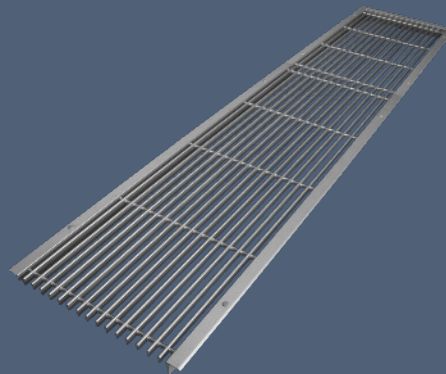
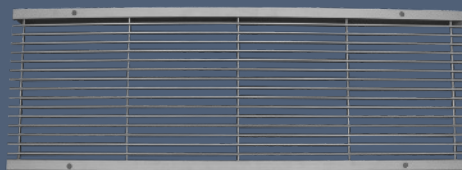


MANDÍK[®]

WALL GRILLE SMPM



These technical specifications state a row of manufactured sizes and models of wall grilles (further only grills) SMPM. It is valid for manufacture, designing, ordering, delivery, assembly and operation.

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II. GENERAL INFORMATION

1. Description

- 1.1.** Grilles serve to cover the openings of ventilation in air-conditioned, ventilated and heated rooms.
- 1.2.** Supplied grilles are made of aluminium sections. Grilles are assembled as needed from side and middle grills. They consist of a rectangular frame, parallel blades and strut pipes. Fixing frames UR, UR1 and UR2 made of galvanized sheet with fixtures can also be included in the supply as required. The tightness of grilles is ensured along the perimeter by means of sealing.
- 1.3.** Grilles are designed for macroclimatic areas with mild climate according to EN 60 721-3-3 zm.A2. Temperature in the place of installation is permitted to range from - 20°C to + 70°C. Grilles are suitable for systems without abrasive, chemical and adhesive particles.
- 1.4.** If is not noticed other way, all dimensions and weight are in millimeters and kilograms.

2. Design

- 2.1.** Grilles are supplied in a single row version with blades pitched at 12,5 mm or 20 mm.
- 2.2.** Fixing frames are supplied in a UR version without fixtures, UR1 with screwed fixtures or UR2 with fixtures intended for immuring.

There are two possibilities to fix grilles with the frame.

Grilles with concealed fastening (without holes in a rectangular frame) are fixed by spring clips. Grilles with screwed fastening (with holes in a rectangular frame) are fixed by screws. Grilles with concealed fastening are installed by using of fixing frames (UR, UR1 or UR2).

It's possible to use an atypical frame furnished with an edge for gripping the spring clips (see detail of leaf of fixation frame).

Grilles with screwed fastening are installed by using of fixing frames (UR, UR1 or UR2). It's possible direct mounting to the wall without fixing frame.

Fig. 1 Grilles with concealed fastening - middle grille

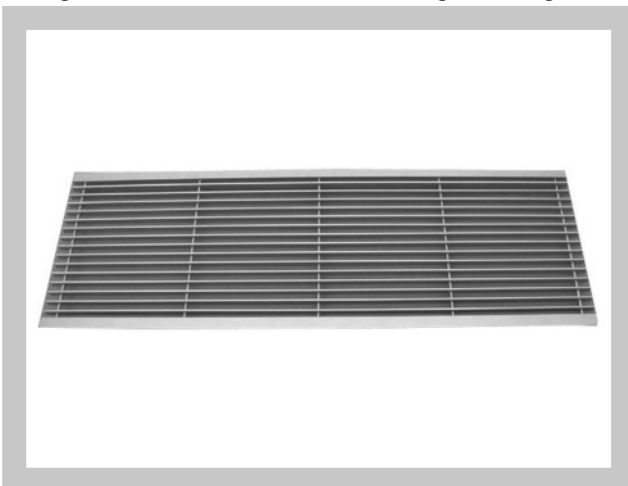


Fig. 2 Grilles with screwed fastening - middle grille

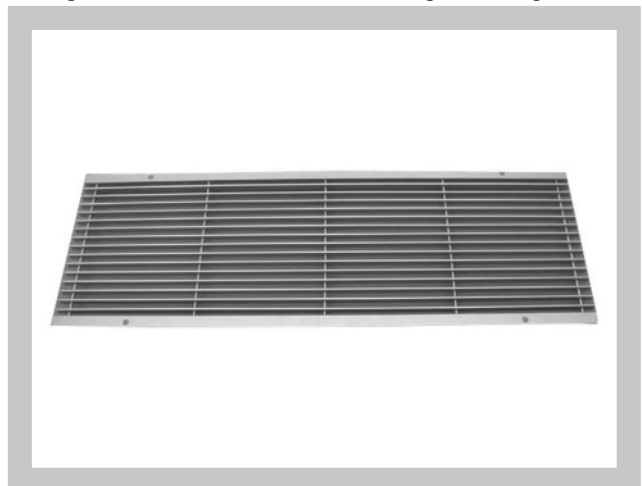
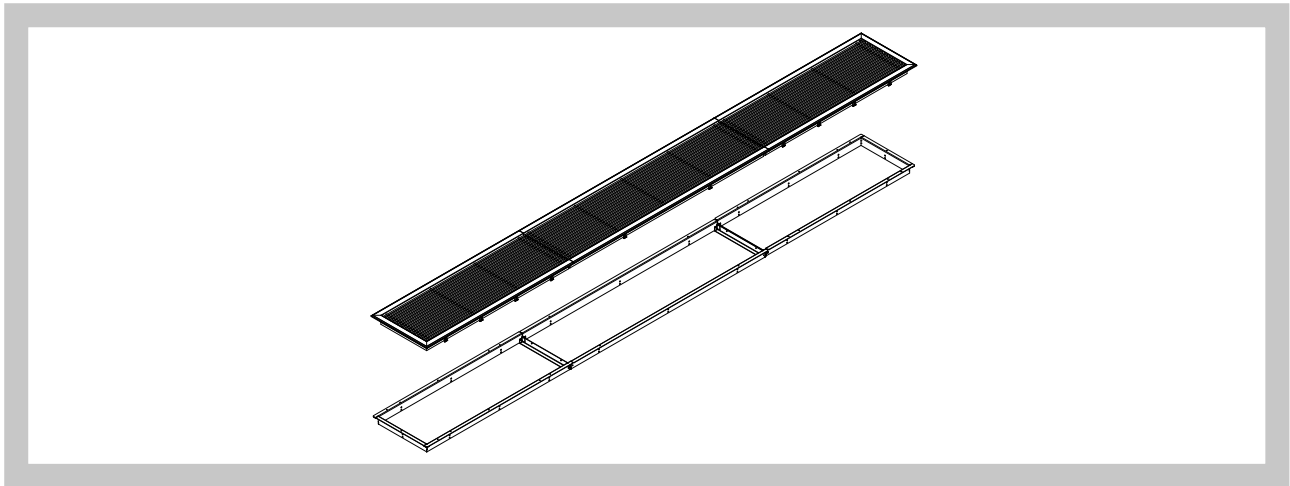


Fig. 3 Grille with concealed fastening and fixing frame UR



3. Dimestions, weights

3.1. Dimesions

Tab. 3.1.1.

DIMENSIONS OF SIDE GRILLES			
nominal dimensions W _k x H			
215 x 75	425 x 75	715 x 75	950 x 75
x 115	x 115	x 115	x 115
x 125	x 125	x 125	x 125
x 165	x 165	x 165	x 165
x 215	x 215	x 215	x 215
x 225	x 225	x 225	x 225
x 315	x 315	x 315	x 315
x 325	x 325	x 325	x 325
225 x 75	515 x 75	725 x 75	1010 x 75
x 115	x 115	x 115	x 115
x 125	x 125	x 125	x 125
x 165	x 165	x 165	x 165
x 215	x 215	x 215	x 215
x 225	x 225	x 225	x 225
x 315	x 315	x 315	x 315
x 325	x 325	x 325	x 325
315 x 75	525 x 75	815 x 75	1015 x 75
x 115	x 115	x 115	x 115
x 125	x 125	x 125	x 125
x 165	x 165	x 165	x 165
x 215	x 215	x 215	x 215
x 225	x 225	x 225	x 225
x 315	x 315	x 315	x 315
x 325	x 325	x 325	x 325
325 x 75	615 x 75	825 x 75	1025 x 75
x 115	x 115	x 115	x 115
x 125	x 125	x 125	x 125
x 165	x 165	x 165	x 165
x 215	x 215	x 215	x 215
x 225	x 225	x 225	x 225
x 315	x 315	x 315	x 315
x 325	x 325	x 325	x 325
415 x 75	625 x 75	915 x 75	1070 x 75
x 115	x 115	x 115	x 115
x 125	x 125	x 125	x 125
x 165	x 165	x 165	x 165
x 215	x 215	x 215	x 215
x 225	x 225	x 225	x 225
x 315	x 315	x 315	x 315
x 325	x 325	x 325	x 325

DIMENSIONS OF SIDE GRILLES			
nominal dimensions $W_k \times H$			
1130 x 75	1190 x 75	1225 x 75	
x 115	x 115	x 115	
x 125	x 125	x 125	
x 165	x 165	x 165	
x 215	x 215	x 215	
x 225	x 225	x 225	
x 315	x 315	x 315	
x 325	x 325	x 325	

Tab. 3.1.2.

DIMENSIONS OF MIDDLE GRILLES	
nominal dimensions $W_s \times H$	
1000 x 75	1000 x 215
x 115	x 225
x 125	x 315
x 165	x 325

3.2. Grilles

Fig. 4 Grilles with concealed fastening - blades pitch 12,5 mm

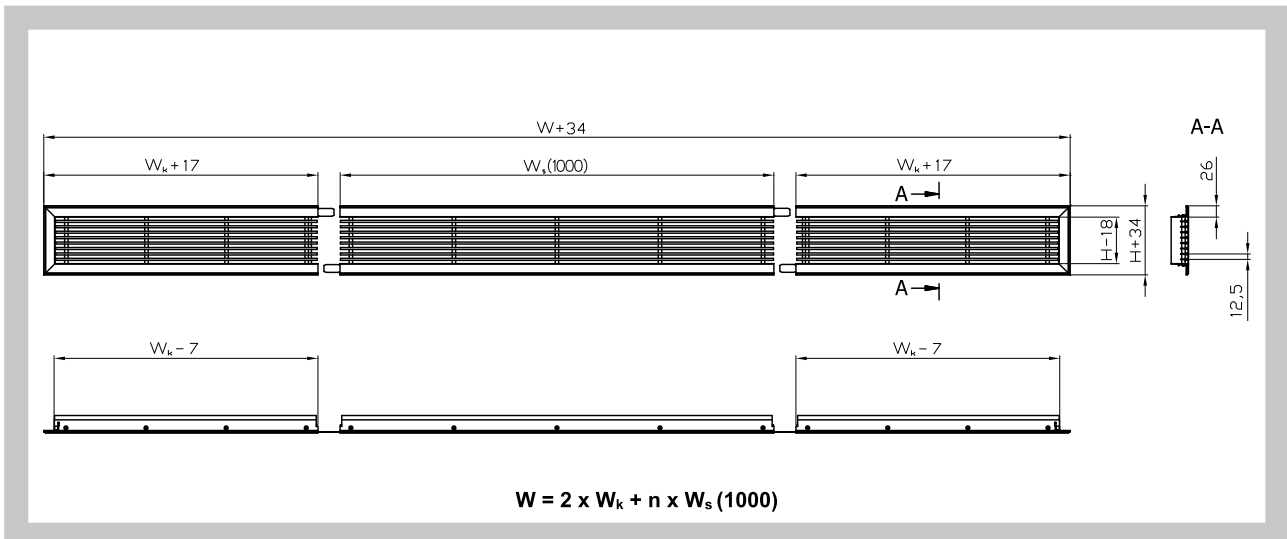


Fig. 5 Grilles with concealed fastening - blades pitch 20 mm

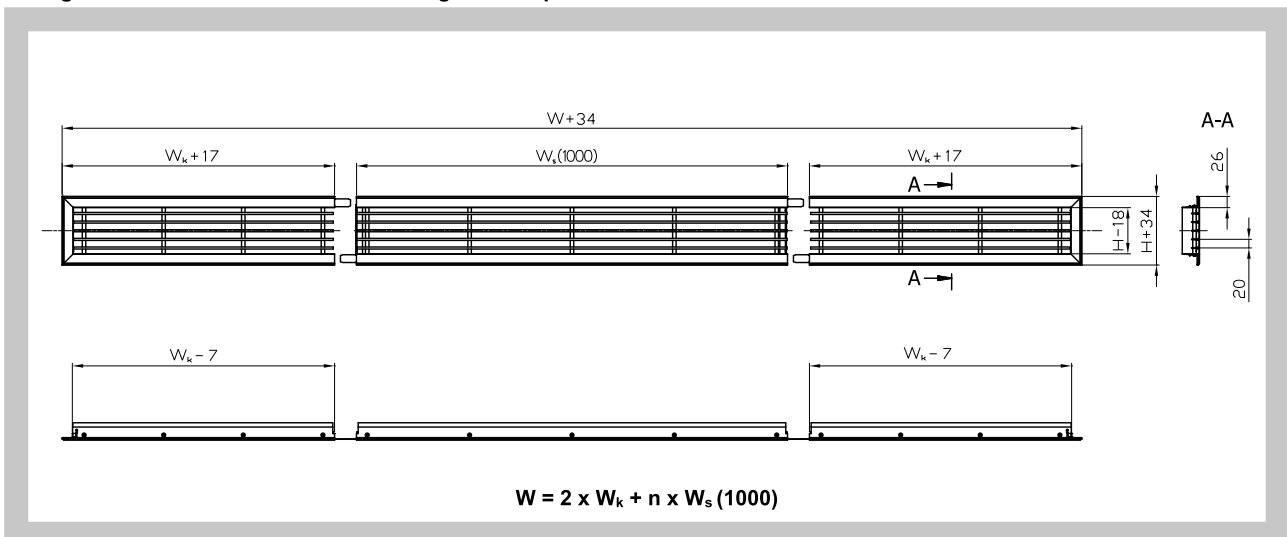


Fig. 6 Detail of blade profile

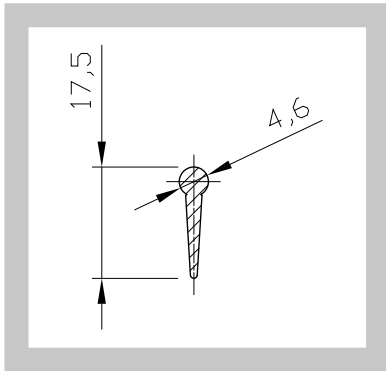


Fig. 7 Detail of concealed fastening

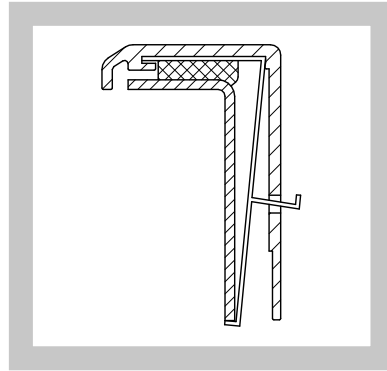


Fig. 8 Detail of leaf on fixation frame

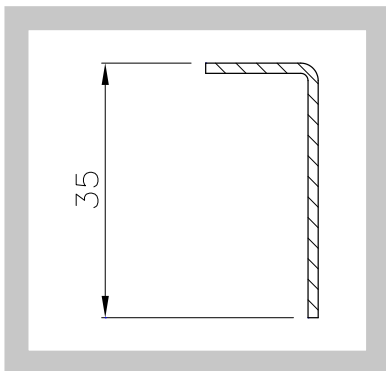


Fig. 9 Detail of spring clip

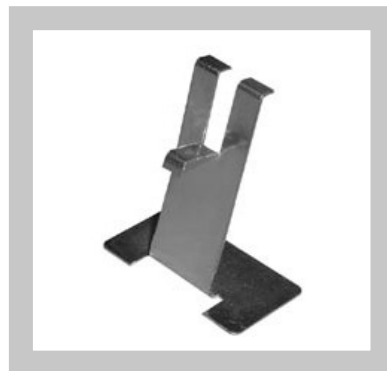


Fig. 10 Grilles with screwed fastening - blades pitch 12,5 mm

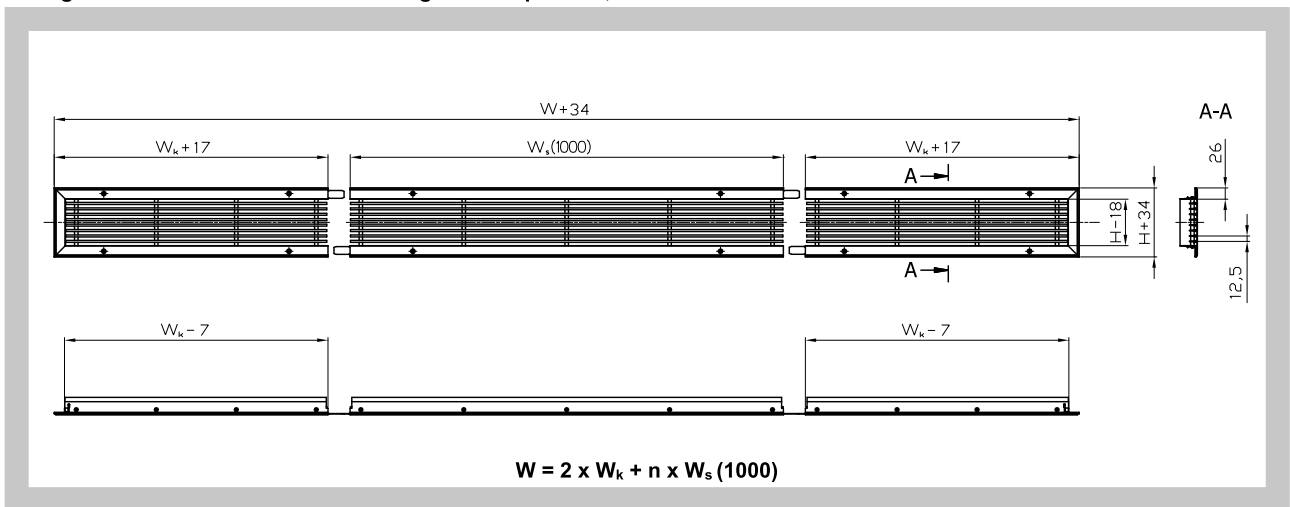


Fig. 11 Grilles with screwed fastening - blades pitch 20 mm

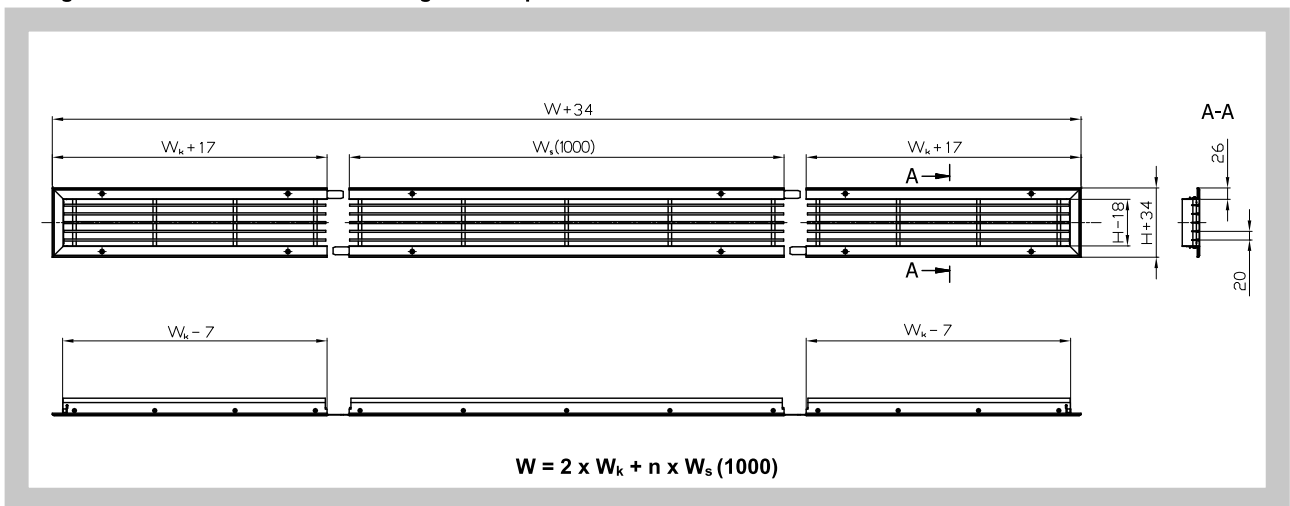
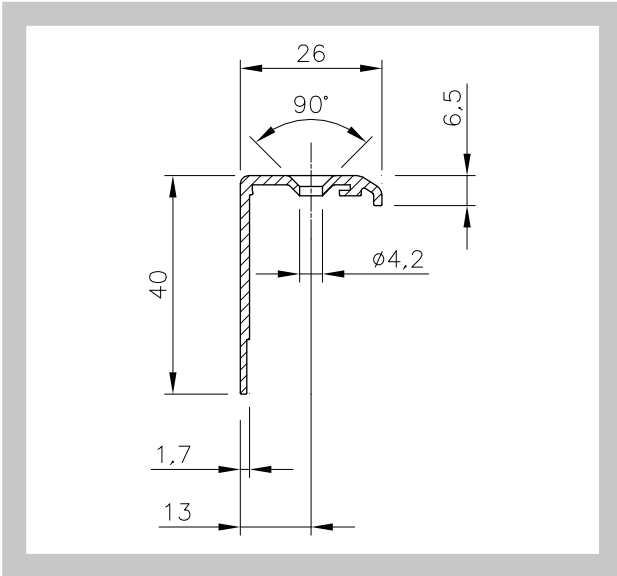


Fig. 12 Grille frame - screwed fastening



3.3. Fixing frames

Fig. 13 Fixing frame without fixtures UR

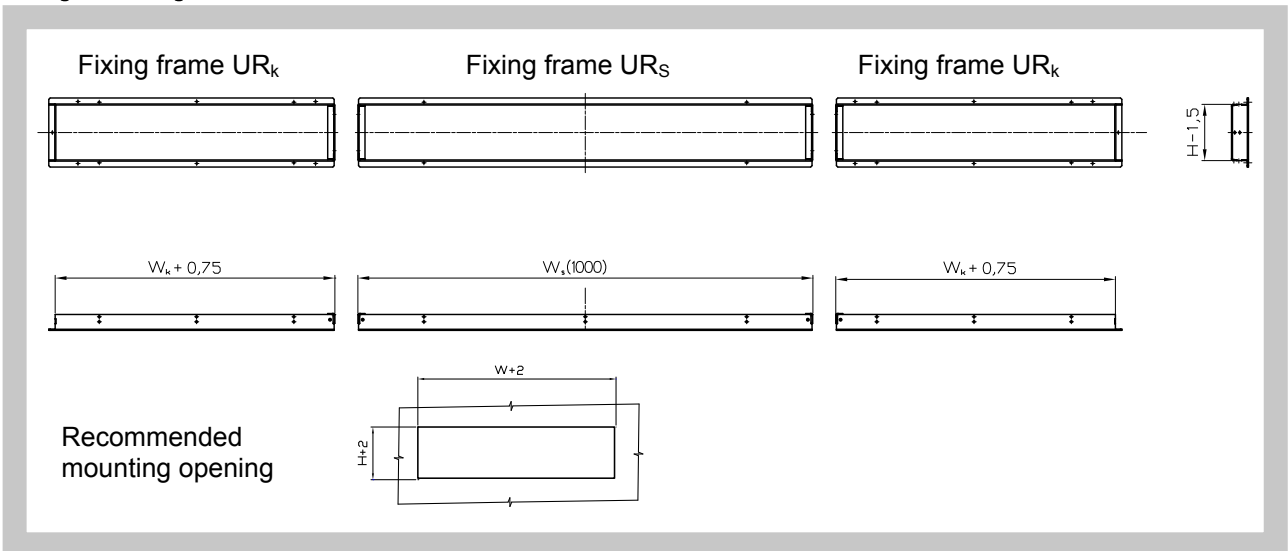


Fig. 14 Fixing frame with screwed fixtures UR1

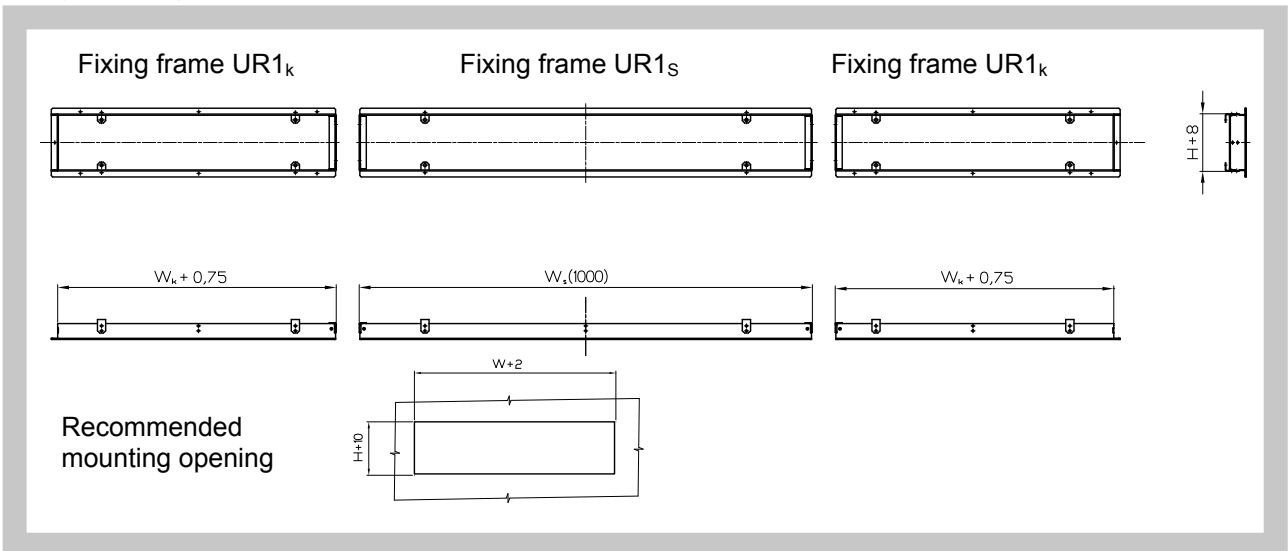
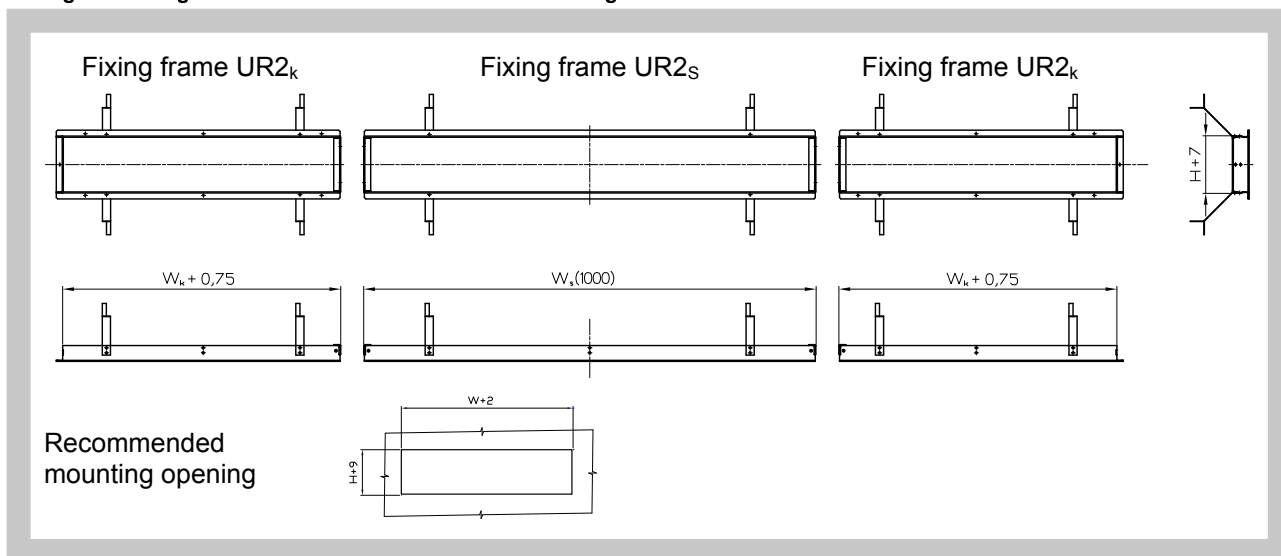


Fig. 15 Fixing frame with fixtures intended for immuring UR2



3.4. Details of assembly and fixtures

Fig. 16 Detail of frame assembly (Detail of frame by using tearing rivets 3 x 6 mm)

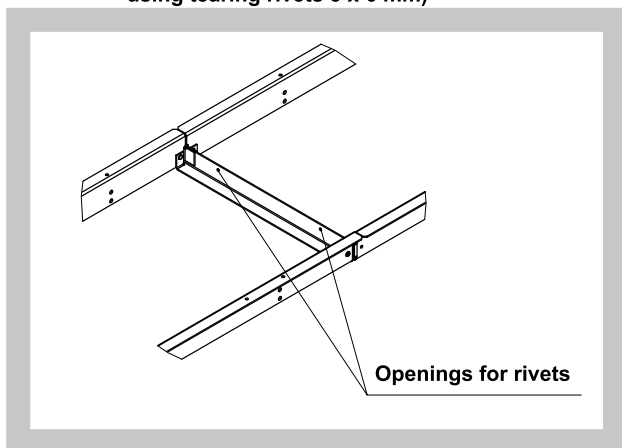


Fig. 17 Detail fixing of fixing frame UR1 fixture (with screwed fixtures)

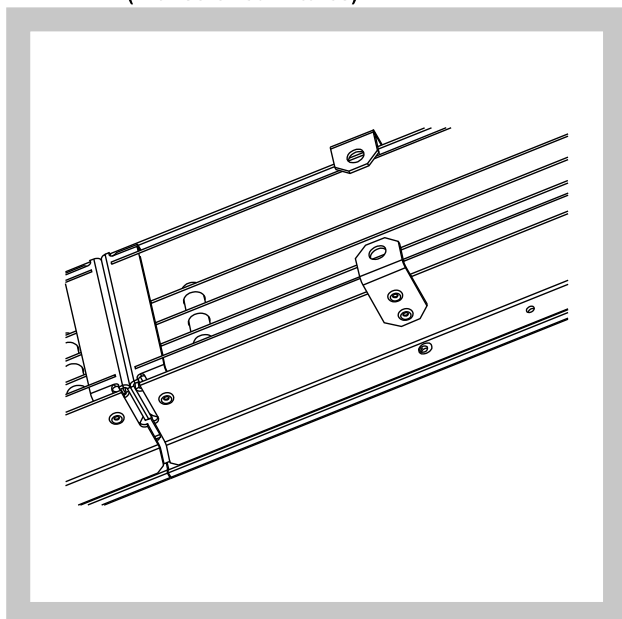
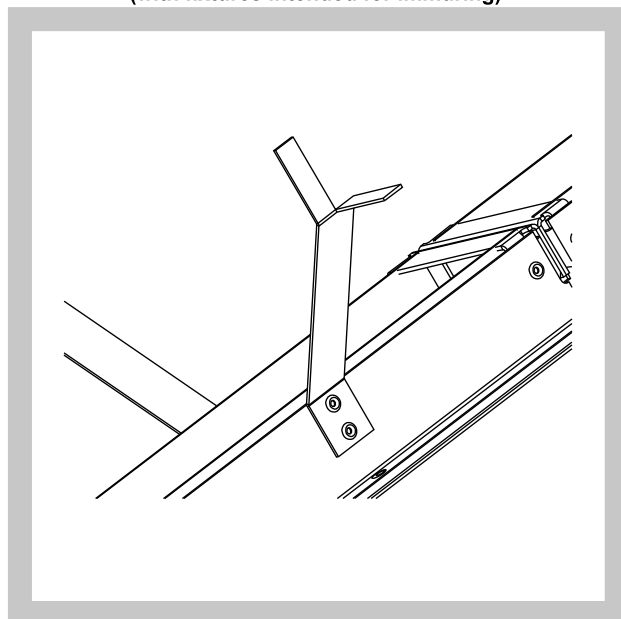


Fig. 18 Detail fixing of fixing frame UR2 fixture (with fixtures intended for immuring)



3.5. Grilles weights - on the request from manufacture.

4. Installation and location

- 4.1. Grilles are intended for installation in building structures.
- 4.2. Frame mounting by means of threaded rods and UR1 fixing frames with screwed fixtures

Fig. 19 Concealed fastening

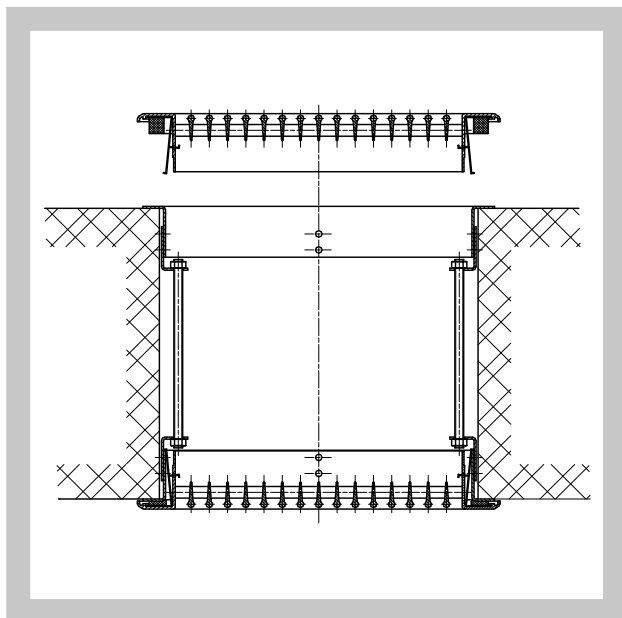
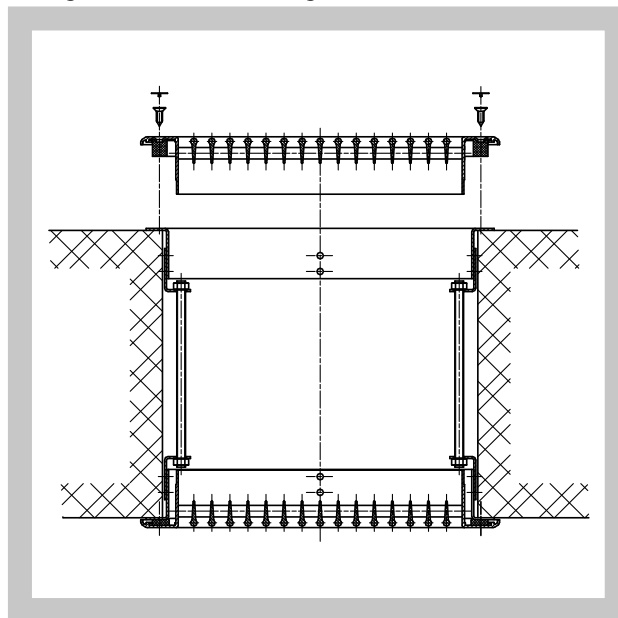


Fig. 20 Screwed fastening



- 4.3. Frame mounting by means of UR2 fixing frame with immured fixtures

Fig. 21 Concealed fastening

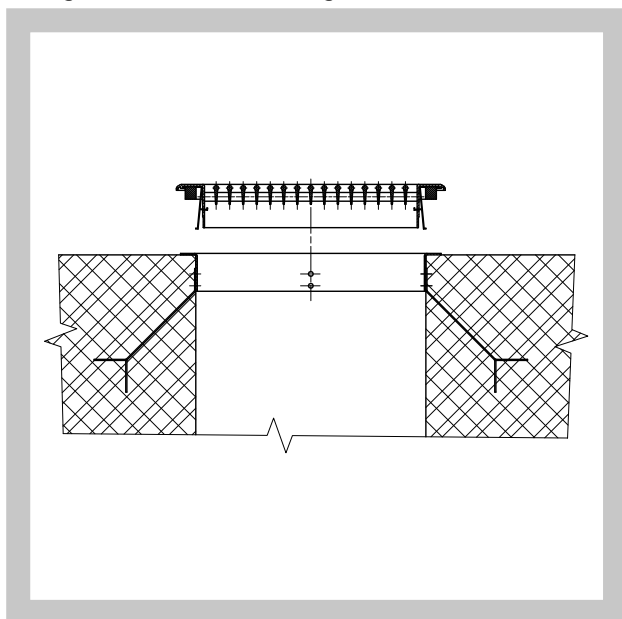
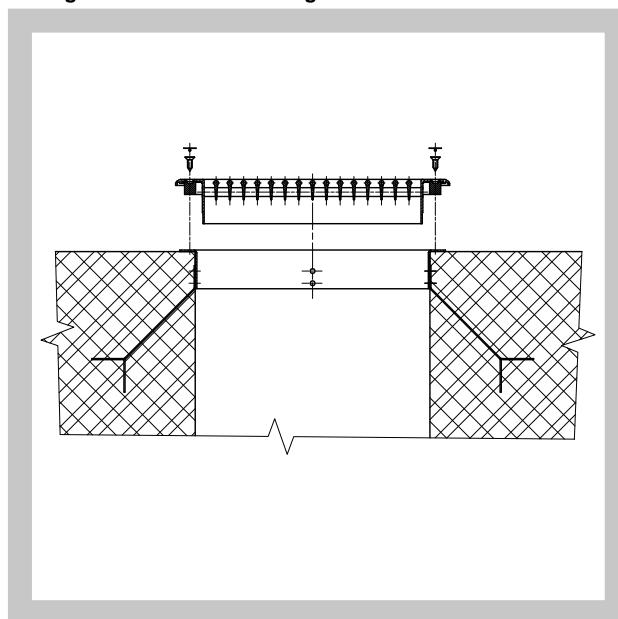


Fig. 22 Screwed fastening



III. TECHNICAL DATA

5. Basic parameters

5.1. Effective area

Tab. 5.1.1. Effective area of side grilles

Size	Effective area [m ²] of side grille S _{ef k}		Size	Effective area [m ²] of side grille S _{ef k}	
	blades pitch			blades pitch	
W _k x H	12,5	20	W _k x H	12,5	20
215 x 75	0,0075	0,0093	515 x 75	0,0190	0,0235
x 115	0,0127	0,0154	x 115	0,0320	0,0388
x 125	0,0137	0,0173	x 125	0,0347	0,0438
x 165	0,0189	0,0234	x 165	0,0477	0,0591
x 215	0,0251	0,0305	x 215	0,0634	0,0771
x 225	0,0262	0,0325	x 225	0,0661	0,0820
x 315	0,0375	0,0457	x 315	0,0948	0,1153
x 325	0,0386	0,0476	x 325	0,0974	0,1203
225 x 75	0,0079	0,0098	525 x 75	0,0974	0,1203
x 115	0,0133	0,0162	x 115	0,0326	0,0396
x 125	0,0144	0,0182	x 125	0,0354	0,0447
x 165	0,0198	0,0246	x 165	0,0486	0,0603
x 215	0,0264	0,0321	x 215	0,0646	0,0786
x 225	0,0275	0,0341	x 225	0,0674	0,0837
x 315	0,0394	0,0480	x 315	0,0967	0,1176
x 325	0,0405	0,0500	x 325	0,0994	0,1227
315 x 75	0,0113	0,0141	615 x 75	0,0228	0,0283
x 115	0,0191	0,0232	x 115	0,0384	0,0467
x 125	0,0207	0,0262	x 125	0,0416	0,0526
x 165	0,0285	0,0353	x 165	0,0573	0,0710
x 215	0,0378	0,0460	x 215	0,0761	0,0926
x 225	0,0395	0,0490	x 225	0,0793	0,0986
x 315	0,0566	0,0689	x 315	0,1138	0,1385
x 325	0,0582	0,0718	x 325	0,1171	0,1445
325 x 75	0,0117	0,0145	625 x 75	0,0232	0,0288
x 115	0,0197	0,0240	x 115	0,0391	0,0474
x 125	0,0214	0,0270	x 125	0,0423	0,0535
x 165	0,0294	0,3650	x 165	0,0582	0,0722
x 215	0,0391	0,0476	x 215	0,0774	0,0941
x 225	0,0408	0,0506	x 225	0,0807	0,1002
x 315	0,0585	0,0712	x 315	0,1157	0,1409
x 325	0,0602	0,0743	x 325	0,1190	0,1469
415 x 75	0,0152	0,0188	715 x 75	0,0266	0,0330
x 115	0,0255	0,0310	x 115	0,0449	0,0545
x 125	0,0277	0,0350	x 125	0,0486	0,0614
x 165	0,0381	0,0472	x 165	0,0669	0,0829
x 215	0,0506	0,0616	x 215	0,0889	0,1081
x 225	0,0527	0,0655	x 225	0,0926	0,1151
x 315	0,0757	0,0921	x 315	0,1329	0,1618
x 325	0,0778	0,0961	x 325	0,1367	0,1687
425 x 75	0,0155	0,0193	725 x 75	0,0270	0,0335
x 115	0,0262	0,0318	x 115	0,0455	0,0553
x 125	0,0284	0,0359	x 125	0,0493	0,0623
x 165	0,0390	0,0484	x 165	0,0678	0,0841
x 215	0,0519	0,0631	x 215	0,0902	0,1097
x 225	0,0541	0,0672	x 225	0,0940	0,1167
x 315	0,0776	0,0944	x 315	0,1348	0,1641
x 325	0,0798	0,0985	x 325	0,1386	0,1711

Size	Effective area [m ²] of side grille S _{ef k}		Size	Effective area [m ²] of side grille S _{ef k}	
	blades pitch			blades pitch	
W _k x H	12,5	20	W _k x H	12,5	20
815 x 75	0,0304	0,0378	1025 x 75	0,0385	0,0477
x 115	0,0513	0,0623	x 115	0,0648	0,0787
x 125	0,0556	0,0703	x 125	0,0703	0,0888
x 165	0,0765	0,0948	x 165	0,0966	0,1198
x 215	0,1016	0,1236	x 215	0,1284	0,1562
x 225	0,1059	0,1316	x 225	0,1339	0,1663
x 315	0,1520	0,1850	x 315	0,1921	0,2337
x 325	0,1563	0,1929	x 325	0,1975	0,2438
825 x 75	0,0308	0,0382	1070 x 75	0,0402	0,0498
x 115	0,0519	0,0631	x 115	0,0677	0,0822
x 125	0,0563	0,0711	x 125	0,0734	0,0928
x 165	0,0774	0,0960	x 165	0,1010	0,1251
x 215	0,1029	0,1252	x 215	0,1342	0,1632
x 225	0,1073	0,1333	x 225	0,1399	0,1737
x 315	0,1539	0,1873	x 315	0,2006	0,2442
x 325	0,1583	0,1954	x 325	0,2063	0,2547
915 x 75	0,0343	0,0425	1130 x 75	0,0425	0,0527
x 115	0,0577	0,0701	x 115	0,0716	0,0869
x 125	0,0626	0,0791	x 125	0,0776	0,0980
x 165	0,0861	0,1067	x 165	0,1067	0,1323
x 215	0,1144	0,1392	x 215	0,1418	0,1725
x 225	0,1192	0,1481	x 225	0,1478	0,1836
x 315	0,1711	0,2082	x 315	0,2121	0,2581
x 325	0,1759	0,2172	x 325	0,2181	0,2692
950 x 75	0,0356	0,0442	1190 x 75	0,0448	0,0555
x 115	0,0600	0,0729	x 115	0,0755	0,0916
x 125	0,0650	0,0822	x 125	0,0818	0,1033
x 165	0,0894	0,1109	x 165	0,1125	0,1394
x 215	0,1189	0,1446	x 215	0,1495	0,1818
x 225	0,1239	0,1539	x 225	0,1558	0,1935
x 315	0,1777	0,2163	x 315	0,2235	0,2720
x 325	0,1828	0,2256	x 325	0,2299	0,2838
1010 x 75	0,0379	0,0470	1225 x 75	0,0461	0,0572
x 115	0,0639	0,0775	x 115	0,0777	0,0944
x 125	0,0692	0,0875	x 125	0,0842	0,1064
x 165	0,0952	0,1180	x 165	0,1158	0,1436
x 215	0,1265	0,1539	x 215	0,1540	0,1873
x 225	0,1319	0,1638	x 225	0,1605	0,1993
x 315	0,1892	0,2302	x 315	0,2302	0,2802
x 325	0,1946	0,2402	x 325	0,2367	0,2922
1015 x 75	0,0381	0,0472			
x 115	0,0642	0,0779			
x 125	0,0696	0,0879			
x 165	0,0957	0,1186			
x 215	0,1272	0,1547			
x 225	0,1325	0,1646			
x 315	0,1902	0,2314			
x 325	0,1955	0,2414			

Tab. 5.1.2. Effective area of middle grilles

Size	Effective area [m ²] of middle grille S _{ef k}		Size	Effective area [m ²] of middle grille S _{ef k}	
	blades pitch			blades pitch	
W _k x H	125	20	W _k x H	12,5	20
1000 x 75	0,0382	0,0474	1000 x 215	0,1276	0,1552
x 115	0,0644	0,0874	x 225	0,1330	0,1652
x 125	0,0698	0,0882	x 315	0,1908	0,2322
x 165	0,0960	0,1282	x 325	0,1962	0,2422

Effective area of grilles S_{ef} [m²] = 2 x S_{ef k} + n x S_{ef s} [m²], n = number of middle grilles

6. Calculation and determination values

\dot{V}	[m ³ .h ⁻¹]	volumetric air flow for one grille
w_{ef}	[m.s ⁻¹]	effective grille outlet velocity
Δp_c	[Pa]	total pressure loss at $\rho = 1,2 \text{ kg.m}^{-3}$

Effective velocity w_{ef}

$$w_{ef} [\text{m.s}^{-1}] = (\dot{V} [\text{m}^3.\text{h}^{-1}] / 3600) / S_{ef} [\text{m}^2]$$

6.1. Pressure losses

Diagram 6.1.1. Pressure losses

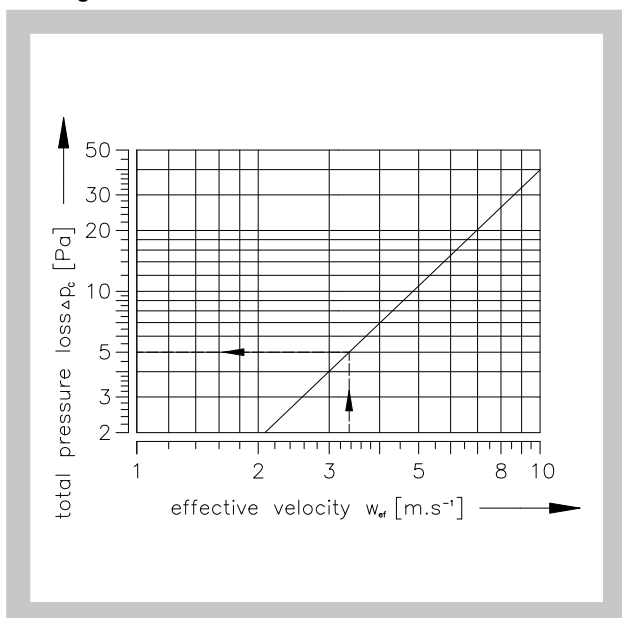
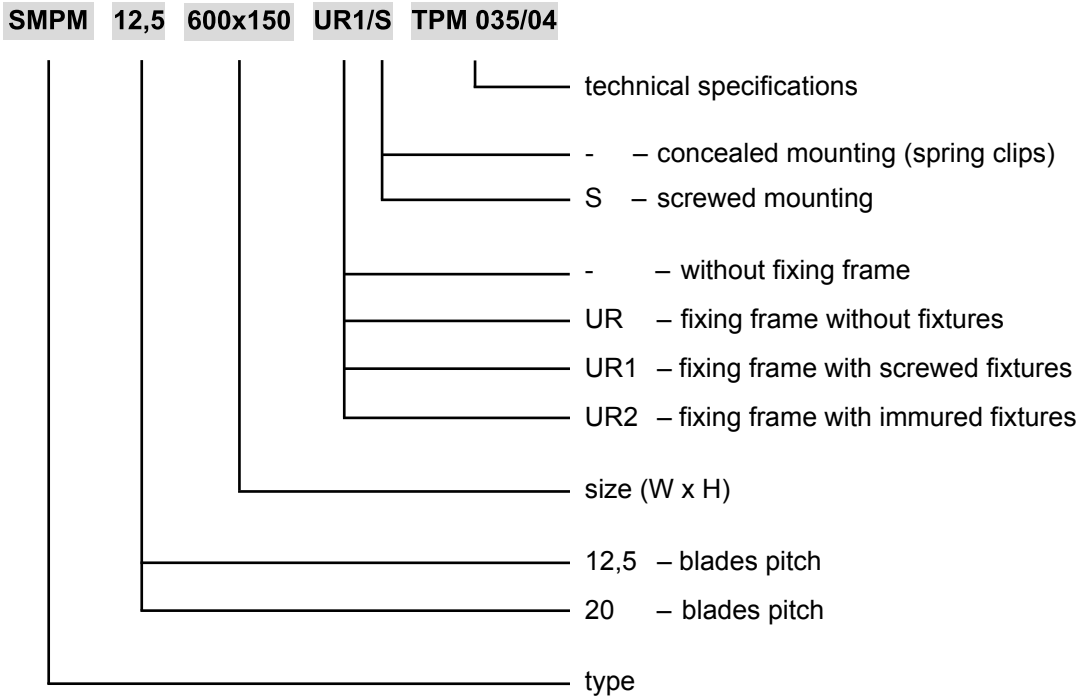


Fig. 23 Example

Given data:	Grille SMPM 12,5 2630 x 215 $\dot{V} = 4000 \text{ m}^3.\text{h}^{-1}$
Grille assembly :	2 pcs side grilles 315 x 215 and 2 pcs middle grilles 1000 x 215
Tab. 3.1.1. a Tab. 3.1.2. :	$S_{ef} = 2 \times S_{ef\ k} + 2 \times S_{ef\ s}$ $S_{ef\ k} = 0,0378 \text{ m}^2$ $S_{ef\ s} = 0,1276 \text{ m}^2$ $S_{ef} = 2 \times 0,0378 + 2 \times 0,1276 = 0,33 \text{ m}^2$
Calculation :	$w_{ef} [\text{m.s}^{-1}] = (\dot{V} [\text{m}^3.\text{h}^{-1}] / 3600) / S_{ef} [\text{m}^2]$ $w_{ef} = 3,37 \text{ m.s}^{-1}$
Diagram 6.1.1.	$\Delta p_c = 5 \text{ Pa}$

IV. ORDERING INFORMATION

7. Ordering key



V. MATERIAL, FINISHING

8. Material

- 8.1. Grille components are made of drawn aluminium sections. Section surfaces are eloxal coated.
- 8.2. Fixing frames with fixtures are made of galvanized sheet. Spring clips are made of spring steel with galvanized surface. The sealing along the grille perimeter is made of plastic foam self-adhesive tape.

VII. PACKING, TRANSPORTATION, TAKE-OVER, STORAGE AND GUARANTEE

9. Logistic terms

- 9.1. Vents are supplied packed in shrinking foil. While transported and stored they must be protected against mechanical damage and weather conditions.
- 9.2. If no method of take-over is mentioned in the order, handing the goods over to the carrier will be considered as a take-over.
- 9.3. Vents have to be stored in closed premises, in the environment without aggressive steams, gases and dusts. Temperature range have to be from -5 to +40°C and relative humidity max. 80%.

10. Guarantee

- 10.1. The manufacturer provides a guarantee to the adjustable vents for the period of 24 months from the date of shipment.

VI. INSTALATION

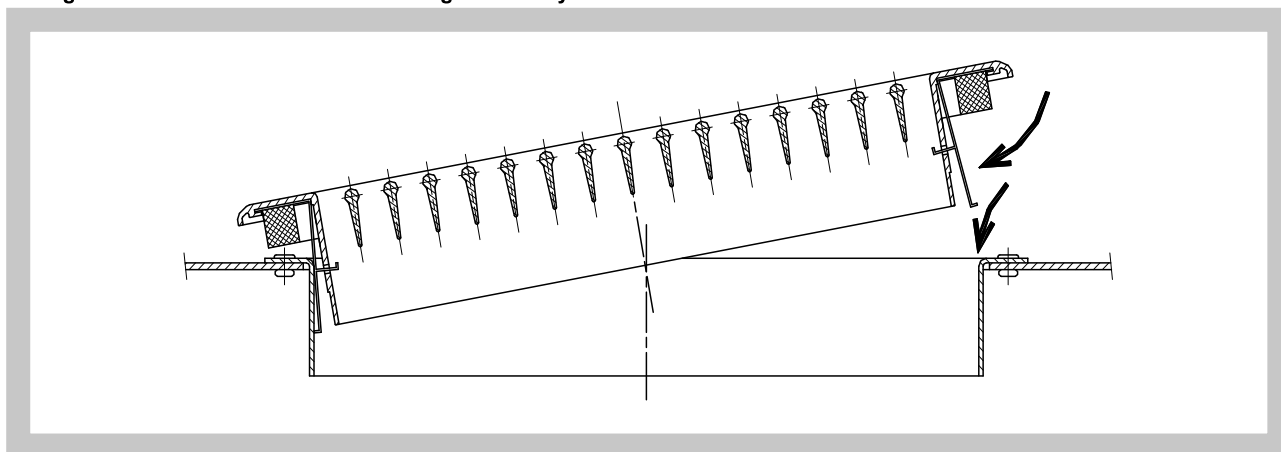
11. Assembly and disassembly

11.1. Grilles with concealed fastening - assembly

Delivery components of the grilles are the spring clips and the seal.

- 1) Install the fixation frame UR, UR1 or UR2 (assembled from side and middle frames) or if required, the atyFigal frame furnished with an edge for gripping the spring clips (see page 6 - detail of leaf on fixation frame).
- 2) Place the grille into the fixation frame, press the spring clips and push in the grille. The tongues of the spring clips grip onto the edge of the frame.

Fig. 25 Grilles with concealed fastening - assembly

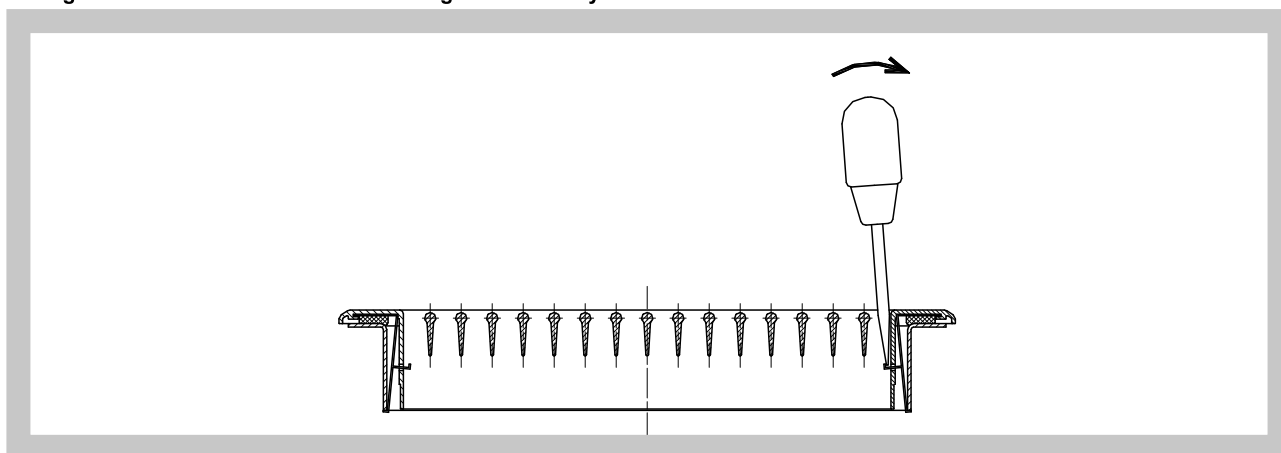


11.2. Grilles with screwed fastening - assembly

- 1) Install the fixation frame UR, UR1 or UR2 (assembled from side and middle frames).
- 2) Place the grille into the fixation frame and secure the screws.

11.3. Grilles with concealed fastening - disassembly

Fig. 26 Grilles with concealed fastening - disassembly



- 1) With a screwdriver (through the openings between the lamellas of the grille), press beyond the jutting-out the tongues of the spring clips from the edge of the frame.
- 2) Take out the grille.

11.4. Grilles with screwed fastening - disassembly

- 1) Unscrew the screws.
- 2) Take out the grille.

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