

FSD418

OLS Motorised Fire-Smoke Damper



OLS

Motorised Fire-Smoke Damper
effectively isolate fire zones,
ensuring escape and firefighting
access routes are clear of fire and smoke

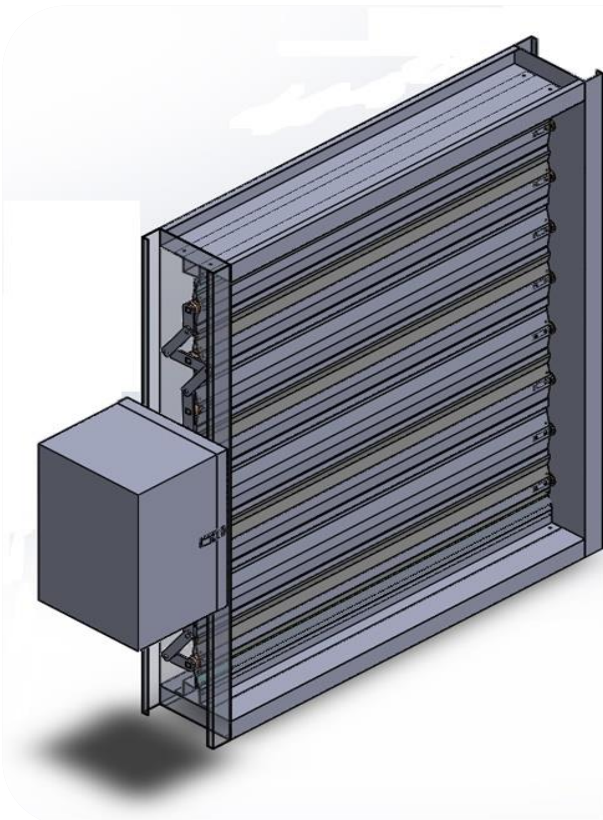
Introduction

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

OLS fire-smoke dampers can effectively isolate the fire zones and keep the escape route and firefighting access clear of fire and smoke.

The model FSD418 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 damper has been tested to 250°C for 2 hours according to Underwriters' Laboratory Standard UL555s and 4 hours fire resistance according to BS476 Parts 20 and 22.



Features

- ▲ Robust construction
- ▲ Double skin blade
- ▲ Aerofoil blade profile
- ▲ Low pressure loss
- ▲ Stainless steel blade-edge and jamb seals
- ▲ Low leakage
- ▲ Electric operation
- ▲ Withstand continuous temperature of 250°C for 2 hours according to Underwriters' Laboratory Standard UL555s
- ▲ Fire resistance for 4 hours continuous according to BS476 Parts 20 and 22
- ▲ Fast cycle time - less than 20s for both opening and closing operation with electric actuator
- ▲ Damper may be integrated into the "Fire Control Strategy"
- ▲ Provide monitoring of damper position

Dimensional Limit

The minimum size is 200mm (width) x 200mm (height).

The maximum module size is 1000mm (width) x 1200mm (height) under fire application, bigger size will be fabricated in multiple modules.

Construction

- ✦ Frame: is constructed of high quality galvanized steel with thickness 2mm. 50mm flange with pre-punch holes for connection to duct flange are provided
- ✦ Blade: is constructed with 1.2mm galvanized steel or stainless steel, double skin with aerofoil profile design, which ensures low pressure loss, reduce flow disturbance and noise
- ✦ Linkage: external linkage for easy maintenance

Performance Testing

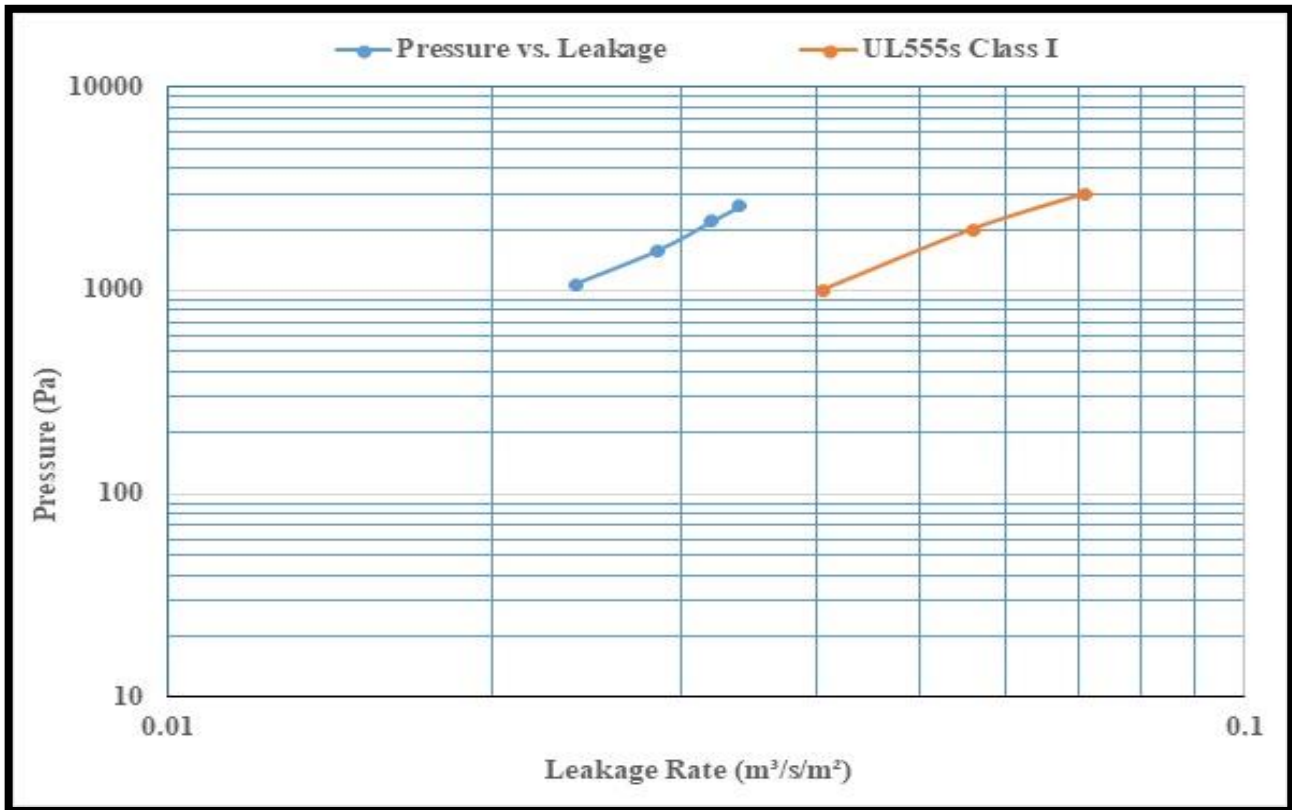
OLS FSD418 damper has been subjected to the following test:

- ✦ 20,000 continual cycling test
- ✦ Temperature resistance test to 250°C for 2 hours to UL555s with electric actuator
- ✦ Operation test to UL555s
- ✦ Pressure loss test
- ✦ Air leakage test to UL555s, meeting class I requirement
- ✦ 4-hours Fire resistance test to BS 476 Parts 20 and 22

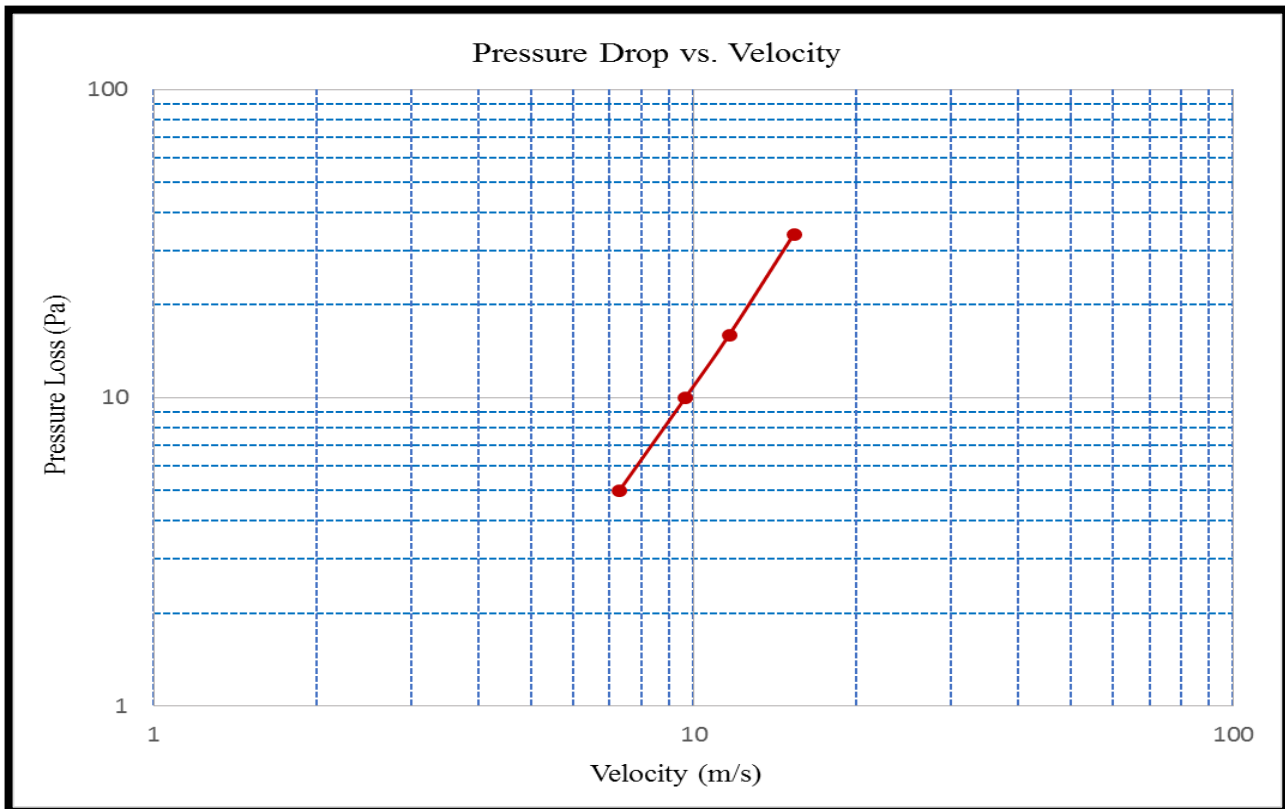
Note: Under UL555s, the damper together with the operator must go through the following test in sequence before it can be classified as a smoke damper.

- ✦ Cycling Test
- ✦ Temperature Degradation Cycling Test
- ✦ Operation Test
- ✦ Leakage Test

FSD418 – Motorised Fire-Smoke Damper



Air Leakage Test Result

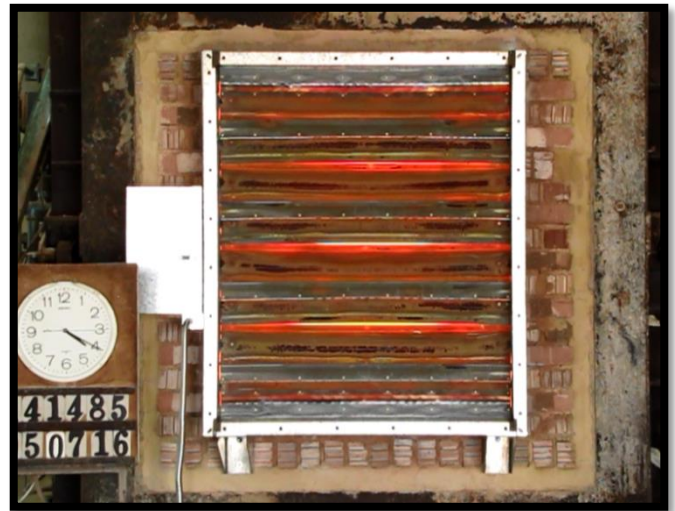


Pressure Loss Test Result

OLS Motorised Fire-Smoke Damper FSD418 under Fire Test



View of the unexposed side of wall mounted damper before testing.



View of the unexposed side of wall mounted damper 4 hours and 20 minutes into the fire test.

OLS Motorised Fire-Smoke Damper FSD418 under Operation & Leakage Test



Operation Test

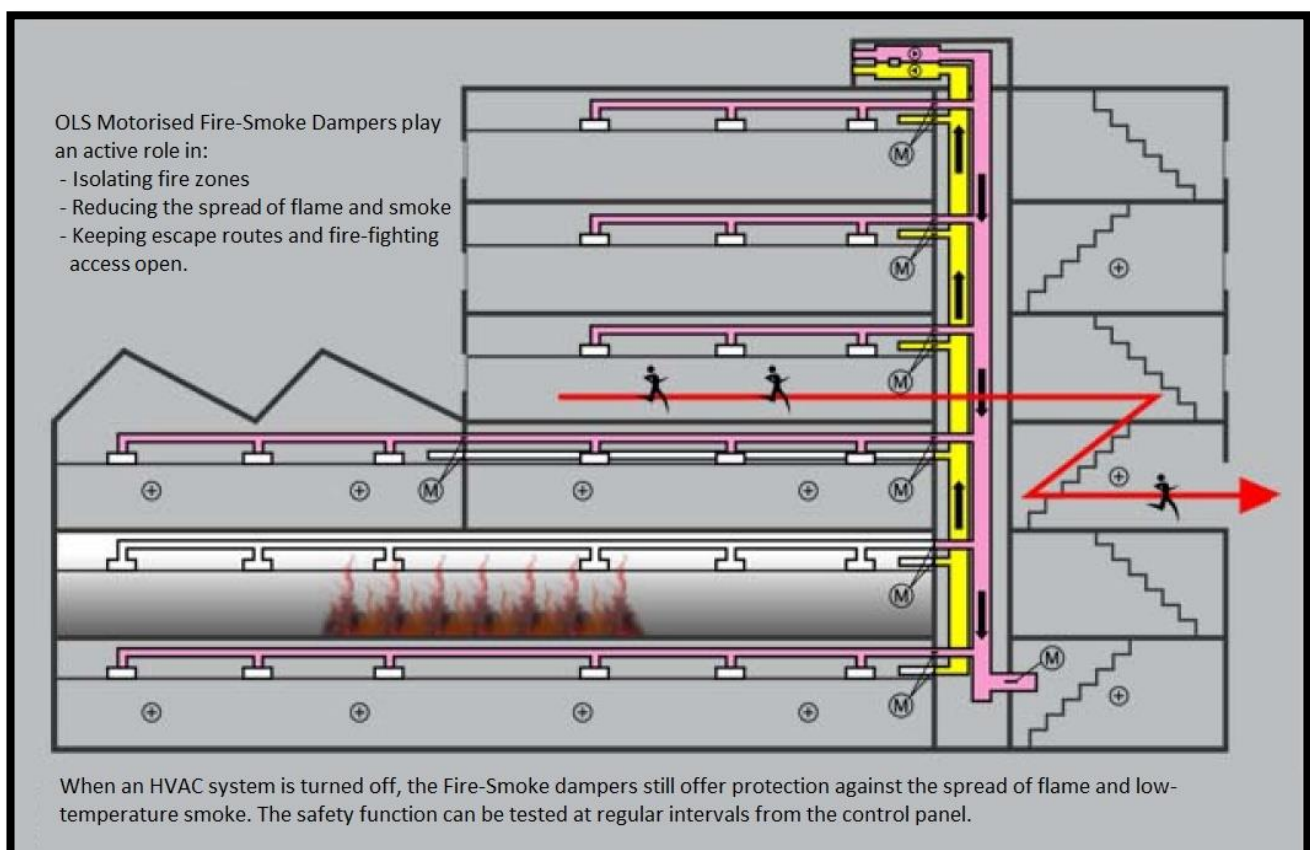


Leakage Test

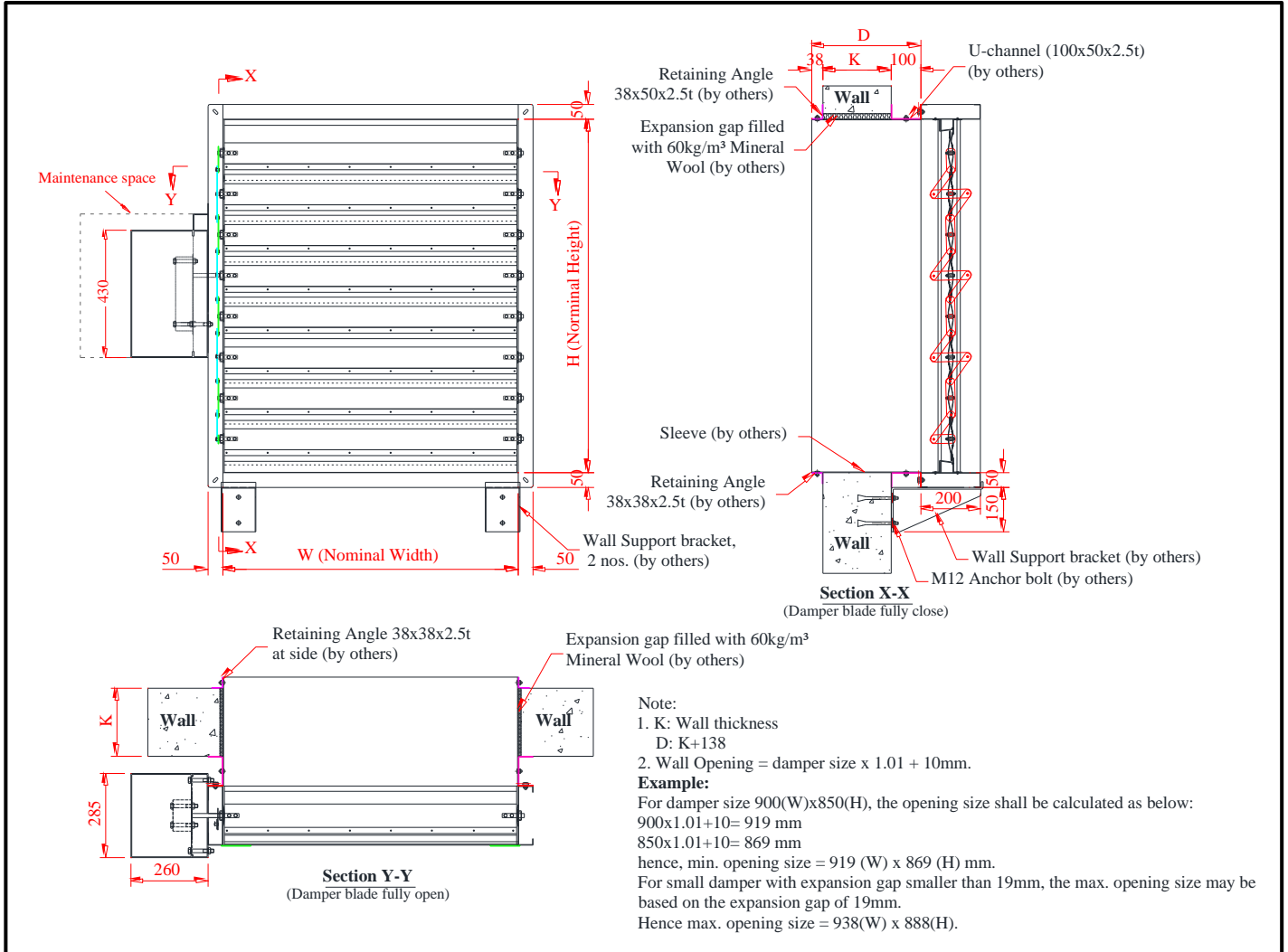
Application of OLS Motorised Fire-Smoke Dampers

The motorised fire-smoke dampers can be interlocked to the HVAC system such that when the plant is turned off (e.g. at night and during weekends), the dampers can be closed to provide isolated zones, preventing the possible spread of smoke should a fire start when the building is unoccupied. In the event of a fire, the motorised fire-smoke dampers can form part of a “Fire Strategy” and can be used to ventilate pressurized escape routes, keeping them cleared of smoke so that the building can be evacuated safely. Once the building has been evacuated and the fire team has arrived, it may be possible to re-open some of the motorized fire-smoke dampers from the central point to provide smoke clearance.

Operation of OLS Motorised Fire-Smoke Dampers



Installation Method



Recommended Specification of Motorized Fire-Smoke Damper

The motorized fire-smoke damper shall be constructed of hot-dipped galvanised steel except blade seals and jamb seals which shall be constructed of stainless steel type 304. Damper frame and sleeve shall be constructed of minimum 2mm thick galvanized steel and full welded at the corners. Blade shall be constructed of minimum 1.2 mm thick galvanized steel and of double-skinned, aerofoil construction to give strength and rigidity. The blade axle shall be 12.7 mm square steel stub shaft pivoted on two-part bronze bush. Stainless steel type 304 compression seal shall be incorporated on the vertical frame and blade edge to minimize leakage. Interconnecting blade linkages shall be located outside the air stream and pivot on stainless steel pin to prevent seizure. Actuator shall be installed inside a heat-resistant compartment or enclosure and shall be easily accessed by removing the access panel outside the connecting duct. The damper and actuator compartment/enclosure shall be mounted within the wall opening or ducted.

For dampers within the airstream requiring 250°C temperature rating, the manufacturers shall provide test evidence that the assembled fire-smoke damper including actuator, all accessories such as controls shall withstand 250°C for a duration of not less than two hours without distortion, buckling, damage to seals, bearings, or any deleterious effect upon the proper performance and operation during and after that two hours period as specified herein.

The fire-smoke damper shall undergo the following **sequence test** accordance to Underwriters' Laboratory Standard, UL555s.

- 1) **Cycling Test:** The damper-actuator assembly must be able to operate 20,000 successive cycles of opening and closing of the damper. There shall be no permanent deformation/damage of the damper or overheating/failure of the actuator during and after the test.
- 2) **High Temperature Test:** The fire-smoke damper together with all accessories, which completed the 20,000 cycling test previously, shall be subjected to heating conditions of 250°C for 2 hours. After 2 hours and still under the same heating condition, the damper-actuator assembly must be able to operate 3 complete operation cycles to be deemed passed.
- 3) **Operation Test:** The fire-smoke damper must be able to operate normally under 1kPa at 10.2m/s for 3 cycles during supply and suction operation.
- 4) **Leakage Test:** In accordance with Class 1 of leakage classification of UL555s, leakage rate of the fire-smoke damper when in fully closed position, for both supply and suction operation, shall not exceed 202CMH/m² at static pressure of 2.1kPa.

Recommended Specification of Motorized Fire-Smoke Damper

In addition, for fire resistance, the damper shall be tested to minimum 4 hours fire rating to British Standard BS476 Part 22.

Electric On/Off actuators complete with spring return, Single Phase, 24Vac, shall be supplied and installed by damper manufacturer to ensure proper selection and interfacing between actuators and dampers. The damper actuator stroke time shall not exceed 20 seconds for 90° rotation at 50Hz with a minimum torque of 20Nm. The actuator shall be capable of operating the damper to the fail-safe position within 20 seconds in the event of loss of power. The damper manufacturer shall be responsible for the proper functioning of the damper and its actuator.

The actuator shall have the same temperature rating as the fire-smoke dampers to which they are fixed. The electric actuators shall be fully operational during and after exposure to an ambient air stream temperature of 250°C for a duration of 2 hours as specified herein.

Limit switches shall be provided for each module for monitoring both the open and closed positions of the fire-smoke dampers and designed to withstand the environment in which they operate. All limit switches for monitoring fire-smoke dampers in smoke control system shall be rated for 250°C for a minimum of two hours.

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.



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