



## Push-pull type ventilation system components

### 1 Push hood

A three-stage design consisting of a punched metal plate, a honeycomb plate, and a pair of louvers supplies streamlined, straight-flowing air.

### 2 Pull hood

A pull hood ensures adequate exhaustion of streamlined air flowing from the supply side of the system.

### 3 Air supply fan

The system incorporates a high-efficiency turbo fan to ensure adequate airflow, even after accounting for duct pressure losses.

### 4 Exhaust fan

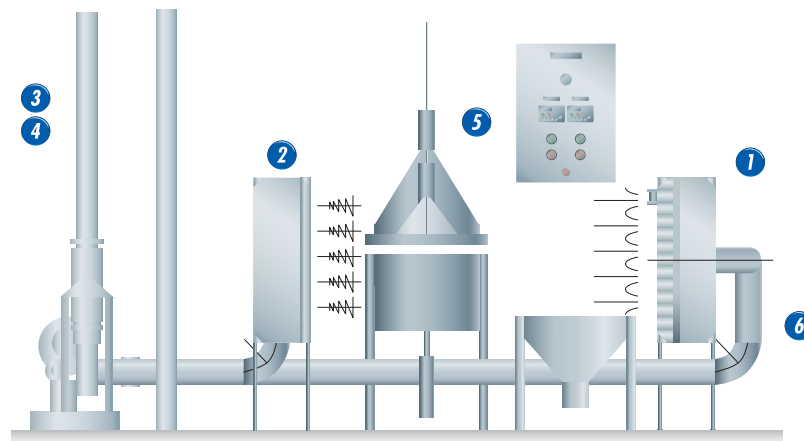
The system incorporates a high-efficiency turbo fan to ensure adequate airflow, even after accounting for duct pressure losses.

### 5 Control panel

The control panel incorporates an inverter so that the system can be adjusted to supply the necessary amount of airflow while operating on the minimum amount of power.

### 6 Ductwork

We can propose waste-free ductwork that is designed to maximize operability.



## Specifications

	Model number	Hood dimensions (mm)		Duct diameter (ø)	Airflow (m <sup>3</sup> /min.)	Motor capacity (kW)
		Width	Length			
Horizontal flow	PPH-0909	900	900	200	15	1.5
	PPH-0912	1200	900	200	20	1.5
	PPH-0915	1500	900	250	25	1.5
Downward flow	PPV-0909	900	900	200	15	1.5
	PPV-0912	1200	900	200	20	1.5
	PPV-0915	1500	900	250	25	1.5

\*Prices are subject to modification depending on operating conditions at the customer's facility.  
\*Customer is responsible for installation work, duct materials, and shipping.

### Options



Activated carbon filter



Fan stand

### Related equipment



Package-type horizontal system



Package-type vertical system



Troubleresa II Plus with data logger for 24-hour monitoring

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## Push-pull Type Ventilation System



Solutions for creating safe working environments

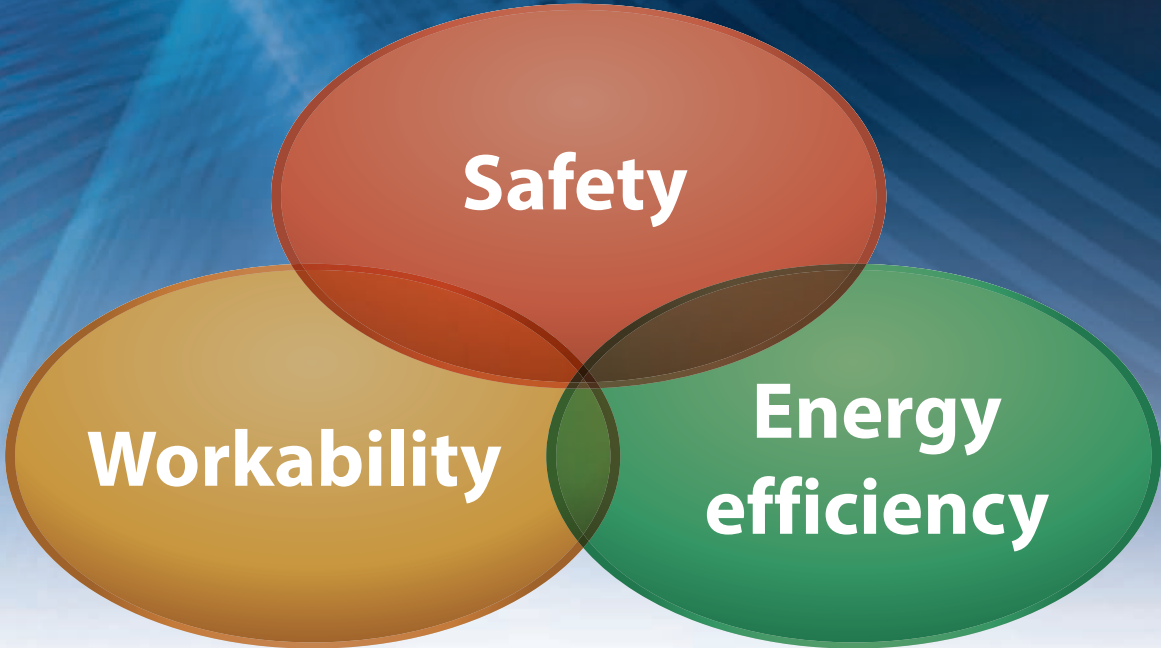


**Showa Denki Group**



# Three features of push-pull ventilation

Emitted toxic substances flow into the exhaust hood before they can disperse, keeping them from contaminating the surrounding area.

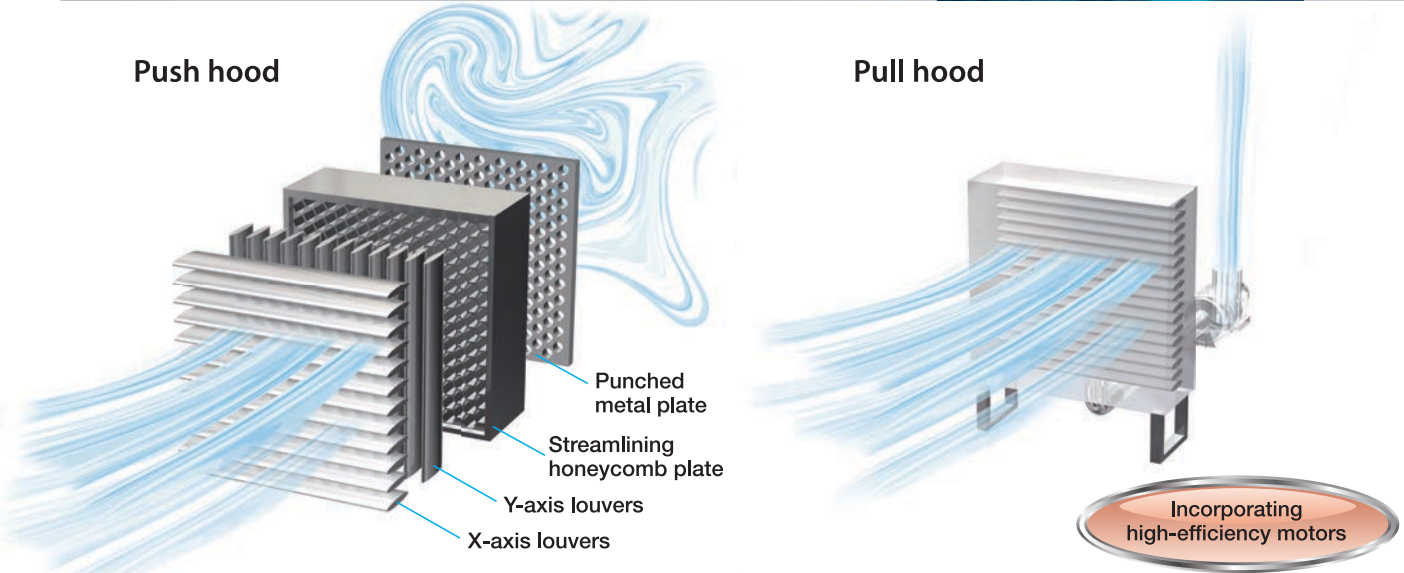


Workability is maintained at the site since the system can be installed in an open space.

The system functions effectively with small motors since the air it supplies travels over a long distance.

Ventiresa

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Ventiresa

System benefits

	Before	After
Measurement site	Motor winding factory	Motor winding factory
Measurement date	March 8, 2016	September 20, 2016
Measurement worksite	Varnish area	Varnish area
Name and management limit for measured substance	Styrene, 20 ppm	Styrene, 20 ppm
Measurement results (A) (geometric mean value)	$M_1 = 5.7$ (ppm)	$M_1 = 5.3$ (ppm)
Management category	II	I
Measurement results (B)	55 (ppm)	3.8 (ppm)
Management category	III	I

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Comparison of ventilation methods

Conditions: Distance of 1 m from source of emissions to hood and hood size of 1 m

## Local exhaust (upward/side suction)

Upward-suction local exhaust

$$Q = 60 \times VC \times (10 \times X^2 \times A) \\ = 60 \times 1.0 \times (10 \times 1^2 \times 1) \\ = 660 \text{ m}^3/\text{min. (15kW)}$$

Side-suction local exhaust

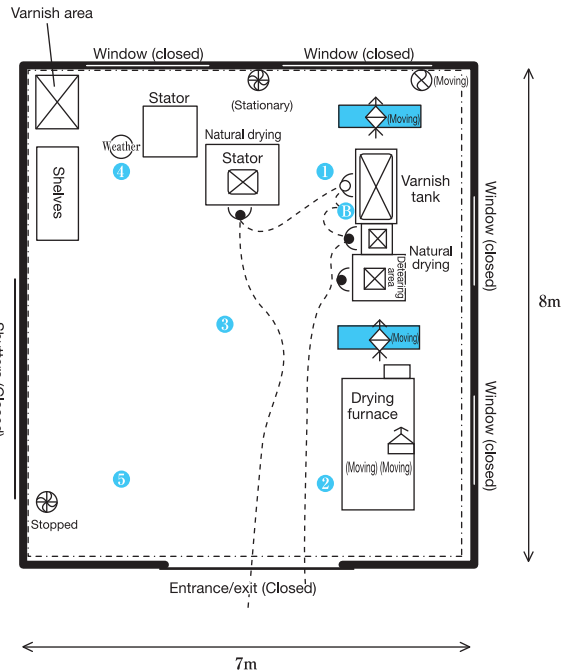
$$Q = 60 \times VC \times (10 \times X^2 \times A) \\ = 60 \times 0.5 \times (10 \times 1^2 \times 1) \\ = 330 \text{ m}^3/\text{min. (11kW)}$$

## Push-pull ventilation system

Push-pull ventilation systems are more energy-efficient, allowing them to use smaller fans.

Push-pull ventilation system

$$Q = 60 \times VC \times A^2 \times 1.5 \\ = 60 \times 0.2 \times 1^2 \times 1.5 \\ = 18 \text{ m}^3/\text{min. (1.5 kW)} \times 2 \text{ units}$$



〔Legend〕①, ②, ③ : Measurement location (A) ④ : Measurement location (B)  
⊙ : Repeated measurement location ⊠ : Emission source ⊕ : Electric fan ⊞ : Enclosure-type hood  
⋈ : External hood ⊗ : Air conditioner outlet ⊗ : Ventilation fan ⊗ : Worker  
⋈ : Push-pull system → ( ) : Airflow direction and rate (m/s) ⊗ : Weather measurement location  
⋈ : Unit work area

Management category based on measurement location (A) <Measurements for 1 day>

