

Damper Controls

Wozair has a significant track record in providing Fire, Fire & Gas, Shut-Off and Control dampers. Our experience enables us to design control systems to meet even the most stringent individual requirements.



Damper Controls

Wozair offer a comprehensive range of electric and pneumatic operation control solutions including a fire damper manually latched. Wozair Fire and Fire & Gas dampers are tested at approved laboratories with actuator and fire trigger installed to automatically close the damper. Testing qualifies the actuator and fire trigger for use with the damper.

Wozair offer control systems for use in potentially hazardous or safe areas. Electrical equipment offered as part of the control system for use in a hazardous area can be offered conforming to ATEX, IECEx and CSA requirements. Wozair also offer control system options that meet the requirements of SIL2. Wozair electrically operated fire dampers also satisfy shock testing to MIL-S-901 D.

All automatically operated dampers can be provided with position switches to give open and closed status signals to the HVAC monitoring control panel. These dampers are also provided with a local visual position indication marker or beacon.

Electric Actuation

A power to open, spring return actuator is typically fitted on Fire, Fire & Gas and Shut-Off dampers. Our standard options are Petz, Schischek and Belimo. Selection is based on application (including performance in fire testing if applicable), environmental location, ambient temperature range, ingress protection, control function, voltage and area rating.

For Control dampers, electric actuators with a modulating control function can be supplied. Control signals are typically 4 – 20 mA or 0 – 10V.

For Fire and Fire & Gas dampers a thermal trigger is installed to close the damper on the fire detection system. Actuators can be provided with the manufacturers standard thermoelectric trigger typically rated for operation at 72°C, or Wozair's frangible bulb fire trigger rated for operation at 68°C. Alternate temperature ratings are available on request.

Actuators can be provided with heater jackets for operation in cold climate regions down to -55°C.

Pneumatic Actuation

An air to open, spring return actuator is typically fitted on Fire and Shut-Off dampers. Our standard option is the Power Tork PT range suitable for instrument air pressures between 4 and 10 barg. The actuator materials offered are hard anodised Aluminium, hard anodised + PTFE coated Aluminium and Stainless Steel DIN 1.4404 (316). As standard, actuators are suitable for a temperature range of -20°C to +80°C with low ambient versions suitable for -60°C available on request. In addition, control valves, pressure regulators etc. can be fitted to provide the required control and operation of the damper.

For Control dampers, pneumatic actuators with an electro pneumatic digital positioner can be supplied to provide a modulating control function. Actuators used in this function can be spring return to close or double acting to stay-put on loss of air. Control signals for the positioner are typically 4 – 20 mA or 0 – 10V.

For Fire and Fire & Gas dampers, a thermal trigger is installed to operate a pneumatic valve or electrical switch to close the damper on fire detection. Our standard duplex frangible bulb fire trigger is rated for operation at 68°C but alternate temperature ratings and trigger devices such as solder link are available on request.

Manual Actuation

Wozair provide Fire dampers with a manual latch mechanism. The damper is opened manually using a spanner and held on a latch against a spring force. A thermal trigger is installed to release the latch to close the damper on fire detection. Our standard duplex frangible bulb fire trigger is rated for operation at 68°C but alternate temperature ratings and trigger devices such as solder link are available on request. A manual release facility is also incorporated.

Shut-Off and Control dampers with a manual handle that can be locked off in the desired position between closed and open. For requirements with low blade leakage to EN 1751 Class 3 we operate the damper with a gearbox and handwheel mechanism.

Pi Safety Components QT.Ex-M (Hazardous / Safe)

- For mounting in Zone 1, 2, 21, 22
- ATEX / IECEx certified
- Electric quarter turn actuator
- Torque spring return actuator up to 18 Nm
- Torque without spring return standard actuator up to 50 Nm
- Internal auxiliary switches 5° / 80° integrated
- Voltage options 20-70 VAC/DC and 85-250VAC 50/60 Hz
- Heating including integrated thermostat switches on automatically at -20°C
- Temperature range -40 ... + 70°C, with Thermal Fire Trigger at 72°C
- Low temperature option down to -65°C
- IP66 protection
- Junction box integrated, no further accessories required
- Optional fail safe / spring return (Fire Shut Off dampers)
- Optional control / feedback 0...10V; 4...20mA (Control dampers)
- Lifetime 20,000 cycles
- LED status indication
- Low power consumption < 5 W to keep the actuator in position
- Brushless DC motor for long life
- High corrosion resistance by using polymer and Stainless Steel
- Galvanic isolated circuits for high immunity to interference



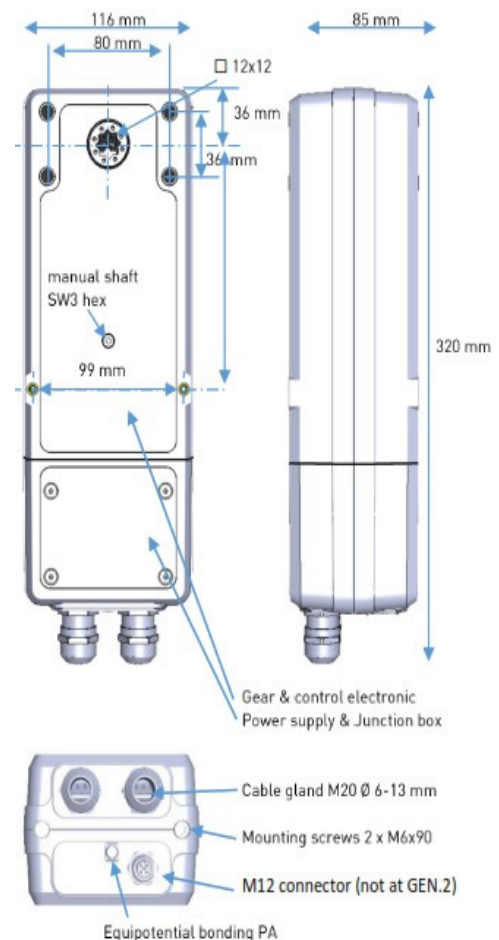
Pi Safety Components Actuator Configuration Chart

Damper Product Duct Width x Height (mm)

Pi Safety Components Actuator	FGD HQ/H120 Hazardous 1200 x 1200	FGD HQ/H120 Safe 1200 x 1200	MFD AQ/A60 Hazardous 1220 x 1525	MFD AQ/A60 Safe 1220 x 1525	LFD AQ/A60 Hazardous 1000 x 1000	LFD AQ/A60 Safe 1000 x 1000	EID Hazardous 1220 x 1525	EID Safe 1220 x 1525	MCD Hazardous 1220 x 1525	MCD Safe 1220 x 1525
3 Second Closing Actuator	✓	✓	✓	✓	✓	✓	✓	✓		
10 Second Closing Actuator	✓	✓	✓	✓	✓	✓	✓	✓		
Modulating Actuator									✓	✓

2 Second closing option available with reduced damper height

Pi Safety Components QT.Ex-M Actuator Dimension Drawing

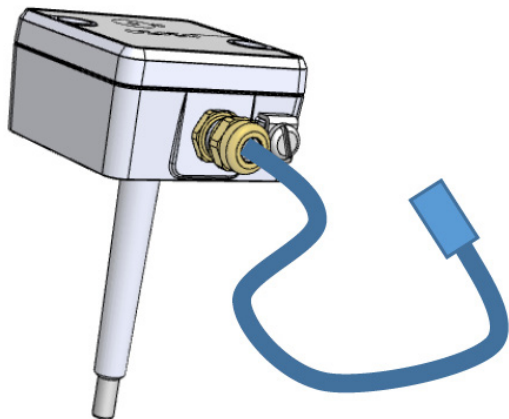


Junction Box

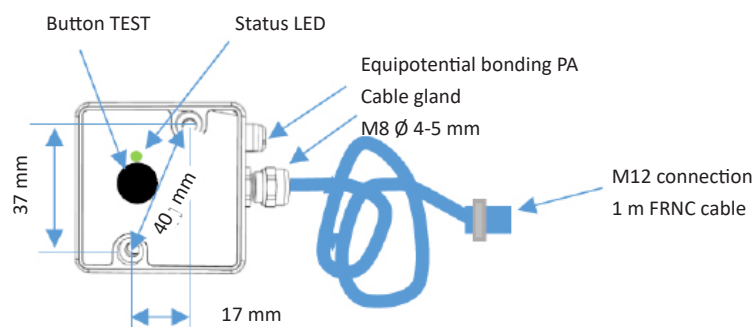
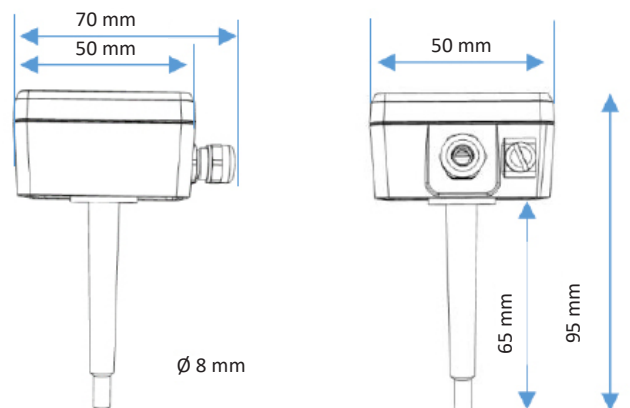
For Pi Safety Components, junction box is integrated onto the bottom of the actuator. No further junction box is required.

FT.Ex Thermal Fire Trigger

- LED status indication
- Test button
- Short circuit protection
- Very good corrosion resistance
- Halogen free
- IP66 protection



Dimension Drawings



ExMax, RedMax & InMax (Hazardous / Safe)

- For all gas, mixtures, vapours and dust for use in Zone 1, 2, 21, 22
- ATEX / IECEx / CSA certified
- Electric quarter turn actuator
- Torque spring return actuators up to 60 Nm
- Internal auxiliary switches 5°C/ 85°C integrated
- Universal supply unit from 24 to 240V AC/DC
- Integral heater for ambient temperatures down to -40c (without enclosure), down to -60°C (with enclosure)
- Simple manual override included
- Selectable motor run times varying from 3 to 150 seconds depending on model spring
- Return times varying from 1 to 20 seconds depending on model
- IP66 protection
- Robust Aluminium housing (option with seawater resistant coating) or Stainless Steel
- Options: Spring return, Switccc

Schischek Actuator Configuration Chart

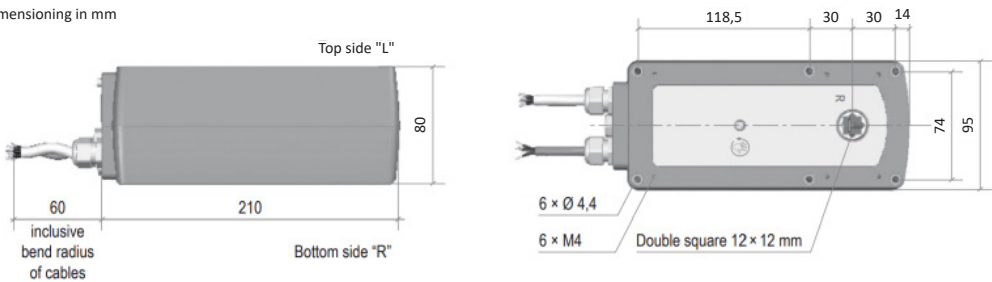
Schischek Actuators	FGD H0/H120 Hazardous 3950 x 2500	FGD H0/H120 Safe 3950 x 2500	MFD A0/A60 Hazardous 2500 x 2100	MFD A0/A60 Safe 2500 x 2100	LFD A0/A60 Hazardous 1000 x 1000	LFD A0/A60 Safe 1000 x 1000	EID Hazardous 2500 x 1525	EID Safe 2500 x 2500	MCD Hazardous 2500 x 2500	MCD Safe 2500 x 2500
1 Second Closing Actuator	✓	✓	✓	✓			✓			
3 Second Closing Actuator	✓	✓	✓	✓	✓	✓	✓			
10 Second Closing Actuator	✓	✓	✓	✓	✓	✓	✓			
20 Second Closing Actuator			✓	✓			✓	✓		



Schischek Actuator Dimension Drawing

S- Size (up to 15 Nm spring torque)

Dimensioning in mm

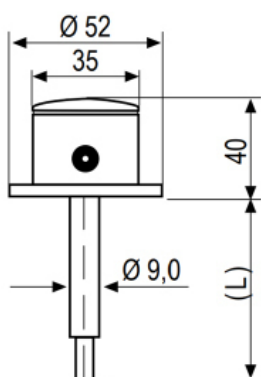


ExPro-TT (Terminal Trigger) - ExMax & RedMax InPro-TT (Terminal Trigger) - InMax

Temperature trigger



Dimensions in mm



Quick fastener M12: InMax



Quick fastener M12: ExMax



Belimo

We build Fire and Fire & Gas dampers with Belimo BFL, BFN and BF actuators; selection is subject to Class Society type approval, damper size and required torque. These actuators are available for operation on 24V AC/DC and 230V AC with the BF also available for operation on 120V AC. Actuators are typically rated IP54 degree of protection and have a run time to close of between 16 and 30 seconds depending on the model.

Wozair can provide Control dampers with a range of Belimo actuators depending on control function and application. Actuators are selected based on the torque output required for the operation of the Wozair damper. Typical options for spring return actuators are types LF, NF, SF and EF and for modulating control are types LM, NM, SM and GM. We can also offer power open, power close actuator on request.



Example - BFN

- Nominal torque 9 Nm / 7 Nm (Motor / Spring return)
- Nominal voltage 24V AC/DC
- Integrated thermoelectric tripping device 72°C
- Integral position indication auxiliary switches
- Direction of rotation can be selected by mounting left or right
- IP54 degree of protection
- Ambient temperature range -30°C to +50°C
- Ambient humidity 95% RH, non-condensing
- Maintenance free

Belimo Actuator Configuration Chart

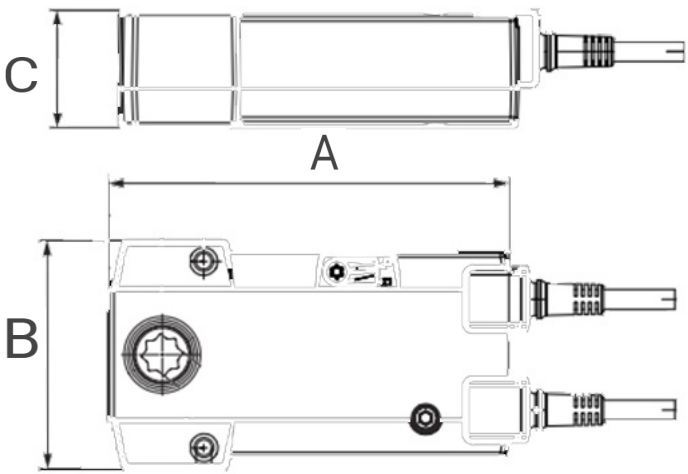
Not For FGD

Belimo Actuator (Subject to Actuator)	Not For FGD			
	MFD A0/A60 Safe 1220 x 1525	LFD A0/A60 Safe 1000 x 1000	EID Safe 1220 x 2500	EID Safe 2500 x 1220
16-30 Second Closing Actuator	✓	✓		
20 Second Closing Actuator			✓	✓

Dimension Measurements (mm)

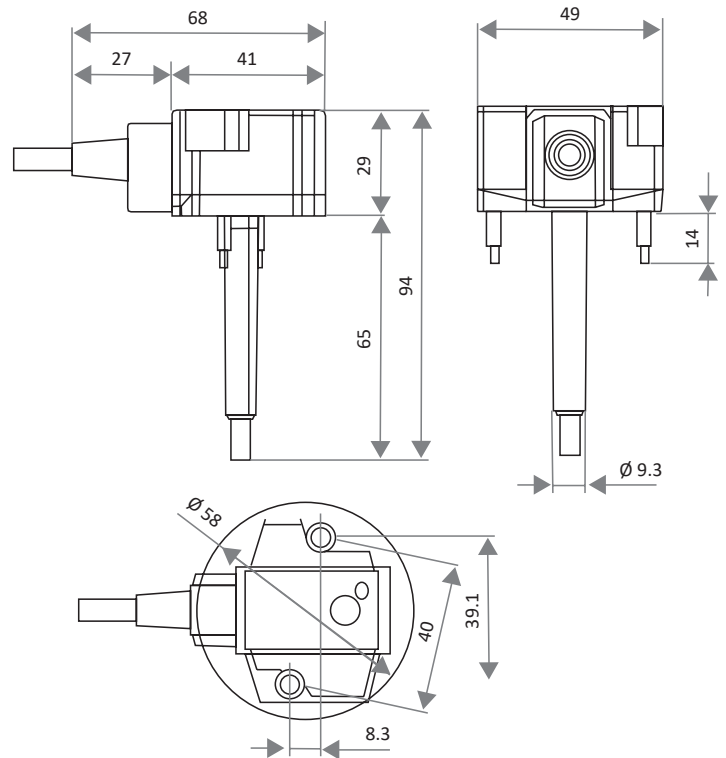
	BFN	BFL	BF
A	180	16	248
B	99	80	98
C	52	48	58.6

Belimo Actuator Dimension Drawing



Terminal Tripping Device

- Complies with ISO 10294-4
- Trip temperature 72°C
- Suitable actuators: BF230, BFN230, BF230 - C232, BFL230, BF24, BF24 - C232, BFN24 & BFL24



S1A & S2A Auxiliary Switches

Application: S1A.. and S2A.. auxiliary switches are used to signal positions or to execute switching functions in any angular position.

Mode of operation: A form-fit engagement is created between a driver disc and the clamp, causing the position to be directly transferred to the trip cams of the microswitches.

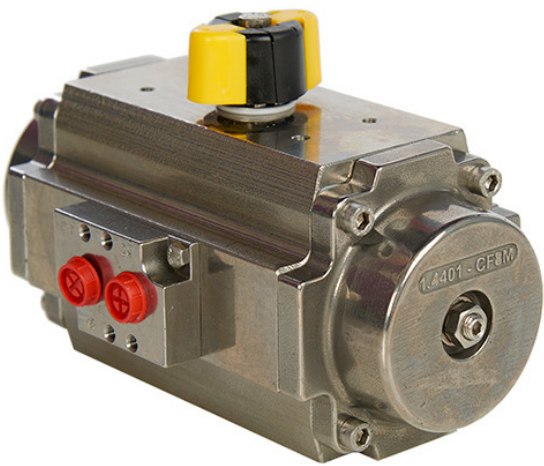
The switching points can be freely selected within the specified range of rotation by means of a dial. The current switch position can be read at any time.

Mounting: The auxiliary switches are attached directly to the clamp of the damper actuator. The guiding grooves between the housing and the switch ensure a tightly sealing fit.



Power Tork

For pneumatic operation an air to open spring return pneumatic actuator is fitted. The actuator is a Power Tork PT type typically suitable for instrument air between 4 and 10 barg. Electrical items can be suitable for non-hazardous and hazardous area applications. For Fire damper applications where an automatic closing device is required, we fit a fire trigger, rated for operation at 68°C, linked to a pneumatic valve or electrical switch with alternatives available on request. Pneumatic actuator solutions can be supplied with switches to provide remote indication of damper status (open and closed positions).



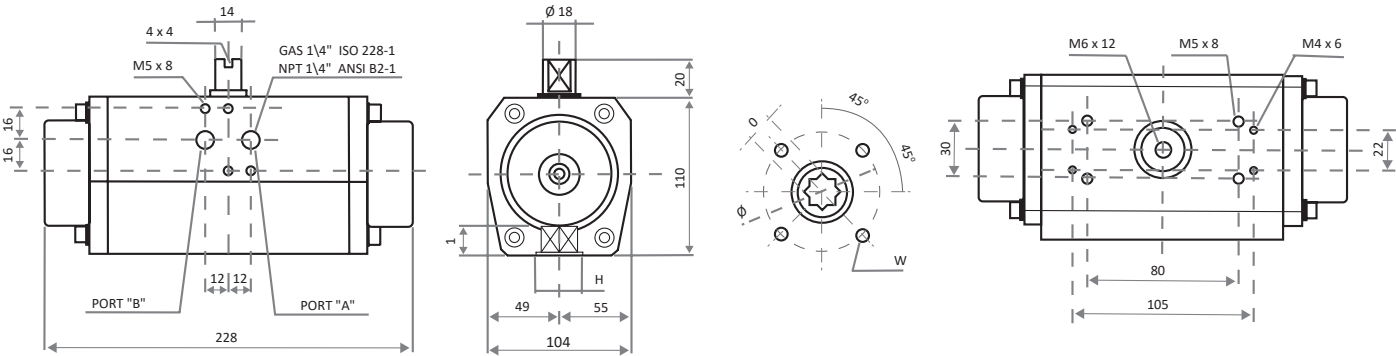
Please contact us to discuss your requirements.

- Rack and opinion design
- Single and double acting versions
- Fully anodized extruded Aluminium body as standard
- PTFE coated and Stainless Steel options available
- ISO 55211/DIN 3337, VDI/VDE 3845, Namur standards
- Approvals include, ATEX, ISO, SIL 2
- 100% certified European manufacture and componentry
- Universal supply unit

Power Tork Actuator Configuration Chart

Power Tork Actuators	FGD H0/H120 Hazardous 3950 x 2500	FGD H0/H120 Safe 3950 x 2500	MFD A0/A60 Hazardous 2500 x 1220	MFD A0/A60 Safe 2500 x 1220	LFD A0/A60 Hazardous 800 x 800	LFD A0/A60 Safe 800 x 800	EID Hazardous 2500 x 1220	EID Safe 2500 x 1220	PID Hazardous 1220 x 1220	PID Safe 1220 x 1220
1 Second Closing Actuator	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Power Tork Actuator Dimension Drawing (Example PT085)



Examples of Valve Options

Midland Plunger Valve

Used with pneumatic damper operation this valve is close coupled with the Wozair duplex fire trigger to ensure the damper will close when the trigger is activated. On activation the 3-port, 2-way valve switches to isolate the air supply from reaching the actuator allowing the actuator to exhaust air from its cylinder and damper to close.

Midland-ACS 3/2 plunger operated spring return spool valves in Stainless Steel for use on gases.

Features and Benefits:

- Specifically designed for severe environments
- Ambient temperature range -20°C to +90°C (standard)
- -60 °C to +55 °C (T5) (low temperature service)
- 316L Stainless Steel construction

Media Temperature Range:

- Standard -20 °C to +90°C
- Low temperature version -55°C to +90°C (T5) (optional)

Working Pressure:

- 10 bar (145 psi) maximum

Ports NPT (BSP Option Available):

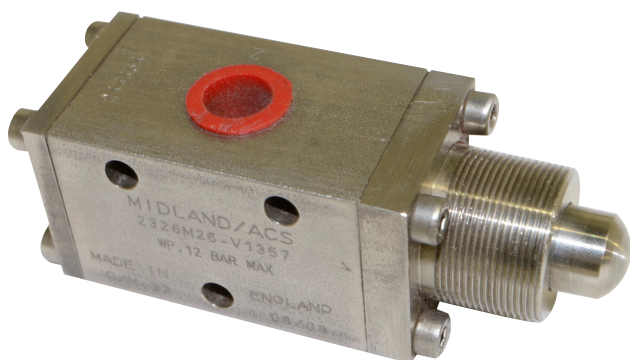
- 1/4" NPT line port

Operating Media:

- Gases - filtered lubricated or non-lubricated
- Air, inert gas, sweet (natural) gases

Construction Materials:

- 316L Stainless Steel construction



Bifold FP06P Solenoid Valve

Used with pneumatic damper operation, our standard damper configuration with this electrically operated valve is energised to open the damper, de-energise to close the damper. The power supply will typically be provided from the fire or fire and gas control system. Energising the valve switches instrument air on to the actuator, driving the damper open and de-energising the valve to isolate the air supply and to exhaust air from the actuator and damper to close.

- Worldwide approvals
- Hazardous area approved
- The standard solenoid operator is a holding magnet type which ensures the valve will operate in damp conditions. The risk of corrosion to internal components is reduced, unlike other valve types that incorporate a solenoid core tube design with a 'wetted' armature that will only operate in dry air conditions
- Tolerant to moist air in control lines
- The standard solenoid valve has proven arctic service and low temperature performance
- DIN 1.4404 (316L) Stainless Steel enclosure
- Large clearances, metal back up to seals and no knife edge sealing to prevent long term valve sticking
- Dry solenoid armature to prevent corrosion and affecting safe shut down
- Simple maintenance - Removable transient suppression diode on Ex d DC solenoid valve assemblies and removable solenoid coil without removing valve from the tubing



Examples of Ancillary Equipment

Position Indication & Proximity Switches

Visual indication is achieved using local pointers and labelling or indicator beacons. Remote indication is achieved using electrical switches or sensors which are suitable for hazardous or non-hazardous areas.

A range of manufacturers are used including Pepperl & Fuchs, Bartec and Lingvale

- Worldwide approvals
- 5 mm flush
- Usable up to SIL 3 acc. to IEC 61508
- ATEX approval Ex-i and Ex-nA/tc for Zone 0-2 and Zone 20-22
- Degree of protection IP68

Switch boxes

Compact limit switch box from a range of manufacturers, designed for hazardous areas, provides a visual and remote position feedback. Housings available in either die cast Aluminium or 316L Stainless Steel.

Terminal Boxes (Junction Boxes)

For terminating solenoid valves and position switches, suitable for non-hazardous or hazardous areas, manufactured from GRP, ABS, or Stainless Steel.

A range of manufacturers are used including Abtech, Index, Bartec, Stahl & Weidmüller

IndEx Junction Box - 316L & 304 Stainless Steel

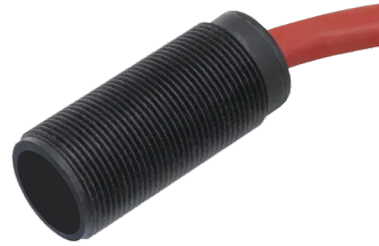
- Brushed finish as standard, more options
- Corrosion resistant for 25 years minimum
- Silicone gasket as standard
- Entry configuration to suit user needs
- Impact resistance 7 Joule
- IP66 ingress protection
- Alternate mounting options
- DIN rail support included

Enclosures

Wozair construct an enclosure from Stainless Steel 304L/316L (1.4307/1.4404) to encase the controls, protecting them from mechanical and environmental factors.

Insulation

Fire and Fire & Gas dampers can be provided with the insulation between the controls enclosure and damper casing. This eliminates the task of applying insulation between the casing and controls enclosure on site, and ensures the controls are fully accessible for maintenance after insulation. The other three sides of the damper shall be insulated in-situ by others.



Proximity Switch



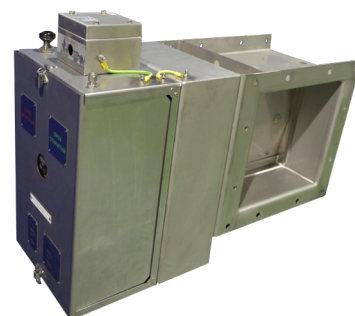
Soldo Switch box



GRP IndEx



Stainless Steel IndEx



MFD with Enclosure and Insulation

Examples of Ancillary Equipment

Duplex Fire Trigger (Frangible Bulbs)

Wozair has developed its own fire trigger fitted with a pair of frangible bulbs. The duplex trigger can be used in conjunction with electric, pneumatic or manual operation fire dampers.

Rupture of either bulb from an increase in duct air temperature will activate the damper closing mechanism.

The frangible bulbs have a temperature range from 57°C to 182°C.

As standard, we fit bulbs rated at 68°C

Fireman's Control Panels

Fire damper control panels can be supplied where there is a need to control a group or "Zone" of dampers from a common point. Such panels can be fitted with control valves and instrumentation to suit specific requirements. As standard the panel is manufactured in Stainless Steel DIN 1.4404 (316) and designed in accordance with IP55.

Air Reservoirs

Fire dampers can be provided with air reservoirs for 'black start' operation. Typically sized to provide three operations of the damper, reservoirs can be designed to PED or ASME requirements.

Manual Latch Operation

The damper is manually latched in the open position, with the blades held open against return springs fitted to the non-drive end of each shaft. De-latching and hence closing of the damper is initiated by either rupture of the frangible bulb, operation of a pneumatic valve by inert gas or interruption of electrical power to a holding electro-magnet. Local visual indication of damper status is provided by a pointer. If required, remote damper status is provided by limit switches cabled back to a local junction box which shall either be for safe or hazardous area depending on the application. Damper closing times for manual latch dampers are less than 3 seconds.

Supplementary Items

- Cable glands suitable for safe or hazardous areas in Plastic, Brass, Nickel-Plated Brass or Stainless Steel
- Stainless Steel tag plates for electrical items and valves
- RFID Tags
- Earth Bonding
- Pneumatic Line Filters/Pressure Regulators/Check Valves
- Pneumatic instrument tubing in Stainless Steel, 6Mo or Tungum
- Stainless Steel - twin ferrule instruments tube fittings - Swagelok, Parker A-Lok or equal



Manual Latch



Control Panel



Air Reservoirs



Frangible Bulb



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