TROX España, S.A.
Polígono Industrial La Cartuja
E-50720 Zaragoza
Telephone + 34 976 50 02 50
Telefax +34 976 50 09 04
E-Mail trox@trox.es
www.trox.es

TROX® TECHNIK

Product Information
Smoke Extraction Dampers
Type JFP

PI/4/29/EN/1

Introduction

The current development in transport infrastructures such as roads and high speed railways has generated the need to construct a large number of new tunnels as well as the need to renovate existing tunnels. The safety measures to be implemented have been considered a priority due to the disastrous consequences that fire can cause inside a tunnel. These safety measures are detailed in European and National Specifications which pay particular attention to the requirements related to Tunnel Ventilation Systems.

The TROX type JFP Tunnel Ventilation Damper has been specifically designed for use as an integral part of the underground ventilation and smoke extraction systems. The JFP is able to withstand high temperature (400º/2hours), has a low closed blade leakage rate and is offered with a wide range of options.

TROX can provide technical assistance in the selection of the most suitable solution depending on the specific project requirements. TROX can also collaborate in the design process by providing technical information tailored to suit differing project requirements.

Materials

Stainless steel

Frame: Stainless steel sheet 2 mm thick, grade 1.4571 in accordance with DIN 17400

Blades: Stainless steel sheet 2 mm thick, grade 1.4571 in accordance with DIN 17400

Blade Shafts: Stainless steel 20 mm diameter, grade 1.4351 in accordance with DIN 17400

Bearings: Stainless steel, material classification 1.4351 in accordance with DIN 17400

Hand locking: Stainless steel case 12 or 18 mm width, grade 1.4351 in accordance with DIN 17400

Blade side and edge seals are manufactured from stainless steel

Galvanised

Frame: Galvanised sheet 2 mm thick, grade sto2z in accordance with DIN 17162

Blades: Galvanised sheet 2 mm thick, grade sto2z in accordance with DIN 17162

Blade shafts: Steel F-114 in accordance with UNE 36011, zinc plated

Bearings: Brass

Hand locking: Steel 12 or 18 mm width, zinc plated

Blade side and edge seals are manufactured from stainless steel

Painted to RAL

Frame: Carbon steel sheet 2 mm thick, grade S235JR in accordance with EN10025-95, polyester or epoxy powder coated finish

Blades: Carbon steel sheet 2 mm thick, grade S235JR in accordance with EN10025-95, polyester or epoxy powder coated finish

Blade shafts: Steel F-114 s/UNE 36011, zinc plated

Bearings: Brass

Hand locking: Steel 12 or 18 mm width, zinc plated

Blade side and edge seals are manufactured from stainless steel

TROX España, S.A.
Polígono Industrial La Cartuja
E-50720 Zaragoza
Telephone + 34 976 50 02 50
Telefax +34 976 50 09 04
E-Mail trox@trox.es
www.trox.es

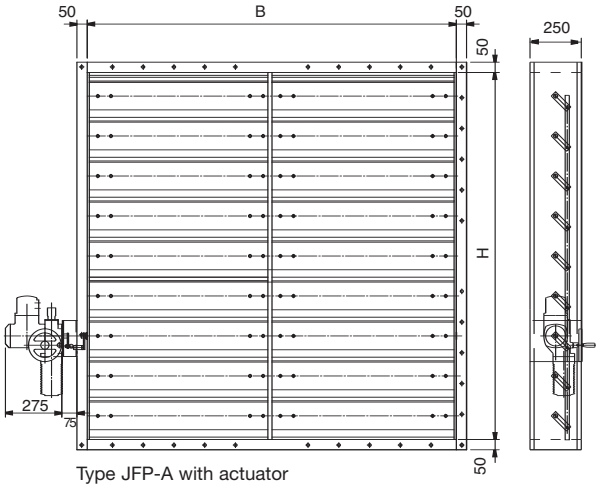
TROX® TECHNIK

Product Information
Smoke Extraction Dampers
Type JFP

PI/4/29/EN/1

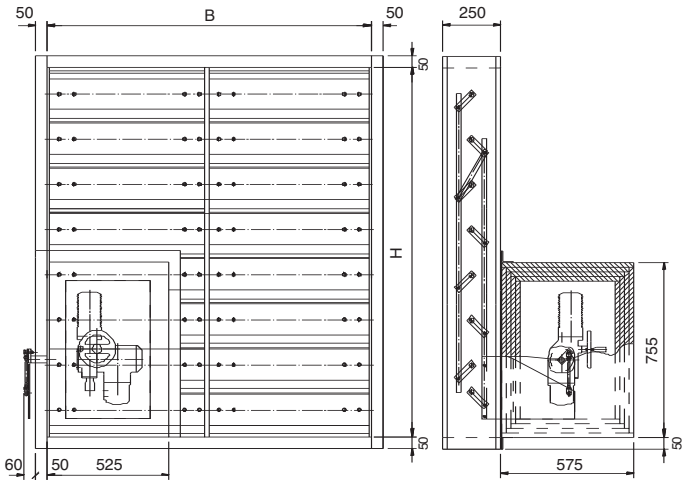
Constructions

Type JFP-A:
Parallel blades: Recommended for open/close dampers.



Type JFP-A with actuator

Type JFP-B:
Opposed blades: Recommended for shut-off dampers.



Type JFP-B with heat-insulating protective cladding

Electric actuator with heat-insulating protective cladding

Resistance test H08-07-06

Actuators

Three-phase or single-phase electric actuators can be provided to operate the dampers. These can be located directly on the side of the damper frame or face mounted in the air stream.

To protect the actuator against the effect of high temperature they are provided with a thermal enclosure.

Leakage flow rate

By means of the leakage profiles placed as well in the horizontal and vertical connection to the damper frame as in the blade union, stringent leakage requirements can be achieved with leakage flows lower than 0.1 m^3/s per m^2, under pressure of 3.000 Pa.

Temperature resistance tests

Test Nr. 210004091 - MPA NRW (Germany)
(400°/2 hours) Dampers with electric actuator (single-phase) and heat-insulating protective cladding (open/close blades).

Test Nr. H08-07-06 - T.S.T. Asturias (Spain)
(400°/2 hours) Dampers without actuator.

Test Nr. 7317/06 - Afiti-Licof (Spain)
(400°/2 hours) Dampers with electric actuator (three-phase) and heat-insulating protective cladding (open/close blades).

TROX España, S.A.
Polígono Industrial La Cartuja
E-50720 Zaragoza
Telephone + 34 976 50 02 50
Telefax +34 976 50 09 04
E-Mail trox@trox.es
www.trox.es

TROX® TECHNIK

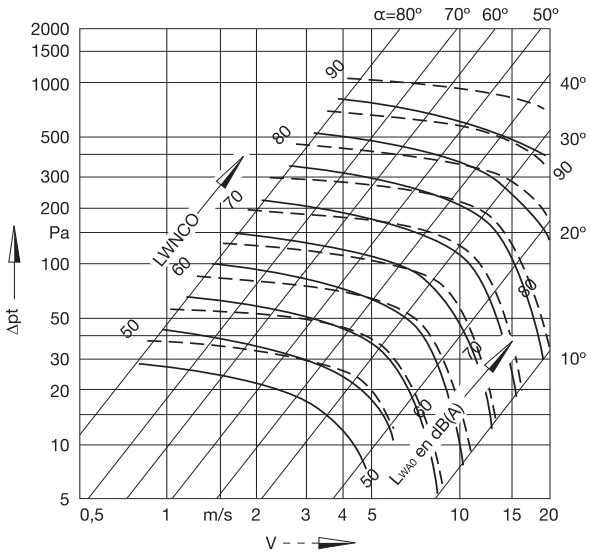
Product Information
Smoke Extraction Dampers
Type JFP

PI/4/29/EN/1

Technical data

Type JFP-A

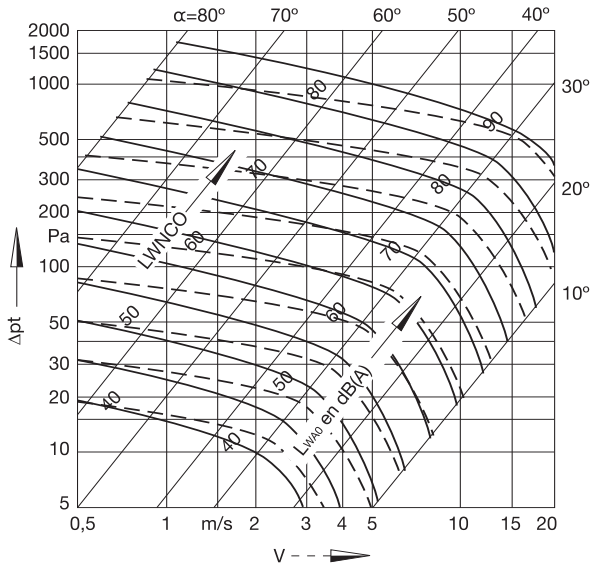
Pressure Drop for α= from 10° to 80°



V in m/s: Face velocity based on cross-sectional area BxH
ΔPt in Pa: Pressure drop
α: Blade angle α< 10 blades fully open

Type JFP-B

Pressure Drop for α= from 10° to 80°



L_{WAO} in dB(A): A-weight power level based on A=1.0 m²
L_{WNCO}: NC rating of sound power level based on A=1.0 m²

Order code

JFP - B - 0 - R / 1000 x 800 / 0 / Z01 / C / P1 / RAL 7042

Type
Parallel blades (rotate in parallel) **JFP-A**
Adjacent blades (rotate in opposite) **JFP-B**

Material
Galvanised Sheet Steel **0**
Stainless Steel **E**

Actuator side
Right **R**
Left **L**

Subframe
Without subframe **0**
Subframe **90**

Sizes
B x H in mm

State colour

0 Standard
JFP-0 Galvanised
JFP-E Stainless steel
P1 Painted to RAL…

Actuator Protective Cladding [1)]
0 Without heat-insulating
C With heat-insulating

Accessories
Z01 Single-phase on-off actuator
AC 230 V 50/60 Hz
P = 8 W / Torque 40 Nw
Running time approx. 60s

Z21 Three-phase on-off actuator
400 V – 3 phases 50/60Hz
P = 8 W / Torque 300 Nw
Running time approx. 30s

[1)] Just in case of actuator

TROX España, S.A.
Polígono Industrial La Cartuja
E-50720 Zaragoza
Telephone + 34 976 50 02 50
Telefax +34 976 50 09 04
E-Mail trox@trox.es
www.trox.es

TROX® TECHNIK

Product Information Smoke Extraction Dampers Type JFP

PI/4/29/EN/1

Specification text

TROX type JFP multi-leaf damper for smoke extraction designed for high temperature resistance of 400ºC for 2 hours, consisting of a frame with a low leakage blade profile with vertical and horizontal linkages to provide a low airflow pressure drop.

The damper case is of channel construction that allows the assembly of multi-module construction.

The blades are aerofoil type with double skin construction joined by screws and incorporating a metal lip seal for greater airtightness between the blades. The dampers are operated by electric actuators that can be provided with manual operation. The actuator can be provided with a thermal enclosure made of silicon calcium for thermal protection at an elevated temperature of 400º for 2 hours.

Reference Projects

M30 underground ring road - Fan Rooms

(Madrid, Spain)

Dampers with three-phase actuators

- Avenida de Portugal underground between Paseo Extremadura and M-30 road
- Puente del Rey-Avenida de Portugal connection link stretch underground between Paseo Marques de Monistrol and Puente de Segovia
- Puente de Segovia and Puente de San Isidro connection link stretch
- Puente de San Isidro and Puente de Praga connection link stretch
- Puente de Praga and Nudo Sur connection link stretch
- By-pass SUR

By-Pass Sur M30 Stretch

(Madrid, Spain)

Dampers with three-phase actuators housed in thermal enclosure

- Southern tunnel
- North tunnel

New Viella Tunnel

(Lérida, Spain)

Damper with single-phase actuators housed in thermal enclosure

Barredo Foundation Test Tunnel

(San Pedro de Anes in Asturias, Spain)

Dampers with single-phase actuators housed in thermal enclosure

Calle Embajadores with A-4 Road Link Connection Tunnel

(Madrid, Spain)

Dampers with single-phase actuators

Paseo de la Castellana with Avenida Pío XII Link Connection Tunnel

(Madrid, Spain)

Dampers with three-phase actuators housed in thermal enclosure

Taksim-Kabatas Railway

(Stambul, Turkey)

Dampers with three-phase actuators

ANDRA Laboratory

(France)

Dampers with three-phase actuators