



C13 Flow Control Vacuum Pump series

# User Guide


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# About This Document

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## Purpose

This document is a description of the C13 flow control vacuum pump series in the test period, which is used to guide the relevant technical personnel to understand the product characteristics.

## Intended Audience

This document is intended for technical personnel. You should have a good understanding of your product and have a clear concept of the relevant parameters, specifications, and other information of the applications of the micro pump.

## Keyword

Brushed motor, related parameters, cautions

## Change History

The change history accumulates each update of this document. The latest version of the document contains all the previous updates.

Issue	Date	Product Version	Issuer	Modification
01	2019-01	1.0	XX	First official release
02	2019-01	1.0	XX	Replace the name C15 channel version with C13L
03	2019-01	1.0	XX	Change the standard edition into the standard edition
04	2019-02	1.0	XX	Modify the lifetime parameters of different versions
05	2019-04	1.0	XX	Modify working condition description
06	2019-11	1.0	LYZ	Modify format
07	2019-12	1.0	FB	Update notes in section 2.1
08	2020-02	1.0	FB	Add model description; update outline drawing
09	2020-04	1.0	FB	Update some descriptive terms
10	2020-05	1.0	FB	Update the version description in section 2.2
11	2020-06	1.0	FB	Update medium description
12	2020-06	1.0	FB	Delete section 2.6

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13	2021-04	1.0	FB	Update parameter test instructions
14	2021-08	1.0	FB	Update content format

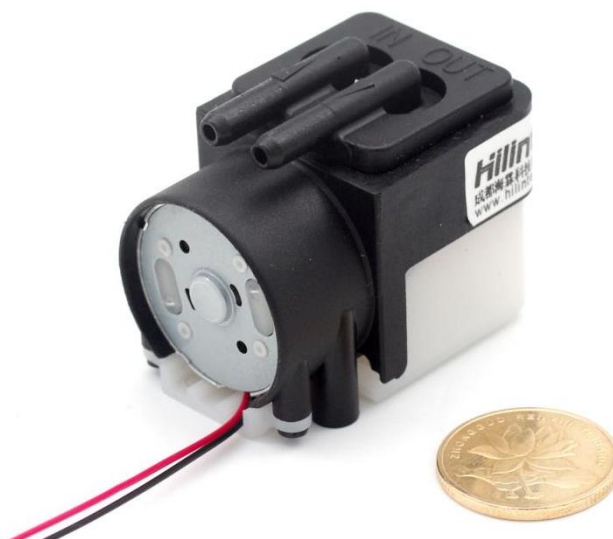
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# 1 Product Characteristics



## 1.1 Compact Size

The product weighs about 40g and the overall size is about 44x29x36mm.

## 1.2 Brushed Motor

This model is driven by high-quality brushed motor which have low working voltage, can use dry battery power supply under special working condition

## 1.3 Excellent Gas Tightness

The well-designed sealing structure has good air tightness. Air tightness test can be provided according to customer requirements.

## 1.4 **Cost-effective**

Based on the pricing of civilian-grade products, the high reliability and high air-tightness of industrial-grade products are realized. It provides a cost-effective product choice for cost-prioritized applications.

## 1.5 **Wide Voltage Operation**

The product can work in the range of 3.7V to 6V and is suitable for battery power supply. And the flow can be adjusted by adjusting the input voltage.



# 2 Technical Parameters

## 2.1 Performance Parameters

Model	Version	Rated Voltage (V DC)	Load Current (mA)	Flow (L/min)		Relative Vacuum (kpa)	Weight (g)
				Peak Flow (L/min)	Average Flow (L/min)		
C13L	simplified	5	≤200	≥0.4	≥0.3	≥18	≈40

**Note:** 1. Working voltage is 3.7V~6V, input voltage change will affect the load current;

2. Unless otherwise specified, the technical parameters are measured under the conditions of temperature 25°C and standard atmospheric pressure of 101kPa. You can contact Hilintec to customize products with other specifications.

3. The parameters in the table are measured at the maximum speed of the motor under rated voltage. When the motor speed changes, the vacuum level is basically unchanged.

4. The peak flow rate in the table refers to the flow value measured with a rotameter, and the average flow rate is measured with a soap film flow-meter.

## 2.2 Configuration options

<b>Material option</b>					
pump head	Reinforced nylon				
diaphragm	EPDM				
one-way valve	EPDM				
motor	BDC				
<b>Connector Option</b>					
Connector type	Hose connectors				
<b>Function option</b>					
Function type	Basic Type				

## 2.3 Reliability Parameters

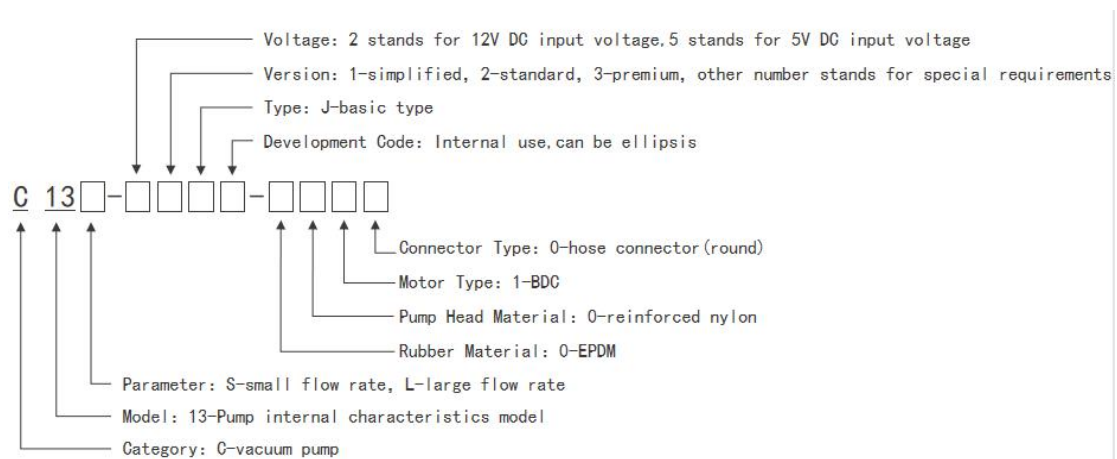
<b>Model</b>	<b>C13L</b>
<b>Version</b>	Simplified Version
Full-Load(hrs)	400
No-Load(hrs)	600
Motor(hrs)	900
Lifetime test instructions:	Full-load life test conditions: block the pump suction port, and the exhaust port is directly connected to the atmosphere, so that the pump can operate continuously without stopping for 24 hours under the maximum vacuum condition;
	No-load life test conditions : The pump suction port and exhaust hole are directly open to the atmosphere, so that the pump works under normal pressure for 24 hours without stopping and continuous operation;

	<p>Motor life test conditions: under good ventilation and heat dissipation conditions, the motor does not carry a load for 24 hours without stopping Continuous operation;</p>
	<p>Environmental conditions for life test: In a clean, non-corrosive laboratory, the ambient temperature is 5~33℃ fluctuates with the climate, and the relative humidity of the environment is 50%~85%, fluctuates with the climate;</p>
	<p>The source of the experimental data is from Hailin Technology Aging and life laboratory and supplier laboratory</p>
<b>Working Conditions</b>	
<b>Environment</b>	<p>Permissible ambient temperature range of the simplified version products is 0℃~50℃, The permissible relative humidity of all pumps in this series is ≤90%, no condensation. The pump should not be exposed to the sun, and should work in a clean and ventilated environment.</p>
<b>Medium</b>	<p>Permissible gaseous media temperature range is 0℃~50℃. The medium is allowed to contain water vapor, but cannot contain particles or oil mist.</p>
<b>Load</b>	<p>The inlet can be operated at full load (i.e. completely block the inlet), but the applied load cannot exceed the maximum vacuum of the pump; the outlet must keep unobstructed.</p>
<b>Corrosion</b>	<p>The materials of the wetted parts: pump head, diaphragm, one-way valve (See Configuration Options for component materials). The above materials have a certain degree of corrosion resistance. Please further judge the resistance to the medium according to the wetted materials</p>

# 3 Product Model Description

## 3.1 Brief Description of Model Naming

Only basic type available for this series of pumps.



Example 1: C13L-51J-0010 (C13L pump, simplified version, 5V voltage, basic type)

# 4 Cautions

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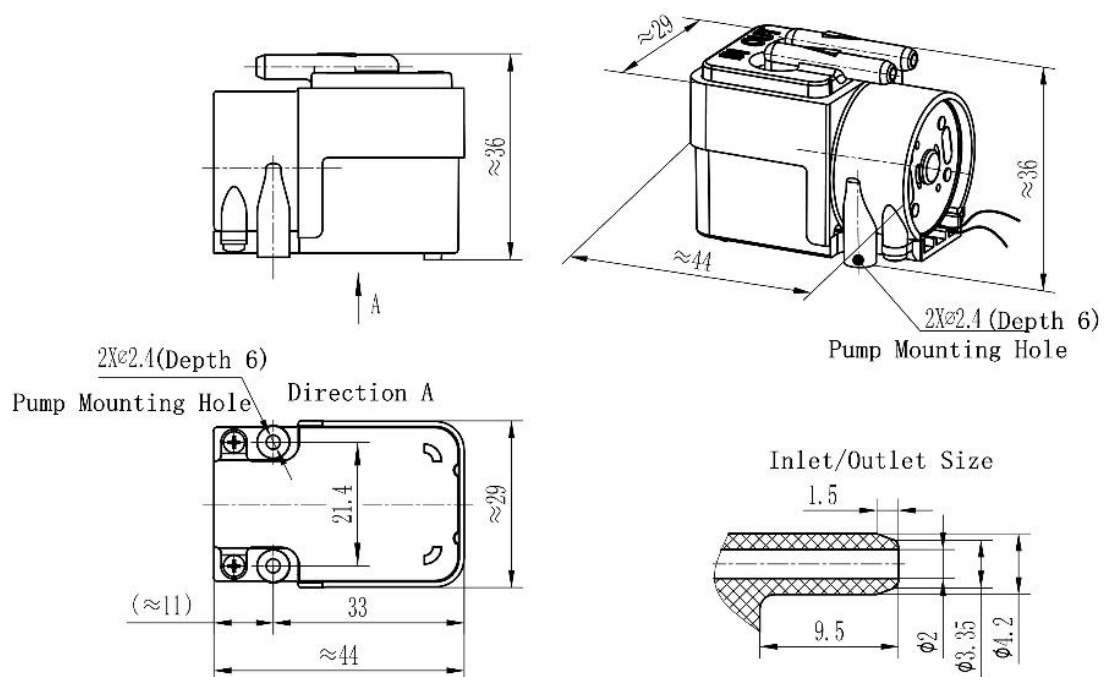
Please read the instructions in this chapter carefully and follow the instructions strictly before use.

- 1. This product has no waterproof, dust-proof, and explosion-proof functions and cannot be used in flammable and explosive environments!**
- 2. Foreign matter must not fall into the pneumatic connectors, and there should be no solid particles in the medium, otherwise the micro pump will be damaged!**
- 3. The outlet must be kept unobstructed, otherwise the micro pump will be damaged!**
- 4. When this product is used to transfer harmful medium, it must be double-sealed to ensure personal safety!**
- 5. The matching piping components and containers must have sufficient strength to ensure personal safety!**
- 6. Please operate strictly in accordance with the instructions!!**

# 5 Dimensions

## Overall Dimensions of C13 Basic Type

Unit:mm



Installation instructions:

1. The screws on the pump cannot be removed, otherwise it will damage the pump;
2. The mounting holes are self-tapping screw holes, not suitable for repeated tightening and disassembly, otherwise the installation will be loose and unreliable.

# 6 Appearance

