of standard alternator
- Standard automotive internal regulation
- Various drive pulley options
- Speed signal output
- Optional gland positions for ease of installation
- Outputs – Group II Types:
 - ASX-200: 12volts / 50 amperes
 - ASX-300: 24volts / 25 amperes
 - ASX-310: 24volts / 25 amperes
 - ASX-400: 24volts / 50 amperes
- Outputs – Group I Types:
 - ASX-220: 12volts / 50 amperes
 - ASX-320: 24volts / 25 amperes

Battery excited types

ASX-200 and ASX-300

see publication CE211

ASX-220 and ASX-330

see publication CE244



Self exciting types

ASX-310

see publication CE232

ASX-330

see publication CE245



High output battery excited type

ASX-400

see publication CE242



Exhaust spark arrestors

An exhaust spark arrestor is a key safety requirement for both hazardous area and lower risk diesel engine applications such as forestry or agriculture where a stray spark may cause ignition of combustible material.

Virtually all legislation with respect to the use of diesel engines in hazardous areas includes a mandatory requirement to fit an exhaust spark arrestor.

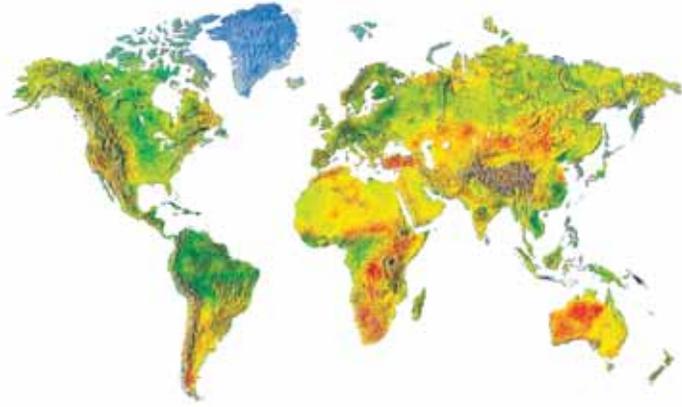
- Ideal for offshore and corrosive environments
- ATEX compliant for surface and mining applications
- Certified for use in zone 1 and 2 areas
- 100% 316 grade stainless steel construction
- Clamp-on pipe ends standard
- Threaded or flanged connections available to special order
- Vertical or horizontal installation
- Type SSE are non-silencing for end of line or temporary fitting on pipe sizes up to 90mm (3 1/2 inches) using single clamp included
- Type SSL have industrial standard silencing so can replace vehicle silencers or for permanent installation with pipe sizes up to 153mm (6 inches)
- Range sizes covering engine ratings from 7.5kw (10hp) to 373kw (500hp)

Spark arrestors

see publication CE224







Chalwyn has a history of almost 40 years in manufacturing engine safety shut down valves to support the oil and gas industry.

In 2008 Chalwyn was acquired by AMOT, a global manufacturer of valves, controls and monitoring solutions for the protection of engines, compressors, turbines and heavy equipment. AMOT has served a wide variety of markets since 1948 including industrial, marine, oil and gas, power generation and transportation.

Together, the AMOT, Roda Deaco and Chalwyn brands offer an extensive family of engine safety solutions.

To find your nearest distributor for Diesel Engine Safety Solutions, please visit the home page of our website and select 'distributors'.



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