

## NEW PRODUCT INFORMATION

# San Ace 172 9HV type High Static Pressure Fan

SANYO DENKI EUROPE SA. is pleased to introduce its new **San Ace 172 9HV type** DC fan, measuring 172mm diameter by 51mm thick, side cut. This high static pressure fan has been designed to enhance the High Performance serie with higher static pressure and less power consumption than current models.



### Features

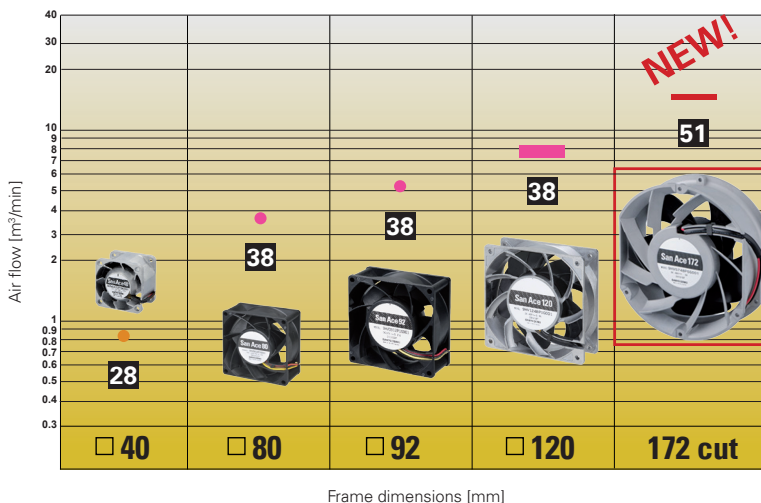
- 1 High Static Pressure**  
max. static pressure: 1,600Pa
- 2 High Reliability**  
expected life time 70,000 hours at 40°C
- 3 PWM Speed Control Function**  
to manage power consumption and noise

### How to read Model Number\*

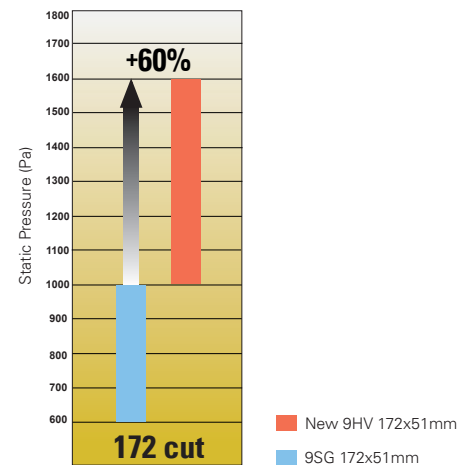
<b>9HV</b>	<b>57</b>	<b>48</b>	<b>P</b>	<b>5</b>	<b>G</b>	<b>0</b>	<b>01</b>	
Series name / frame material		PWM control		Speed code		Frame type		
9HV   plast. / alu.				G, H, K		ribless alu. frame		
						ribbed plastic frame		
						1   ribless plastic frame		
Frame size		Voltage		Frame thickness		Sensor		
04	40x40mm	12	12V	3	28mm	01   pulse sensor		
08	80x80mm	24	24V	1	38mm			
09	92x92mm	48	48V	5	51mm			
12	120x120mm							
57	diam. 172mm							

(\*) contact us for available model numbers

### 9HV Product Range



### Performance Comparison



### Main Specifications 9HV serie

- Size ..... 5 sizes : 40, 80, 92, 120 & 172mm by 3 thicknesses
- Air flow ..... from 0.83 to 16.1m³/min - 29.3 to 568CFM
- Static pressure ..... from 1,000 to 1,600Pa
- Rated voltage ..... 12 or 48VDC depending on models
- Expected life time ..... 70,000 hours at 40°C
- Speed control ..... PWM (25kHz)
- Speed feedback ..... pulse sensor

### Target Applications

- Information, Environment, Industry:
- Server
  - Data storage system
  - ATCA cabinet, Telecom enclosure
  - Optical transport module
  - PV, Wind inverters
  - Industrial inverters and UPS

# San Ace 172 9HV type

## High Static Pressure Fan

### Features

#### High Static Pressure

- Static pressure: 1.6 times that of our conventional DC fan.\*
- Servers, data storage systems, and ICT devices are becoming denser and generating more heat.
- Offers effective cooling even for these devices with its greatly increased static pressure.

\* : Our conventional DC fan is  $\phi 172 \times 150 \times 51$  mm "San Ace 172 9SG type", Model No. 9SG5748P5G01.



$\phi 172 \times 150 \times 51$  mm

### Specifications

The following nos. have **PWM controls, pulse sensors.**

Model No.	Rated voltage [V]	Operating voltage range [V]	PWM duty cycle (Note1, 2) [%]	Rated current [A]	Rated input [W]	Rated speed [min <sup>-1</sup> ]	Max. Airflow [m <sup>3</sup> /min] [CFM]	Max. Static pressure [Pa] [inchH <sub>2</sub> O]	SPL [dB(A)]	Operating temperature [°C]	Expected life [h]
9HV5724P5H001	24	16 to 30	100	5.0	120	8,000	12.3 434	1,000 4.02	77	-20 to +70	40,000 / 60 °C (70,000 / 40 °C)
			20	0.50	12.0	3,000	4.60 162	175 0.70	51		
9HV5748P5G001	48	36 to 72	100	5.0	240	10,500	16.1 568	1,600 6.43	83		
			20	0.41	19.7	3,700	5.60 198	250 1.01	57		

Note1: PWM frequency: 25 kHz

Note2: Fans do not rotate when PWM duty cycle is 0%.

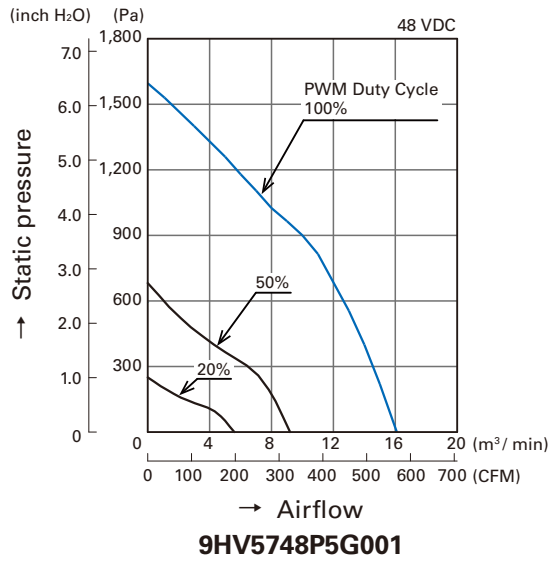
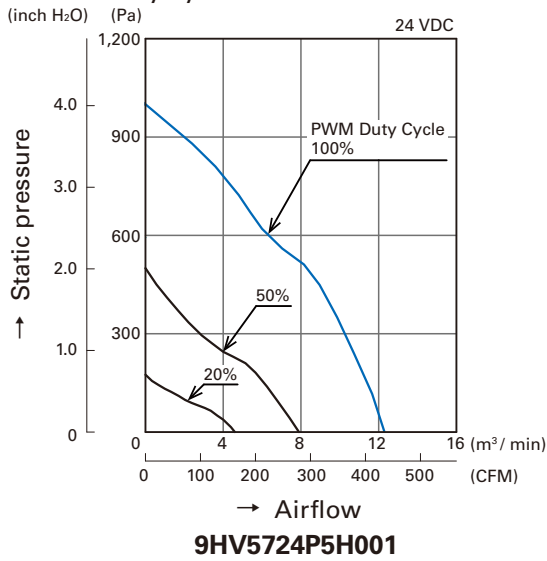
Available options: Without sensor Lock sensor

### Common Specifications

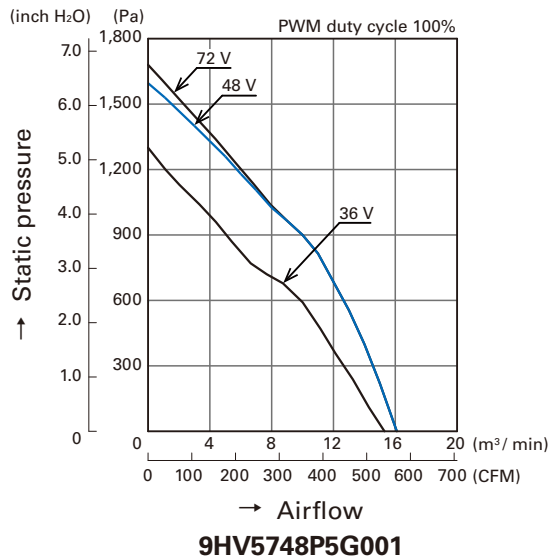
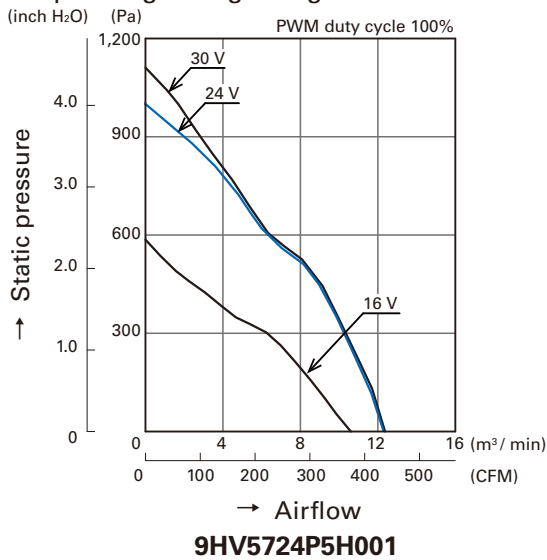
- Material ..... Frame: Aluminum, Impeller: Plastics (Flammability: UL94V-1)
- Expected life ..... Refer to specifications  
(L10: Survival rate: 90% at 60 °C, rated voltage, and continuously run in a free air state)
- Motor protection system ..... Current blocking function and reverse polarity protection
- Dielectric strength ..... 50 / 60 Hz, 500 VAC, 1 minute (between lead conductor and frame)
- Sound pressure level (SPL) ..... Expressed as the value at 1 m from air inlet side
- Operating temperature ..... Refer to specifications (Non-condensing)
- Storage temperature ..... -30 °C to +70 °C (Non-condensing)
- Lead wire ..... ⊕Red ⊖Black Sensor: Yellow Control: Brown
- Mass ..... Approx. 800 g

## Airflow - Static Pressure Characteristics

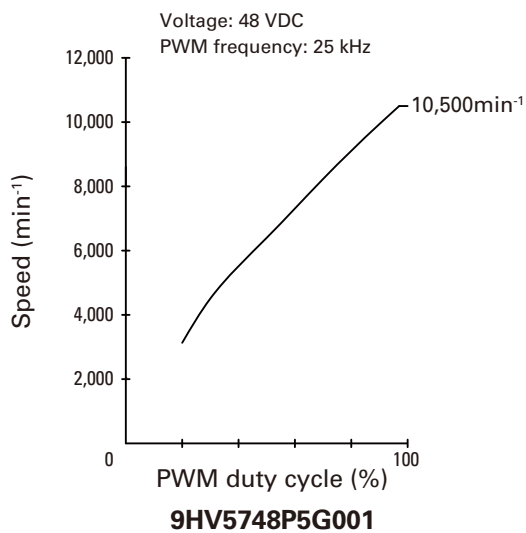
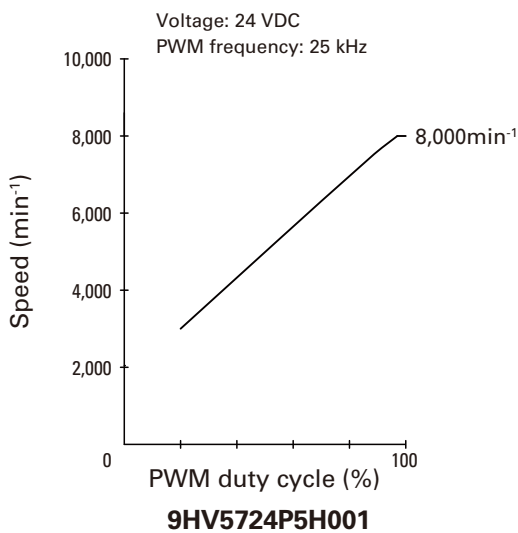
### • PWM duty cycle



### • Operating voltage range

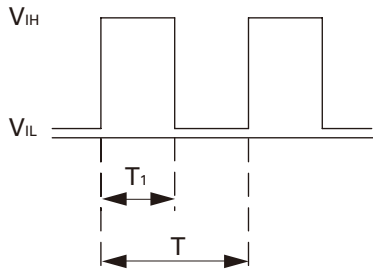


## PWM Duty - Speed Characteristics Example



### PWM Input Signal Example

Input signal waveform



$V_{IH}=4.75\text{ V to }5.25\text{ V}$

$V_{IL}=0\text{ V to }0.4\text{ V}$

PWM duty cycle (%) =  $\frac{T_1}{T} \times 100$

PWM frequency 25 (kHz) =  $\frac{1}{T}$

Source current ( $I_{source}$ ) : 1 mA max. at control voltage 0 V

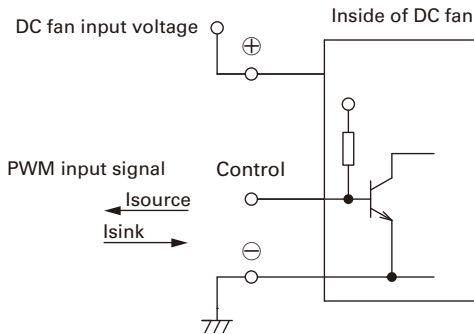
Sink current ( $I_{sink}$ ) : 1 mA max. at control voltage 5.25 V

Control terminal voltage: 5.25 V max. (Open circuit)

When the control lead wire is open, the fan speed is the same as the one at a PWM duty cycle of 100%.

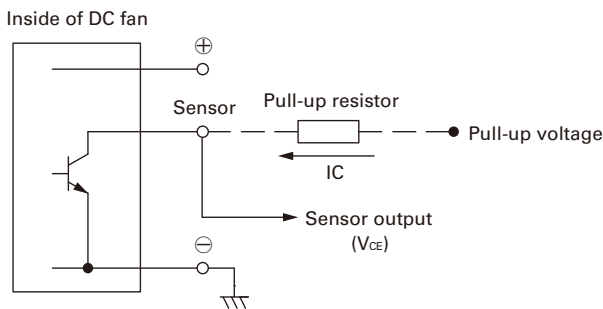
Either TTL input, open collector or open drain can be used for PWM control input signal.

### Example of Connection Schematic



### Specifications for Pulse Sensors

Output circuit: Open collector



**Rated voltage 24 V fan**

$V_{CE} = +36\text{ V max.}$

$I_C = 10\text{ mA max. } [V_{OL} = V_{CE}(\text{SAT}) = 1\text{ V max.}]$

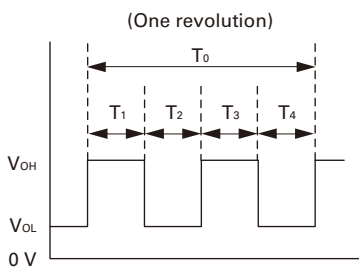
**Rated voltage 48 V fan**

$V_{CE} = +72\text{ V max.}$

$I_C = 10\text{ mA max. } [V_{OL} = V_{CE}(\text{SAT}) = 1\text{ V max.}]$

Output waveform (Need pull-up resistor)

In case of steady running

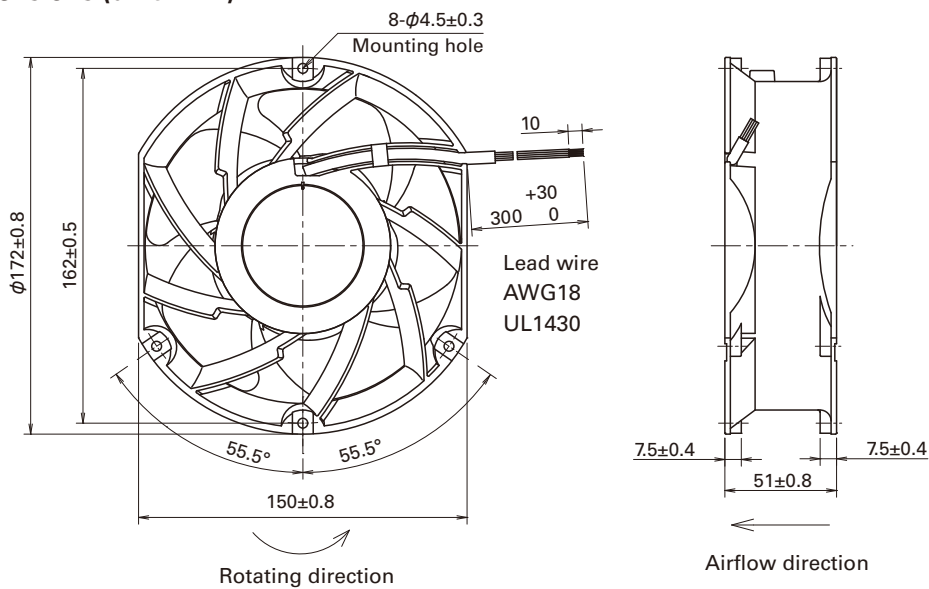


$T_1 \sim 4 \div (1/4) T_0$

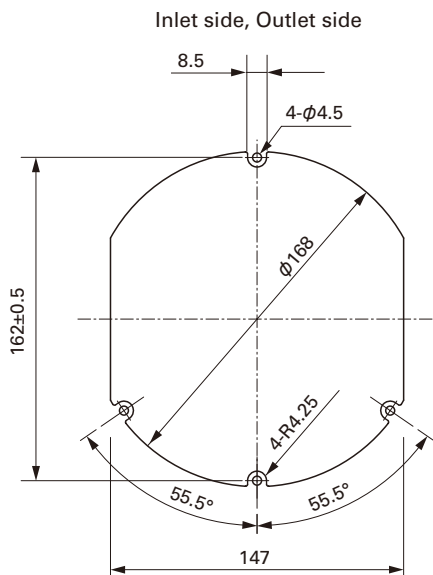
$T_1 \sim 4 \div (1/4) T_0 = 60/4N \text{ (sec)}$

$N = \text{Fan speed (min}^{-1}\text{)}$

**■ Dimensions (unit: mm)**



**■ Reference Dimensions of Mounting Holes and Vent Opening (unit: mm)**



**Notice**

- Please read the "Safety Instructions" on our website once you have decided on a product for use.
- The products shown in this catalog are subject to Japanese Export Control Law. Diversion contrary to the law of exporting country is prohibited.
- To protect against electrolytic corrosion that may occur in locations with strong electromagnetic noise, we provide fans that are unaffected by electrolytic corrosion.

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<http://www.sanyodenki.com>

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