Trox-o-mat
Automatic Roll Filters

TROX® TECHNIK
The Trox-o-mat automatic roll filter with cassette system is designed for use in general ventilation and air conditioning systems. It is manufactured with a distortion resistant frame in a strong construction from galvanized steel sections. The equipment frame is also used as the installation frame.

Due to simple construction and extensive factory assembled parts, the equipment is easily assembled on site.

The Trox cassette system offers a unique advantage for assembly and maintenance. The Filter media is supplied in a single-use cassette from which it is unwound during use. The used filter media is wound onto a second cassette for disposal. No special casings or covers for the filter media are necessary. Side channels and support grids guide and locate the filter media and ensure an air-tight seal.

The magnetically-operated media run out switch is sufficiently precise as to ensure complete utilisation of the filter media. The end of media roll is indicated by a signal lamp and the automatic control is simultaneously switched off (see wiring diagram).

The equipment is fully electrically wired, with pressure measuring points and tubes pre-fitted. In addition to the basic unit, sufficient fixing and sealing material, as well as installation and operating instructions are supplied.
**Differential Pressure Control**

Differential pressure control considers automatically all data at the point of installation on the automatic roll filter:
- pressure loss of the roll filter
- dust concentration
- type of dust
- quantity of dust collected
- operating period and volume flow.

With differential pressure control all the data is co-ordinated to ensure maximum economy in utilisation of the filter media.

There is no need to adapt the control function to filter height or different dust concentrations, as this is done automatically by the differential pressure control unit.

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**Compact transport volume**

Only two packages with pre-assembled components and one cassette with filter media Trox-o-fil F702.

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**Low cost installation**

Only a few pre-assembled components offering easy assembly.

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**Combined drive control unit**

The drive system and control are one easily assembled unit. Side slots in the shaft of the drive spocket ensure correct positioning of the cassette, and faultless alignment of the drive system.
End of roll switch in only one component
To assemble, insert end of roll switch into side channel and tighten the pre-fixed screws. After completing the socket connection the end of roll switch is operational.

Factory-installed pressure measuring point and associated tubing.

Simple connection of Trox-o-mat to the building structure by means of clamps.
The Trox servicing platform can be used for single or multiple assemblies. It provides maximum safety and makes it easy to change the filter media. The platform has a strong aluminium construction, and is designed for rapid assembly. The wheels are maintenance-free and fitted with a brake device. Subsequent assembly to existing equipment is possible. We recommend the use of a servicing platform for filter assemblies above 2000 mm.
Drive Control Unit – Diaphragm

A Pressure Differential Manometer

With diaphragm as pressure sensor, non-indicating, fully wired – only mains connection required. The pressure differential is controlled by a diaphragm which is built into a control box together with a manual-off-automatic switch, signal lamp for media run out and all switch elements required for the automatic control. Control box and geared motor form one unit and are electrically connected. The pressure measuring points are factory installed on the roll filter and connected. The connection of the end of roll cut-out switch is made by means of factory positioned cables and socket connections. Only mains connection required on site, see wiring diagram.

Switching differential: approx. 20 Pa
Switching point for Trox-o-fil F702: set at approx. 160/180 Pa

Control unit with diaphragm

Wiring Diagram
**Drive Control Unit – Transmitter**

**B  Contact-Type Pressure Differential Manometer**

With transmitter as pressure transducer, with display. Automatic control unit as described under A, but without diaphragm. The transmitter, which must be ordered separately, is a fully electronic measuring device for display and monitoring of filter pressure differentials (adjustable measuring range 0 to 2000 Pa, switching differential 20 Pa). The user is responsible for connecting the transmitter/control unit to the measuring points. The distance from the pressure measuring point to the transmitter (wall-mounted) should not exceed 30 m. Facilities for connecting an external digital display (panel mounting) for remote monitoring of the filter pressure differential are provided. See leaflet on Measuring Instruments for wiring diagram and technical data.

**C 2-Contact Pressure Differential Manometer**

For two flow volumes with transmitter as pressure transducer with display. The 2-contact pressure differential control unit is specially designed for automatic roll filters in air conditioning systems with two flow volumes. Construction and operation as described in B.

Transmitter for one or two flow volumes.

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**Diagram for Pressure Measuring Tubing**

Pre-assembled pressure measuring point

Air flow direction

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**Additional Control for Winter Operation**

On equipment with exclusive fresh air operation, it is possible that due to unfavourable meteorological conditions, e.g. fog and subsequent fall of temperature below freezing, that separation of water in the filter media may result in freezing of the media. Unfavourable conditions, like snow in the air, can block the filter media.

On request we can offer a Control instrument, which takes care of the possible icing up or blockage of the filter media.
The automatic roll filter is manufactured with a distortion resistant frame in a strong construction from galvanized steel sections. The equipment frame, having wide sealing surfaces, doubles as a connecting frame for room or duct installation eliminating the need for an additional installation frame. For larger air flows than those shown in the table, more filter units of the same or different width can be combined. Installation position and air flow direction are optional. The drive control unit is available with a diaphragm or transmitter (for one or two flow volumes) as pressure sensor.

**Combined Drive Control Unit**

Pre-assembled drive group comprising:
set of drive wheels, contact protection, fixed bracket and geared motor with integral automatic control if ordered. No separate drive housing required. The drive assembly can be bolted on after installation of the frame. For combinations of 2 filter units, only one drive unit required.

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**Dimensions**

- **Casing width**
- **Height**
- **Spacing up to 3000 mm height**
- **Spacing above 3000 mm height**

**Section A–B**

- **Approx. 500**

**Section C–D**

- **Fixing holes by others**
- **Sealing**
- **70**
- **35**

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1) Space for servicing
### Selection Table for Dimensions and Air Volume

<table>
<thead>
<tr>
<th>Width code</th>
<th>Equipment width in mm</th>
<th>Equipment height in mm</th>
<th>Volume flows in l/s have been rounded off, then converted to m³/h</th>
<th>Height code</th>
<th>Filter Type</th>
<th>Width code</th>
<th>Height code</th>
<th>Pressure differential control with diaphragm</th>
<th>Control system code</th>
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</thead>
<tbody>
<tr>
<td>100</td>
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<td>2700</td>
<td>3200</td>
<td>A</td>
</tr>
</tbody>
</table>

#### Filter Type
- **D**: For standard construction
- **A**: For pressurized control with diaphragm
- **B**: For pressurized control with transmitter
- **C**: For pressurized control with transmitter for 2 volume flows

#### Drive Motor
- 3-phase 380–440 V, 50 Hz, I = 0.43 A, N = 90 W
- Protection IP 54

#### Gear Drive
- n = 5 R.P.M.

#### Control Unit
- Control voltage 220–240 V, 50 Hz, protection IP 54.

#### Manual operation on request.

#### Important!
To determine the most economic solution, please base your selection on the maximum possible filtration height. Volume flows in l/s have been rounded off, then converted to m³/h. Air velocity 3.1 m/s.

Pressure differential for other air volumes and permissible volume range are given on page 11. All weights are net, excluding packing. Intermediate weights can be interpolated. Packing weight per filter unit approx. 5 kg.

**Selection Table for Dimensions and Air Volume**

<table>
<thead>
<tr>
<th>Height combination</th>
<th>Equip. height in mm</th>
<th>V l/s</th>
<th>m³/h</th>
<th>Weight in kg</th>
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<td>3700</td>
<td>4200</td>
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</tbody>
</table>

**Order Example**
- **Tron-o-mat**
- **Type code**: N
- **Weight code**: 100
- **Height code**: 22
- **Combination**
- **Pressure differential control with diaphragm**
- **Control system code**: A

**Selection Table**

<table>
<thead>
<tr>
<th>Weight code</th>
<th>Equipment width in mm</th>
<th>Equipment height in mm</th>
<th>Volume flows in l/s have been rounded off, then converted to m³/h</th>
<th>Height code</th>
<th>Filter Type</th>
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</tr>
</tbody>
</table>

#### Filter Type
- **D**: For standard construction
- **A**: For pressurized control with diaphragm
- **B**: For pressurized control with transmitter
- **C**: For pressurized control with transmitter for 2 volume flows
Trox-o-fil filter media is manufactured from continuous glass-fibre filaments in a flexible structure wetted with dust binding agent. The wetting agent increases the dust extraction efficiency and prevents dust being blown off. Manufacture is carried out at our own Production Plant under constant quality control.

Extremely large filtration surface due to the high number of ultrafine glass fibres:
- Fibre diameter: approx. 14µm
- Fibre length per m² filter area: approx. 750 km
- Fibre surface area per m² filter area: approx. 32 m²

The low filament volume of just 0.2 % of the filter volume guarantees a high dust holding capacity.

The structure of the filter media, having constant density, guarantees a maximum degree of efficiency of more than 86 % to EN 779. The dust holding is maintained evenly over the entire depth of the filter media.

Tests in our laboratory have confirmed:
- Optimum, economic relation between efficiency, dust holding capacity and pressure drop characteristics.
- Permissible tolerance on the flow velocity of 1.9 to 3.1 m/s without unduly affecting the filter grade or arrestance.

As a rule, the recommended operating pressure differential is 160–180 Pa at 3.1 m/s nominal air velocity. Depending on the type of dust, the operating pressure differential may be set between 120 and 300 Pa.

The media dimensions correspond to the casing width. Filter roll length > 20 m.

For further information, see leaflets F0/2/EN/ “Air Filter Test” to EN 779 (ASHRAE STANDARD 52–76) and F0/4/EN/ “Technical Data – Filter Media”.

See price list for replacement filter media.

### Filter Media Performance Diagram, Trox-o-fil F702

1. Initial pressure differential as a function of air velocity.
2. Recommended final pressure differential as a function of air velocity.
3. Maximum final pressure differential as a function of air velocity.
4. Dust holding capacity at recommended final pressure differential as a function of air velocity
5. Fractional dust extraction efficiency as a function of particle size

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1. EN 779: “Particle air filters for general ventilation and air conditioning purposes”. (Equivalent to ASHRAE STANDARD 52–76)
2. To determine the dust holding capacity, test dust A (to StF) was used.
3. Test results of the “National Test Laboratory” France, with Royco 202, particle counter at air flow velocity of 2.5 m/s with normal atmospheric dust.
Air Filter Test to EN 779

Static Test:
For this test, the filter media examined is taken from production material. It is securely fixed in a frame avoiding movement during testing.

Technical Data:
Nominal air velocity: 3.1 m/s
Filter class to EN 779\(^1\): G3

Dynamic Test:
With a dynamic test, the use of the filter media in the automatic roll filter is simulated in the laboratory. When the final operating pressure difference is reached, the filter media is automatically rolled on until the minimum pressure differential is reached.

Technical Data:
Nominal air velocity: 3.1 m/s
Minimum operating pressure differential: 160 Pa
Final operating pressure differential: 180 Pa
Filter class to EN 779\(^1\): G3

\(^1\)EN 779: “Particle air filters for general ventilation and air conditioning purposes”. (Equivalent to ASHRAE STANDARD 52.76)
### Technical Data:

<table>
<thead>
<tr>
<th>Description</th>
<th>Drive Control Unit</th>
</tr>
</thead>
</table>
| Geared motor (380-440 V, 50 Hz). Media cut out switch and two filter cassettes, one loaded with filter media Trox-o-fil F702. Filter class G3 to EN 779 or 86% average synthetic dust weight arrestance. Extensive factory pre-assembled units, all site assembly by screw or socket connections, factory fitted electric wiring, and pressure measuring points including tubing. Installation and operating instructions. Non-returnable packaging. | A: Automatic control, with built-in diaphragm, fitted to drive; completely wired.  
B: Automatic control, fitted to drive, with separate transmitter.  
C: Automatic control, fitted to drive, with separate transmitter for two flow volumes. |

#### Technical Data:

- Volume flow: ____________ l/s (m³/h)
- Width: ________________ mm
- Height: ________________ mm
- Filter class to EN 779: ________________
- Average synthetic dust weight arrestance: ________________ %
- Recommed. operating pressure differential: 160-180 Pa
- Net weight: ________________ kg
- Order number: ________________
- Manufacture: Trox