

# SMOOTHER

High-speed Roll-up Door



高速開閉で熱損失が少ない

エコマーク認定番号  
第 10123020 号  
株ユニフロー  
(RB シリーズ)



RB-1



RB-2a

Highly Air-Tightened × Wind resistance × Eco = **SMOOTHER**



RB-4Z






RB-3a

More environmentally and user friendly.  
SMOOTHER satisfies customer needs.

## I N D E X

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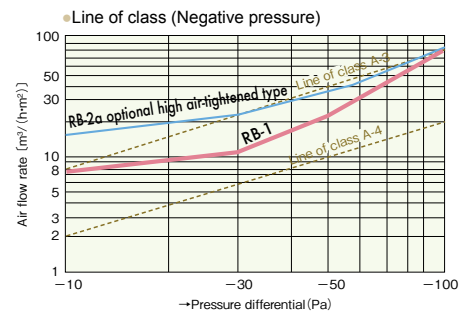
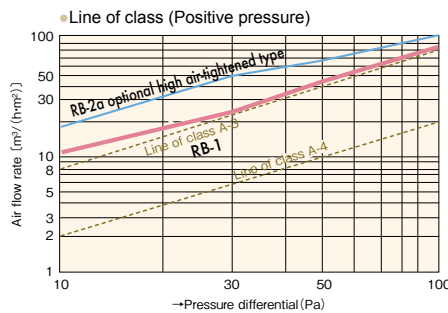
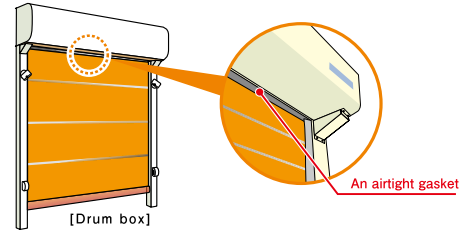
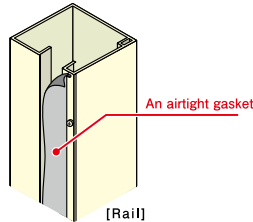
# Eight Distinctive Features

Highly Air-Tightened

## Achieved A-3, the industry's highest level of air tightness

While the RB-1 Series is a pipe model, it offers excellent air tight performance equivalent to the A-3 CLASS (the industry's highest level) as defined by the Japanese Industrial Standards. An airtight gasket allows the RB-1 Series to provide approximately 10 times the air tightness of conventional products. It also provides reliable protection against insects and dust-proof performance to keep your work environment clean.

	Air leak volume at 10 Pa (m <sup>3</sup> /h·m <sup>2</sup> )	
	RB-1	RB-2a optional high air-tightened type
Positive pressure	10.6	19.2
Negative pressure	7.5	18.7



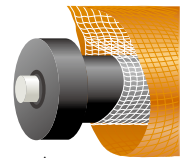
\*The values indicated here are test results, not guaranteed values.

Wind resistance

## 29.3 m/s\* of wind pressure resistance when fully closed. The industry's highest level of wind pressure resistance enables smooth opening and closing.

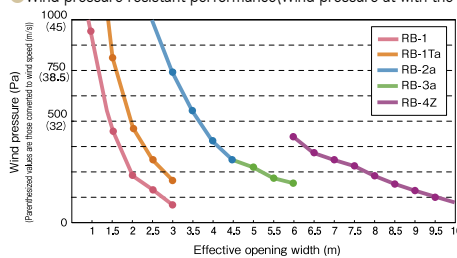
\*Converted value (to wind speed), calculated based on the RB-4Z with an effective opening width of 6.050 mm.

SMOOTHER easily opens and closes without a steel shutter even in strong winds thanks to bearings (rollers) on the pipe ends. Achieves the industry's highest level of wind pressure resistance among ultra-large shutters.



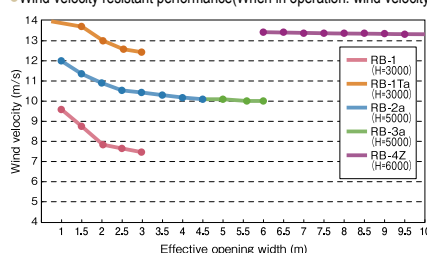
Bearings on the pipe end of the sheet (RB-4Z)

● Wind pressure-resistant performance (Wind pressure at which the pipe yields or comes off from the rail when stopping at the lowermost level) (Pa)



Effective opening width (m)	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	
RB-1	963	428	241	154	107															
RB-1Ta	1815	807	454	290	202															
RB-2a	6,370	2,831	1,593	1,019	708	520	398	315												
RB-3a								315	255	211	160									
RB-4Z											419	357	308	268	229	185	152	126	105	

● Wind velocity resistant performance (When in operation: wind velocity at which the sheet can descend) (m/s)



Effective opening width (m)	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
RB-1 (H=3m)	9.8	8.7	7.9	7.7	7.5														
RB-1Ta (H=3m)	14.0	12.7	11.7	11.4	11.3														
RB-2a (H=5m)	12.0	11.3	10.9	10.6	10.4	10.3	10.2	10.1											
RB-3a (H=5m)									10.1	10.0	10.0								
RB-4Z (H=6m)												13.4	13.4	13.4	13.4	13.3	13.3	13.3	13.3

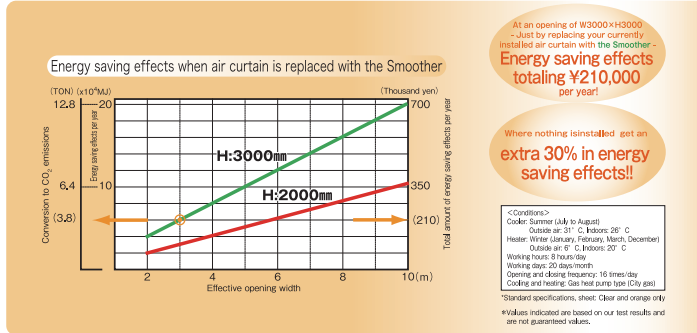
\*This performance data is not a guaranteed value in any way. Be careful because it varies depending on the wind direction, use environment, etc.



## The Smoother is an Eco Mark-certified product. Run the energy saving diagnostic service.

The Smoother RB-Series\* has received Eco Mark Certification granted to products that are certified to be environmentally friendly.

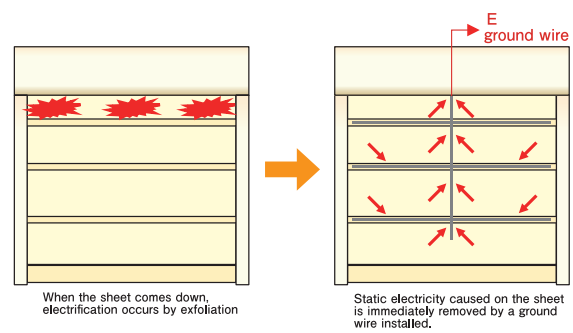
Energy saving effects are demonstrated just by replacing your currently installed air curtain with the Smoother. Contact us and allow us to run our energy saving diagnostic service according to your usage environment.



## Instant static electricity elimination structure

Patent pending

With this structure, any static electricity that may be generated when the sheet shutter is opened or closed is instantly discharged, preventing the build up of static electricity and resulting in significantly improved safety. Dischargeable sheet can be installed optionally in RB-1, RB-1Ta, RB-2a and RB-3a.



## Backup power option available. The only feature of its kind offered in the industry. Ensures operation during an emergency.

The sheet opens and closes by using the backup power in case of power failure due to an earthquake or fire. If emergency evacuation is needed during a power failure, the backup power prevents such situations as closed sheet blocking an evacuation route with someone left inside, as is the case with conventional products. Backup power can be installed optionally in RB-1, RB-1Ta, RB-2a, and RB-3a.

- (One of four types of operation can be selected in case of power failure.)
1. Manual operation: Users manually operate the ascend/descend buttons on the operation panel to open and close the sheet (up to two times).
  2. Manual operation + Eternal signals: Users manually operate the ascend/descend buttons on the operation panel to open and close the sheet (up to two times). When certain external signals are received, the sheet fully opens.
  3. Automatic operation: Detects the stop due to a power failure and automatically opens the sheet.
  4. Automatic operation + External signals: Detects the stop due to a power failure and automatically opens the sheet. When certain external signals are received, the sheet fully opens.

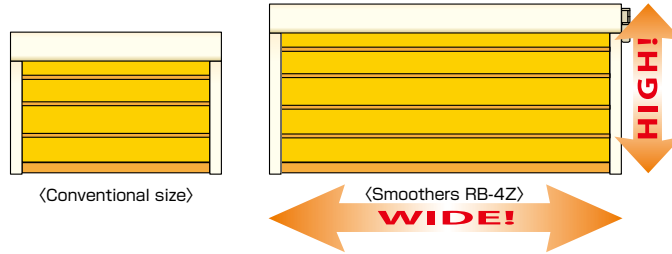
Backup power supply	Power outage compensation	Frequency of sheet operation 2 times (in 30 minutes during standby time)
	Output voltage	Nominal DC 96 V
	Battery service life	Recommended replacement every three years
	Type of power supply	Nickel-Metal Hydride battery *Ni-cd battery in only RB-1.
	Charging time	48 hours (charging time required after discharging to below 50% of battery content capacity)

**Large opening**

The largest size in the industry for ultrawide opening. <RB-4Z>

The largest size in the industry, enabling up to 60 m<sup>2</sup> of indoor/outdoor opening (10 m in width and 6 m in height).

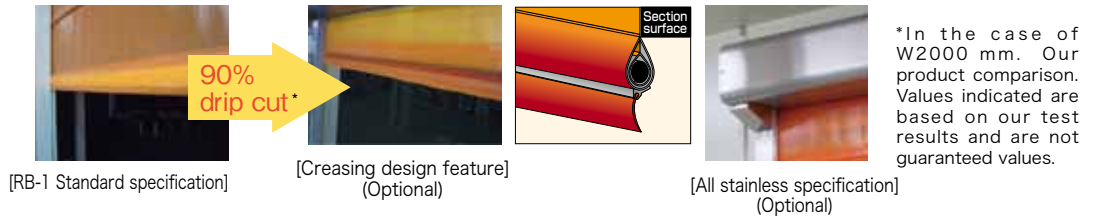
Allows large vehicles such as trucks or forklifts carrying large materials to pass smoothly. Safety sensors (rail embedded type, two optical axes) are also equipped as standard to ensure even higher safety. Users can easily adjust these sensors.



**HACCP compatible**

Creasing design feature for the lower stage sheet provides greater sanitary effect <RB-1>

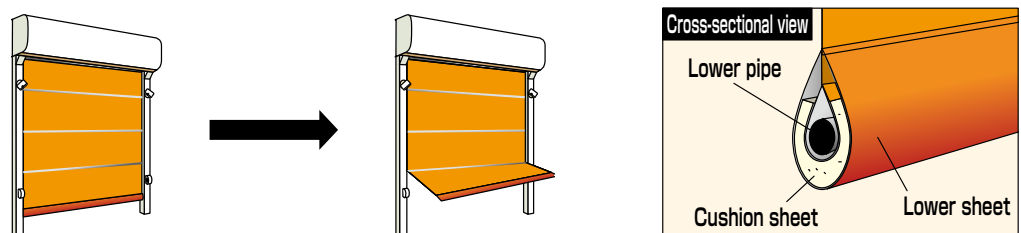
- The Smoother RB-1 Series adopts the industry's first creasing design feature for the lower end of the sheet. In food factories that handle water even around the sheet shutter, situations occur where the lower end of the sheet in water is raised and water drips down from the shutter. With the creasing design feature, the amount of water that drips down is only 1/10 of conventional products. This makes replacing parts easy and provides a greater sanitary effect.
- Available with an all stainless specification using stainless steel for the main body box and rail or a stainless specification using stainless steel for only the rail. These specifications prevent corrosion in places exposed to water.



**Safety**

Equipped with a “Flap function” that allows the pipe to easily disengage when something comes into contact with the sheet, thereby preventing possible rail and sheet damage.

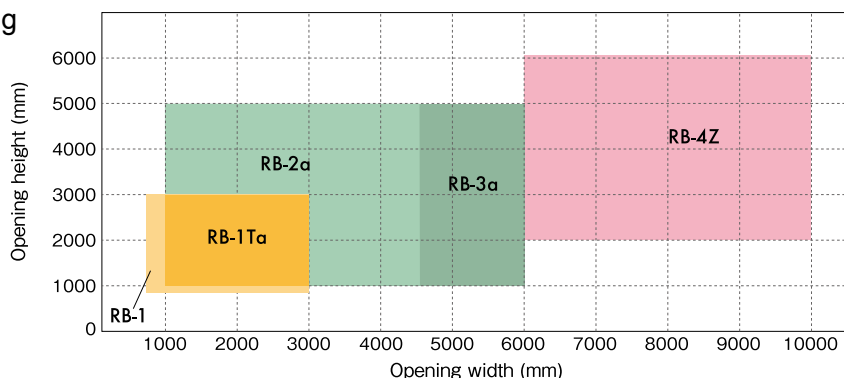
- RB-1 and RB-1Ta are equipped with the “Flap function” (optional for the RB-2a) as standard. This allows the pipe to easily disengage, thereby preventing possible rail and sheet damage, even if a forklift comes into contact with the sheet.
- The lower pipe of the sheet is enclosed in cushion material to reduce shock impact.



Specifications		Compact Model for Indoor Use	Model for both Indoor and Outdoor Use			
		RB-1	RB-1Ta	RB-2a	RB-3a	RB-4Z
Effective opening regulation	Effective opening width (mm)	W800~3000	W1000~3000	W1000~4500	W4550~6000	W6050~10000
	Effective opening height (mm)	H900~3000	H1000~3000	H1000~5000		H2000~6000
Components used	Box	Colored steel plate				
	Rail	Colored steel plate				
	Rotor pipe	Aluminum alloy $\phi$ 150		Aluminum alloy $\phi$ 216		
	Sheet	Polyester yarn encapsulated vinyl sheet				
	Middle pipe	$\phi$ 19.1	$\phi$ 25.4	$\phi$ 38.1		$\phi$ 48.6 With rollers on both ends
	Lower pipe	$\phi$ 25.4	$\phi$ 38.1	$\phi$ 38.1		$\phi$ 48.6 With rollers on both ends
Operation method	Drive	Induction motor (output 400 W)		Induction motor (output 750 W)		Induction motor (output 1.5Kw)
	Sheet speed※	1.3m/s(Ascent velocity of the sheet) · 1.0m/s(Descent velocity of the sheet)		1.2m/s(Ascent velocity of the sheet) · 0.6m/s(Descent velocity of the sheet)	0.8m/s(Ascent velocity of the sheet) · 0.6m/s(Descent velocity of the sheet)	0.6m/s(6m<W $\leq$ 8m) (Ascent velocity of the sheet) · 0.5m/s(8m<W $\leq$ 10m) · 0.5m/s(Descent velocity of the sheet)
	Upper/lower limits setting method	Encoder control and teaching control				
	Opening/closing speed control	Slow start/slow stop control				
Sensor	Phototube sensor	Photoelectric tube sensor (phototransmitting / photoreceiving type)		Photoelectric tube sensors (phototransmitting/photoreceiving type · 2 optical axes)		
Power supply	Single phase AC 200 V $\pm$ 10% (50 Hz/60 Hz) 6A			Three-phase AC 200 V $\pm$ 10% (50 Hz/60 Hz) 6 A		Three-phase AC 200 V $\pm$ 10% (50 Hz/60 Hz) 7 A
Allowable frequency	120 times/h, 2 times/min			90 times/h, 1.5 times/min		60 times/h, 1 times/min
Ambient temperature	5~40°C	sheet drumbox -10~40°C control board 5~40°C				
Ambient humidity	There should be no freezing or condensation at 20% to 85%.					
Environmental conditions	There should be no toxic gas, powder dust, and condensation.					

※Maximum speed





• Table of effective opening width and height by model



● Sensors

<p><b>Infrared sensor OA-6000S</b>                  Outside dimension : W100×H100×D129.5mm                  Mountable height (from FL) : 2~6m                  Static detection : 2 / 15 / 60 sec. / infinity</p>	<p>Power supply : DC24V                  Mountable model : RB-1,RB-1Ta,RB-2a,RB-3a,RB-4Z                  Remarks : On-delay timer function</p>	
<p>Adjustable sensor angle for a small- to medium-size opening</p>		
<p><b>Infrared sensor OA-4700S</b>                  Outside dimension : W267×H62×D45mm                  Mountable height (from FL) : 2.5~4.7m                  Static detection: 2 / 60 sec. / 10 min. / infinity</p>	<p>Power supply: AC/DC12~24V                  Mountable model : RB-1,RB-1Ta,RB-2a,RB-3a,RB-4Z                  Remarks : Rainproof cover available (sold separately)</p>	
<p>For a small- to medium-size opening, with high-intensity radiation area</p>		
<p><b>Infrared sensor SHA-6501</b>                  Outside dimension : W321×H102×D91mm                  Mountable height (from FL) : 2.0~6.5m                  Static detection: 2 / 30 / 180 sec. / infinity</p>	<p>Power supply: AC/DC12~24V                  Mountable model: RB-1,RB-1Ta,RB-2a,RB-3a,RB-4Z                  Remarks : Direction detecting function, traverse cancel function, rainproof construction, (separately sold) remote control</p>	
<p>For a small- to medium-size opening, with a wider infrared radiation area</p>		
<p><b>Infrared sensor DA-4700</b>                  Outside dimension : W265×H61×D37.5mm                  Mountable height (from FL) : 2.0~4.7m                  Static detection: [1·2·3 ROW] 2 / 15 / 60sec. / infinity [4·5 ROW] 2 / 15 sec.</p>	<p>Power supply : AC/DC12~24V                  Mountable model: RB-1,RB-1Ta,RB-2a,RB-3a,RB-4Z                  Remarks : Rainproof cover available (sold separately)</p>	
<p>For a small- to medium-size opening, with high-intensity radiation area</p>		
<p><b>FALCON/FALCON XL</b>                  Outside dimension : W103×H97×D160mm                  Mountable height (from FL) : 2~3.5m(FALCON XL), 3.5~7m(FALCON)                  Static detection: -</p>	<p>Power supply : AC/DC12~24V                  Mountable model: RB-1,RB-1Ta,RB-2a,RB-3a,RB-4Z(FALCON XL) RB-2a,RB-3a,RB-4Z(FALCON)</p>	
<p>For a small- to medium-size opening, with high-intensity radiation area</p>		

● Switches

	Wireless remote control (1-key type / 3-key type)	String switch	Single pushbutton	Touchless sensor
				
Type	Receiver : RX13-1143 Transmitter : TX16-1111	—	WBSTT 221 ON	Panel switch with built-in touchless sensor
Outside dimension	W35×H60×D12.8 (Transmitter)	W140×H154×D33 (main body portion)	W60×H98×D47.5	W70×H140×D40 (Panel switch)
Power supply	DC12~24V	—	—	DC6~27V
Power consumption	Below 2.4 W	—	—	Below 0.25 W
Mountable model	RB-1,RB-1Ta, RB-2a, RB-3a, RB-4Z	RB-1,RB-1Ta, RB-2a, RB-3a, RB-4Z	RB-1,RB-1Ta, RB-2a, RB-3a, RB-4Z	RB-1,RB-1Ta, RB-2a, RB-3a, RB-4Z
Remarks	Possible to use 100 transmitter units in each group, maximum 200 units for one receiver.	—	Explosion-proof & jet-proof IP65	Built-in to a panel switch made by our company

● Other options



● Guard pole  
Prevents minor collisions between the transport vehicle and the sheet shutter.



● Patlite warning lamp  
A red lamp illuminates to attract attention while the sheet shutter is in operation. A voice warning activates and a green lamp lights when the sheet stops at the uppermost position.

- Triple pushbutton  
Outside dimension: W86×H200×D98
- Phototube sensor (phototransmitting / photoreceiving type)
- Buzzer

\*Specifications are subject to change without notice for product improvement.



● HACCP compatible option

In addition to an insect-proof orange sheet that prevents insects from coming inside, a high performance airtight gasket (optional) enhances protection against the entry of insects and dust.

Moreover, mounting a trapezoid cover on the main body or In addition, mounting the sloping cover on the main body box or the control panel allows easily checking for dirt or grime.

Rails and a main body box made of stainless steel are also available.



▲Example of use



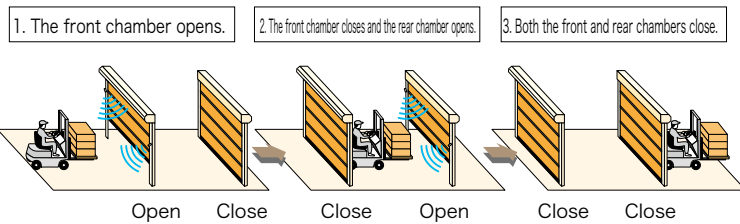
▲Example of use: Trapezoid cover for main body box



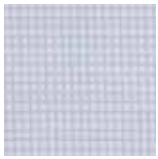
▲Example of use: Trapezoid cover for control box

● Interlocking functions

Two units of Smoothers make a front chamber, which are coordinated via a microprocessor. An interlocking operation in which one side opens and the other side does not is possible. As it prevents external air from entering, it can enhance air-conditioning efficiency. An optional printed board can be added for linked operation with belt conveyors, AGVs or other equipment.



(Standard Type)  
(RB series except for the RB-1)

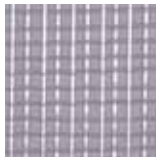


Transparent sheet  
(Flame retardant finish : Fire Office Registration No. E-13-42766)



Insect-proof orange sheet  
(Flame retardant finish : Fire Office Registration No. E-13-42766)

(Anti-static and Flame retardant Type)  
(RB-1)



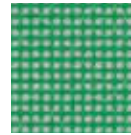
Transparent sheet  
(Anti-static/flame retardant finish : Fire Office Registration No. E-13-42766)



Insect-proof orange sheet  
(Anti-static/flame retardant finish : Fire Office Registration No. E-13-42766)

(Option)

● Special mesh window material

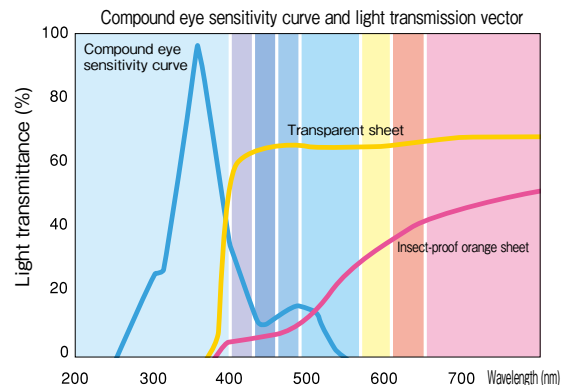


Mesh 1003



Mesh 1004

● Inspect-proof effect

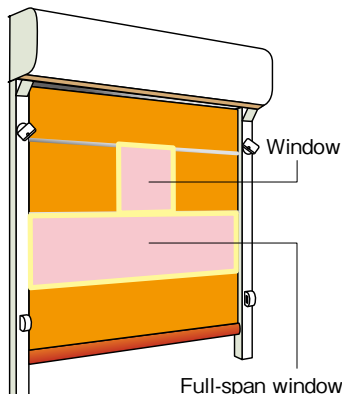


Cutting a wavelength zone of around 350 nm, to which insects are most responsive, this prevents insects from coming inside.

● Sheet window

A window on the sheet allows workers to check forklift or pedestrian traffic on the opposite side to avoid collisions.

\*Transparent type, insect-proof orange-colored type, and mesh type windows are offered.



● Dimension suitable for mounting windows

	Window			Full-span window	
	Maximum width	Minimum width	Height	Width	Height
RB-1	W-500	500	400	W+110	Maximum height set for each span
RB-1Ta					
RB-2a					
RB-3a				W+140	
RB-4Z	W-800			—	—

\* Windows that can be mounted are 1 to 3 windows for a single span or a full-span window. (The number of windows varies depending on the width of a sheet.)

\* Window mounting positions may be located on the first, second, third, and fourth stages.

\* Mesh window does not comply with a full-span window.

\* For RB-1, if the opening width is less than 900, the maximum width of window is W-300.

Even in a space-saving environment safe and secure with a wide opening, air tight.  
Compact sheet shutter great for all factories.

# RB-1, RB-1Ta

Even in a space-saving environment, the “RB-1 Series makes the most of any opening with efficiency in mind, including a compact main body, the industry’s smallest space needs for maintenance, air tight performance, and safe and secure backup power source (option) in case of a power outage.



▲Installation example (Automotive-related factory)



▲Installation example (Food factory)



▲Installation example (Supermarket)

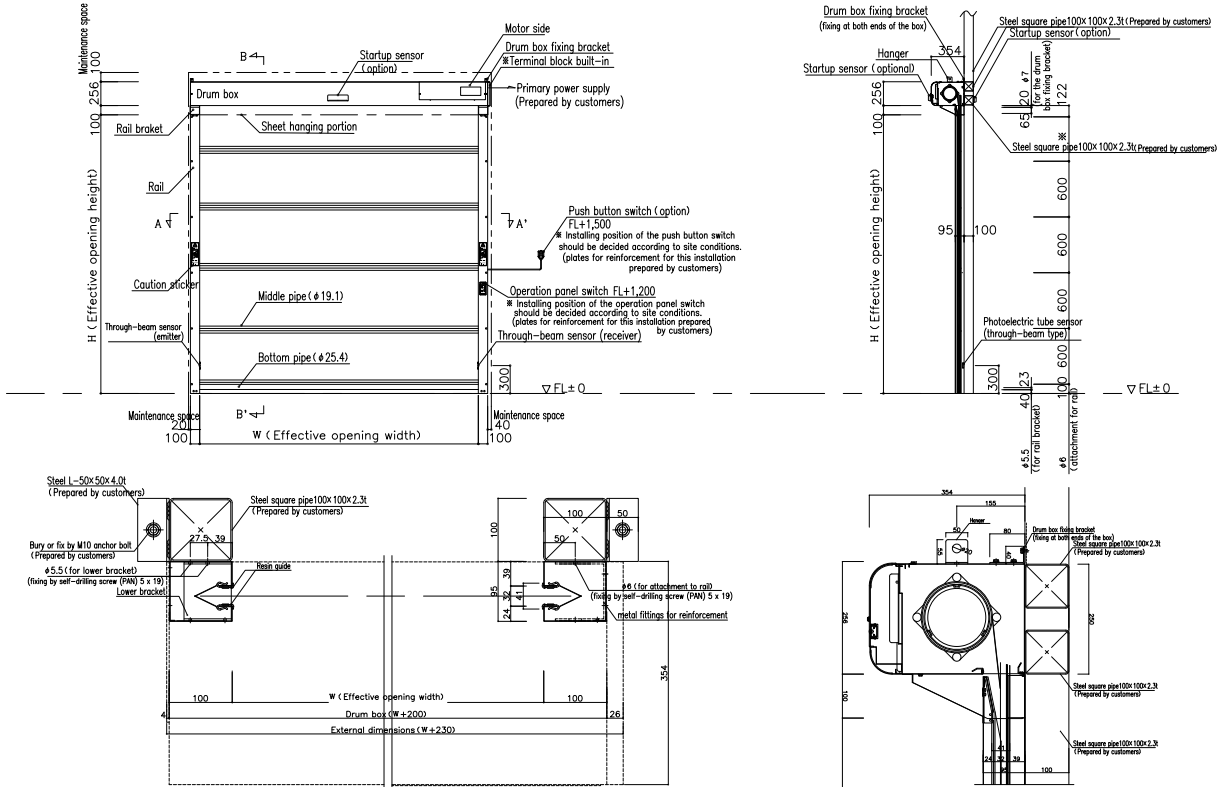
- Industry’s first creasing design feature (option)  
Dripping from the lower end of the sheet is only 1/10 of conventional products.
- High energy saving performance, protection against insects and dust-proof performance (option)  
Airtight design feature equivalent to the A-3 Class of the Japanese Industrial Standards reduces indoor energy loss and prevents entry of insects and dust.
- Compactly fit, maximum opening  
Enables working from the main body box front side for inspections. The maintenance space on both sides is reduced to make the opening wide.
- Safe and secure backup power source even in an emergency (option)  
Compatible with a built-in backup power source, the only one of its kind in the industry. Feel safe and secure! Even in the case of a power outage the sheet can be raised to ensure an evacuation passage. (Various settings are available → P4)



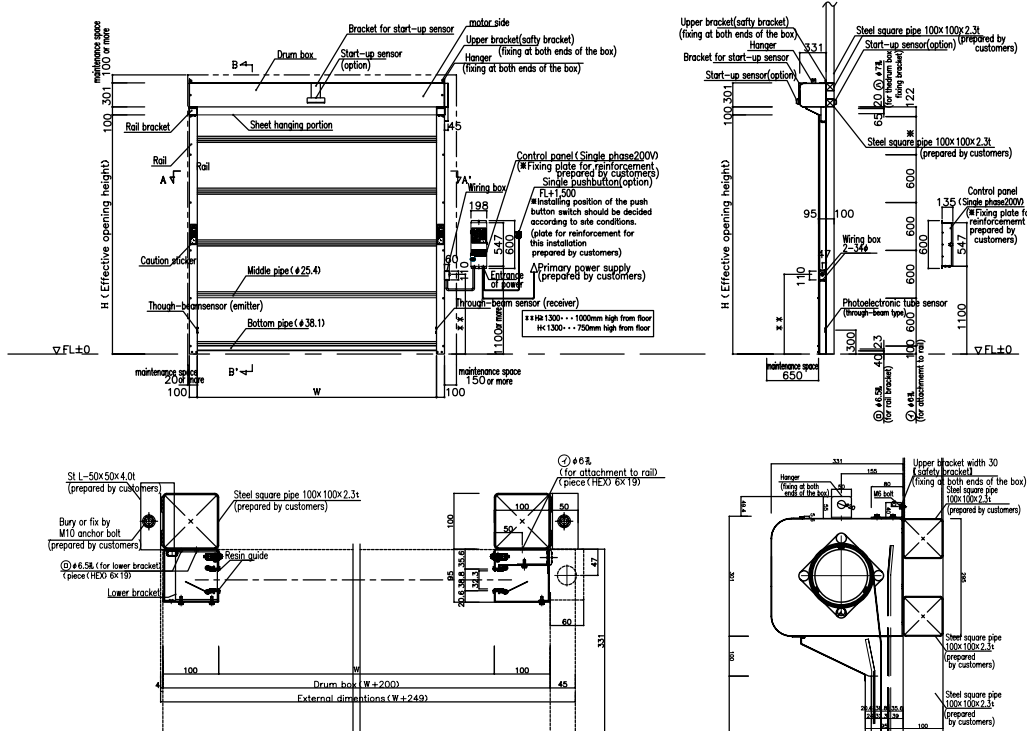
▲RB-1 control panel  
(RB-1Ta is identical to RB-2a)

- Range of possible opening / Effective opening width (mm) : minimum W 800 to maximum W 3000(RB-1), minimum W 1000 to maximum W 3000(RB-1Ta)  
Effective opening height (mm) : minimum H 900 to maximum H 3000(RB-1), minimum H 1000 to maximum H 3000(RB-1Ta)
- Power : Single phase 200V AC 6A
- Sheet speed : 1.3m/s when ascending, 1.0 m/s when descending

RB-1 Installation



RB-1Ta Installation



\* The installation location of the control panel or optional equipment will be determined through consultation at each site.  
\* Treatment of the installation base will be determined through consultation at each site.

This is the best selling UNIFLOW model, which may be commonly used for indoors and outdoors.

# RB-2a, RB-3a

Easy setting of upper and lower limit positions. The operation panel allows the viewing of such information as maintenance intervals and error information.  
Highly air-tightened type (optional) provides enhanced insect/dust-proof performance.



▲Example of use : Logistics center



▲Example of use : Manufacturing plant



▲Example of use : Printing plant

■ Operation panel equipped with display window :

Displays maintenance information and the type of error in case a fault occurs in order to support maintenance and management by the user.

■ Easier setting of sheet upper and lower limit positions :

Control by the encoder allows easy and accurate settings on the operation panel at hand.

■ New phototube sensor :

The angle adjust mechanism makes it easier to fix problems brought by deviation of the optical axis, in addition to the two optical axis by the double photo tube sensors standardized in view from making much of the safeness.



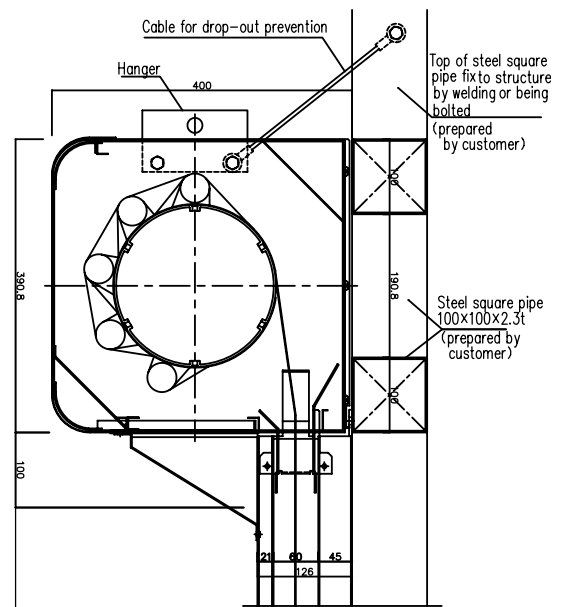
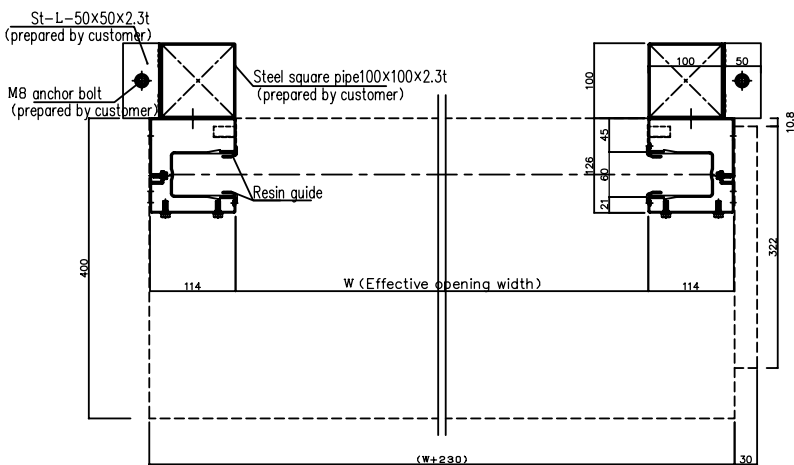
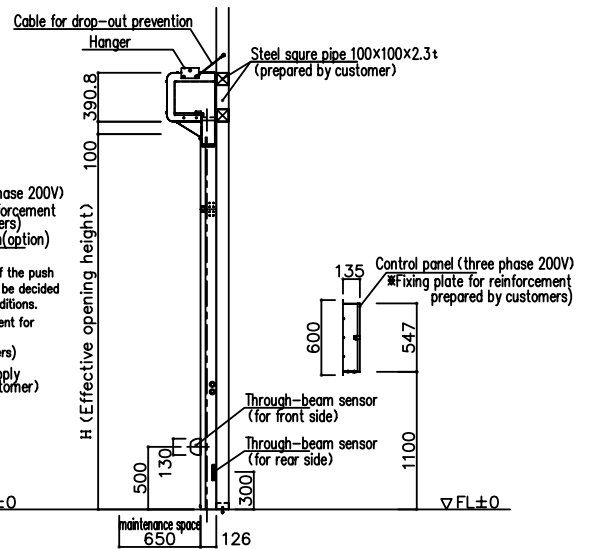
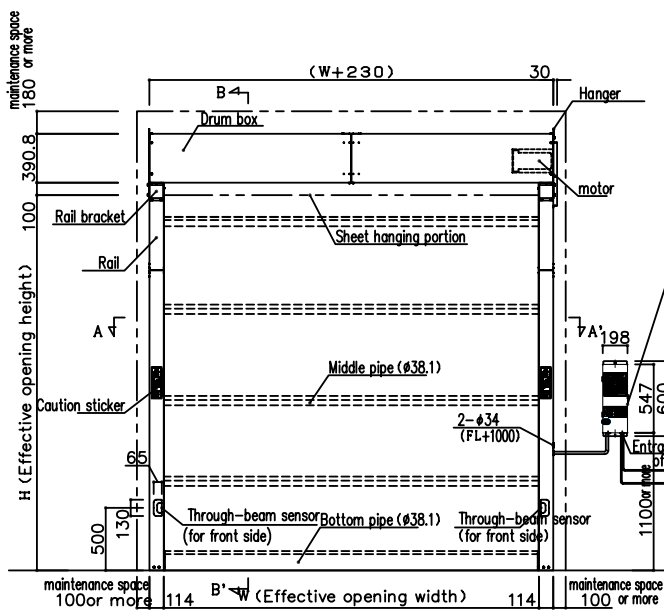
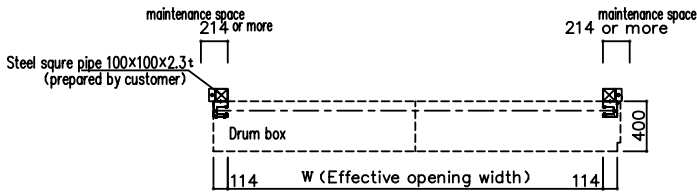
▲Control panel

# RB-2a, RB-3a for both Indoor and Outdoor Use

CAD download ► <http://www.uniflow.co.jp>

- Range of possible opening / Effective opening width (mm) : minimum W 1000 to maximum W 4500(RB-2a), minimum W 4550 to maximum W 6000(RB-3a)  
Effective opening height (mm) : minimum H 1000 to maximum H 5000
- Power / Three phases AC 200 V 6A
- Sheet speed / RB-2a : 1.2 m/s when ascending, 0.6 m/s when descending / RB-3a : 0.8 m/s when ascending, 0.6 m/s when descending

## RB-2a, RB-3a Installation



- \* Where to install the control panel or optional equipment must be determined through consultation at each site.
- \* Treatment of the installation base must be determined through consultation at each site.
- \* Treatment for High Air-Tightened model (option) differs from that for the standard model. Please ask us for details.
- \* The drawings above show the motor set in right side (standard type).

The largest size in the industry, enabling up to 60 m<sup>2</sup> of opening in plants or warehouses.

# RB-4Z

Ultra-large type available for sizes of up to 10 m in width and 6 m in height.

Safe design featuring the industry's highest level of wind resistance and no need of working in high places during adjustment.



■ Largest size in the industry for ultra-wide opening :

Affords an effective opening size up to 10 m in width and 6 m in height, thus allowing large vehicles like trucks to smoothly pass through. Improved durability particularly in the driving unit where a high load is applied.



▲Control panel

■ Shutter featuring the highest wind resistance in the industry :

Easily opens and closes even in strong winds thanks to bearings on the pipe ends of the sheet. Achieves the highest wind pressure resistance in the industry at 29.3 m/s\* (when fully closed).

\* Converted value (to wind speed), calculated based on effective opening width of 6,050 mm.

■ Safe structure with new control panel – No need of working in high places :

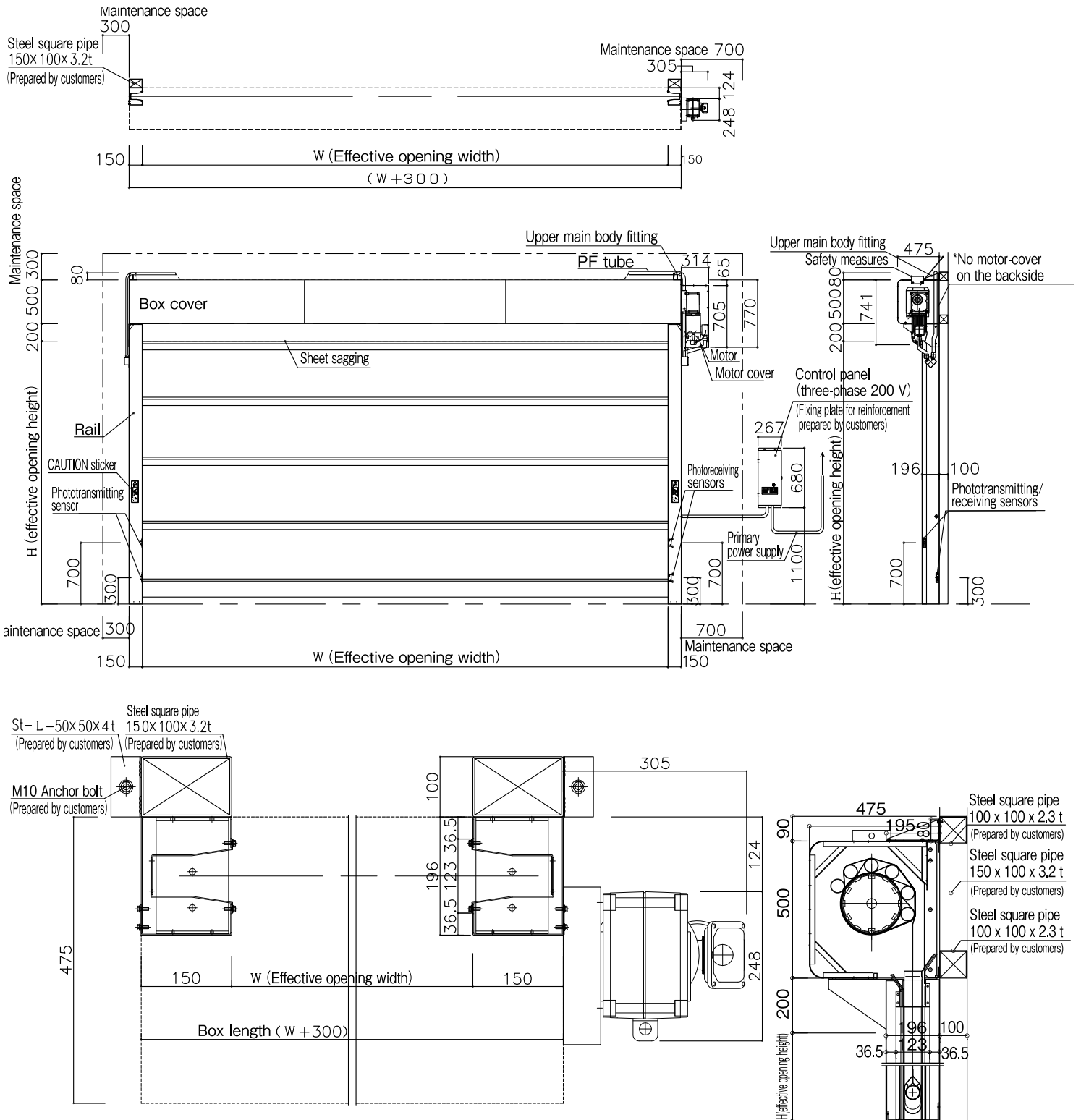
All the more true given the model's super-large size, its control panel is equipped with an emergency stop button (of the push-to-lock and turn-to-reset type) as a standard feature to afford safety in case of emergency. Moreover, adopting an encoder control system makes it possible to configure all functional settings (including the uppermost and lowermost stop positions) from the control panel, thus eliminating the need to make settings for work in high places.

# RB-4Z, large model for Indoor and Outdoor Use

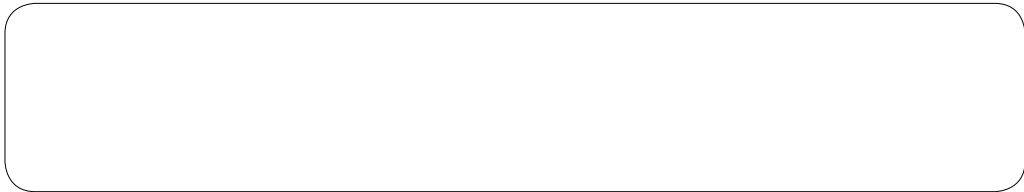
CAD download ► <http://www.uniflow.co.jp>

- Range of possible opening / Effective opening width (mm) : minimum W 6050 to maximum W 10000  
Effective opening height (mm) : minimum H 2000 to maximum H 6000
- Power / Three phases AC 200 V 7A
- Sheet speed / 0.6 m/s (6m < W ≤ 8m), 0.5 m/s (8m < W ≤ 10m) when ascending / 0.5 m/s when descending

## RB-4Z Installation



- \* Where to install the control panel or optional equipment must be determined through consultation at each site.
- \* Treatment of the installation base must be determined through consultation at each site.
- \* For outside use, install the products under a roof and mount the motor covers.
- \* The drawings above show the motor set in right side (standard type).



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- Due to the properties of printing ink, the color of the product may differ from the actual color.
- The specifications are subject to change without notice for improvements.

Uniflow is participating in the  
Challenge 25 Campaign.  
The future will change.  
Japan will change it.

