

Splash Proof Fan “San Ace 92W” WP Type

Akira Nakayama Naruhiko Kudou

1. Introduction

Our company has produced the “San Ace W” Series splash proof cooling fans for use in areas where normal fans are not suitable due to the risk of exposure to rain or other environmental hazards.

The “San Ace W” Series is based on our company’s long life fans and adds a splash proof abilities (IPX5) to produce high-reliability fans. Over the years, the demand for splash proof fans has increased and the quality of fans on the market has increased in response.

We have thus arrived at the San Ace 92W.

This document introduces the features and performance of the “San Ace 92W” WP type fan.

2. Background of the Development

Sanyo Denki previously offered three sizes of splash proof fans: 60 mm sq., 25 mm thick; 80 mm sq., 25 mm thick; and 120 mm sq., 38 mm thick.

In response to increasing demand and to meet the varied needs of users, we have developed the “San Ace 92W” WP type fan (92 mm sq., 25 mm thick).

3. Product Features

Fig. 1 shows a photograph of the “San Ace 92W” WP type



Fig. 1 “San Ace 92W” WP type splash proof fan

splash proof fan (hereinafter referred to as “San Ace 92W”).

San Ace 92W includes the following features:

1. Constructed with highly splash resistant materials to protect the electrically active parts (coils, circuit board) (Fig. 2)
2. Magnetic materials increase the splash resistance compared to normal fans
3. Resin frame reduces weight
4. “IP55” splash proof abilities^(*)



Fig. 2 Coating condition

4. Product Overview

4.1 Dimensions

Fig. 3 shows the dimensions of the San Ace 92W.

4.2 Characteristics

4.2.1 General characteristics

There are two types of products, each with a rated voltage of 24 VDC and a rated rotating speed of either F speed (2,650 min⁻¹) or B speed (2,000 min⁻¹).

Table 1 shows the general characteristics for the San Ace 92W.

4.2.2 Air flow vs. static pressure characteristics

Fig. 4 shows the air flow versus static pressure characteristics for San Ace 92W.

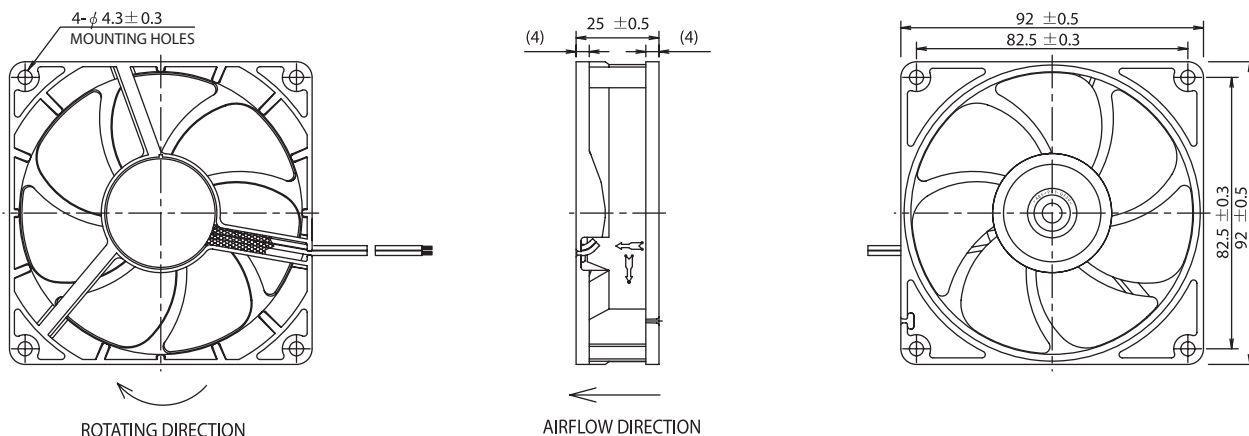


Fig. 2 "San Ace 92W" WP type dimensions (unit: mm)

Table 1 "San Ace 92W" WP type general characteristics

Model No.	Rated voltage (V)	Operating voltage range (V)	Rated current (A)	Rated input (W)	Rated speed (min ⁻¹)	Max. air flow (m ³ /min) (CFM)	Max. static pressure (Pa) (inchH ₂ O)	Sound pressure level (dB [A])
9WP0924F402	24	12~27.6	0.08	1.92	2,650	1.24 43.8	32.2 0.129	30
9WP0924B402			0.05	1.20	2,000	0.90 31.8	18 0.072	23

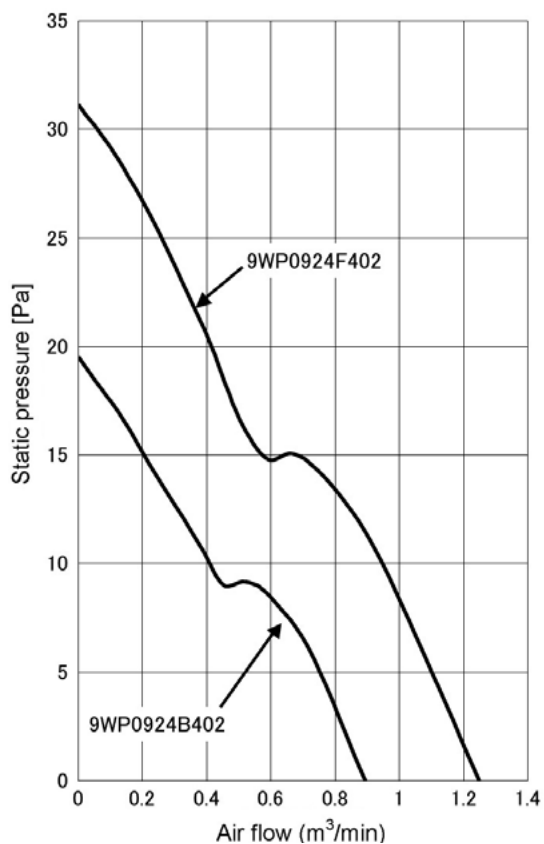


Fig. 4 Air Flow vs. Static Pressure

4.3 Expected life

The San Ace 92W has an expected life of 40,000 hours at 60°C (survival rate of 90% with continuous operation at the rated voltage under free air conditions and at normal humidity).

5. Comparisons with Conventional Models

Fig. 5 shows a comparison of the characteristics of the San Ace 92W.

The product uses the fan mold and frame of the San Cooler 92 to improve on the performance of previous W Series fans.

The coating material used to cover the electrically active components is based on the methods established in the development of the San Ace WF Series and provides an improvement in reliability over the previous models in the W Series.

Additionally, the frame materials have been changed from die-cast aluminum to resin, reducing the process time required to produce and the mass of the product (Fig. 6).

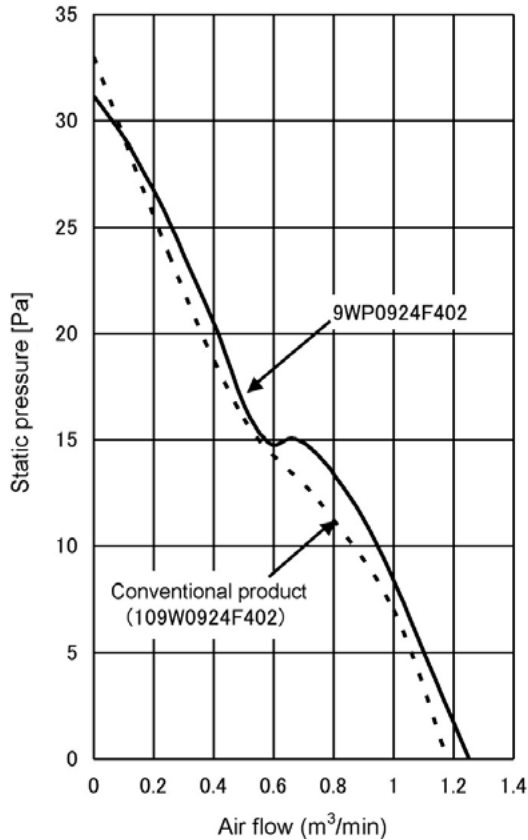


Fig. 5 Comparison of Air Flow vs. Static Pressure

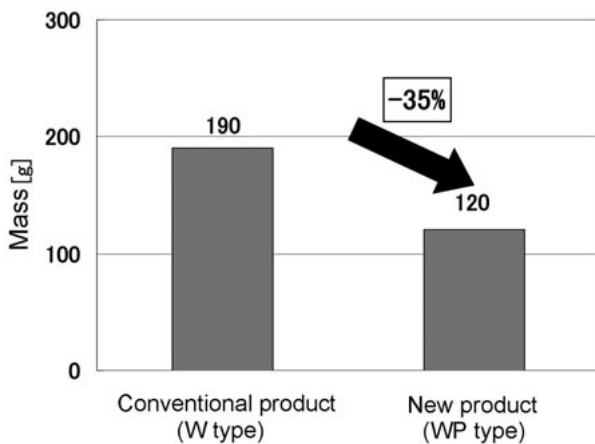


Fig. 6 Mass comparison

6. Conclusion

This document has introduced the features and performance of the splash proof "San Ace 92W" WP type fan, developed to meet the rising demand for splash resistant fans. We believe that this fan will prove to be useful for cooling of equipment used outdoors and that it demonstrates an extended durability over conventional models.

The product expands our fan series to encompass 60 mm sq., 80 mm sq., 92 mm sq., and 120 mm sq. fans. This product provides another alternative for fans used for internal cooling of outdoor equipment.

Footnotes

*1 : This indicates the international protection code for the "San Ace W" Series WP type.

IP : System that uses codes to indicate the class of protection for the outer framework against water ingress, foreign particle ingress, access to hazardous parts, or other additional items

5 : Dust protected (rotator that provides protection from dust)

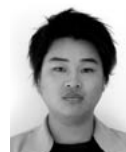
5 : Protected against water jets (Rotator that protects the device from water that comes in from any direction)

"IPXX"

* Prescribed by JIS (Japan Industrial Standards) C0920.

"Guarantees resistance to water and to penetration of foreign matter in the electrical device" as well as IEC (International electrotechnical commission) 529

"DEGREES OF PROTECTION BY ENCLOSURES (IP code)"

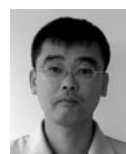


Akira Nakayama

Joined Sanyo Denki in 2005.

Cooling Systems Division, Design Dept.

Worked on the development and design of cooling fans.



Naruhiko Kudou

Joined Sanyo Denki in 1997.

Cooling Systems Division, Design Dept.

Worked on the development and design of cooling fans.