PNEUMATIC SAFETY LAMP TSL-51

Industries like oil and gas, pharmaceuticals, fertilizer, pipeline, tanker, chemicals, biofuel, food processing and waste water processes, create explosive atmospheres in their normal operations. These hazardous explosive atmospheres can be generated in the normal course of operations such as manufacturing, transporting, and storage.

TSL-51 Pneumatic Safety Lamp operate on compressed air and provide safe and continuos illumination of these areas. They find application wherever there is a need of illumination where there is an explosive atmosphere present or likely to be present.

TSL-51

Safety regulations to avoid explosions have been developed worldwide in the from of legislation and standards regarding the management of hazardous areas and correct design, manufacture and certification for safe equipment and operators safety. The International Electrotechnical Commission is responsible for global standards and ensures standardization through the IECEx Scheme. Additionally in the European Union, the directives and standards applicable are governed by the ATEX Directive.

Teryair Pneumatic Safety Lamp is approved and Certified by both by IECEx and ATEX.

Certificate Number IECEx BAS 18.0001X
Certificate Number ATEX Baseefa18ATEX0006X

Features

- 250Watts with 6000 Lumen output
- Zone 1 and 2 approved
- Operates on compressed air
- Bronze and Brass Construction
- Special mechanism purges the lamp before every startup

OPERATION

Compressed air enters the Lamp when the operating valve is opened.

The compressed air enters via a "Timer delay"
The purpose of this delay is to bleed air into the lamp for a measured period of time. This effectively purges the lamp of any gas atmosphere present with the lamp prior to starting. This timer is factory set to operate for 8 seconds.

The amount of air during this purging stage is insufficient to operate the lamp rotor and therefore no electrical activity begins.

Once the purging of the lamp is completed, the timer delay opens and the full supply of air is allowed to enter into the lamp. On shutdown the timer delay mechanism resets itself.

This compressed air flow via a governor into the internal Lamp Housing. The purpose of the governor is to regulate supply if there is over pressure supplied to the lamp inadvertently.

The compressed air is directed via nozzles onto a turbine wheel, which begins rotating and finally achieving speeds of 12,000rpm. This turbine rotates the turbo generator and electric current begins to get generated.

The compressed air now flows pas the turbine wheel and flows toward the lamp exhaust. The path of air is directed past the halogen filament area and thus significantly cools down the temperature around the filament as added safety

The compressed air flows out of the lamp from the rear of the housing and into the atmosphere.

The electric current generated flows through a triac circuit and lights up the halogen bulb in the front chamber. This Triac circuit is designed to monitor the voltage, so that bulb temperature not rise.

A parabolic reflector directs this light into a desired pattern and this beam can be directed to the area required.

The lamp can be hung and clamped into any desired position. There is an optional tripod available.

Feature	Benefit
Timer delay valve	Purges lamp before every start up
Air governor	Prevents over speeding
Robust construction of housing and glass	Can contain internal explosions, flameproof
Breathable flame arrestors on inlet and exhaust	No flame transmission from within lamp to outside atmosphere
Triac circuitry	Prevents over generation of electric energy
Pressurized enclosure during operation	No entry of outside gases
Internal air path design	If housing is damaged the air circuit is broken, lamp gets de energized and shuts down

Technical Specifications

Model Number - TSL-51			Comments
Product Description		Pneumatic Safety Lamp	-
Marking		CE 1180 Ex II2G Ex db h sb IIB T4 Gb	-
Baseefa Certificate no		Baseefa18ATEX0006X	-
IECEx Certificate no		IECEx BAS 18.0001X	-
Notified body		Baseefa (NB1180)	SGS Baseefa Ltd, Buxton, United Kingdom
Equipment Group		Group II	Equipment for hazardous areas, apart from mining.
Area of classification		Zone 1 & 2	Areas which have occasional presence of an explosive atmosphere
Equipment Category		2G	Equipment offers a high degree of safety when used in gas explosion hazard areas, even with fault conditions typically expected
Standards applied		EN 60079-0: 2012 + A11: 2013, EN 60079-1: 2014, IEC 60079-33: 2012, EN ISO 80079-36: 2016	Compliance with the Essential Health and Safety Requirements has been assured by compliance with these standards
Equipment Proection Level EPL		Gb	Equipment with high protection level for use in hazardous areas. This equipment presents no risk of ignition in normal operation or in the event of predictable faults and malfunctions
Gas Group		II B	Suitable for Ethylene, Ethyl ether, Cyclopropane, Butadene 1 - 3, Propane, Ethane, Butane, Heptane, Acetone, Ethyl Alcohol etc.
Temperature Class		T4	Maximum surface temperature during operation will not exceed 135°C
Ambient Temperature		- 20° C to + 40° C	NA
Protection Concepts employed		Starting Mode	Non-electrical and Special Protection - Ex h sb
		Operating Mode	Special Protection - Ex sb
		Shutdown Mode	Special Protection - Ex sb
		Cooling Mode	Flameproof - Ex db
Input Air Requirements		60-115psi / 4.0-8.0 bar of clean compressed dry air	-
Consumption		26.5 cubicft/min, 0.75m³/min	-
Light Source	Type	Tungsten Halogen Filament Bulb	-
	Volts	24	-
	Watts	250	-
	Output	6000Lm	-
Weight		30lbs / 13.5kgs	-

Specific Conditions of Use

1. The Pneumatic Safety Lamp shall be connected to a clean air supply having a maximum pressure of 8 bar.
2. The integral non-electrical switch shall not be removed.
3. The Pneumatic Safety Lamp shall be connected to the clean air supply by either an earthed metal pipe or a flexible hose. Any non-metallic flexible hose shall be used in line with the guidance provided by IEC/TS 60079-32-1.
4. The regulating screw within the governor housing shall not be adjusted during the Cooling Mode, after the Pneumatic Safety Lamp has been disconnected from the air supply.
5. Fasteners with yield stress ≥ A2-70 (450 MPa) shall be used to secure the exhaust arrestor cover.
6. The Pneumatic Safety Lamp shall only be operated when stationary.