

SMOKE KILLS



OLS SMOKE DAMPERS
TESTED ACCORDING TO THE UL555S STANDARD

The Problem

TOXIC SMOKE IS A SILENT KILLER

Smoke kills 80 % of recorded fire victims. It causes confusion and panic, making firefighting and rescue difficult.

It is because of the toxic gases that are released from the infinite number of building materials, furnishings and other contents in a fire that we applied some imaginative engineering and lot of actual application knowledge and developed our SD18 and SD20 smoke dampers. The great importance of effective duct closure is the basis of our smoke damper design. The result is smoke dampers that are reliable during emergency operation and with very low leakage factor.

The SD18 & SD20

OLS Model SD18 and SD20 dampers have been designed with carefully chosen components to ensure a long-lasting, trouble-free and reliable operation. Stainless steel parts are used where necessary on moving parts to prevent seizure during a fire.

The dampers may be duct-connected or wall-mounted. For a smoke lobby, the smoke damper may be mounted to a metal grille for smoke-extract function. The dampers have been tested to 250°C for 2 hours according to Underwriters' Laboratory Standard UL555s.

Damper Ratings

Rated Pressure	2000 Pascals
Rated Velocity	20 m/s
Rated Temperature	250°C, 2 hours continuous
Rated Leakage	Less than 0.5% based on 10.2 m/s approach velocity and pressure differential of 1000 Pa. meeting UL 555s requirements for Class I damper to 2000 Pa
Operating Pressure	2000 Pa

*Pictured left
SD20 preparing for heat resistance test*



The Solution

OLS SMOKE DAMPERS used in engineered smoke control systems to evacuate toxic gases from the fire floor and prevent the spread these gases to non-fire floors.

Features

- Robust construction
- Stainless steel blade-edge and jamb seals ensure low leakage – less than 0.5% based on approach velocity of 10 m/s
- Withstand pressure of 2000 Pa
- Low pressure loss – less than 30 Pa at 10 m/s air velocity
- Withstand continuous temperature of 250°C for 2 hours
- Fast cycle time - less than 20s for electric and 10s for pneumatic operated damper
- Dampers may be integrated into the “fire Control Strategy” and the plant control system
- Provide monitoring of damper position
- Damper reliability proven by testing to Underwriters’ Laboratory Standard UL555s

Performance

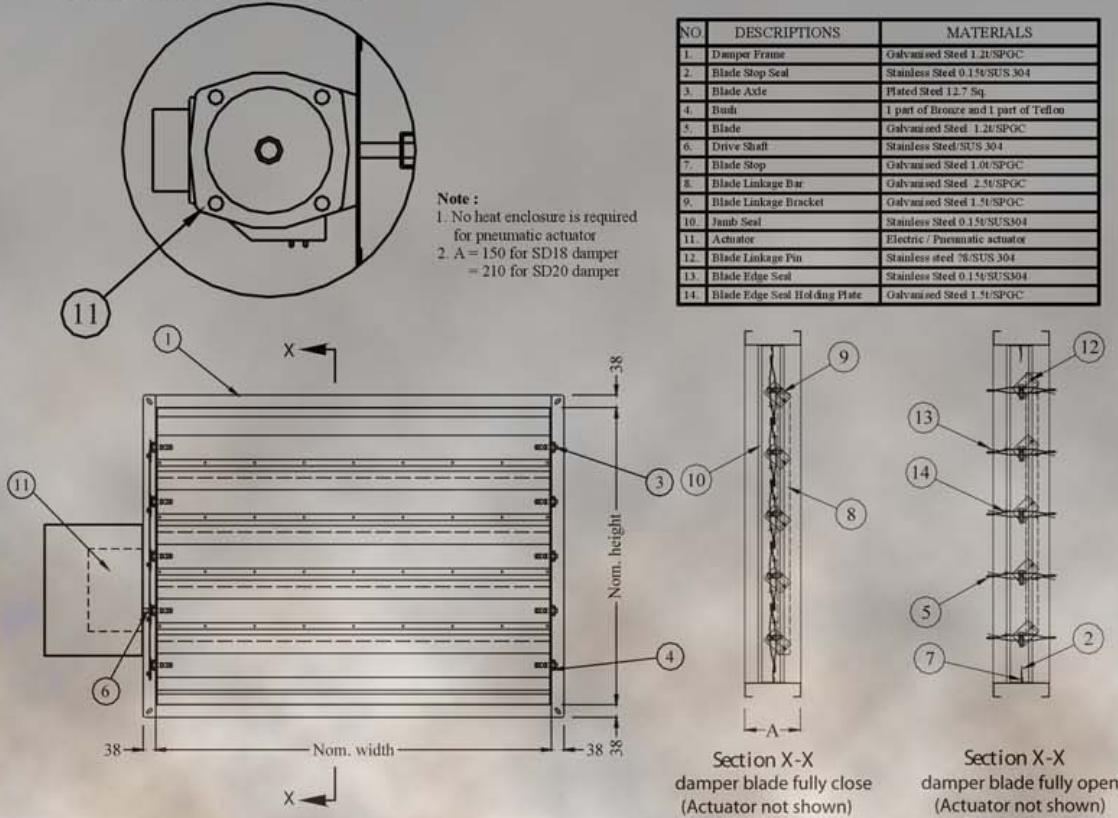
OLS smoke dampers were subjected to a series of tests according to UL555s for its heat resistance and aerodynamic performance. The air leakage and pressure loss properties of the smoke dampers were determined by tests after the smoke dampers have undergone the 250°C heat resistance test for a period of 2 hours. Subsequently the smoke dampers were subjected to an operation test which determined the dampers' operating torque for pressure of 2000 Pa. The tests clearly demonstrated the reliability of OLS smoke dampers.



Note: Air leakage data based on test carried out on 1200 x 900 mm damper according to UL555s and related AMCA Standards.

Technical Information

Construction



Operation of Smoke Control Damper

For smoke control functions, OLS smoke control dampers are equipped with spring return type electric or pneumatic actuator.

Control Options

Electric - 24 VAC, 50 Hz On/Off type with spring return
 Electric - 230 VAC, 50 Hz On/Off type with spring return for large dampers
 Pneumatic - Single-acting actuator with 5 – 7 bar supply pressure
 They can be triggered remotely as part of the fire control strategy and by a smoke detector or fire alarm contact.

The smoke dampers may function as a smoke shield or smoke extract damper in a fire. The actuator may be incorporated with auxiliary switches which will indicate the position of the damper from a remote control panel.

Installation and Flange Details

As a standard, the actuator is located on the right side of the damper except for the large damper, where more actuators are required. They may be located on both sides of the damper. The damper flanges are 38mm wide and may be factory pre-punched with 20mm by 8mm slot holes spaced at 200mm centres for connection to duct flanges.

Recommended Specifications

The smoke control dampers shall be supplied and installed where shown on the drawings and shall be single acting (parallel blades) of Model SD18 or SD20 as manufactured by OLS Manufacturing Co. (S) Pte. Ltd.. All damper components, except moving parts, bearings and damper seals, shall be constructed of high quality hot-dip galvanized steel sheet. Damper frame shall be constructed of minimum 150 mm depth so that its blades when in full-open position will not protrude outside the frame and shall have flange of 38mm factory pre-punched with 20 mm by 8 mm slot holes spaced at 200 mm centers maximum for connection to duct flanges. The damper frame shall be constructed of minimum 1.2 mm thick material. The blade shall be constructed of minimum 1.2 mm material and of double-skinned, air-foil construction to give it strength and rigidity. Maximum length of blades shall not exceed 1500 mm. Blade axles and drive shaft of a damper shall be constructed of 12.7 mm square solid plated steel shafts that pivot on bronze bearings. Round drive shaft shall not be permitted. Blade / drive axles and damper blades shall be fastened so as not to distort the blades during tightening.

The smoke dampers shall be tested to 250°C for 2 hours according to Underwriters' Laboratory Standard, UL555s and meet the leakage requirement for Class I damper to pressure of 2000 Pascals. The torque shall be the maximum torque determined from the tests based on the worst conditions. Pressure loss of the full opened damper shall not exceed 30 Pascal based air

approach velocity of 10 m/s. Test report shall be submitted for approval.

Contractor shall submit full details of the dampers showing modular arrangement, calculated torque with appropriate safety factor and actuator selection for approval before ordering. A minimum of 20% safety factor shall be added to the torque in the selection of actuator.

Electric or pneumatic actuators shall be supplied and installed by damper manufacturer to ensure proper selection and interfacing between actuators and dampers. The damper manufacturer shall be responsible for the proper functioning of the damper and its actuator.

The maximum module size of a damper shall not exceed 1500 mm width by 2000 mm height. For larger dampers, they shall be supplied in separate modules with necessary hardware for assembly on site by the installers. Where dampers are installed to the wall, they shall be fastened to the wall with appropriate clamps to be provided by the damper manufacturer. Minimum 5 mm thick high temperature gasket shall be used between the wall and the damper flange to prevent leakage.

Contractor shall ensure that large dampers can be brought to the designated location in the building site. Contractor shall ensure that the dampers are properly sized and the types of damper selected are suitable for its control functions and the environmental conditions.