



D16 Micro Piston Vacuum Pump & Compressor series

User Guide


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About This Document

Purpose

This document is a description of the D16 Vacuum and Compressor Piston 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

Piston pump, related parameters, cautions

Change History

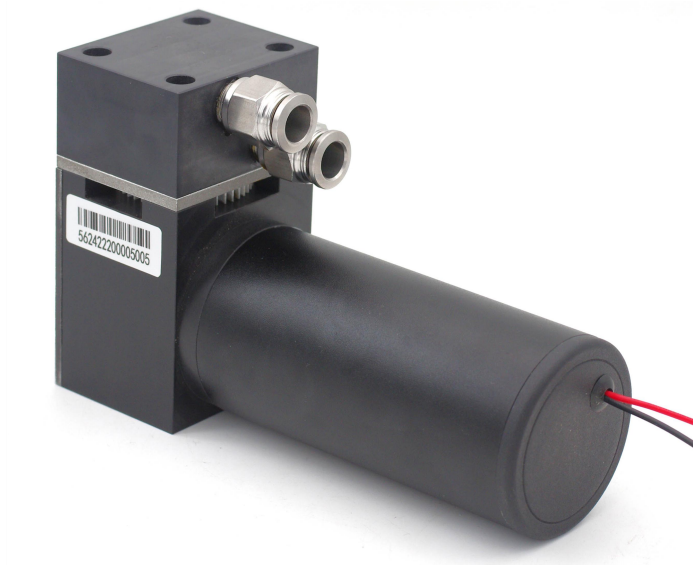
The change history accumulates each update of this document. The latest version of the document contains all the previous updates.

Issue	Date	Product Version	Issuer	Modification
01	2022-1	1.0	XYL	First official release
02	2022-5	1.0	LYZ	Text optimization

Contents

About This Document.....	1
Change History.....	2
Contents.....	3
1 Product Characteristics.....	1
1. 1 High Quality DC Motor.....	1
1. 2 Modular Pneumatic Connectors.....	1
1. 3 Continuous Oil-less Operation.....	2
1. 4 Interference suppression circuit.....	2
1. 5 Start with Maximum Load.....	2
2 Technical Parameters.....	3
2. 1 Key Parameters.....	3
2. 2 Configuration options.....	4
2. 3 Options of Modular Pneumatic Connectors.....	4
2. 4 Medium Contact Material.....	5
2. 5 Reliability Parameters.....	1
2. 6 Flow Rate Curve.....	2
2. 7 Starting Current Curve.....	3
3 Cautions.....	4
4 Product Model Description.....	5
4. 1 Brief Description of Model Naming.....	5
Only basic type available for this series of pumps.....	5
5 Dimensions.....	6
6 Appearance.....	7

1 Product Characteristics



1.1 High Quality DC Motor

This model is driven by high-quality brushed DC motor which has the advantages of long lifetime, low interference, high reliability, etc

1.2 Modular Pneumatic Connectors

This series of pumps has a modular connector design. It is available with hose, tube and internal thread options for easy connection to various air systems. Default PC8 stainless steel push-in connector are used with 8mm outer diameter hard pipes; it also can be configured with PC6 stainless steel push-in connector for 6mm outer diameter hard pipes and reinforced nylon hose connector for 4*8mm silicone hose and R1/8 internal thread for more types of connections. The user can select the corresponding pneumatic connectors when ordering according to the pipeline situation.

1. 3 Continuous Oil-less Operation

Industrial grade high-reliability design, allow 24 hours of continuous oil-less operation, maintenance-free during the design life, and no need to stop for heat dissipation.

1. 4 Interference suppression circuit

This series of pumps are equipped with an interference suppression circuit, which can effectively suppress the conduction interference and electromagnetic radiation caused by the operation of the motor. It has good electromagnetic compatibility and can be used in occasions requiring low electromagnetic interference.

1. 5 Start with Maximum Load

This series pump can start stably and reliably under nominal maximum negative pressure or maximum positive pressure, and has good performance of re-starting with load.

2

Technical Parameters

2.1 Key Parameters

(standard atmospheric pressure 101kPa)

Model	Rated Voltage (V DC)	Load Current (mA)	Peak Flow (L/min)	Average Flow (L/min)	Relative Vacuum (-kPa)	Max.Output Pressure (kPa)
Material	Pump Head: PPS; Cylinder:Aluminum; Piston:PTFE; One-way Valve:FKM, Motor: BDC					
D16M	24	≤780	≥5	≥2.8	≥80	≥520

Note:

- 1.Input working voltage 12~24V,the change of operating voltage will affect parameters.
- 2.Unless otherwise specified, the technical parameters are measured under the conditions of temperature 20°C and standard atmospheric pressure of 101kPa. For products with other parameters and specifications, you can contact us to customize.
- 3.The parameters in the table are measured at the maximum speed of the motor under rated voltage.
- 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

Material option			
pump head	PPS		
Piston	PTFE		
Cylinder	Aluminum		
one-way valve	FKM		
motor	BDC		

2.3 Options of Modular Pneumatic Connectors

Connector identification	Connector Option	Material	Recommended Hose/Tube
0	Hose connector-type A	reinforced nylon	Silicone hose with inner diameter 4mm
1	PC6 push-in connector	Stainless steel	6mm outer diameter hard tube
2	PC8 push-in connector(default)	Stainless steel	8mm outer diameter hard tube
3	Rc1/8 internal thread	reinforced nylon	Install connectors above or other kind of connectors
5	Hose connector-type B	PP	Silicone hose with inner diameter 6~7mm
6	Hose connector-type C	Stainless steel	Silicone hose with inner diameter 7~8mm

Note: When the operating pressure is greater than 150kPa, the hose connector with has the risk of falling off the pipeline, and PC6 or PC8 push-in connector or internal thread connector should be selected.

2.4 Medium Contact Material

Medium contact parts include pump head, cylinder, piston, and check valve. The default configuration is PPS pump head, PTFE piston, aluminum cylinder, FKM check valve and PC8 push-in connector. For corrosion resistance requirements, please refer to the above configuration options and Modular Pneumatic Connectors for details.

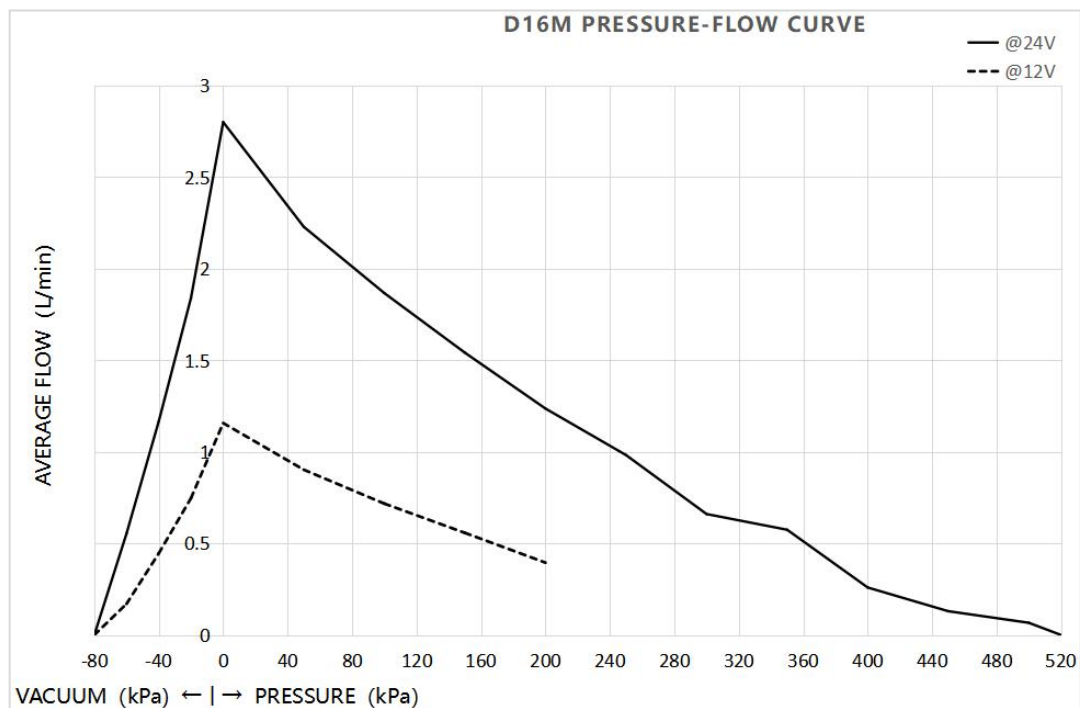
2.5 Reliability Parameters

Model	D16M
Version	Standard Version
Full-Load(hrs)	1000
No-Load(hrs)	2000
Motor(hrs)	5000
Lifetime test instructions:	Full-load life test conditions: At rated voltage, the exhaust port of the pump is adjusted to 400kPa. the suction port is directly connected to the atmosphere, so that the pump can operate continuously without stopping for 24 hours under the maximum pressure 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;
	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;
	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;
	The source of the experimental data is from Hailin Technology Aging and life laboratory
Working Conditions	
Environment	Permissible ambient temperature range of the simplified version products is 0℃~50℃, The pump should not be exposed to the sun, and should work in a clean and ventilated environment.
Medium	Permissible gaseous media temperature range is 0℃~50℃. The medium is allowed to contain water vapor, but cannot contain particles or oil mist.
Load	The inlet/outlet can be operated at full load (i.e. completely block the inlet/outlet), but the inlet applied load cannot exceed the maximum vacuum of the pump; the outlet applied load cannot exceed the maximum pressure of

	the pump.
Corrosion	The materials of the contact parts: pump head,piston,cylinder,one-way valve,Modular Pneumatic Connectors.The above materials have a certain degree of corrosion resistance. Please further judge the resistance to the medium according to the contact materials

2.6 Flow Rate Curve

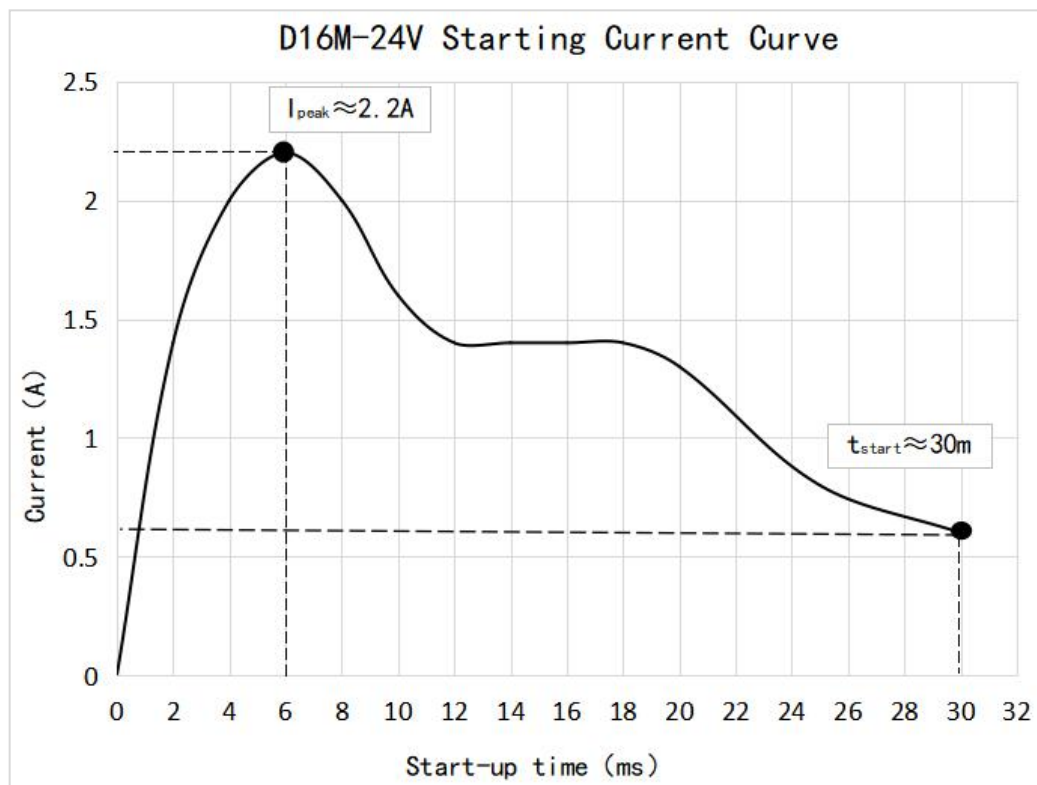
There are individual differences between different micro pumps, so this curve is a statistical value, only as a technical reference for users to confirm the working point. The "flow" mentioned in this section refers to the "average flow".



- Note:**
1. The maximum average flow rate of the curve will be slightly lower than the nominal value, which is due to the resistance of the test pipeline components, which leads to the attenuation of the flow;
 2. The value of this curve is for reference only, not as a basis for product acceptance.

2.7 Starting Current Curve

The starting current curve is measured under the working condition that the inlet and outlet are directly connected to the atmosphere, and there are certain individual differences between different micro pumps. This curve is a statistical value, which is only used as a technical reference when users determine the power supply system, and is not for acceptance data.



3

Cautions



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

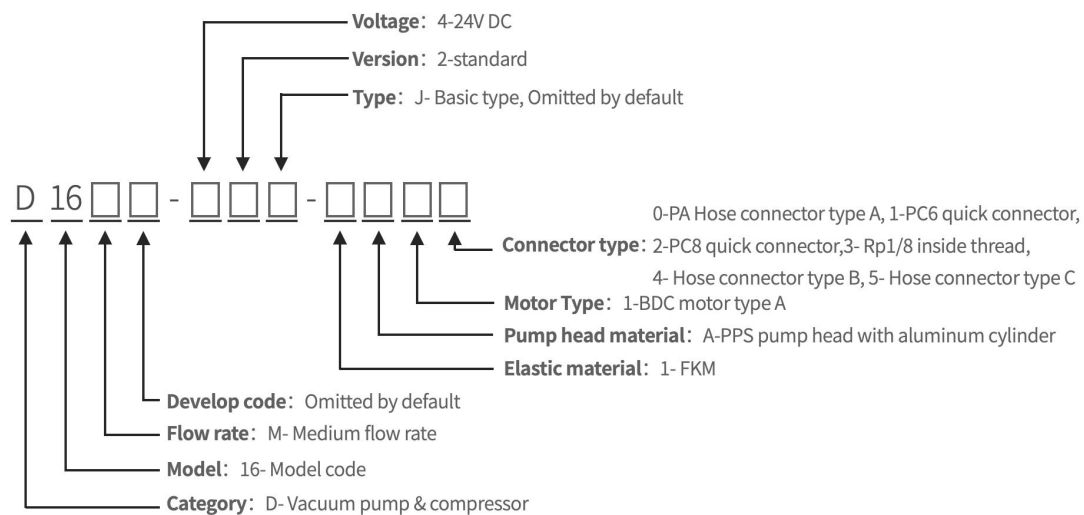
1. **This product has no waterproof, dust-proof, and explosion-proof functions and cannot be used in flammable and explosive environments!**
2. **Foreign matter must not fall into the gas nozzles, and there should be no solid particles in the medium, otherwise the micro pump will be damaged!**
3. **When this product is used to transfer harmful medium, it must be double-sealed to ensure personal safety!**
4. **The matching piping components (especially use hose connector) and containers must have sufficient strength to ensure personal safety!**
5. **When using the product in a enclosed space, please pay attention to the heat dissipation of the pump.**
6. **The air tightness of piston pump will decrease over the end of its life due to piston wear.**
7. **Do not suck up oil mist!**
8. **Please follow the instructions strictly!**

4

Product Model Description

4.1 Brief Description of Model Naming

Only basic type available for this series of pumps.

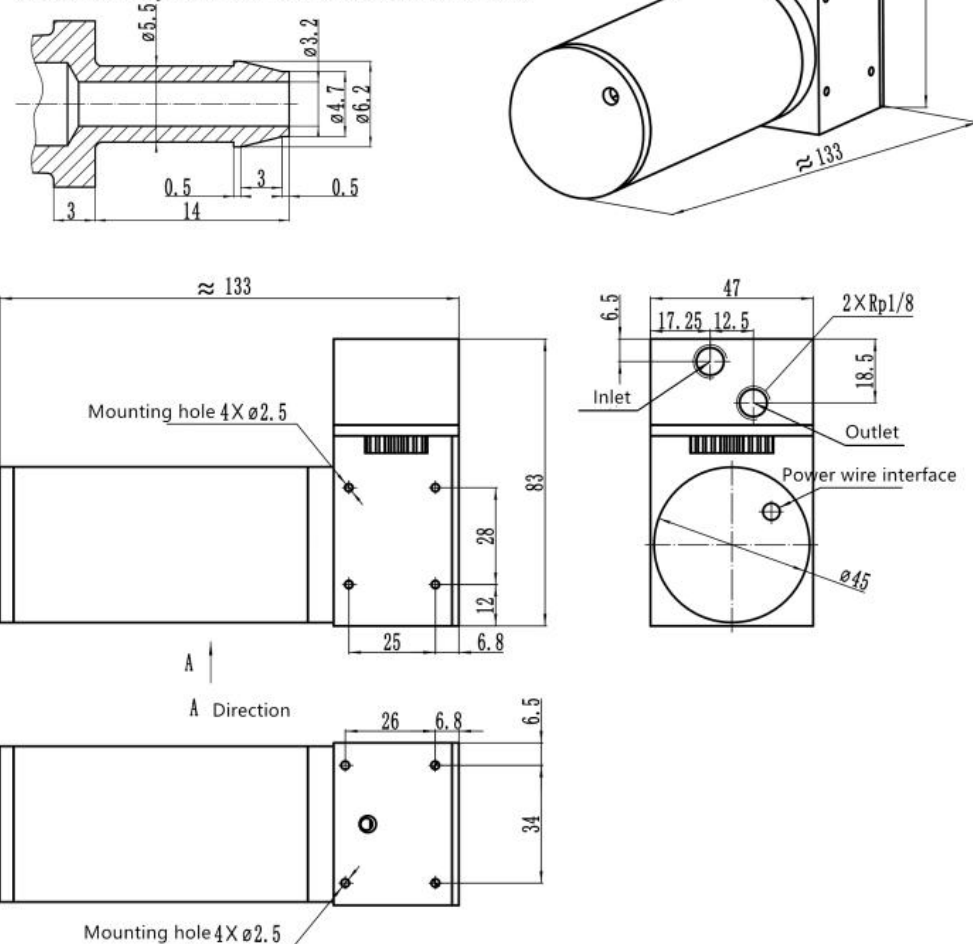


Example 1: D16M-42J-1A12 (D16 pump with medium flow rate , standard version of 24V voltage basic type)

5 Dimensions

Overall Dimensions of D16 Unit:mm Outline Drawing without Connectors

Reinforced Nylon Hose Connector(Inlet/Outlet)



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

