# Smoke Curtains

## The need for smoke curtains

For production-related and not least financial reasons the trend is increasingly towards large-scale buildings. The fire safety requirements here are often in contradiction to modern production workflow planning. In large-scale halls no significant excess pressure is able to build up beneath the roof during the initial phase of a fire. This is, however, of key importance to the efficiency of any natural smoke and heat extraction system. The rising smoke fumes spread out below the ceiling. They cool off and then flow back down in the form of rolling smoke, which becomes lethally dangerous close to the floor.

Smoke curtains split a hall into several smoke zones and thus prevent any horizontal spread of the smoke within the roof space. The curtains are also used to systematically guide the smoke in a set direction. The dimensioning of a natural smoke extraction system pursuant to DIN 18232-2 calls for smoke zones to be no bigger than 1,600m² or to be subdivided by smoke curtains to a maximum of that size. The maximum distance between smoke curtains / between wall and smoke curtain may not exceed 60 metres. Any further subdivisions (e.g. enclosed girders) within the smoke zone have no influence on the dimensioning.

Smoke curtains are divided into two types: static smoke curtains and rolled smoke curtains.

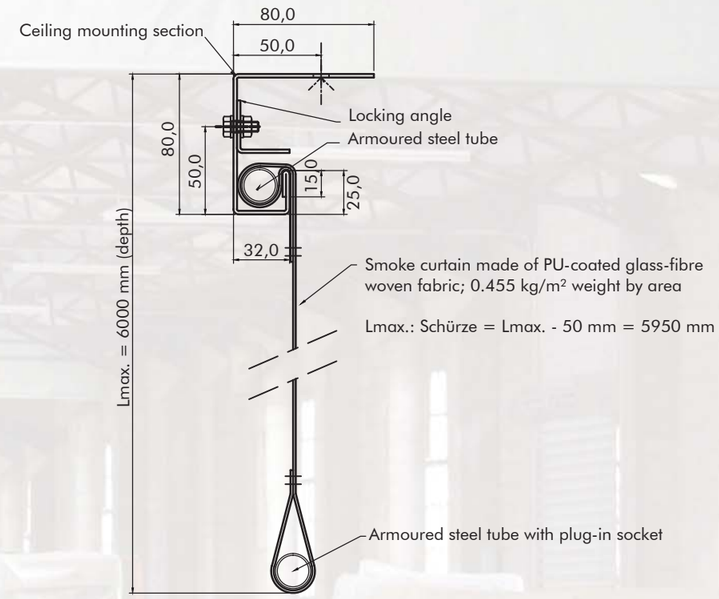
## Static smoke curtain SmokeTex

The ‘SMOKETEX’ curtain is a static smoke curtain made of polyurethane-coated flexible glass-fibre woven fabric with grey aluminium pigmentation. Approximately 0.40mm thick, this woven material weighs 0.455kg/m² (± 10 %). The standard smoke curtain consists of vertically arranged individual elements that are sewn together using non-flammable thread to form a maximum curtain area of 45.00m². Individual curtains are available in widths of 800 to 5,950mm and depending on configuration can be horizontally extended to the maximum curtain size using poppers. The C-shaped ceiling mounting section is made of a multi-bevelled 2mm-thick hot-dip galvanised piece of sheet steel.

The SMOKETEX rigid smoke curtain fulfils the requirements for CE marking as defined in Appendix ZA3 of DIN EN 12101-1. For conformity evaluation the procedures specified in the standard were performed.

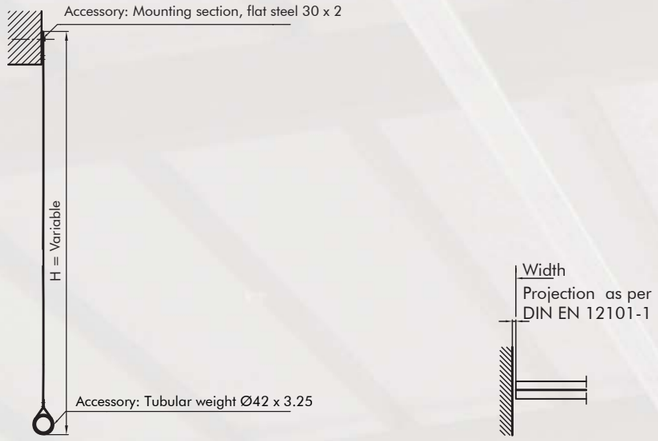
CE MPA - Geprüft nach: DIN EN 12101 - 2 Bauproduktengesetz 89 / 106 / EWG

The smoke curtain was tested for 151 minutes at a temperature of 620°C. It holds back smoke as per the test report and by virtue of complying with DIN EN 12101-1 has gained the classification ‘D150’. Top and side gap measurements are given as 0 mm.




Picture: Static SmokeTex smoke curtain that has been adapted to the slope of the roof

## Static smoke curtain, model RST 73.1



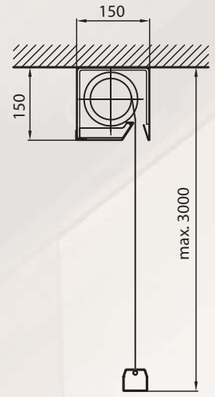


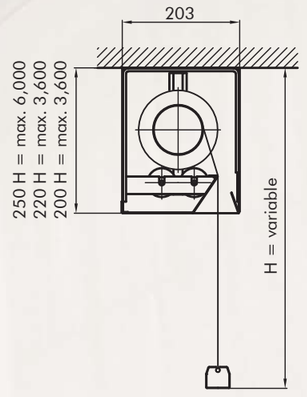


| | |
|---|---|
| Fabric: | Glass filament woven fabric, non-flammable as per 4102-2 A2 / AbZ |
| Execution: | Fabric finished with hollow seam top and bottom for 42-diameter tubing |
| Fitting: | Wall-mounting, with zinc-plated steel panel, Ceiling mounting, mounting profile with steel |
| Installed size: | Up to 100 x 8m |
| Classification: | D 60 / DH 60 |
| Certification: | Z-56.4211-957<br>CE-certified to EN 12101-1 |

Picture: Rigid smoke curtains with fireproof door as way through to the other smoke zones

## Automatic smoke apron, model RSS 74

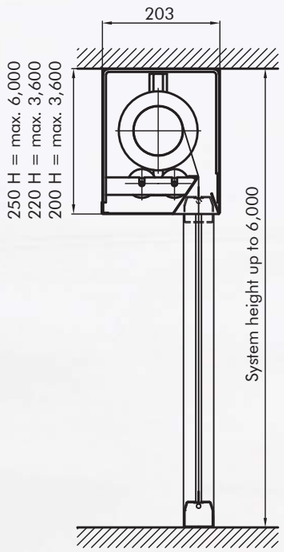


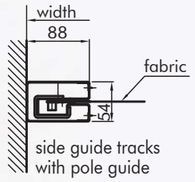




| | |
|---|---|
| Fabric: | Glass filament woven fabric, non-flammable as per 4102-2 A2 / AbZ |
| Execution: | Free falling, including without power by gravity |
| Drive system: | 24V standard or fail-safe tubular motor<br>230V standard or fail-safe tubular motor |
| Fitting: | On a ceiling, on a wall, in a reveal, suspended from the ceiling |
| Installation size: | Casing 150 x 150 mm for system size up to 6 x 3 m<br>Casing 230 x 250 mm for system size up to 15 x 6 m<br>max. system size on request |
| Build type: | ASB 1 - ASB 4 |
| Classification: | D 60 / DH 60 |
| Certification: | Z-56.4211-957<br>CE-certified to EN 12101-1 |

Picture: Rigid smoke curtains above a crane runway

## Automatic smoke curtain, model RSR 75, room sealing, with roller guides

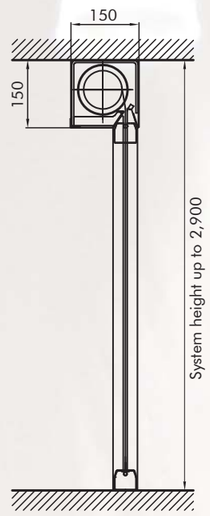


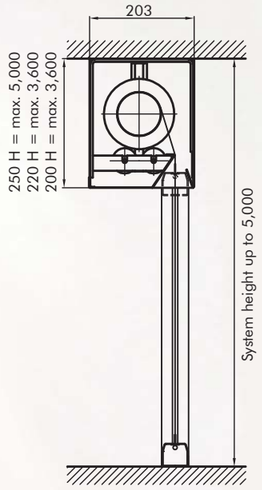



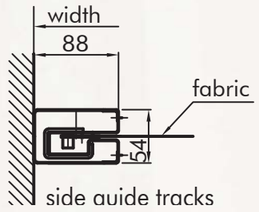

| | |
|---|---|
| Fabric: | Glass filament woven fabric, non-flammable as per 4102-2 A2 / AbZ |
| Execution: | Free falling, including without power by gravity, with guide tracks bevelled on the side, with roller guides |
| Drive system: | 24V standard or fail-safe tubular motor<br>230V standard or fail-safe tubular motor |
| Fitting: | On a ceiling, in front of a wall, in a reveal, suspended from the ceiling |
| Installation size: | Casing 203 x 250 mm for system size of 15 x 6 m max. system size on request |
| Build type: | ASB 1 - ASB 4 |
| Classification: | D 60 / DH 60 |
| Certification: | Z-56.4211-957<br>CE-certified to EN 12101-1 |

Picture: Smoke curtains keep this floor of a school free of smoke in order to enable people to escape from the building

## Automatic smoke curtain, model RSR 75.1
## room sealing, with pole guide



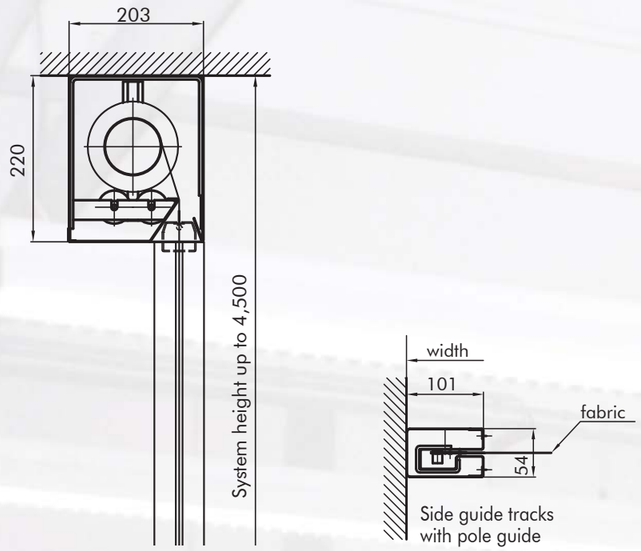




| | |
|---|---|
| Fabric: | Glass filament woven fabric, non-flammable as per DIN 4102-2 A2 / AbZ |
| Execution: | Free falling, including without power by gravity, with bevel-edged guide track with pole guide |
| Drive system: | 24V standard or fail-safe tubular motor<br>230V standard or fail-safe tubular motor |
| Fitting: | On a ceiling, in front of a wall, in a reveal, suspended from the ceiling |
| Installation size: | Casing size of 150 x 150 for system size 6 x 2.9 m<br>Casing size of 203 x 250 mm for system size 15 x 5 m<br>max. system size on request |
| Build type: | ASB 1 - ASB 4 |
| Classification: | D 60 / DH 60 |
| Certification: | Z-56.4211-957<br>CE-certified to EN 12101-1 |

Picture: In the event of a fire, the rolled smoke curtain drops down in order to keep the stairs free of smoke

## Flexible smoke protection barrier as per EN 1634-3 / DIN 18095-3, model RSA 77.1



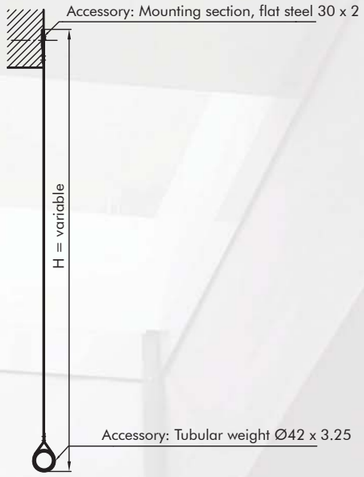




| | |
|---|---|
| Fabric: | Glass filament woven fabric, non-flammable as per DIN 4102-2 A2 / AbZ |
| Execution: | Free falling, including without power by gravity, with bevel-edged guide track with pole guide |
| Drive system: | 24V standard or fail-safe tubular motor<br>230V standard or fail-safe tubular motor |
| Fitting: | On a ceiling, in front of a wall, in a reveal, suspended from the ceiling |
| Installation size: | Standard casing 203 x 220 mm to max. system size 7,2 x 4,5m |
| Classification: | Sa, S200 - certificate: AbPNr.: P-5003DMTD0 |

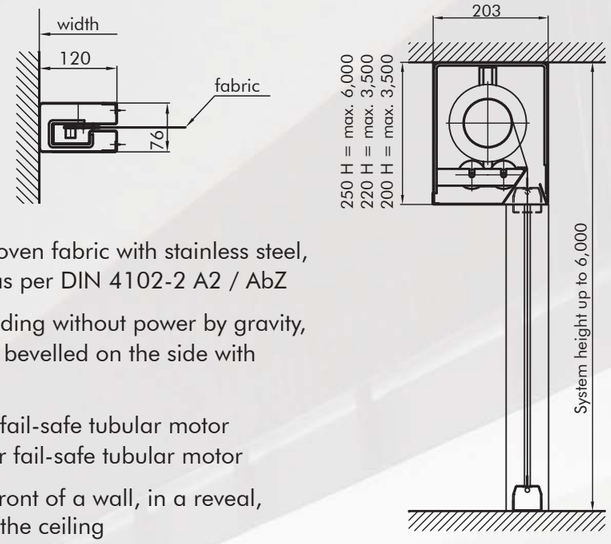
Picture: Smoke curtains must also be installed in retail warehouses open to the public

## Fire curtain, rigid, model BST 53




| | |
|---|---|
| Fabric: | Glass filament woven fabric with stainless steel, non-flammable as per 4102-2 A2 / AbZ |
| Execution: | Fabric finished with hollow seam top and bottom for 42-diameter tubing |
| Test certificate: | DIN 4102-2 1100°C<br>EN 12101-1 smoke-tight |

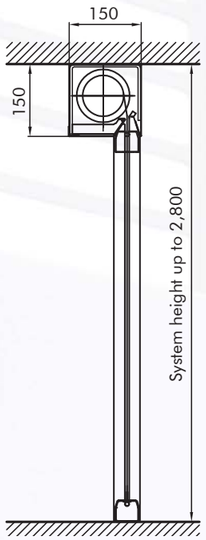
## Automatic fire curtain, model BSV 55, room sealing, with roller guides

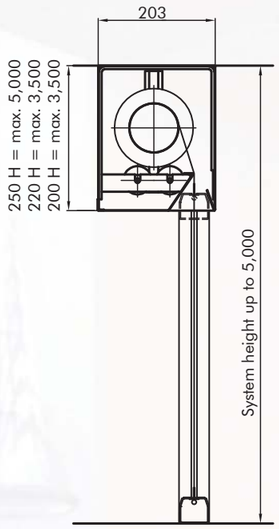


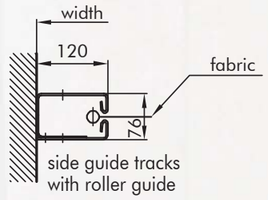

| | |
|---|---|
| Fabric: | Glass filament woven fabric with stainless steel, non-flammable as per DIN 4102-2 A2 / AbZ |
| Execution: | Free falling, including without power by gravity, with guide tracks bevelled on the side with roller guides |
| Drive system: | 24V standard or fail-safe tubular motor<br>230V standard or fail-safe tubular motor |
| Fitting: | On a ceiling, in front of a wall, in a reveal, suspended from the ceiling |
| Installation size: | Casing 203 x 250 mm for system size of 15 x 6 m<br>max. system size on request |
| Classification: | E 30 - E 180 / C2 |
| Certification: | Z-6.60-2116 (max. 5.32 x 4.26 m) |
| Test certificate: | DIN 4102-2 1100°C / 180 min<br>EN 1634-1 1100° C / 120 min<br>EN 12101-1 smoke-tight |

Picture: Rolled smoke curtains for channelling the smoke in a stairwell

## Automatic fire curtain, model BSV 55.1, room sealing, with pole guide



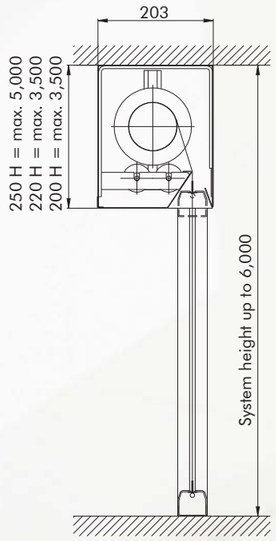



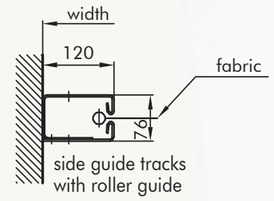




| | |
|---|---|
| Fabric: | Glass filament woven fabric with stainless steel, non-flammable as per DIN 4102-2 A2 / AbZ |
| Execution: | Free falling, including without power by gravity, with bevel-edged guide track with pole guide |
| Drive system: | 24V standard or fail-safe tubular motor<br>230V standard or fail-safe tubular motor |
| Fitting: | On a ceiling, in front of a wall, in a reveal, suspended from the ceiling |
| Installation size: | Casing 150 x 150 mm for system size of 4 x 2.8 m<br>Casing 203 x 250 mm for system size of 15 x 5 m<br>max. system size on request |
| Classification: | E 30 - E 180 / C2 |
| Certification: | Z-6.60-2116 (max. 5.24 x 4.26 m) |
| Test certificate: | DIN 4102-2 1100°C / 180 min<br>EN 1634-1 1100° C / 120 min<br>EN 12101-1 smoke-tight |

Picture: At the reception desk of this hospital the rolled smoke curtain is visible only when run out in the event of a fire

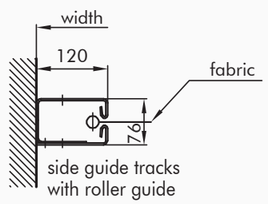
## Automatic fire curtain, model BSV 55 EW, room sealing, with pole guide

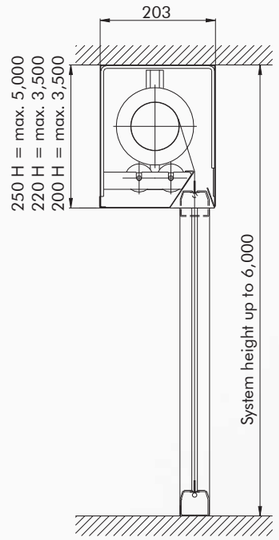



| | |
|---|---|
| Fabric: | Glass filament woven fabric with stainless steel, PU coating, aluminium-clad on one side |
| Execution: | Free falling, including without power by gravity, with bevel-edged guide track with pole guide |
| Drive system: | 24V standard or fail-safe tubular motor<br>230V standard or fail-safe tubular motor |
| Fitting: | On a ceiling, in front of a wall, in a reveal, suspended from the ceiling |
| Installation size: | Casing 203 x 250 mm for system size of 15 x 5 m<br>max. system size on request |
| Classification: | E 120 / EW 20 - EW 60 / C2 |
| Test certificate: | EN 1634-1 1100° C / 120 min<br>EN 12101-1 smoke-tight |

## Automatic fire curtain, model BSV 55 EW, room sealing, with roller guide

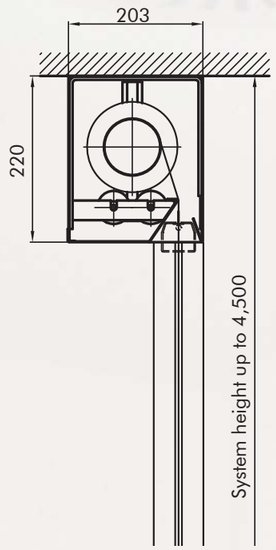


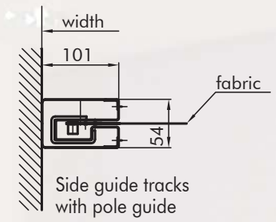




| | |
|---|---|
| Fabric: | Glass filament woven fabric with stainless steel, PU coating, aluminium-clad on one side |
| Execution: | Free falling, including without power by gravity, with bevel-edged guide track with roller guide |
| Drive system: | 24V standard or fail-safe tubular motor<br>230V standard or fail-safe tubular motor |
| Fitting: | On a ceiling, in front of a wall, in a reveal, suspended from the ceiling |
| Installation size: | Casing 203 x 250 mm for system size of 15 x 5 m<br>max. system size on request |
| Classification: | E 120 / EW 20 - EW 60 / C2 |
| Test certificate: | EN 1634-1 1100° C / 120 min<br>EN 12101-1 smoke-tight |

Picture: In normal conditions the smoke curtain remains hidden, withdrawn under the cover

## Flexible fire protection barrier as per DIN 18095-3 model BSV-RS




| | |
|---|---|
| Fabric: | Glass filament woven fabric, non-flammable as per DIN 4102-2 A2 / AbZ |
| Execution: | Free falling, including without power by gravity, with bevel-edged guide track with pole guide |
| Drive system: | 24V fail-safe tubular motor<br>230V fail-safe tubular motor |
| Fitting: | On a ceiling, in front of a wall, in a reveal, suspended from the ceiling |
| Installation size: | Standard casing 203 x 220 mm for system size of 7 x 4,5 m max. system size on request |
| Classification: | Z-6.60.2116 (max. 5.24 x 4.26 m) |

Picture: Only in case of fire the smoke barrier is extended

The Centre of Justice in Aachen has a large, internal atrium. Via skylights, this provides the building, including its interior, with daylight. Here too smoke and heat extraction systems are integrated into the skylights, which are also used for everyday ventilation. Each floor has a walkway going around the atrium, giving access to the rooms facing the outside. So that, in the event of a fire, smoke is stopped from filling the whole building and thus preventing many people from getting out, here too rolled smoke curtains have been installed on all windows facing the atrium for the walkways. In the event of a fire, they come down flush with the glass handrail. This occurs on every floor except the one on which the fire is located, where the smoke curtains remain open in order to channel the smoke and guide it to the outside via the natural smoke and heat extraction system in the atrium's skylight. The rolled smoke curtains have been perfectly integrated into the wood panelling.

At Aalen Vocational College not only were parts of the flat roof fitted with trigonal skylights and an integrated, electrically operated natural smoke and heat extraction system, but in order to prevent smoke filling every floor in the event of a fire, rolled smoke curtains were also installed around the stairway entrance, which is otherwise open to the sides. Triggered by smoke detectors and a central fire alarm system, the curtains automatically move down to the ground. Here too, the rolled smoke curtains on the floor that is on fire remain open in order to channel the smoke and to guide it to the outside via the natural smoke and heat extraction system. The floor that is on fire can be left via two external staircases on either side.

In the case of the regional railway‘s maintenance hall in Kempten, the SmokeTex static smoke curtains had to be adapted to the angle of the roof. It was also necessary to work in holes for pipelines with a smoke-tight seal (small photo on the left). Triangular skylights installed over parts of the roof ridge are another special feature. Where the smoke curtain is fitted to the girder under the head section of the skylight (large photo), the curtain can be installed up to the girder‘s upper edge. However, in places where the smoke curtain runs under the middle of the skylight, it too has to be lined with the curtain in order to prevent smoke spreading over the curtain and through the skylight into any other smoke zones (small picture on the right).

At Wanzl in Leipheim, smoke curtains subdivide a newly built production hall into several fire zones. Maintenance walkways that run above the crane runway have been connected to one another by fireproof doors, which integrate with a smoke-tight fit into the smoke curtain. Everything that passes through, such as pipelines, has to be sealed in a smoke-tight way, so that no smoke can get into any other parts of the building. The full depth of the installation derives from the girder depth, support depth and the height of the smoke curtain, which is made of glass filament woven fabric.

The project in Baku was not our largest, but certainly one of the most interesting. roda had the privilege of supplying the smoke curtains for the Eurovision Song Contest in Baku, Azerbaijan. A total of 18 smoke curtains, complete with control system and smoke detectors, were fitted in the various passageways and rooms under the arena. The task was to ensure that in the event of a fire in any one part of the building, the smoke curtains would channel the smoke away and keep it out of all other areas of the huge hall. The smoke curtains also serve as a form of escape route control system. 38 shops in the ring-shaped building complex underneath the auditorium were fitted with aluminium shutter systems, which were likewise triggered via controllers and smoke detectors (with back-up rechargeable batteries). The Baku Crystal Hall, which had a 16,000-spectator capacity during the event, was built specially for the song contest.

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