

Air Louver

Installation Manual

201807-vol.4

 AIR WATER ECOROCA INC.

Air Louver Installation manual

Issued on September 01, 2012
Revised on July 01, 2018

- Be sure to read this manual before installing.
- Be sure to respect precautions since the important contents are shown in this manual.

● Prohibited matters

- Air Louver is a louver material for making design, blind or sunshade on buildings. Don't use anything other than original purpose of louver, deck or others are unsuitable.
- Air Louver is a flammable material, it shall not be used near fuel tanks or ventilators of hot air.
- It shall be respected this manual to use or install Air Louver.

● Precautions

- Please keep products horizontally in the warehouse, avoiding direct sunlight, with the product packed. It causes bend or warp of products.
- In case of carrying long products more than 3 meters, it shall be carried by two or more people.
- Improper method of installation or support span causes warp, bend or break.
- Top layer of Air Louver is made by wood materials and polypropylene and extruded with aluminum. Please keep proper clearance under this manual in light of expansion due to heat or water absorption.
- Be sure to calculate and confirm the intensity of louver separately from this manual if it will be expected that an excessive concentrated load is applied on louver.
- Be sure to calculate and confirm the intensity of louver separately from this manual if it is installed in horizontal in snow-covered regions.
- In case of using Air Louver in heavy-snow regions, it is necessary to consider safety measures, for example, place of using, safety catcher of falling snow from louver or removing snow on louver.

● Expansion of Air Louver

Air Louver has expansion properties due to heat, therefore the expansion rate is different depending on installed season.

Be sure to design to keep clearance in light of coefficient of thermal expansion as below.

Evaluation item		Measured value
Thermal property	Coefficient of thermal expansion JIS-K6911 (x 10 ⁻⁵ 1/°C)	2.5

Example) Air Louver Length : L (mm) , Temperature difference : T ()
Clearance : ΔL (mm) = L x T x Coefficient of thermal expansion

○ Calculation of clearance

Condition : Air Louver HB-1003 : 102.6x32.6 L=3,000
Temperature difference : 10°C~70°C (Difference 60)

$$\begin{aligned} \text{Clearance } \Delta L &= 3,000 \text{ (mm)} \times 60 \text{ (}^\circ\text{C)} \times 2.5 \times 10^{-5} \text{ (1/}^\circ\text{C)} \\ &= 4.5 \text{ (mm)} \end{aligned}$$

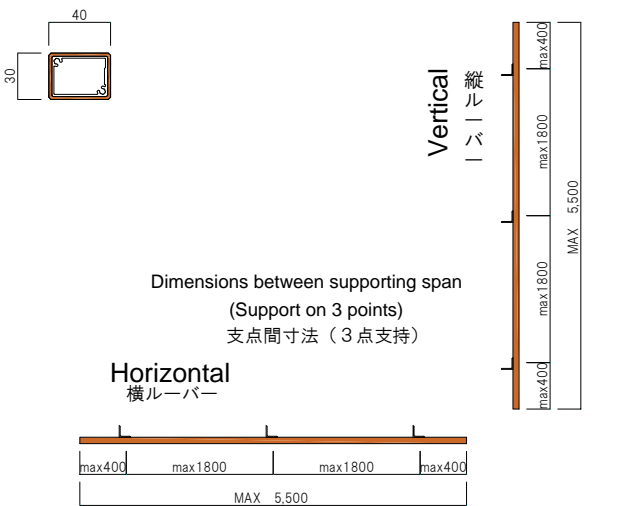
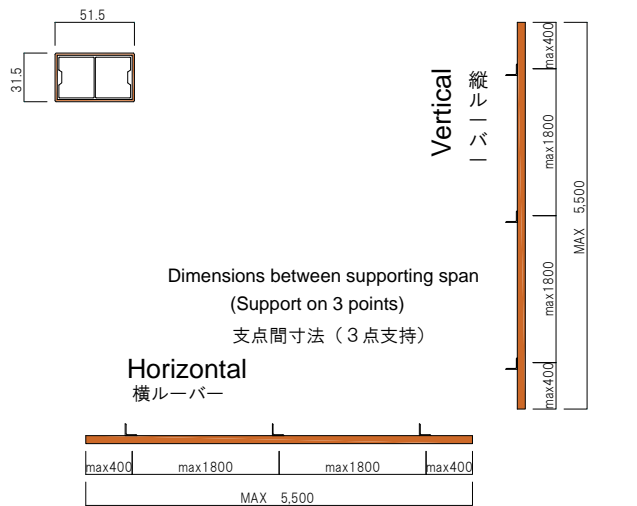
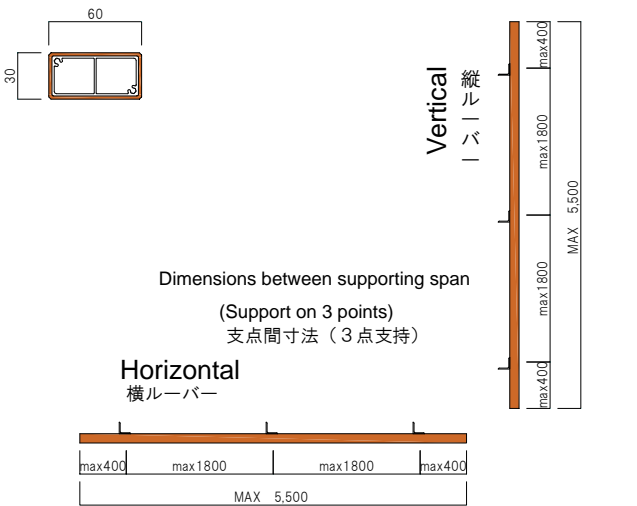
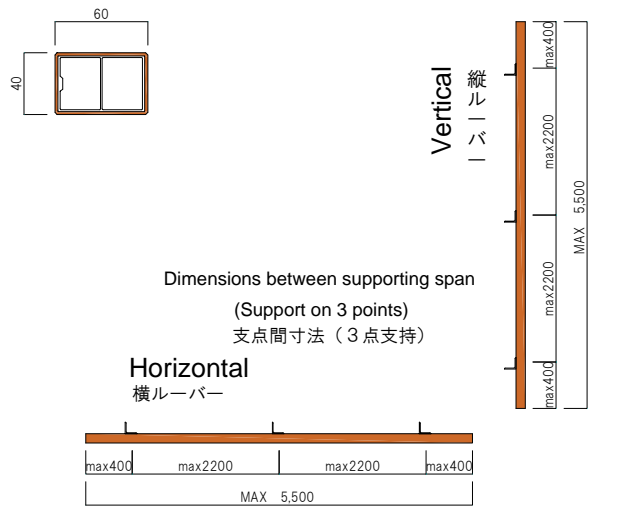
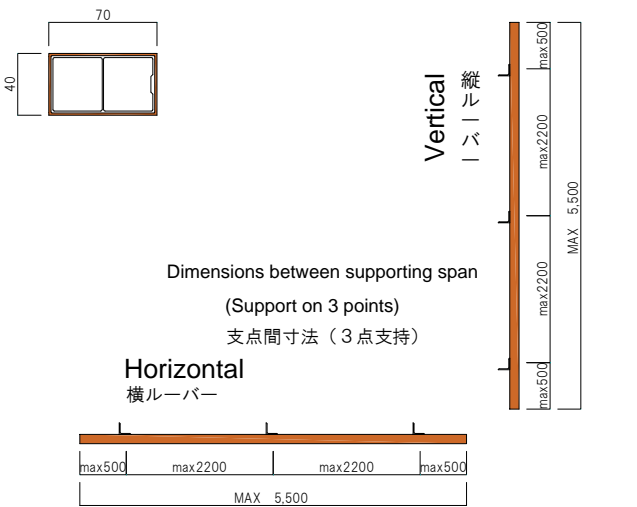
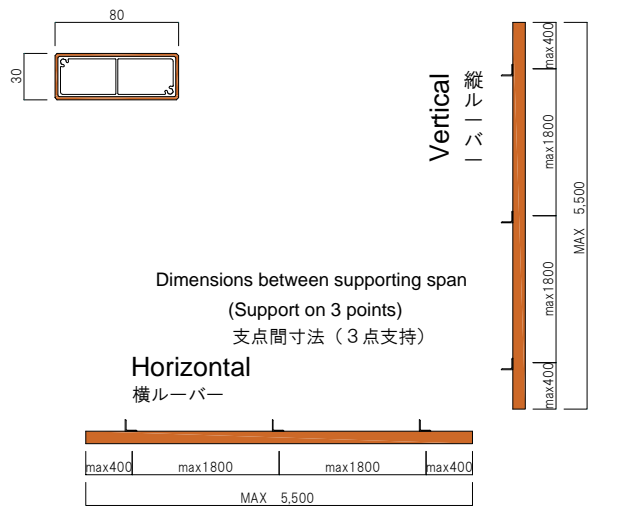
A clearance of 9 mm or more at maximum is required under above condition.

List of Air Louver

Calculation basis of supporting span:

Tokyo(V0=34m/sec) Classification of ground roughness: Height of buildings H=21m Designed wind pressure 2650N/m²

算出条件：東京都(V0=34m/s) 地表面粗度区分Ⅲ 建物高さH=21m 設計風圧力W=2650N/m²

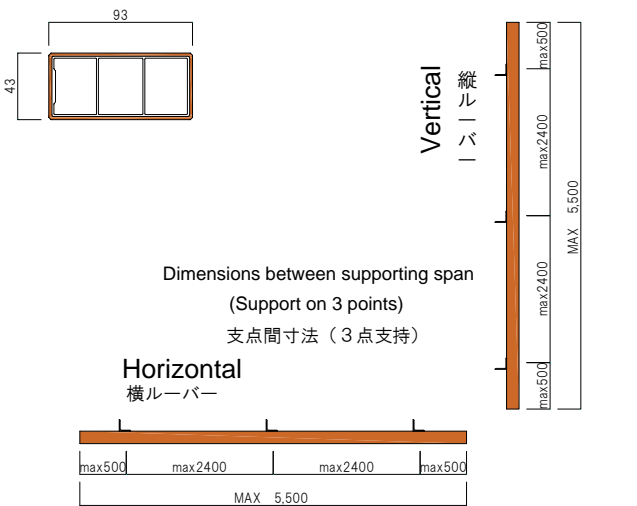
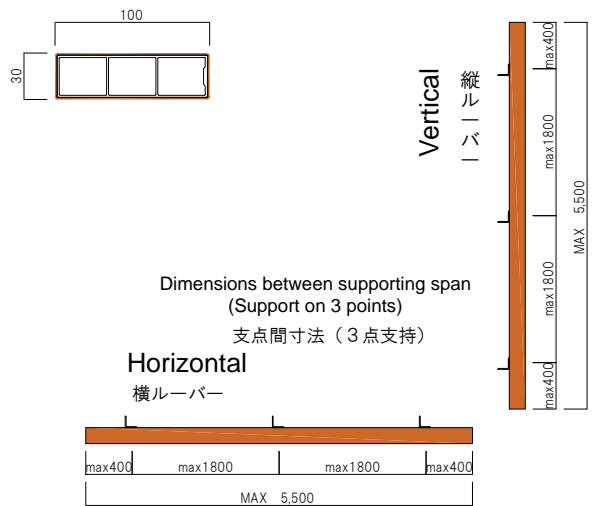
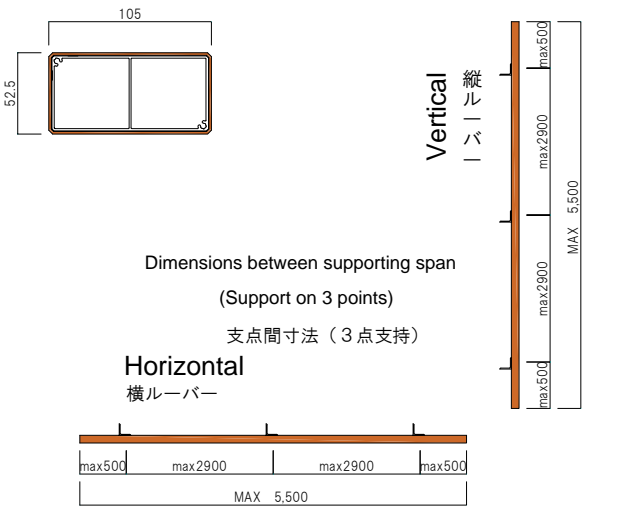
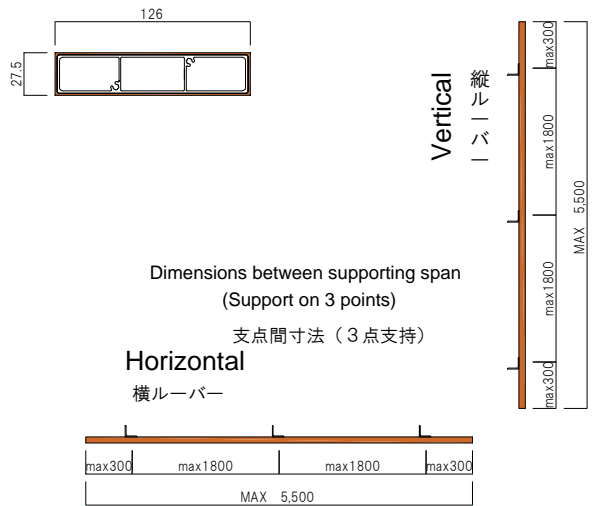
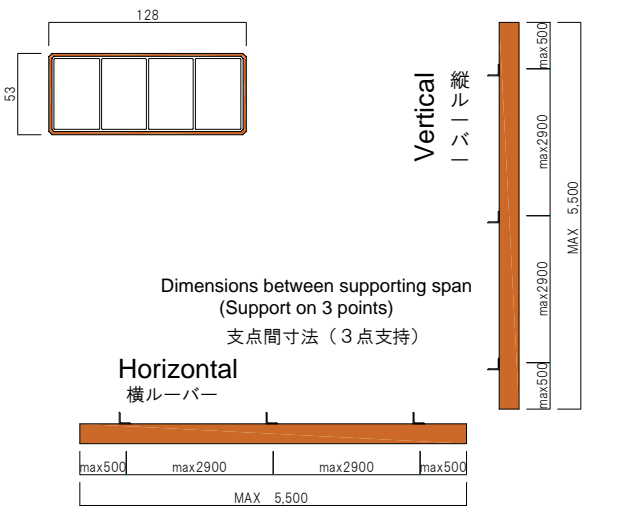
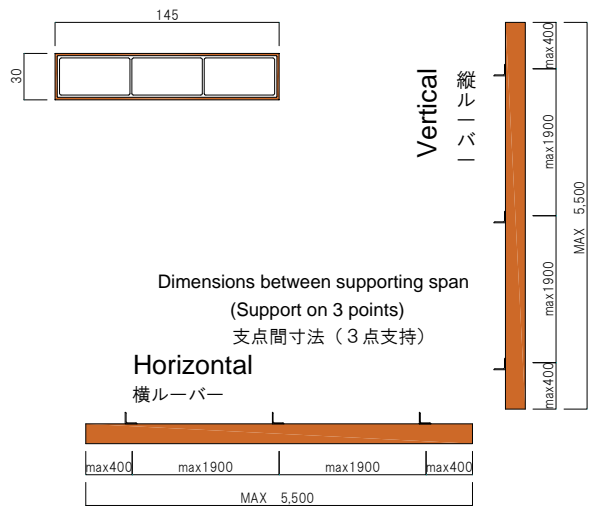
HB-0403 (Profile 40x30)	HB-0503 (Profile 51.5x31.5)
 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>	 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>
HB-0603 (断面 60x30)	HB-0604 (断面 60x40)
 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>	 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>
HB-0704 (断面 70x40)	HB-0803 (断面 80x30)
 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>	 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>

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Tokyo($V_0=34\text{m/sec}$) Classification of ground roughness: Height of buildings $H=21\text{m}$ Designed wind pressure 2650N/m^2

算出条件：東京都($V_0=34\text{m/s}$) 地表面粗度区分Ⅲ 建物高さ $H=21\text{m}$ 設計風圧力 $W=2650\text{N/m}^2$

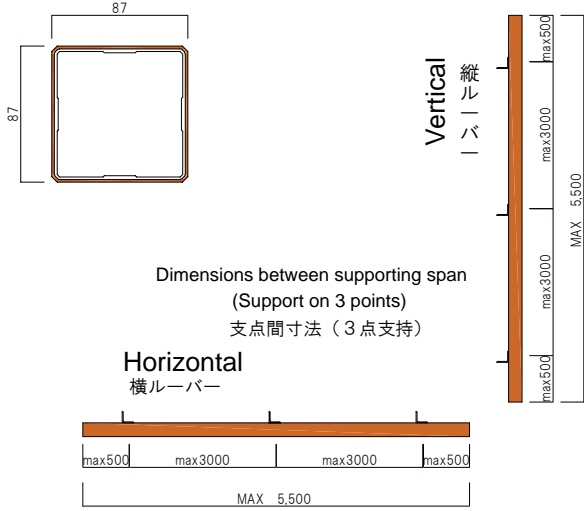
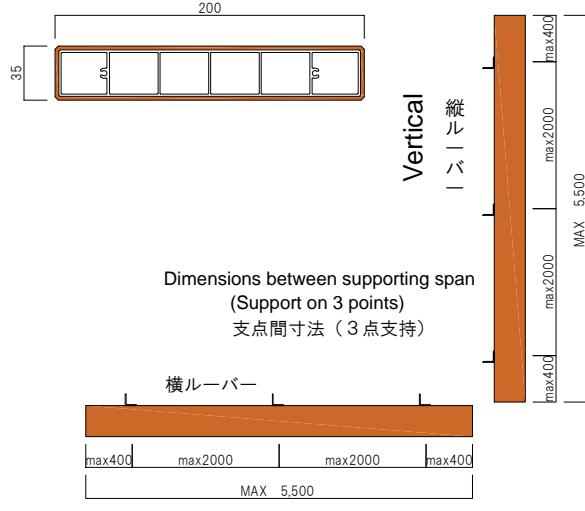
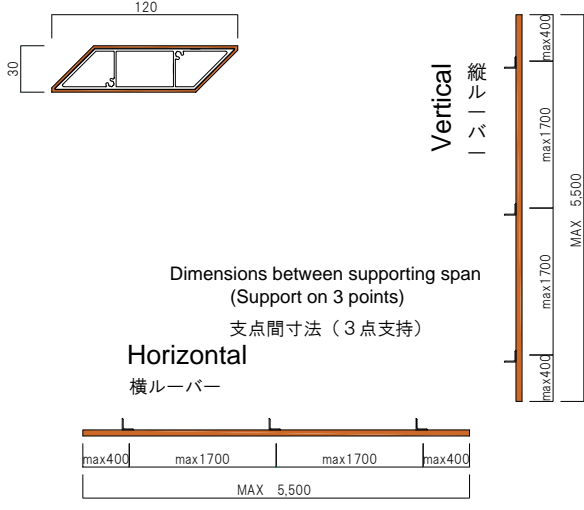
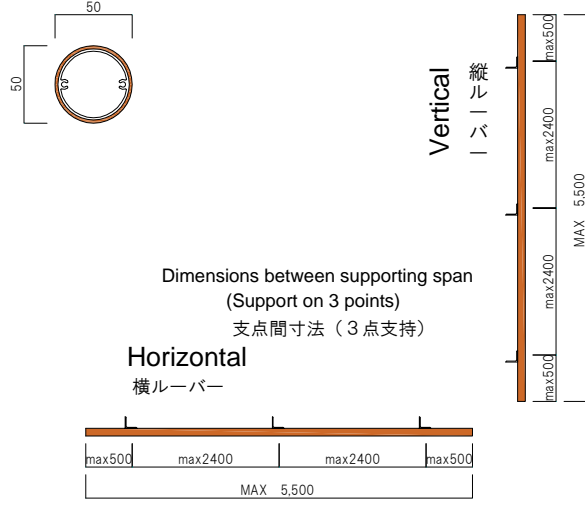
HB-0904 (Profile 93x43)	HB-1003 (Profile 100x30)
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HB-1005 (断面 105x52.5)	HB-1303 (Profile 126x27.5)
 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p>	 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p>
HB-1305 (断面 128x53)	HB-1503 (Profile 145x30)
 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p>	 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p>

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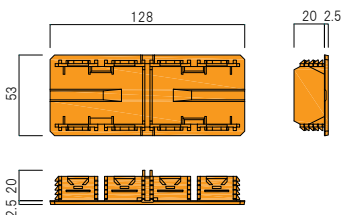
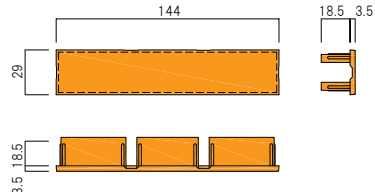
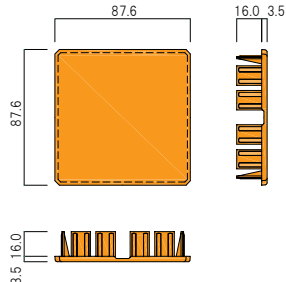
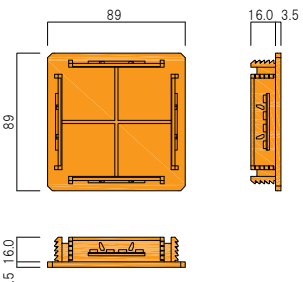
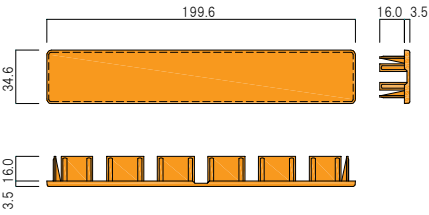
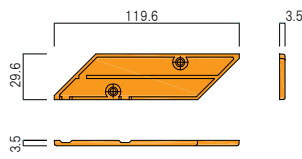
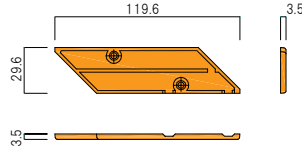
算出条件：東京都(V0=34m/s) 地表面粗度区分Ⅲ 建物高さH=21m 設計風圧力W=2650N/m²

HB-0909 (断面 87x87)	HB-2003 (Profile 200x35)
 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>	 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>
HB-1203 (Profile 120x30)	HB-0005 (Profile φ 50)
 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>	 <p>Dimensions between supporting span (Support on 3 points) 支点間寸法 (3点支持)</p> <p>Horizontal 横ルーバー</p> <p>Vertical 縦ルーバー</p>

End Caps for Air Louver

HB-0403-EC (ASA)	HB-0503-EC (ASA)	HB-0503-EC (WPC)
<p>(40x30)</p>	<p>(51.5x31.5)</p>	<p>(51.5x31.5)</p>
HB-0603-EC (ASA)	HB-0603-EC (WPC)	HB-0604-EC (ASA)
<p>(60x30)</p>	<p>(60x30)</p>	<p>(60x40)</p>
HB-0704-EC (ASA)	HB-0803-EC (ASA)	HB-0803-EC (WPC)
<p>(70x40)</p>	<p>(80x30)</p>	<p>(80x30)</p>
HB-0904-EC (ASA)	HB-1003-EC (WPC)	HB-1005-EC (ASA)
<p>(93x43)</p>	<p>(100x30)</p>	<p>(105x52.5)</p>
HB-1303-EC (ASA)	HB-1303-EC (WPC)	HB-1305-EC (ASA)
<p>(126x27.5)</p>	<p>(126x27.5)</p>	<p>(128x53)</p>

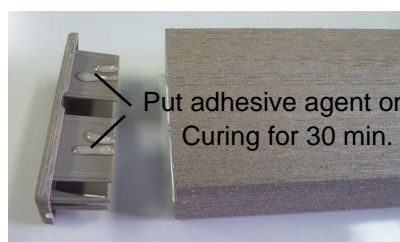
End Caps for Air Louver

HB-1305-EC (ASA)	HB-1503-EC (ASA)	HB-0909-EC (ASA)
<p>(128x53)</p> 	<p>(145x30)</p> 	<p>(87x87)</p> 
HB-0909-EC (WPC)	HB-2003-EC (ASA)	HB-1203-EC(A) (ASA)
<p>(87x87)</p> 	<p>(200x35)</p> 	<p>(120x30)</p> 
HB-1203-EC(B) (ASA)		
<p>(120x30)</p> 		

Surface of end cap is mat and etching finish

Weep hole on four side

Attaching end cap to louver by adhesive agent "Silyation Urethane type"



エア・ルーバー 支持スパン早見表

Simplified chart for supporting span of Airlouver

次の 手順1 ~ 手順7 に従って、各取付ピッチの算定をしてください。

Calculate installation pitch according to the procedures from 1 to 7.

手順1 基準風速を求めます。 Procedure 1 : Check reference wind speed by below Table 1

【Table1】 Simplified chart for reference wind speed

No.	Region category	Prefecture	Unit:m/sec	
1	Hokkaido	Hokkaido	36	
2	Tohoku	Aomori	34	
		Iwate	34	
		Miyagi	30	
		Akita	34	
		Yamagata	32	
		Fukushima	30	
3	Kantou	Ibaragi	36	
		Tochigi	30	
		Gunma	30	
		Saitama	34	
		Chiba	38	
		Tokyo	34	
		Kanagawa	36	
		Tokyo (Isolated island)	42	
4	Koshinetsu and Hokuriku	Niigata	32	
		Toyama	30	
		Ishikawa	30	
		Fukui	32	
		Yamanashi	32	
		Nagano	30	
5	Tokai	Gifu	34	
		Shizuoka	36	
		Aichi	34	
		Mie	34	
6	Kinki	Shiga	34	
		Kyoto	32	
		Osaka	34	
		Hyogo	34	
		Nara	34	
		Wakayama	34	
7	Chugoku	Tottori	32	
		Shimane	34	
		Okayama	32	
		Hiroshima	34	
		Yamaguchi	34	
8	Shikoku	Tokushima	38	
		Kagawa	34	
		Ehime	34	
		Kochi	40	
9	Kyushu and Okinawa	Fukuoka	34	
		Saga	34	
		Nagasaki	36	
		Kumamoto	34	
		Oita	32	
		Miyazaki	36	
		Kagoshima	46	
		Okinawa	46	

※Refer to notification #1454 by Ministry of Land, Infrastructure and Transport

※Refer to notification #1454 Tale 2 by Ministry of Land, Infrastructure and Transport, if it needs reference wind speed on municipality.

手順2 地表面粗度区分を求めます。 Procedure 2 : Check classification of ground roughness by below Table 3

【表2】 地表面粗度区分表 【Table 2】 Chart for classification of ground roughness

建築物の高さ Height of Building	都市計画区域内 Within city planning area			都市計画区域外 Outside city planning area
	海岸線又は湖岸線(対岸までの距離が1500m以上のものに限る)までの距離 Distance to coastline or shoreline of lake (Limit 1500m and more distance to opposite shore)			
	200m以下 200m and less	200m超~500m以下 more than 200m to 500m and less	500m超 more than 500m	
31m超 More than 31m	II		III	II
13m超~31m以下 More than 13m to 31m and less				
13m以下 13m and less				III

手順3 設計風圧力を求めます。 Procedure 3 : Check the design wind pressure by below Table 3

【表3】 風圧力早見表(再現期間100年・開放型) 【Table 3】 Simplified chart for design wind pressure(reccurrence interval 100 years and open type) (Unit:N/m²)

基準風速 (m/s) Reference wind speed	30		32		34		36		38		40		42		44		46	
	II	III	II	III	II	III	II	III	II	III	II	III	II	III	II	III	II	III
3	1813	1205	2063	1371	2329	1547	2611	1735	2909	1933	3223	2141	3553	2361	3900	2591	4262	2832
6	1997	1359	2272	1546	2565	1745	2876	1957	3204	2180	3551	2416	3915	2663	4296	2923	4696	3195
9	2230	1573	2537	1789	2864	2020	3211	2264	3578	2523	3965	2796	4371	3082	4797	3383	5243	3697
12	2403	1736	2734	1975	3087	2229	3461	2499	3856	2785	4272	3085	4710	3402	5170	3733	5650	4081
15	2570	1866	2924	2123	3301	2397	3700	2687	4123	2994	4568	3318	5036	3658	5528	4014	6041	4388
18	2714	1974	3088	2245	3486	2535	3908	2842	4355	3166	4825	3509	5320	3888	5838	4245	6381	4640
21	2843	2063	3234	2347	3651	2650	4093	2971	4561	3310	5053	3668	5571	4044	6115	4438	6683	4851
24	2959	2138	3366	2433	3800	2747	4261	3079	4747	3431	5260	3802	5799	4191	6365	4600	6956	5028
27	3065	2202	3487	2505	3937	2828	4414	3171	4918	3533	5449	3914	6008	4316	6593	4736	7206	5177
30	3164	2255	3599	2566	4063	2897	4556	3247	5076	3618	5624	4009	6201	4420	6805	4851	7438	5302
35	3313	2380	3770	2708	4256	3057	4771	3427	5316	3819	5890	4231	6494	4665	7127	5120	7790	5596
40	3449	2511	3924	2857	4430	3225	4966	3615	5533	4028	6131	4464	6759	4921	7419	5401	8108	5903
45	3573	2632	4065	2994	4589	3380	5145	3790	5732	4223	6352	4679	7003	5158	7685	5661	8400	6188
50	3953	2943	4498	3348	5078	3780	5693	4238	6343	4722	7028	5232	7748	5768	8504	6331	9295	6919
60	4737	3591	5390	4086	6084	4613	6821	5171	7600	5762	8421	6384	9284	7039	10190	7725	11137	8443
70	4961	3820	5645	4346	6372	4906	7144	5500	7960	6128	8820	6791	9724	7487	10672	8217	11664	8980
80	5164	4029	5875	4584	6633	5175	7436	5802	8285	6465	9180	7163	10121	7897	11108	8667	12141	9473
90	5350	4224	6087	4806	6871	5425	7703	6082	8583	6777	9510	7509	10485	8278	11508	9085	12578	9930
100	5521	4405	6282	5012	7092	5659	7951	6344	8859	7068	9816	7832	10822	8635	11877	9477	12981	10358

※詳細は、国土交通省建告第1454号・1458号を参照ください。 Refer to notification #1454 and #1458 by Ministry of Land, Infrastructure and Transport

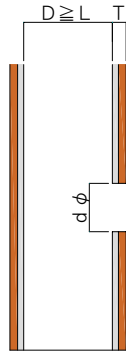
※基準風速は、【表2】 基準風速早見表を参照ください。 Refer to 【Table2】 simplified chart for reference wind speed.

Clasp to Fixing

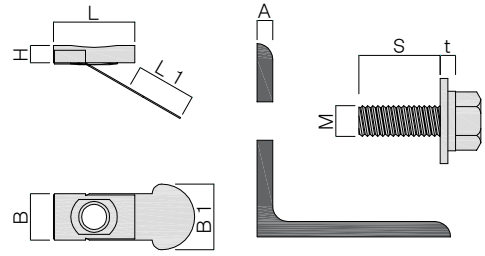
In-pull Nut



Pic. In-pull Nut M8



- PL 6 T = 0.6~3.0
- PL 6 L T = 3.0~9.0
- PL 8 T = 1.2~4.0
- PL 8 L T = 4.0~9.0



CODE	Screw Hole	Min.length of Screw S (mm)	Prepared Hole d φ (mm)	Thickness of Nut H (mm) 厚	Length of Nut L (mm)	Total Length L+L 1 (mm)	External Width B (mm)	Tab Width B 1 (mm)
PL 6	M6	H+T+A+t+α	10.0~10.2	3.5	15.0	28.5	9.5	14.5
Long tab PL 6 L	M6	H+T+A+t+α	10.0~10.2	3.5	15.0	34.5	9.5	14.5
PL 8	M8	H+T+A+t+α	12.5~12.7	4.5	21.0	36.5	12.0	17.0
Long tab PL 8 L	M8	H+T+A+t+α	12.5~12.7	4.5	21.0	41.5	12.0	17.0

施工方法

1

Insert In-pull Nut into the prepared hole on Air Louver

2

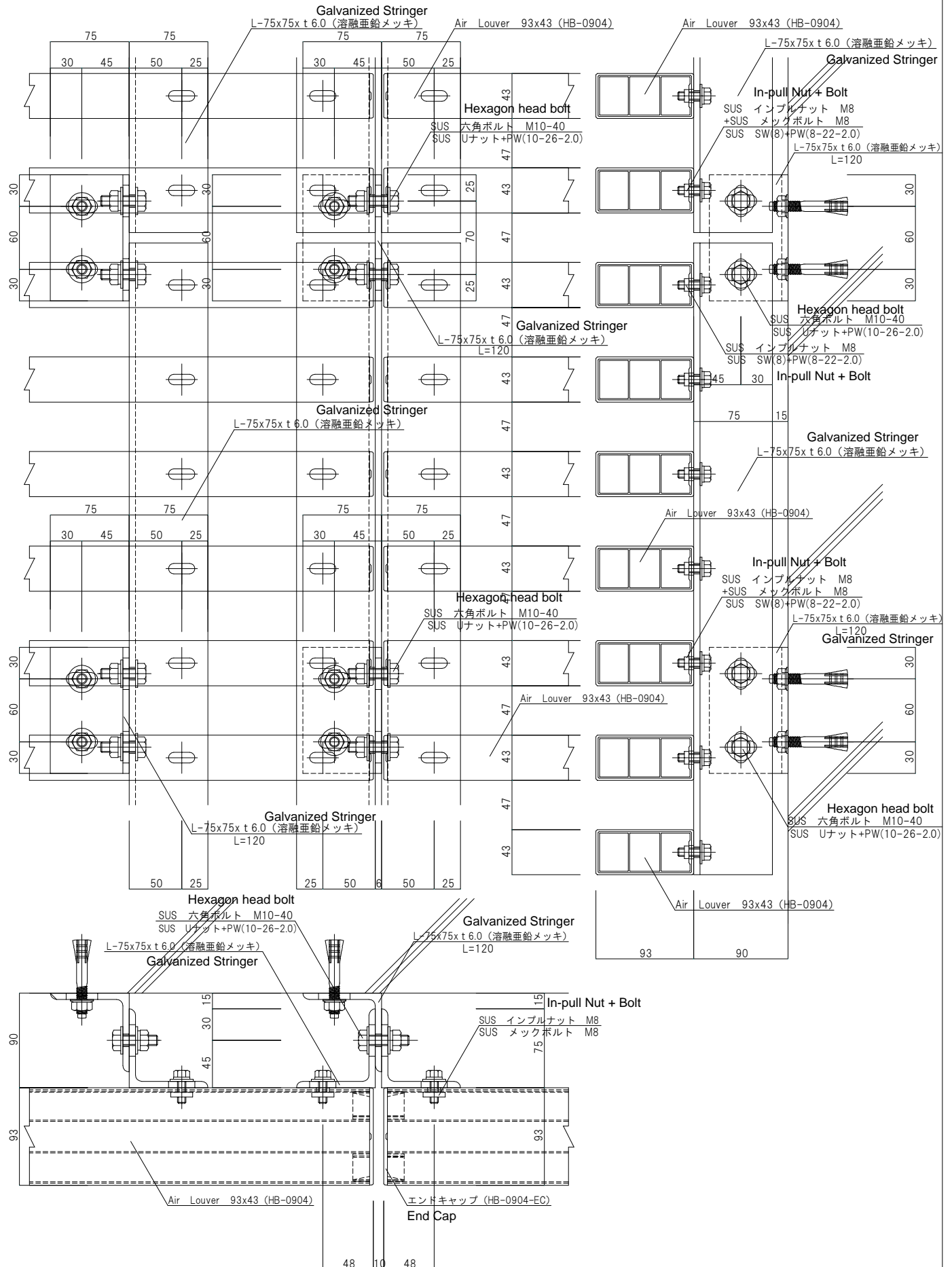
1. Pull upward
2. Turn down

3

Setting stringer on Air Louver and bolting

Fig.2 Fitting Drawing

Horizontal Louver



Attaching End Caps if it sounds like whistling noise in case of higher position to install louver.
To set anchor bolt shall be considered louver type, pitch to set or pitch of stringer.