Trox-o-mat
Automatic Roll Filters

TROX® TECHNIK

Contents · Description

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.

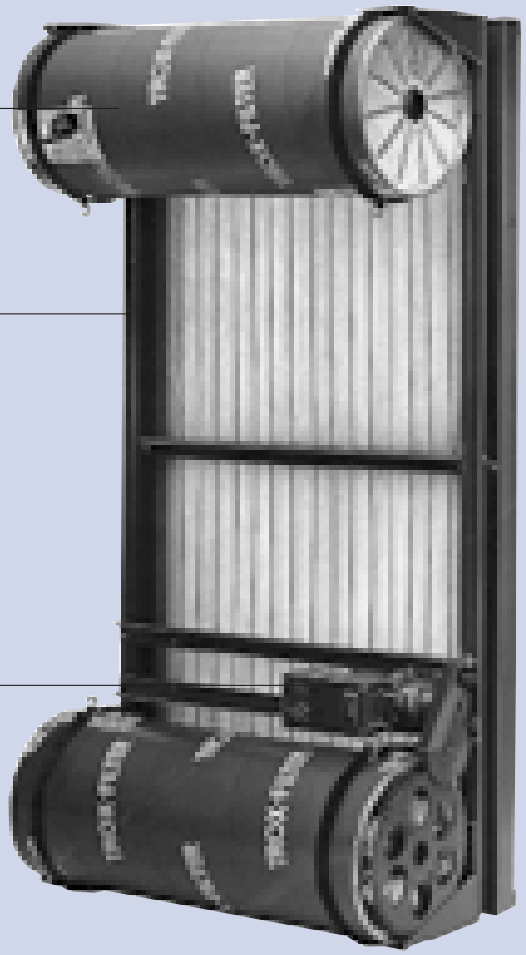
Due to simple construction and extensive factory assembled parts, the equipment is easily assembled on site.

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.

Trox-o-mat F100
for universal installation



Description

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.

Compact transport volume

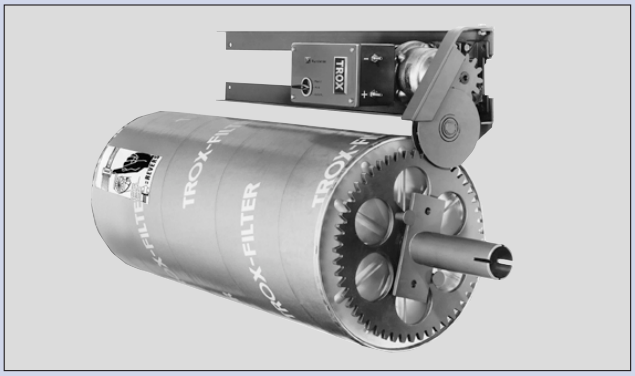
Only two packages with pre-assembled components and one cassette with filter media Trox-o-fil F 702.

Low cost installation

Only a few pre-assembled components offering easy assembly.

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.

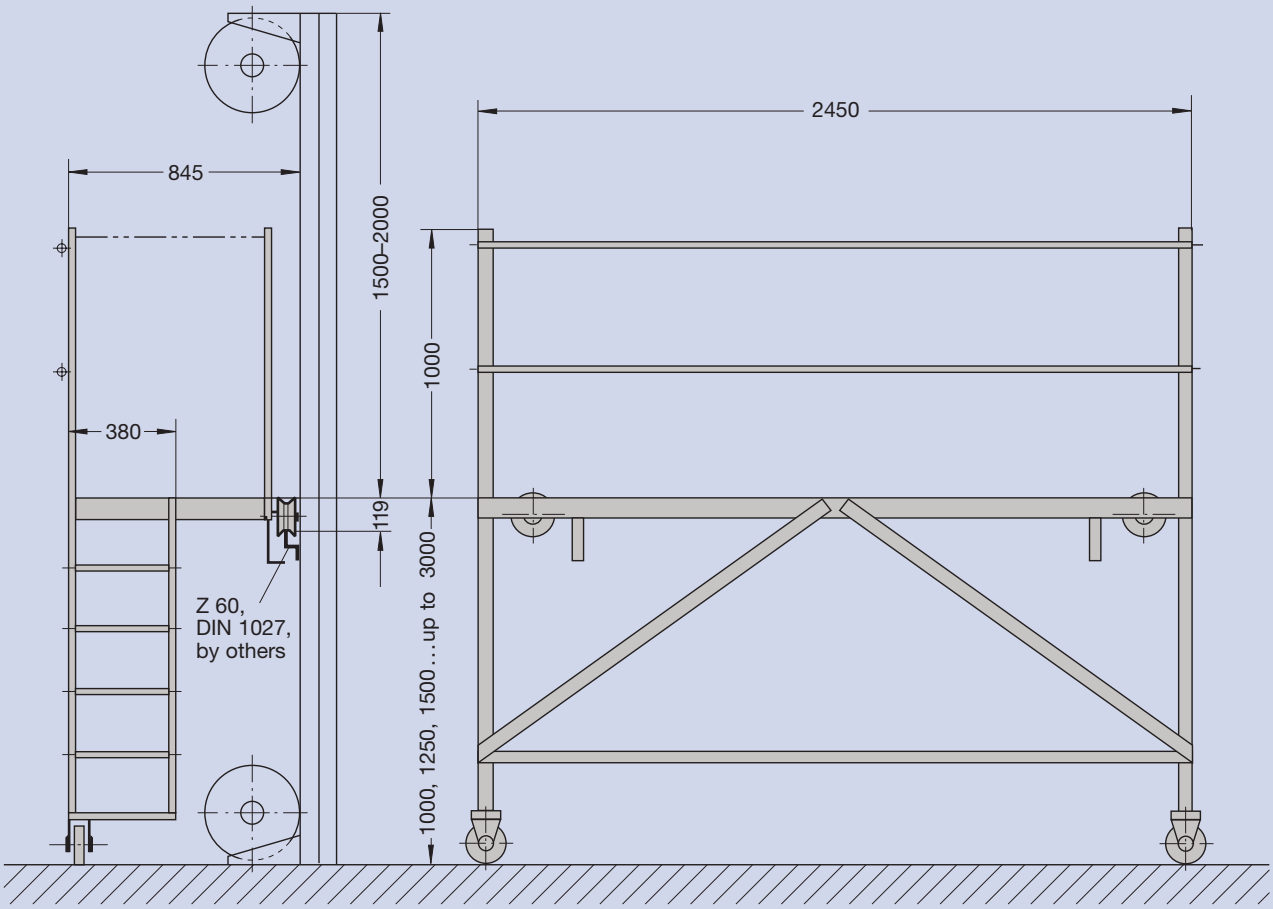
Factory-installed pressure measuring point and associated tubing.

Simple connection of Trox-o-mat to the building structure by means of clamps.

Servicing Platform

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.

Dimensions

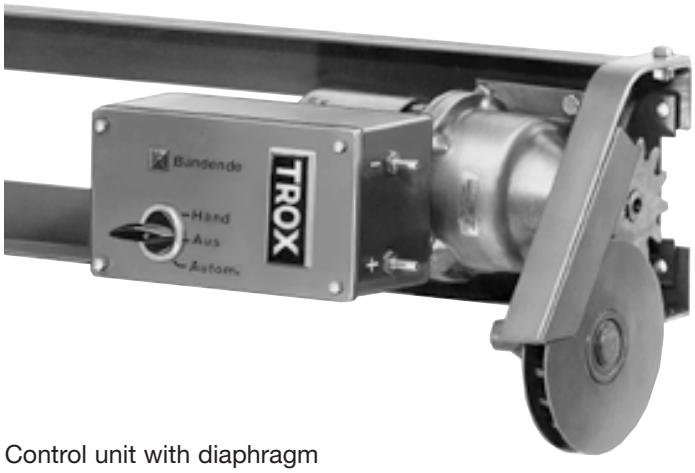


Drive Control Unit – Diaphragm

A Pressure Differential Manometer

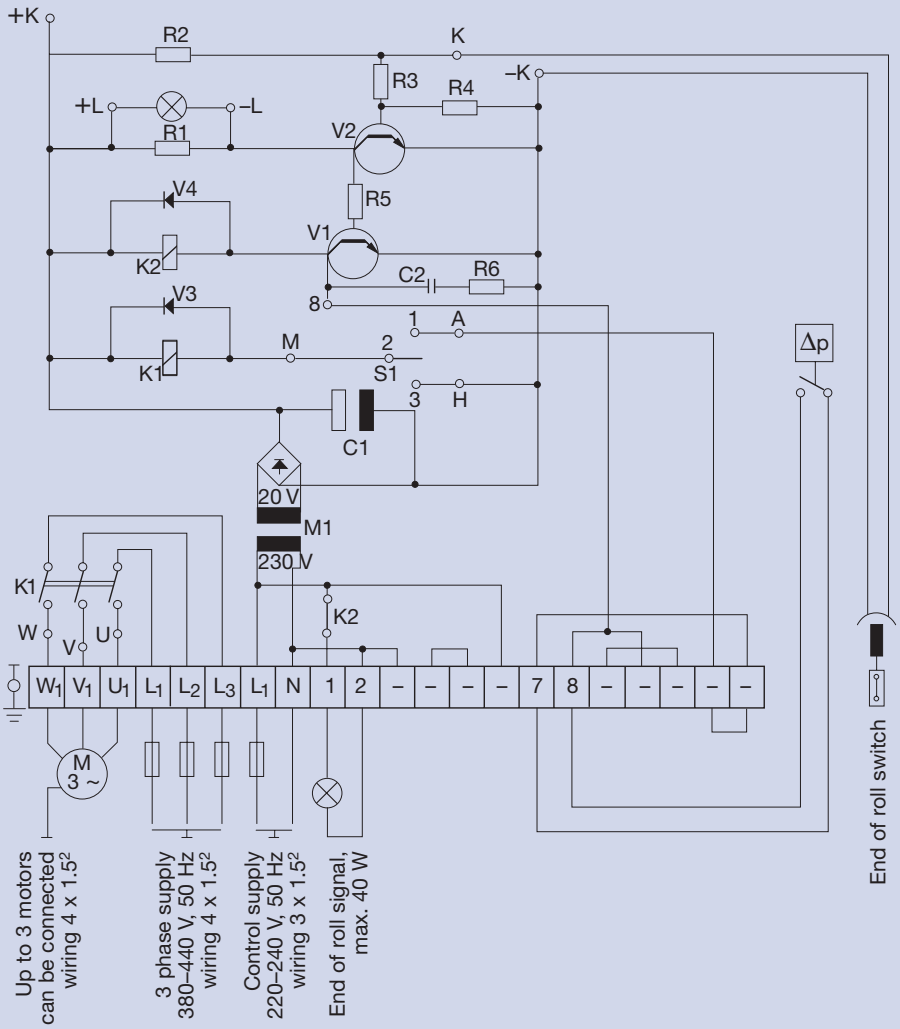
With diaphragm as pressure sensor, non-indicating, fully wired – only mains connection required.
The pressure differential is controlled by a diaphragm which is built into a control box together with a manual-off-automatic switch, signal lamp for media run out and all switch elements required for the 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 F 702: set at approx. 160/180 Pa



Control unit with diaphragm

Wiring Diagram



Drive Control Unit – Transmitter

B Contact-Type Pressure Differential Manometer

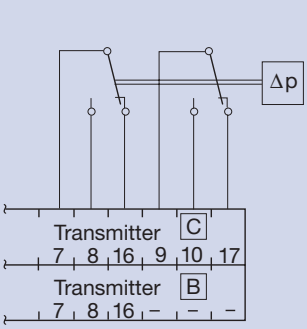
With transmitter as pressure transducer, with display. Automatic control unit as described under A, but without diaphragm. The transmitter, which must be ordered separately, is a fully electronic measuring device for display and monitoring of filter pressure differentials (adjustable measuring range 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.

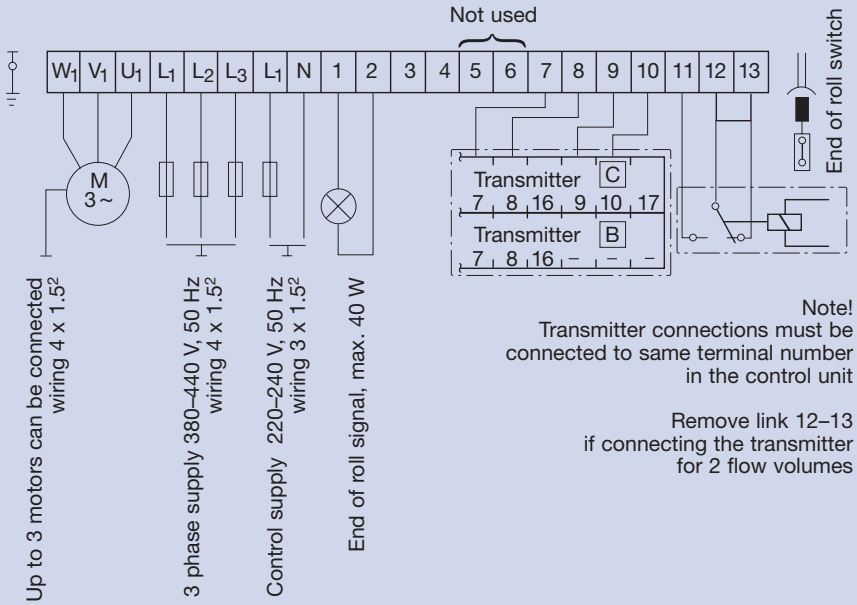
C 2-Contact Pressure Differential Manometer

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.

Wiring Diagram

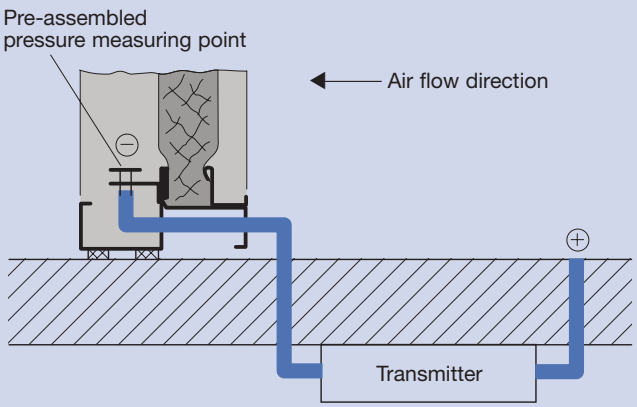




Note!
Transmitter connections must be connected to same terminal number in the control unit

Remove link 12–13 if connecting the transmitter for 2 flow volumes

Diagram for Pressure Measuring Tubing



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.

Trox-o-mat F100

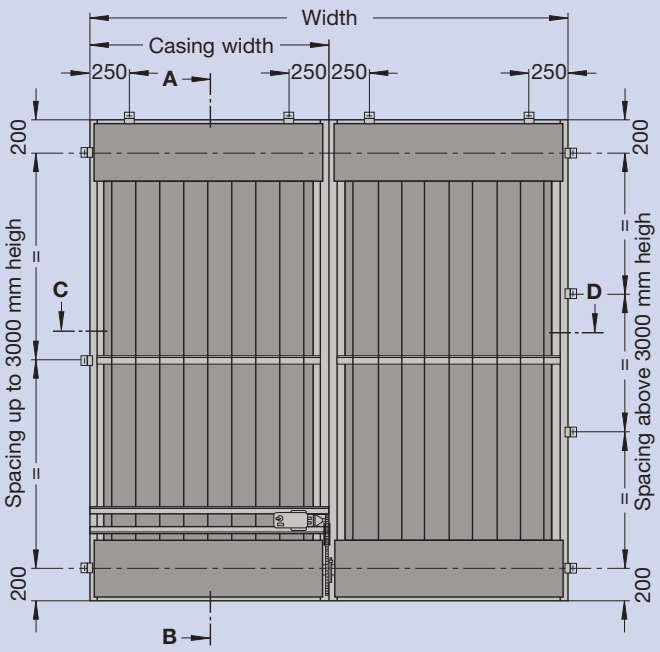
The automatic roll filter is manufactured with a distortion resistant frame in a strong construction from galvanized steel sections. The equipment frame, having wide sealing surfaces, doubles as a connecting frame for room or duct installation eliminating the need for an additional installation frame.
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.

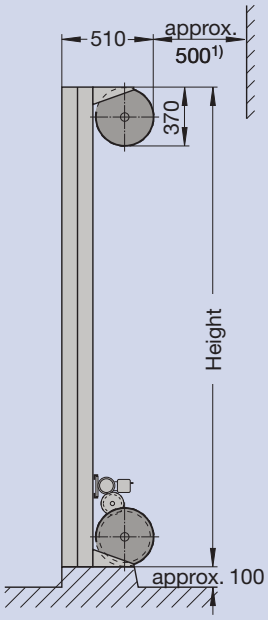
Combined Drive Control Unit

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.

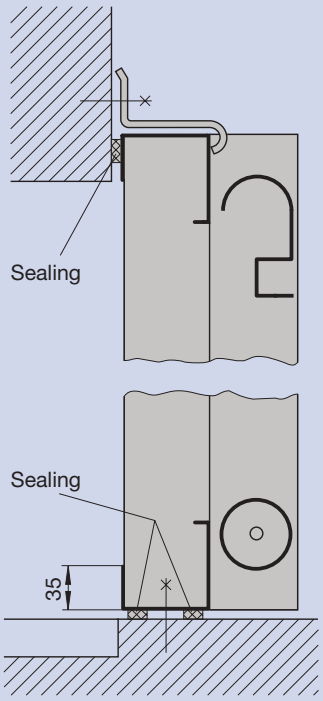
The drive assembly can be bolted on after installation of the frame.
For combinations of 2 filter units, only one drive unit required.

Dimensions



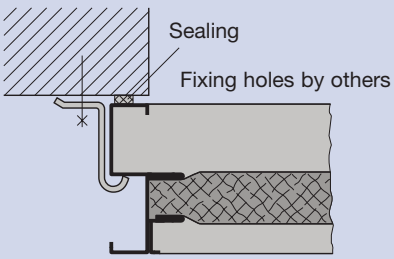


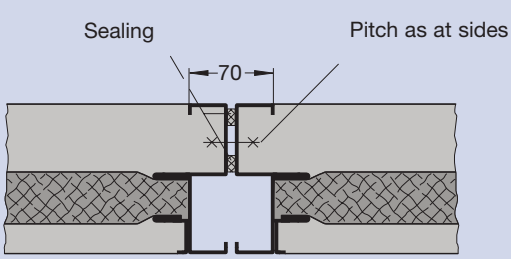
Section A–B

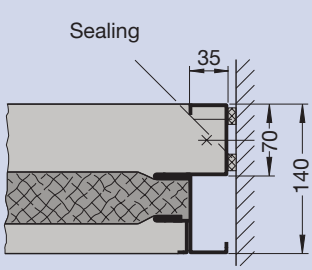


[1)] Space for servicing

Section C–D







Selection Table

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.

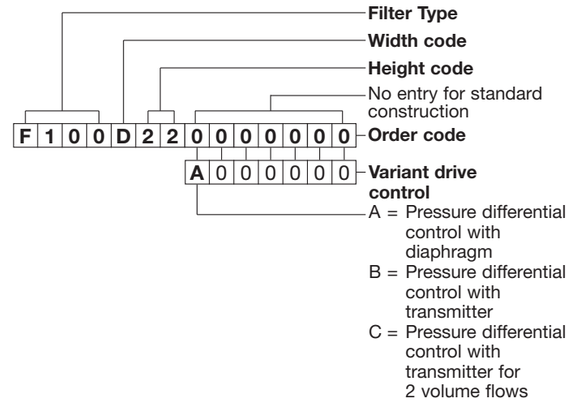
Volume flows in l/s have been rounded off, then converted to m^3/h. Air velocity 3.1 m/s.

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.

Order Example

Trox-o-mat _____ Filter Type: **F100**
Equipment width 1850 mm _____ Width code: **D**
Equipment height 2200 mm ____ Height code: **22**
Pressure differential control with diaphragm _____ Control system code: **A**



Selection Table for Dimensions and Air Volume

Width code			A		B		C		D		E		F		G		H		J		K		L		M		N	
Equipment width in mm			950		1250		1550		1850		2150		2500		2800		3100		3400		3700		4000		4300		4650	
Width combination													2 x B		1 x B 1 x C		2 x C		1 x C 1 x D		2 x D		1 x D 1 x E		2 x E		3 x C	
Height code	Equip. height in mm	V̇ in	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h	l/s	m^3/h
		Weight in kg	60		70		80		100		110		130		140		150		160		170		190		200		220	
11	1100		2250	8100	3110	11200	3970	14300	4830	17400	5690	20500	6220	22400	7080	25500	7940	28600	8810	31700	9760	34800	10530	37900	11390	41000	11920	42900
12	1200		2500	9000	3440	12400	4390	15800	5360	19300	6310	22700	6890	24800	7830	28200	8780	31600	9750	35100	10720	38600	11670	42000	12610	45400	13170	47400
13	1300		2750	9900	3780	13600	4830	17400	5860	21100	6920	24900	7560	27200	8610	31000	9670	34800	10690	38500	11720	42200	12780	46000	13830	49800	14500	52200
14	1400		2970	10700	4110	14800	5250	18900	6390	23000	7530	27100	8220	29600	9360	33700	10500	37800	11640	41900	12780	46000	13920	50100	15060	54200	15750	56700
15	1500		3250	11700	4500	16200	5720	20600	6970	25100	8220	29600	9000	32400	10220	36800	11440	41200	12690	45700	13940	50200	15190	54700	16440	59200	17170	61800
16	1600		3500	12600	4830	17400	6140	22100	7500	27000	8830	31800	9670	34800	10970	39500	12280	44200	13640	49100	15000	54000	16330	58800	17670	63600	18420	66300
17	1700		3750	13500	5170	18600	6580	23700	8030	28900	9440	34000	10330	37200	11750	42300	13170	47400	14610	52600	16060	57800	17470	62900	18890	68000	19750	71100
18	1800		4000	14400	5500	19800	7000	25200	8560	30800	10060	36200	11000	39600	12500	45000	14000	50400	15560	56000	17110	61600	18610	67000	20110	72400	21000	75600
19	1900		4250	15300	5830	21000	7440	26800	9080	32700	10670	38400	11670	42000	13280	47800	14890	53600	16530	59500	18170	65400	19750	71100	21330	76800	22330	80400
20	2000		4530	16300	6220	22400	7890	28400	9670	34800	11330	40800	12440	44800	14110	50800	15780	56800	17560	63200	19330	69600	21000	75600	22670	81600	23670	85200
		Weight in kg	70		90		100		110		130		160		170		180		200		210		220		230		270	
21	2100		4780	17200	6560	23600	8330	30000	10170	36600	11970	43100	13110	47200	14890	53600	16670	60000	18500	66600	20330	73200	22140	79700	23940	86200	25000	90000
22	2200		5000	18000	6890	24800	8750	31500	10690	38500	12580	45300	13780	49600	15640	56300	17500	63000	19440	70000	21390	77000	23280	83800	25170	90600	26250	94500
23	2300		5250	18900	7220	26000	9190	33100	11220	40400	13190	47500	14440	52000	16420	59100	18390	66200	20420	73500	22440	80800	24420	87900	26390	95000	27580	99300
24	2400		5500	19800	7560	27200	9610	34600	11750	42300	13810	49700	15110	54400	17170	61800	19220	69200	21360	76900	23500	84600	25560	92000	27610	99400	28860	103900
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34	3400		8030	28900	11000	39600	14000	50400	17080	61500	20080	72300	22000	79200	25000	90000	28000	100800	31080	111900	34170	123000	37170	133800	40170	144600	42000	151200
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36	3600		8560	30800	11720	42200	14890	53600	18190	65500	21360	76900	23440	84400	26610	95800	29780	107200	33080	119100	36390	131000	39560	142400	42720	153800	44670	160800
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39	3900		9310	33500	12720	45800	16170	58200	19780	71200	23320	83600	25440	91600	28890	104000	32330	116400	35940	129400	39560	142400	43000	154800	46440	167200	48500	174600
40	4000		9560	34400	13080	47100	16440	59900	20360	73300	23890	86000	26170	94200	29720	107000	33280	119800	37000	133200	40720	146600	44250	159300	47780	172000	49920	179700
		Weight in kg	100		120		130		150		160		220		230		250		260		280		290		310		360	
41	4100		9810	35300	13440	48400	17060	61400	20890	75200	24500	88200	26890	96800	30500	109800	34110	122800	37940	136600	41780	150400	45390	163400	49000	176400	51170	184200
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50	5000		12080	43500	16470	59300	21000	75600	25690	92500	30170	108600	32940	118600	37470	134900	42000	151200	46690	168100	51390	185000	55860	201100	60330	217200	63000	226800
		Weight in kg	110		130		150		160		180		240		260		280		300		310		330		350		410	

Filter Media Data

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 extration 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 m^2 filter area	approx. 750 km
Fibre surface area per m^2 filter area	approx. 32 m^2

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.

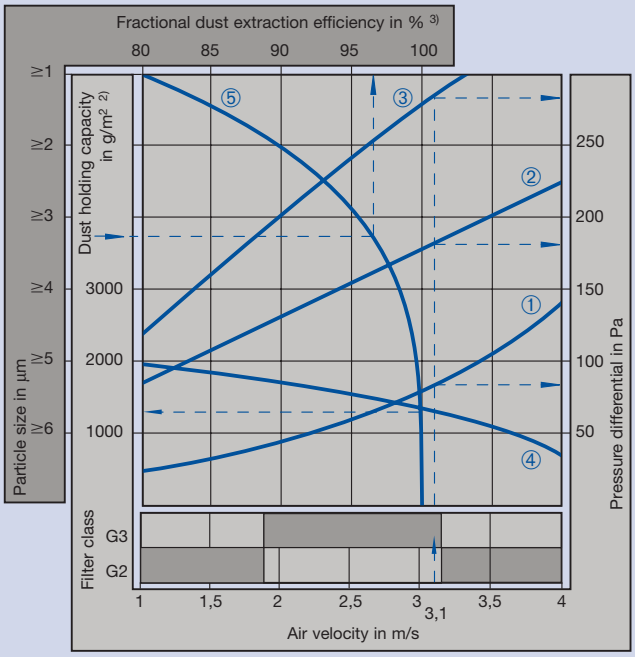
Tests in our laboratory have confirmed:
- Optimum, economic relation between efficiency, dust holding capacity and pressure drop characteristics.
- Permissible tolerance on the flow velocity of 1.9 to 3.1 m/s without unduly affecting the filter grade or arrestance.

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.



Performance Diagram, Trox-o-fil F702

Filter Media		Trox-o-fil F702
Filter class to EN 779[1)]		G3
Average synthetic dust weight arrestance	approx. in %	86
Average atmospheric dust spot efficiency	approx. in %	30
Initial pressure differential at nominal air volume as per table	in Pa	80
Operating pressure differential	in Pa	120 to 300
Recommended operating pressure differential (pre-set diaphragm control)	in Pa	160 to 180
Temperature stability	in °C	-30 to +100
Admissible tolerance on volume flow in relation to nominal air volume at 3.1 m/s air velocity	in %	+0 to -35

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[3)]
⑤ Fractional dust extraction efficiency as a function of particle size[3)]

– – – example

[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[1)]) 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

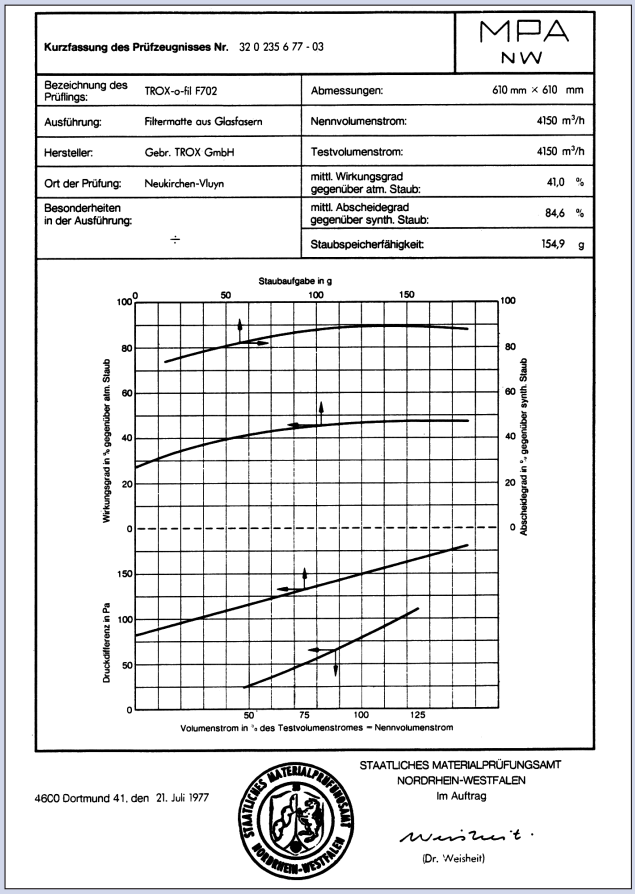
Dynamic Test:

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).



Kurzfassung des Prüfzeugnisses Nr. 32 0 235 6 77 - 03

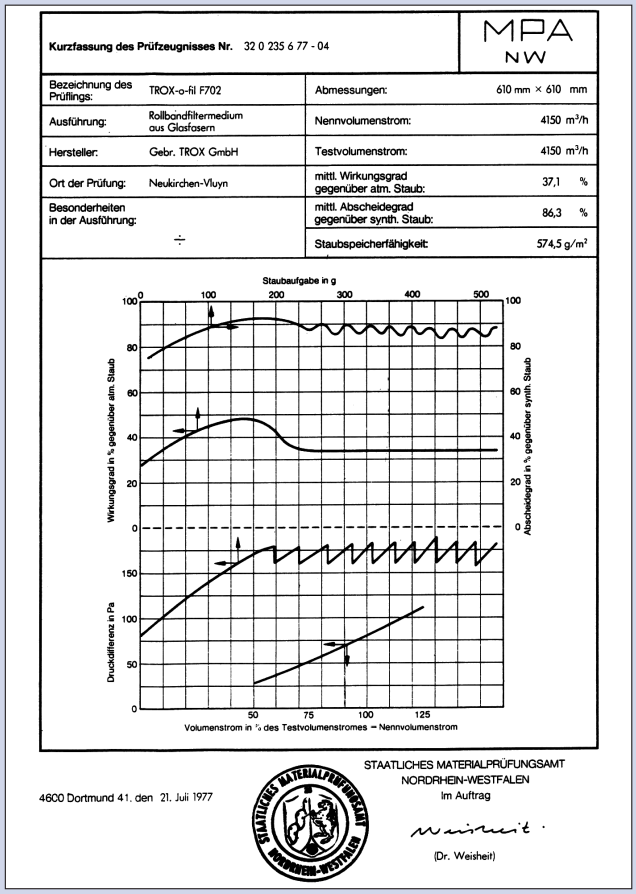
MPA NW

Bezeichnung des Prüflings:	TROX-o-fil F702	Abmessungen:	610 mm × 610 mm
Ausführung:	Filtermatte aus Glasfasern	Nennvolumenstrom:	4150 m³/h
Hersteller:	Gebr. TROX GmbH	Testvolumenstrom:	4150 m³/h
Ort der Prüfung:	Neukirchen-Vluyn	mittl. Wirkungsgrad gegenüber atm. Staub:	41,0 %
Besonderheiten in der Ausführung:	÷	mittl. Abscheidegrad gegenüber synth. Staub:	84,6 %
		Staubspeicherfähigkeit:	154,9 g

4600 Dortmund 41, den 21. Juli 1977

STAATLICHES MATERIALPRÜFUNGSAMT
NORDRHEIN-WESTFALEN
Im Auftrag
(Dr. Weisheit)

Test Certificate Trox-o-fil F 702 (static)



Kurzfassung des Prüfzeugnisses Nr. 32 0 235 6 77 - 04

MPA NW

Bezeichnung des Prüflings:	TROX-o-fil F702	Abmessungen:	610 mm × 610 mm
Ausführung:	Rollbandfiltermedium aus Glasfasern	Nennvolumenstrom:	4150 m³/h
Hersteller:	Gebr. TROX GmbH	Testvolumenstrom:	4150 m³/h
Ort der Prüfung:	Neukirchen-Vluyn	mittl. Wirkungsgrad gegenüber atm. Staub:	37,1 %
Besonderheiten in der Ausführung:	÷	mittl. Abscheidegrad gegenüber synth. Staub:	86,3 %
		Staubspeicherfähigkeit:	574,5 g/m²

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STAATLICHES MATERIALPRÜFUNGSAMT
NORDRHEIN-WESTFALEN
Im Auftrag
(Dr. Weisheit)

Test Certificate Trox-o-fil F 702 (dynamic)

Specification Text

Pos.	Qty.	Description
		Trox Cassette Automatic Roll Filter Trox-o-mat F 100 Comprising distortion resistant frame construction from galvanized steel sections. Equipment frame designed to provide direct plenum or duct installation without additional sub-frame. Geared motor (380-440 V, 50 Hz). Media cut out switch and two filter cassettes, one loaded with filter media Trox-o-fil F 702. 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. **Drive Control Unit** [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 (m^3/h) Width _____ mm Height _____ mm Filter class to EN 779 _____ Average synthetic dust weight arrestance _____ % Recomm. operating pressure differential ___160-180 Pa Net weight _____ kg Order number _____ Manufacture: Trox
		Unit price: