



Ex
Explosion-proof

CCC
3C

EMC
EMC

IP66

Official Website:

Our experienced team of professional engineers can provide you with products and technical solutions for your needs

For more product information, please visit our official website:

www.innofluid.com



OFFICIAL WEBSITE



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Pilot Free Trade Zone, Shanghai, China.

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Email: info@innofluid.com

INNOFLUID

ExD series



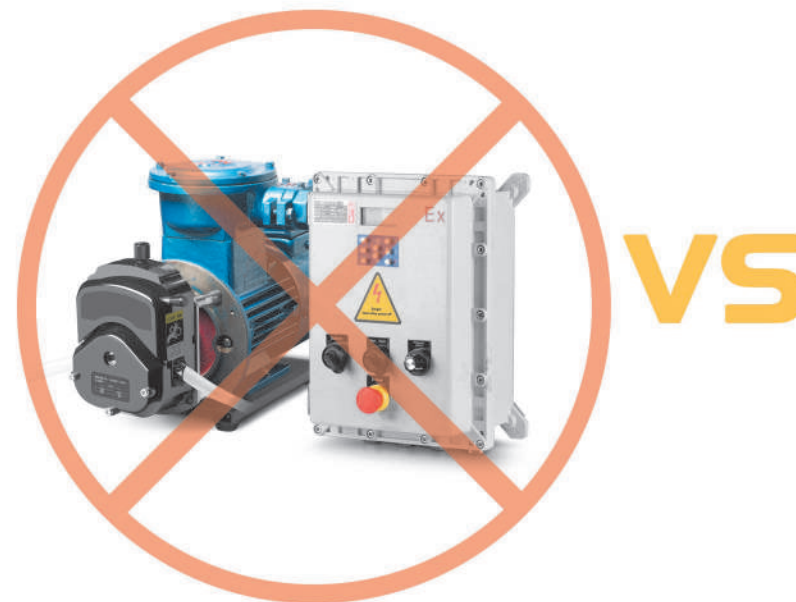
ExD Series

Redefine Explosion Proof Peristaltic Pump



Series ExD

- A new category of peristaltic pump based on explosion proof standards.
- The whole pump is explosion proof, reaching Ex db IIC T4 Gb and Ex tb IIC T130°C Db explosion proof levels at the same time.
- Intelligent control system to realize high precision transferring and dispensing.



Assembled products with parts



ExD series explosion proof peristaltic pump

	Explosion proof motor type	ExD series
Explosion proof method	Explosion proof motor and Explosion proof control box	Overall explosion proof
Speed range(rpm)	180-600 / 60-600	0.1-600
Speed revolution(rpm)	——	0.1
Display	——	4.3-inch color LCD screen
Control	External frequency converter control	Manual, External signal, Communication
Intelligent dispensing mode	——	Automatic filling and dispensing
Flow rate	——	Display both speed and flow rate
Intelligent calibration	——	Input actual volume and calibrate automatically
Power consumption	370W	300W
Drive weight	≥40kg	30.1kg
IP rate	IP55	IP66

Integrated casting body

- The unique casting reinforced structure and integrated design have successfully passed the "No explosion transmission" test of the IIC level of the national testing center to ensure safety.
- The cast aluminum shell has a tensile strength of 280MPa after heat treatment, which greatly reduces the overall weight and volume of the pump while ensuring strength and safety.
- The hidden design of the flange explosion proof surface combined with the sunken design of the flange fastening screws changes the appearance of traditional explosion proof products.
- The cast aluminum shell has good heat dissipation performance and no additional heat dissipation device is required.

Three-proof button and knob system: explosion-proof, dustproof, waterproof

- Button dust cover: Double layer protection to ensure dustproof and waterproof effect.
- Concave button design: It conforms to ergonomics and fits more comfortably with fingers.

The identification system has been fully upgraded

- The logo pattern on the pump head and operation panel adopts laser engraving technology to eliminate the hidden danger of static electricity of traditional plastic masks.

Intelligent operation system

- 4.3-inch color LCD screen, easy operation.
- Dynamic display working status.
- Flow rate, setting parameters and system configuration are displayed in the same screen.
- Intelligent calibration function.
- Multiple external control methods meet remote control requirements.

Passed EMC test

excellent anti-electromagnetic interference capability

- Comply with safety regulations:
IEC61000-6-2
IEC61000-6-4
IEC61000-3-2
IEC61000-3-3

The whole pump is IP66, designed for industrial environment

- More than 90% of the pump body sealing surface of the pump body is sealed by O-ring, which has self-sealing characteristics.
- Passed the IP66 protection level test, easily cope with hot and humid working environment.

AC servo motor control system

- AC servo motor, high precision, high torque and smooth operation.
- Under full load:
ExD-300-30L (with DZ45 pump head): Motor temperature rise 25 °C
ExD-600-12L (with YZ35 pump head): Motor temperature rise 15 °C



IP66 Protection Level



Water spray test



Intelligent Operation System



External Control Interface





Precise dripping of chemical drug in explosion-proof production workshop

In the titration process of chemical drug production, customers have been using liquid level tanks to drip acetone or ethanol solutions. This method is less accurate. Because this process is used to transport ethanol and acetone, the equipment is required to be explosion-proof and corrosion-resistant. Using ExD-600-12L explosion proof peristaltic pump to achieve precise control and accuracy of $\pm 1\%$.



95% ethanol sub-package production

The customer has been using the explosion proof motor and piston pump to dispensing ethanol. When producing products of different specifications, complicated equipment adjustment work is required, which takes about 2-3 hours. The customer's equipment transformation replaces the sub-package pump with ExD-600-6L. For each replacement, it only needs to adjust the parameters on the control panel of the pump, and it only takes 5 minutes at most.



Catalytic validation equipment and simulation pilot production equipment validation device sampling for chemical enterprises

In the process of validating catalysts and simulating oil production, chemical enterprises need sampling pumps for accurate injection. A lot of electromagnetic interference signals will be generated in the field cause of multiple devices running in a centralized manner. And many similar products in the market cannot meet the demand. ExD-600-12L peristaltic pump achieves accurate sampling through good anti-interference ability on site.



exD series



Redefine Explosion Proof Peristaltic Pump



Explosion Proof Peristaltic Pump

Application: Inflammable and explosive sites, including chemistry, pharmaceutical industry, etc.

IP66

Technical Specifications

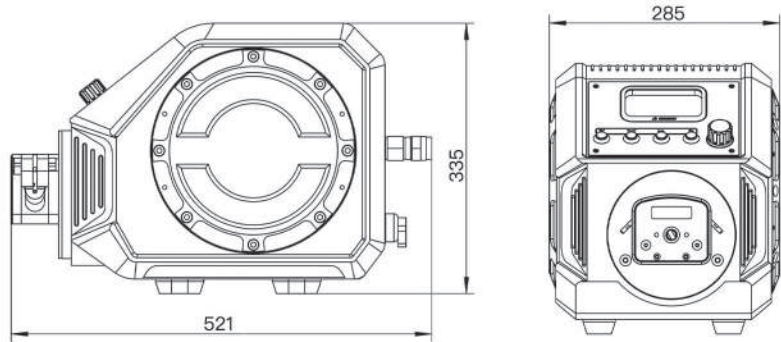
- | Standard: GB/T3836.1-2021, GB/T3836.2-2021, GB/T3836.31-2021, GB/T 4208-2017, Q/BSC03-2022
- | Housing material: Aluminum Alloy
- | Speed range:
ExD-600 series: 0.1-600rpm
ExD-300 series: 0.1-300rpm
- | Speed resolution: 0.1rpm
- | Display: 4.3 inch -Industrial grade - True color LCD screen
- | Control: Mechanical button, explosion proof knob, external control signal and communication.
- | Working mode: Flow rate mode, Dispensing mode.
- | Flow rate mode: Continuous transferring according to the set flow rate or motor speed.
- | Dispensing mode: Set the dispensing volume, dispensing time, pause time and repeat numbers.
- | Dispensing volume: 0.1mL-9999L
- | Dispensing time: 0.1sec-9999hour
- | Pause time: 0.5sec-9999hour
- | Repeat number: 1-9999 times, 0 represent unlimited
- | Calibration function: Input actual volume and calibrate automatically
- | Back suction angle: 0-360°
- | Communication: RS485
- | Communication protocol: Modbus protocol(RTU mode)
- | External control speed signal: 0-5V, 0-10V, 4-20mA optional
- | External control signal input: Active switch signal (5-24V) control start/stop, direction and full speed; Passive switch signal control start/stop.
- | External control signal output: Open collector output working status
- | Drive dimension (L×W×H): 458×285×335mm
- | Power supply: AC220V±10%, 50Hz
- | Rated power: 300W
- | Relative humidity: <90%
- | Condition temperature: 0-40℃
- | IP rate: IP66
- | Drive weight: 30.1kg

ExD Series Explosion Proof Peristaltic Pump

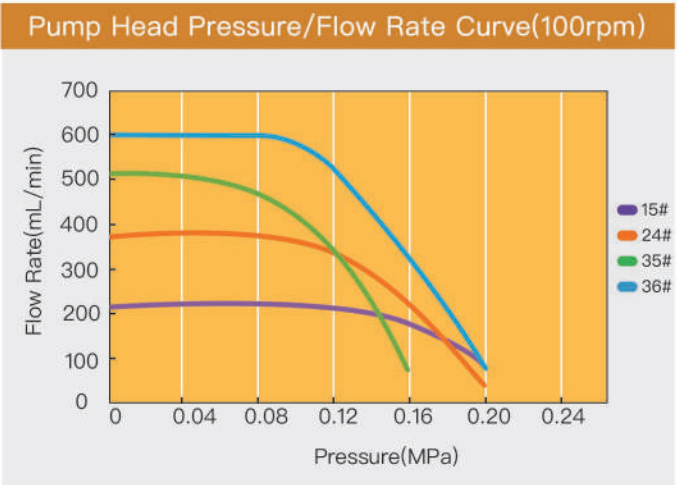
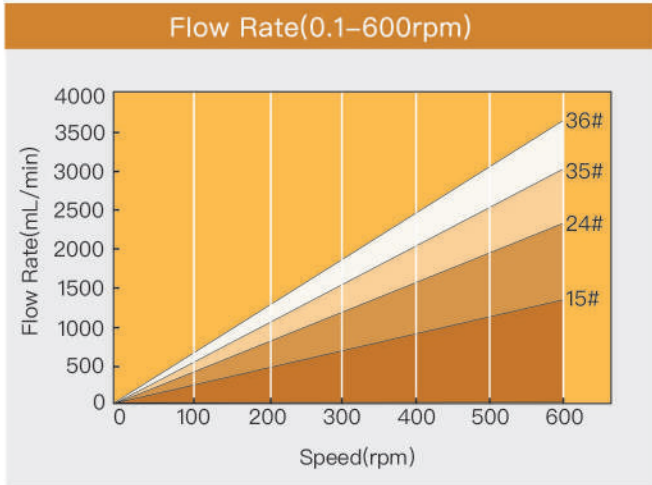
Pump Head



Dimension Drawing(Unit:mm)



DZ25-3L Flow Rate									
Drive	Pump Head	Housing Material	Tube Clamp Material	Tubing		mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-3L	DZ25-3L	Aluminum alloy	Polyamide	15#	4.8x2.4(mm)	2.11	0.1-600	0.211-1264	1.16
				24#	6.4x2.4(mm)	3.85		0.385-2310	
				35#	7.9x2.4(mm)	5.08		0.508-3050	
				36#	9.6x2.4(mm)	6		0.6-3600	



DZ25-3L Filling Volume Reference Parameter							
Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
ExD-600-3L	DZ25-3L	15#	20	1.2	0.5	27	473.9
		24#	40	1.5	0.5	24	415.6
		35#	50	1.5	0.5	24	393.7
		36#	70	2	0.5	20	350.0

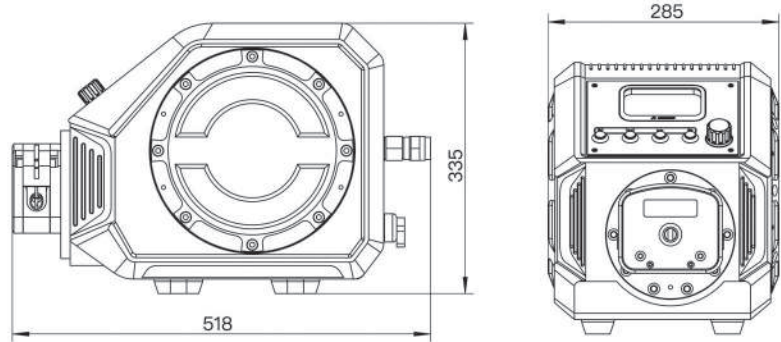
Experimental conditions:standard atmospheric pressure, room temperature at 20°C,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

ExD Series Explosion Proof Peristaltic Pump

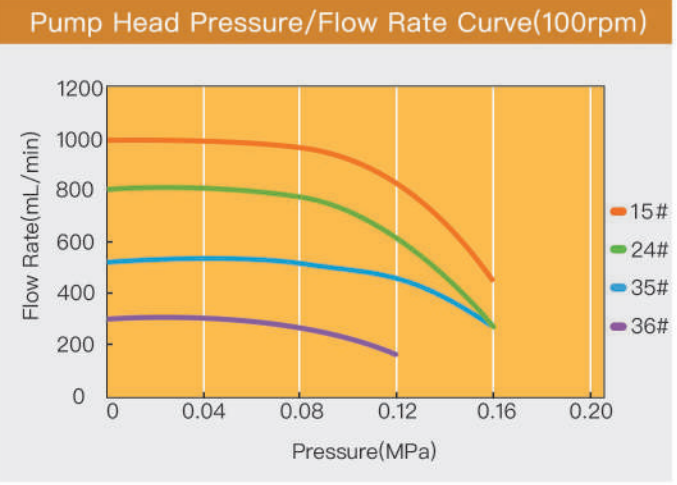
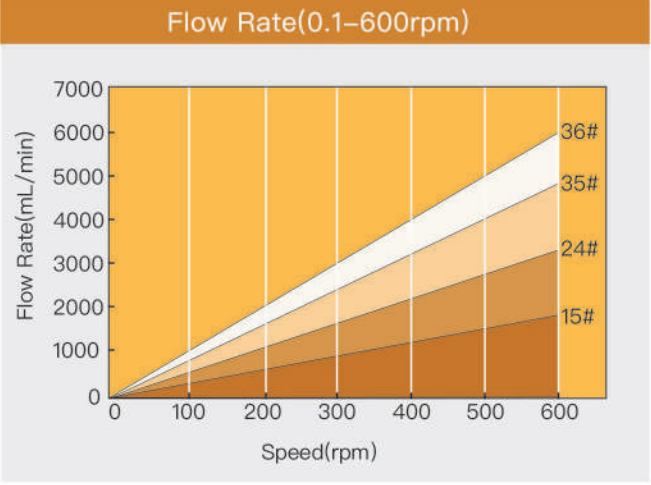
Pump Head



Dimension Drawing(Unit:mm)



DZ25-6L Flow Rate									
Drive	Pump Head	Housing Material	Tube Clamp Material	Tubing		mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-6L	DZ25-6L	Aluminum alloy	Polyamide	15#	4.8x2.4(mm)	3	0.1-600	0.3-1800	1.87
				24#	6.4x2.4(mm)	5.5		0.55-3300	
				35#	7.9x2.4(mm)	8		0.8-4800	
				36#	9.6x2.4(mm)	10		1-6000	



DZ25-6L Filling Volume Reference Parameter							
Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
ExD-600-6L	DZ25-6L	15#	30	1.2	0.5	27	500.0
		24#	50	1.2	0.5	27	454.6
		35#	70	1.2	0.5	27	437.5
		36#	100	5	0.5	24	400.0

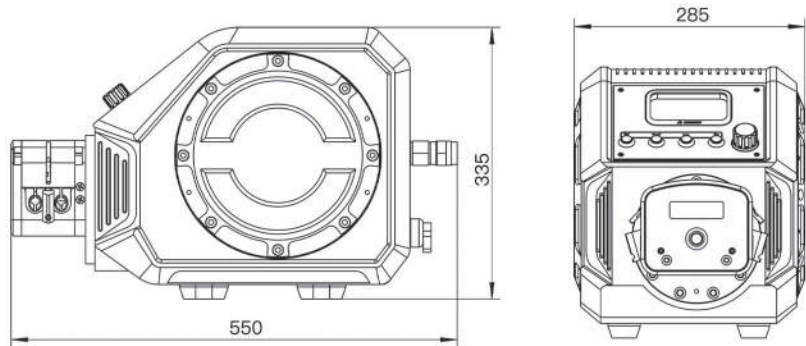
Experimental conditions:standard atmospheric pressure, room temperature at 20°C,the liquid is pure water, no pressure, no suction and lift.
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ExD Series Explosion Proof Peristaltic Pump

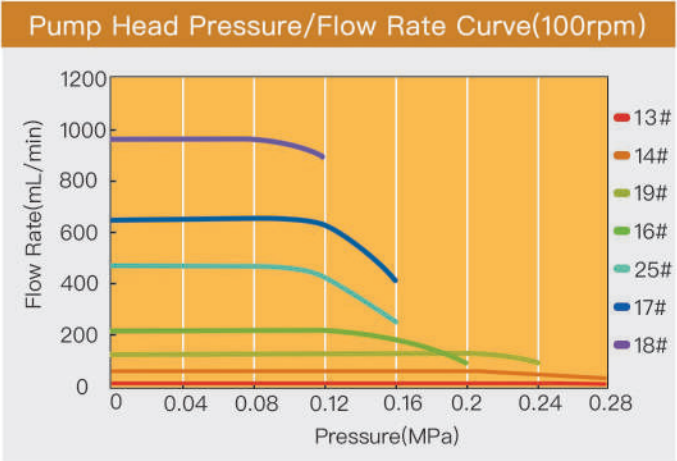
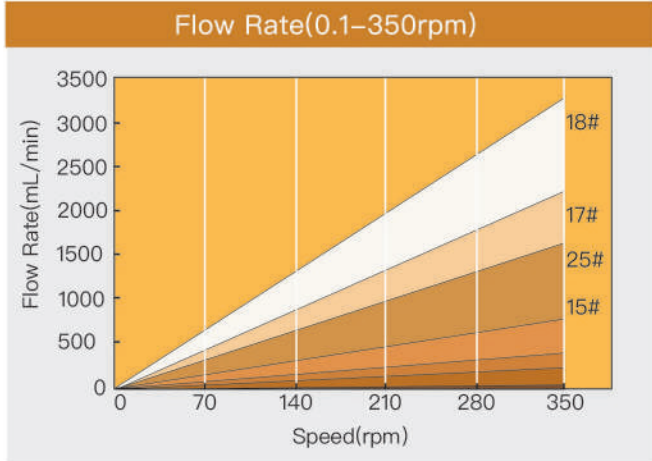
Pump Head



Dimension Drawing(Unit:mm)



DY15 Flow Rate									
Drive	Pump Head	Housing Material	Tube Clamp/Connector Material	Tubing		mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-6L	DY15	Aluminum alloy	Polyamide	13#	0.8x1.6(mm)	0.14	0.1-350	0.01-48	3.2
				14#	1.6x1.6(mm)	0.64		0.06-223	
				19#	2.4x1.6(mm)	1.28		0.13-448	
				16#	3.1x1.6(mm)	2.07		0.2-723	
				25#	4.8x1.6(mm)	4.65		0.47-1626	
				17#	6.4x1.6(mm)	6.37		0.64-2230	
				18#	7.9x1.6(mm)	9.53		0.95-3337	



DY15 Filling Volume Reference Parameter							
Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
EXD-600-6L	DY15	13#	0.5	0.8	0.8	33	273.4
		13#	1	1.2	0.5	27	364.6
		14#	0.5	0.5	1	30	94.2
		14#	1	0.6	0.8	38	157.0
		14#	3	1	0.5	30	282.6
		19#	5	1	0.8	30	234.4
		16#	15	1.5	0.5	24	290.4
		25#	20	1	0.5	30	258.3
		17#	30	1	0.5	30	282.5
		18#	100	2.5	0.5	17	251.7

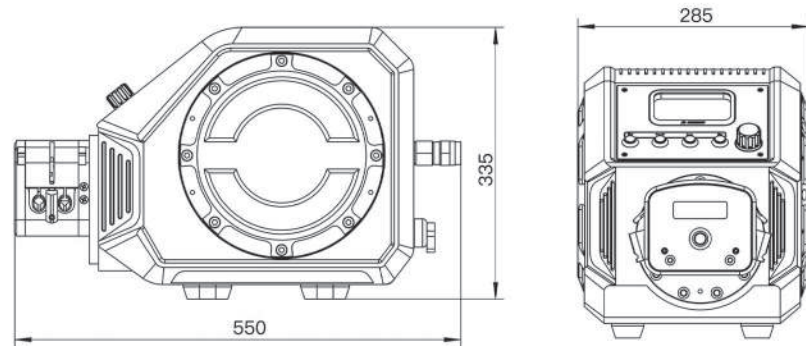
Experimental conditions:standard atmospheric pressure, room temperature at 20°C,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

ExD Series Explosion Proof Peristaltic Pump

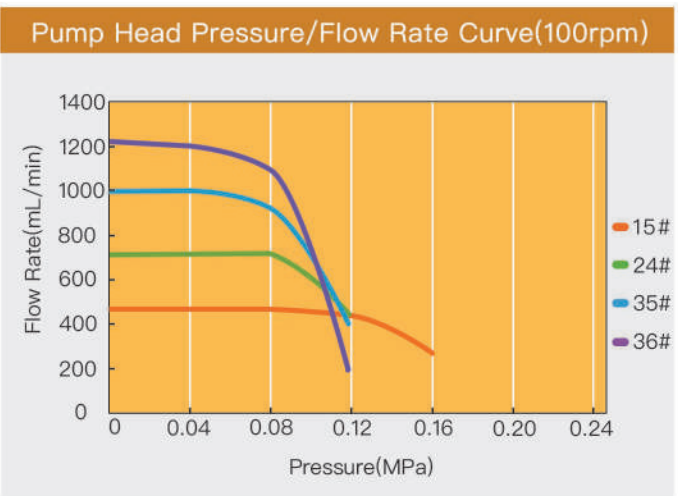
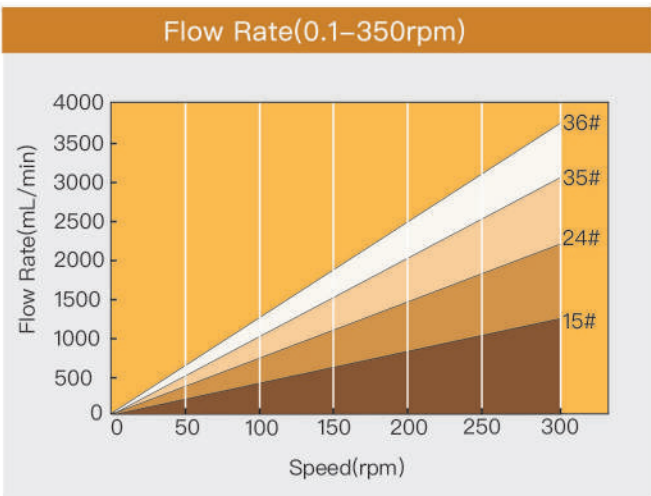
Pump Head



Dimension Drawing(Unit:mm)



DY25 Flow Rate									
Drive	Pump Head	Housing Material	Tube Clamp/Connector Material	Tubing		mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-6L	DY25	Aluminum alloy	Polyamide	15#	4.8x2.4(mm)	4.23	0.1-350	0.42-1480	3.2
				24#	6.4x2.4(mm)	7.63		0.76-2670	
				35#	7.9x2.4(mm)	10.29		1.03-3600	
				36#	9.6x2.4(mm)	12.40		1.24-4340	



DY25 Filling Volume Reference Parameter							
Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
ExD-600-6L	DY25	15#	10	0.8	0.8	33	177.3
		24#	30	1	0.8	30	235.9
		35#	70	1.5	0.5	24	272.2
		36#	100	2	0.5	20	241.9

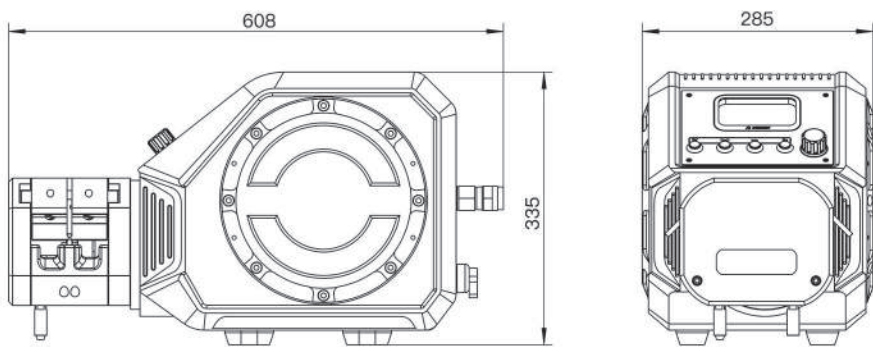
Experimental conditions:standard atmospheric pressure, room temperature at 20°C,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

ExD Series Explosion Proof Peristaltic Pump

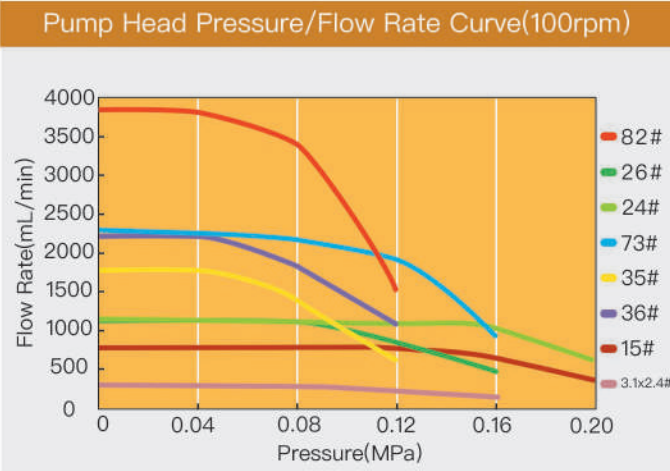
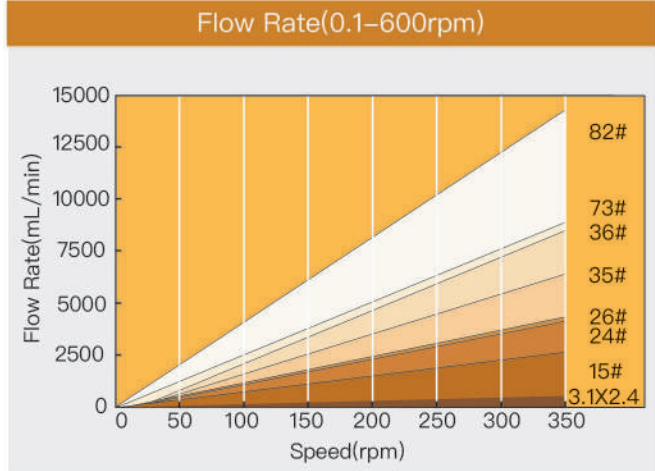
Pump Head



Dimension Drawing(Unit:mm)



DY Flow Rate									
Drive	Pump Head	Housing Material	Tube Clamp/ Connector Material	Tubing		mL/r	Speed (rpm)	Flow Rate (L/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-12L	DY25-II	Aluminum alloy	POM	3.1X2.4	3.1x2.4	3.46	0.1-350	0.35-1211	9.45
				15#	4.8x2.4	7.52		0.75-2632	
				24#	6.4x2.4	11.87		1.19-4154	
				35#	7.9x2.4	17.64		1.76-6174	
				36#	9.6x2.4	23.65		2.37-8278	
	DY35			26#	6.4x3.3	12.78		1.28-4473	
				73#	9.6x3.3	23.96		2.40-8686	
				82#	12.7x3.3	39.3		3.93-13755	



YZ35 Filling Volume Reference Parameter							
Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy (±%)	Output (pcs/min)	Motor Speed (rpm)
ExD-600-12L	DY25-II	3.1X2.4	20	2	0.5	20	173.4
		15#	80	3	0.5	15	212.8
		24#	150	4	0.5	12	189.6
		35#	200	3.2	0.8	14	212.6
		36#	200	4	1	12	217.5
	DY35	26#	150	3	0.8	15	234.7
		73#	300	3	1	15	250.4
		82#	500	3	1	15	254.5

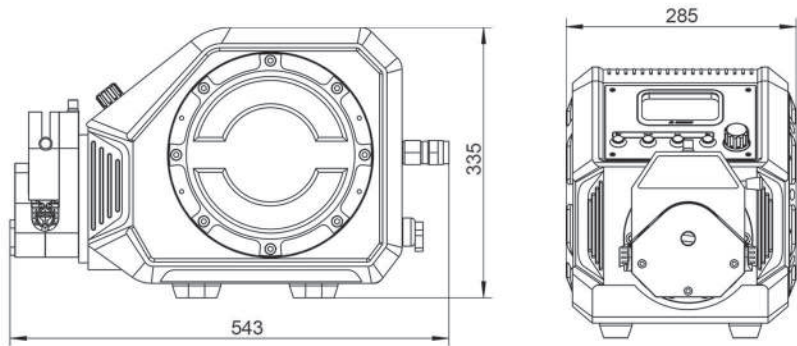
Experimental conditions:standard atmospheric pressure, room temperature at 20°C,the liquid is pure water, no pressure, no suction and lift.
Note: Actually, it is affected by many factors such as transmission medium, inlet and outlet pressure, hose material and error, working environment, etc. This data is for reference only.

ExD Series Explosion Proof Peristaltic Pump

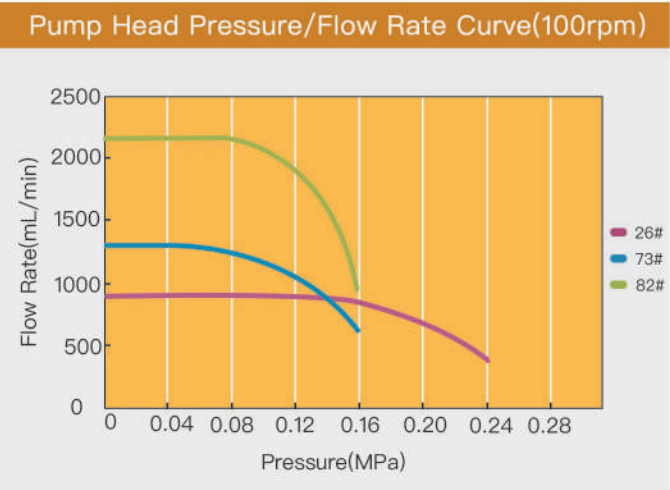
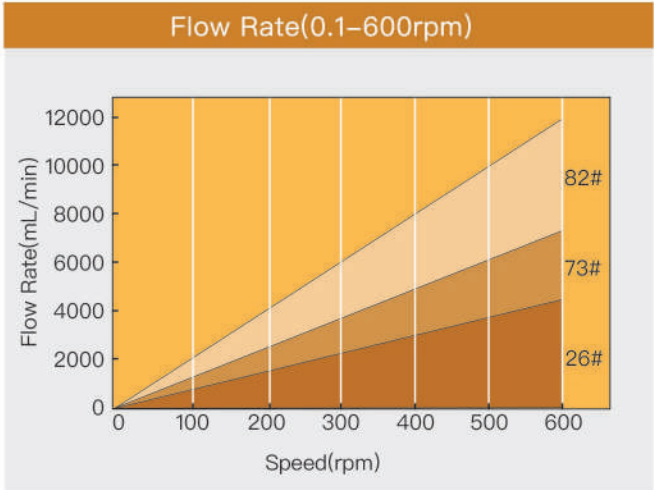
Pump Head



Dimension Drawing(Unit:mm)



YZ35 Flow Rate									
Drive	Pump Head	Housing Material	Tube Clamp Material	Tubing		mL/r	Speed (rpm)	Flow Rate (mL/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-600-12L	YZ35	Aluminum alloy	Polyamide	26#	6.4x3.3(mm)	7	0.1-600	0.7-4200	3.55
				73#	9.6x3.3(mm)	12.3		1.23-7400	
				82#	12.7x3.3(mm)	20		2-12000	



YZ35 Filling Volume Reference Parameter							
Drive	Pump Head	Tubing	Filling Volume(mL)	Filling Time(s)	Accuracy(±%)	Output (pcs/min)	Motor Speed(rpm)
ExD-600-12L	YZ35	26#	50	1	0.5	30	428.6
		26#	100	2	0.5	20	428.6
		73#	100	1.2	0.5	27	406.5
		73#	150	2	0.5	20	365.9
		82#	200	1.5	0.5	24	400.0
	2*YZ35	73#	100	1.2	0.5	27	203.3
		73#	200	1.5	0.5	24	325.2
		82#	500	2	0.5	20	375.0

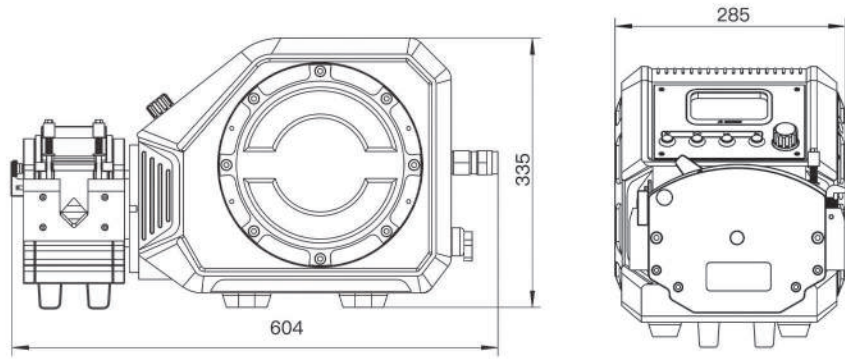
Experimental conditions:standard atmospheric pressure, room temperature at 20°C,the liquid is pure water, no pressure, no suction and lift.
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ExD Series Explosion Proof Peristaltic Pump

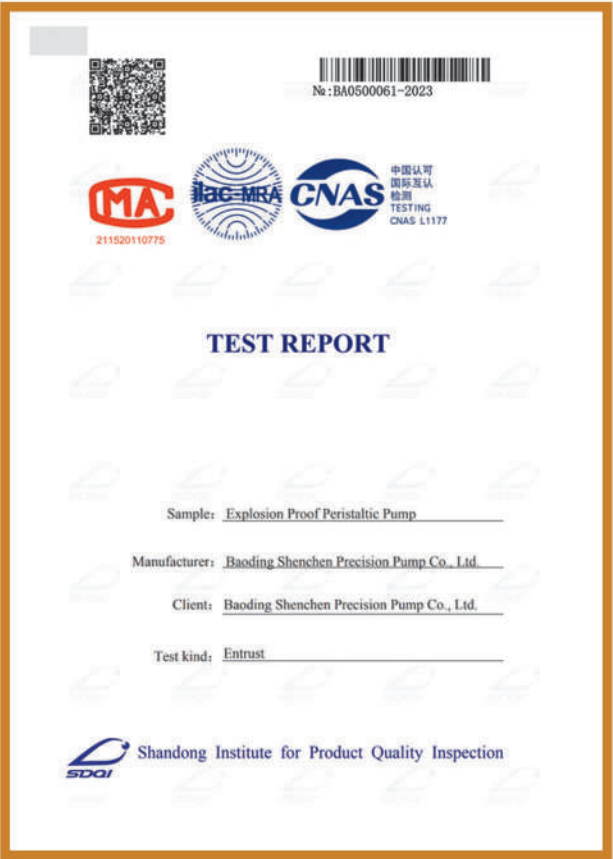
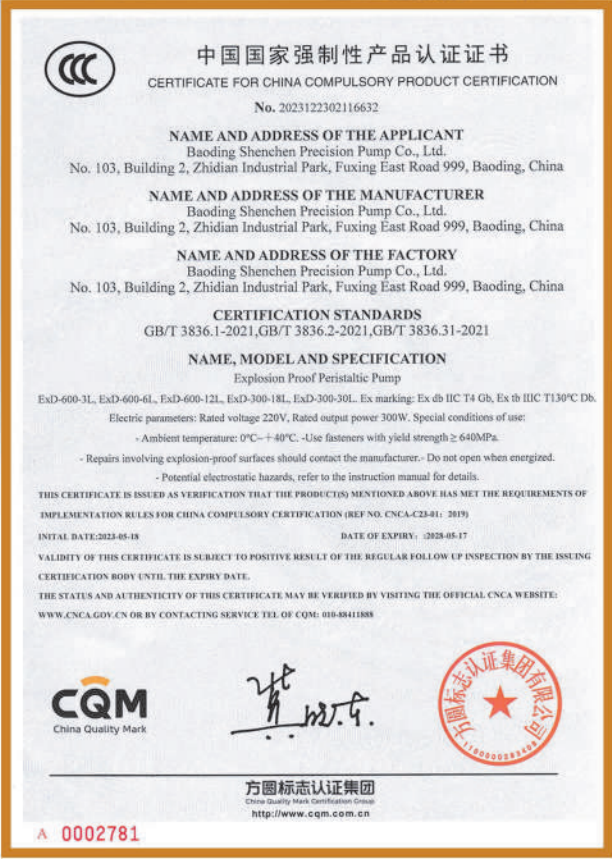
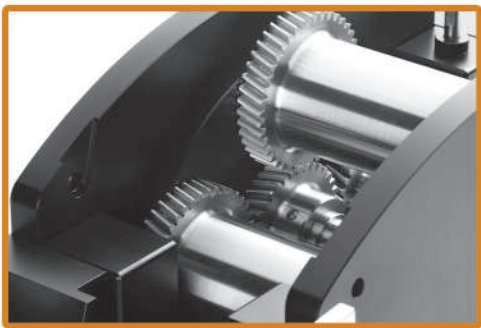
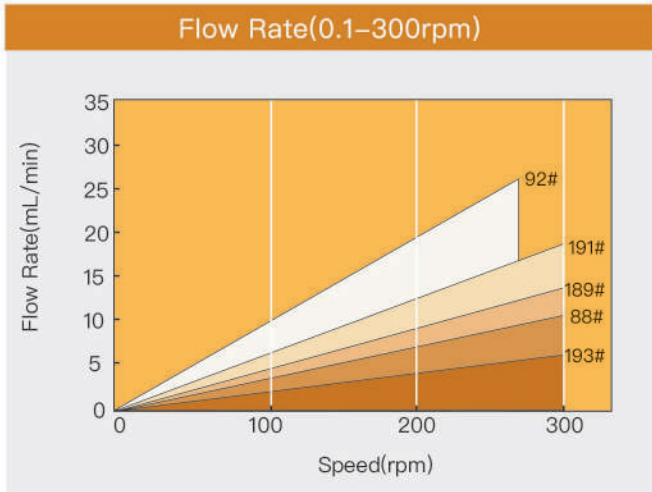
Pump Head



Dimension Drawing(Unit:mm)



DZ45 Flow Rate									
Drive	Pump Head	Housing Material	Tube Clamp/Connector Material	Tubing		L/r	Speed (rpm)	Flow Rate (L/min)	Weight (kg)
				Size	IDxWall Thickness				
ExD-300-30L	DZ45	Aluminum alloy	Polyamide	193#	9.6x4.8(mm)	0.019	0.1-300	0.0019-5.66	10
				88#	12.7x4.8(mm)	0.035		0.0035-10.5	
				189#	15.9x4.8(mm)	0.047		0.0047-13.98	
				191#	19.4x4.8(mm)	0.063		0.0063-18.78	
				92#	25.4x4.8(mm)	0.104	0.1-270	0.0104-28.15	



Qualification certificate

QUALIFICATION CERTIFICATES



防爆合格证

CERTIFICATE OF CONFORMITY

No. CJEx23.0236X

委托单位

Client

Baoding Shenchen Precision Pump Co., Ltd.

(No.103, Building 2, Zhidian Industrial Park, Fuxing East Road 999, Baoding, China.)

制造单位

Manufacturer

Baoding Shenchen Precision Pump Co., Ltd.

(No.103, Building 2, Zhidian Industrial Park, Fuxing East Road 999, Baoding, China.)

样品名称

Name of Product

Explosion Proof Peristaltic Pump

型号规格

Type of Product

ExD-600-12L 300W 220V

防爆标志

Marking

Ex db IIC T4 Gb Ex tb IIIC T130°C Db

产品标准

Product Standard

Q/BSC 03-2022

总装图号

Drawing No.

030135ZZ0000

经对上述产品图样及技术文件的审查和样品检验，确认符合下列标准：

After examination of product drawings and technical documents and testing of sample, the product is in accordance the following standards:

Explosive atmospheres. Part 1: Equipment. General requirements

Explosive atmospheres. Part 2: Equipment protection by flameproof enclosures "d"

Explosive atmospheres. Part 31: Equipment dust ignition protection by enclosure "t"

说明事项

Explanation

1、Represent: ExD-600-3L; ExD-600-6L; ExD-600-12L; ExD-300-18L; ExD-300-30L 300W 220V Ex db IIC T4 Gb Ex tb IIIC T130°C Db.

2、"X" indicates that see the instruction manual for special conditions of use.

本证有效期至

Valid Date

February 26th, 2028

批准

Approved by



National Quality Supervision & Inspection Centre of Hoisting and Metallurgical & Explosion-Proof Electric Machine

Machine-Building Industry Quality Supervision & Testing Centre of Explosion-Proof Electrical Apparatus

Jiamusi Explosion-proof Motor Research Institute Co., Ltd.

February 27th, 2023

 佳木斯防爆电机研究所有限公司

JIAMUSI EXPLOSION-PROOF ELECTRIC MACHINE INSTITUTE CO.LTD

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电话：0454-8326353

传真：0454-8311260

网址：www.jexm.net



注：本证书仅对与认可文件和样品一致的产品有效，登录网站或扫描二维码查询真伪。

QUALIFICATION CERTIFICATES



中国国家强制性产品认证证书

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

No. 2023122302116632

NAME AND ADDRESS OF THE APPLICANT

Baoding Shenchen Precision Pump Co., Ltd.

No. 103, Building 2, Zhidian Industrial Park, Fuxing East Road 999, Baoding, China

NAME AND ADDRESS OF THE MANUFACTURER

Baoding Shenchen Precision Pump Co., Ltd.

No. 103, Building 2, Zhidian Industrial Park, Fuxing East Road 999, Baoding, China

NAME AND ADDRESS OF THE FACTORY

Baoding Shenchen Precision Pump Co., Ltd.

No. 103, Building 2, Zhidian Industrial Park, Fuxing East Road 999, Baoding, China

CERTIFICATION STANDARDS

GB/T 3836.1-2021,GB/T 3836.2-2021,GB/T 3836.31-2021

NAME, MODEL AND SPECIFICATION

Explosion Proof Peristaltic Pump

ExD-600-3L, ExD-600-6L, ExD-600-12L, ExD-300-18L, ExD-300-30L. Ex marking: Ex db IIC T4 Gb, Ex tb IIIC T130°C Db.

Electric parameters: Rated voltage 220V, Rated output power 300W. Special conditions of use:

- Ambient temperature: 0°C~+40°C. -Use fasteners with yield strength ≥ 640MPa.

- Repairs involving explosion-proof surfaces should contact the manufacturer.- Do not open when energized.

- Potential electrostatic hazards, refer to the instruction manual for details.

THIS CERTIFICATE IS ISSUED AS VERIFICATION THAT THE PRODUCT(S) MENTIONED ABOVE HAS MET THE REQUIREMENTS OF IMPLEMENTATION RULES FOR CHINA COMPULSORY CERTIFICATION (REF NO. CNCA-C23-01: 2019)

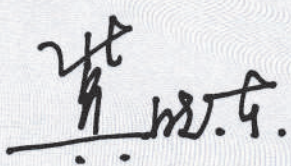
INITIAL DATE:2023-05-18

DATE OF EXPIRY: :2028-05-17

VALIDITY OF THIS CERTIFICATE IS SUBJECT TO POSITIVE RESULT OF THE REGULAR FOLLOW UP INSPECTION BY THE ISSUING CERTIFICATION BODY UNTIL THE EXPIRY DATE.

THE STATUS AND AUTHENTICITY OF THIS CERTIFICATE MAY BE VERIFIED BY VISITING THE OFFICIAL CNCA WEBSITE: WWW.CNCA.GOV.CN OR BY CONTACTING SERVICE TEL OF CQM: 010-88411888

 China Quality Mark





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China Quality Mark Certification Group

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No : BA0500061-2023



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国际互认
检测
TESTING
CNAS L1177

TEST REPORT

Sample: Explosion Proof Peristaltic Pump

Manufacturer: Baoding Shenchen Precision Pump Co., Ltd.

Client: Baoding Shenchen Precision Pump Co., Ltd.

Test kind: Entrust



Shandong Institute for Product Quality Inspection

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ExD Series Explosion Proof Peristaltic Pump

QUALIFICATION CERTIFICATES

No : BA0500061-2023

Shandong Institute for Product Quality Inspection

Test Report

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Sample	Explosion Proof Peristaltic Pump	Test Kind	Entrust
Client	Baoding Shenchen Precision Pump Co., Ltd.	Model, Type	ExD series
Manufacturer	Baoding Shenchen Precision Pump Co., Ltd.	Grade	/
Address of Client	No.103, Building 2, ZhiDian Industrial Park, FuXing East Road 999, Baoding, China. 071000	Registered Trademark	/
Sampling Location	/	Client Representative	Li Mingjie
Sample Batch	/	Receipt Date	2023-02-15
Sample Quantity	1 set	Producing Date	/
Sample Description	Apparently Sound, No damage.	Batch No.	/
Environmental for Test	Temperature:18.3℃~18.7℃, Humidity:32%RH ~38%RH, Atmospheric pressure:101.40kPa~101.90kPa	Test Date	2023-02-15~2023-02-16
Test Standard	IEC61000-6-2:2016, IEC61000-6-4:2018, IEC61000-3-2:2020, IEC61000-3-3:2017		
Decision Standard	IEC61000-6-2:2016, IEC61000-6-4:2018, IEC61000-3-2:2020, IEC61000-3-3:2017		
Test Item	Electrostatic discharge Immunity test, Radiated, radio-frequency, electromagnetic field immunity test, Electrical fast transient/burst immunity test, Surge immunity test, Immunity test to conducted disturbances, induced by radio-frequency fields, Power-frequency magnetic field immunity test, Voltage dips and short interruptions immunity test, Conducted disturbance test, Radiated disturbance test, Harmonic current emission test, Voltage fluctuations and flicker test		
Test Conclusion	The sample is determined as qualified according to IEC61000-6-2:2016, IEC61000-6-4:2018, IEC61000-3-2:2010 and IEC61000-3-3:2017.		
Note	1. This report contains front cover and second cover (signal"/"indicates this item has no content). 2. Testing address: No.31000, Jingshidong Road, Jinan, Shandong Prov.		

Approved by: 潘勇

Reviewer: 刘桂秋

Tested by: 胡德隆

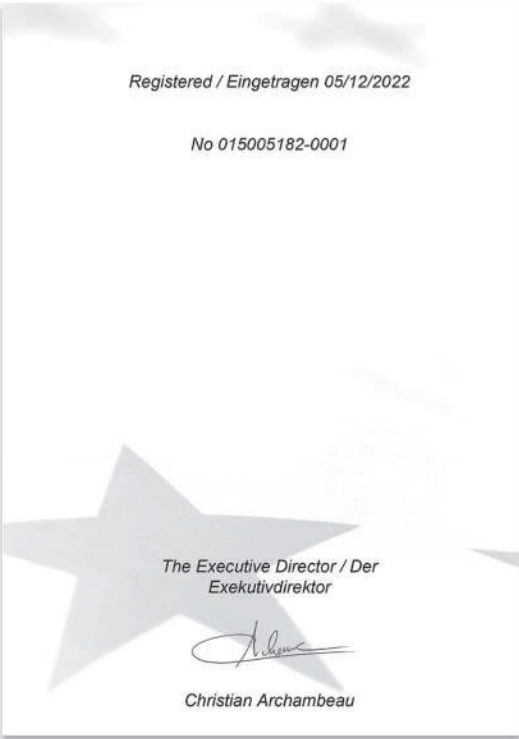
Date: 2023-03-10

Date: 2023-03-10

Date: 2023-03-10

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The utility model relates to an explosion proof peristaltic pump.



The utility model relates to an explosion proof knob structure.



Software Copyright



Appearance Patent



The utility model relates to an explosion proof locking structure.



The utility model relates to a dust-proof, water-proof and explosion-proof, three-proof button structure.

1. Explosion-proof concept analysis

• **Classification of areas – Explosive gas atmospheres**

Countries around the world have different zones for dangerous places, but there are roughly two factions: China and most European countries use the IEC classification method, Other countries, mainly represented by the United States and Canada, use the North American method.

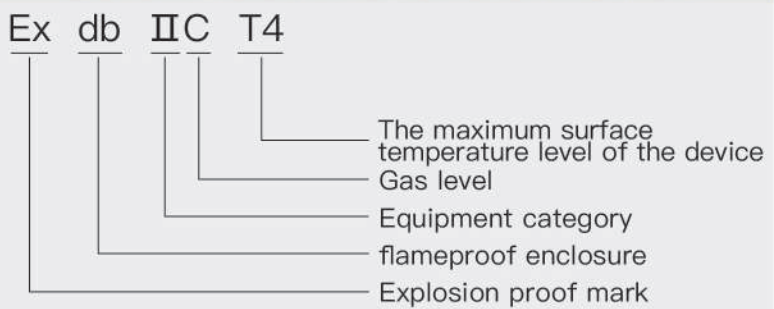
The provisions of the Chinese standard GB3836.14–2014 Explosive atmospheres–Part 14: Classification of areas–Explosive gas atmosphere as follows:

Hazardous areas are classified into the follow zones according to the frequency and duration of the explosive gas atmospheres:

Zone 0: A place where an explosive gas atmospheres is present continuously or for a long time.

Zone 1: A place where an explosive gas atmospheres may occur during normal operation.

Zone 2: A place where an explosive gas atmospheres is not likely to occur in normal operation, but if it does occur, it will occur occasionally and only for a short time.

Electrical apparatus for explosive gas atmospheres				Maximum surface temperature grouping for Class II electrical equipment	
Ex	db	II C	T4	Temperature group	Maximum surface temperature of equipment (°C)
				T1	450
				T2	300
				T3	200
				T4	135
				T5	100
				T6	85

Classes and temperature groups of explosive gases or vapors									
温度组别		T1		T2		T3	T4	T5	T6
category	I	methane		—		—	—	—	—
	IIA	Acetic acid acetone acetonitrile Allyl fluoride ammonia aniline Styrene Benzene Methylstyrene Tritoluene penta-2-one (Methylpropyl ketone)	Cresol Bromoethane Isobutane Butyryl fluoride Chloromethane propane Chloroethane petroleum Nitrogen (impurity) benzene	Cyclopentane Methylcyclo- opentane Propionic acid ethane methanol Methyl formate ethyl acetate ethylene oxide Diisopropyl ether	Propanol cyclohexanone Ethylene Furan Butane methylamine chloroethanol Ethyl acrylate	Pentane Methylcyclohexane Petroleum (including gasoline) Naphtha Diesel kerosene hexane ethanethiol Pentyl alcohol chlorobutane tetrahydrothiophene	Acetaldehyde	—	Ethyl nitrite
	IIB	Propylene (methyl acetylene) Cyclopropane Acrylonitrile	Hydrogen cyanide Coke oven gas	Butadiene-1,3 ethylene oxide Methyl acrylate furan		Diformaldehyde methylfuryl alcohol Butenal Ethylthiol	Ethyl methyl ether diethyl ether Dibutyl ether tetrafluor- oethylene	—	—
	II C	Hydrogen		Acetylene		—	—	Carbon disulfide	—

Explosive gas group				
Electrical equipment category	Representative gas	Gas classification	Maximum Experimental Safe Gap(MESG)	Minimum ignition current (MIC)
I	Methane	—	—	—
IIA	Propane	A	MESG is greater than 0.9mm	MIC ratio is greater than 0.8
IIB	Vinyl	B	MESG is 0.5–0.9mm	MIC ratio is 0.45–0.8
II C	Hydrogen/Acetylene	C	MESG is less than 0.5mm	MIC ratio is less than 0.45

• **Electrical equipment for combustible dust environments**

Protected by an enclosure to prevent dust from entering and limit the surface temperature, an explosion proof form of electrical equipment used in explosive dust atmospheres.

The type of protection “t” is divided into three protection classes according to the degree of danger that Ex equipment can become a source of ignition in explosive dust atmospheres.

Equipment protected by a dust ignition-tight enclosure “t” is classified as:

----“ta” (Equipment Protection Level “Da”); or

----“tb” (Equipment Protection Level “Db”); or

----“tc” (Equipment Protection Level “Dc”).

Protection rate,Relationship between device category and protection rate (IP)			
Protection rate	IIIC	IIIB	IIIA
“ta”	IP6X	IP6X	IP6X
“tb”	IP6X	IP6X	IP5X
“tc”	IP6X	IP5X	IP5X

2.Description of IP protection level (According to GB4208/IEC60529)

For example, the protection level is IP54, IP is the marked letter, the number 5 is the first marked number, and 4 is the second marked number. The first marked number indicates the contact protection and foreign object protection level, and the second marked number indicates the waterproof protection level

The first characteristic number fixed conductor foreign matter enters.		Second special identification number to prevent harmful effects from ingress of water	
0	No protection	0	No protection
1	Fixed foreign object with a diameter greater than 50mm	1	Vertical drip
2	Fixed foreign object with a diameter greater than 12mm	2	15° drip
3	Fixed foreign object with a diameter greater than 2.5mm	3	Deluge
4	Fixed foreign object with a diameter greater than 1.0mm	4	Splash
5	Dustproof	5	Spray water
6	Dusty	6	Blast water
		7	Short time immersion
		8	Continuous immersion

Peristaltic Pump Tubing



Silicone Tubing

Platinum-cured silicone tubing: Soft, slightly transparent, smooth inner wall; low protein adhesion, low protein penetration, temperature range: -51~238°C.

Micro Flow Rate Tubing										
Tubing Size	0.13×0.86	0.5×0.86	0.86×0.86	1.52×0.86	2.06×0.86	2.79×0.86	1×1	2×1	3×1	2.4×0.8
Tubing cross sections(1:1)										
Wall thickness (mm)	0.86						1.0		0.8	
Inside diameter (mm)	0.13	0.5	0.86	1.52	2.06	2.79	1.0	2.0	3.0	2.4
Maximum pressure (Mpa)	Continuous	0.1								
	Intermittent	0.1								

Basic Flow Rate Tubing												
Tubing Size		13"	14"	19"	16"	25"	17"	18"	15"	24"	35"	36"
Tubing cross sections (1:1)												
Wall thickness	mm	1.6							2.4			
	inch	1/16							3/32			
Inside diameter	mm	0.8	1.6	2.4	3.2	4.8	6.4	7.9	4.8	6.4	7.9	9.6
	inch	1/32	1/16	3/32	1/8	3/16	1/4	5/16	3/16	1/4	5/16	3/8
Maximum pressure (Mpa)	Continuous	0.17				0.14	0.1	0.07	0.17		0.14	
	Intermittent	0.27				0.24	0.14	0.1	0.27		0.24	

Industrial Tubing								
Tubing Size		26"	73"	82"	86"	90"	88"	92"
Tubing cross sections (1:1)								
Wall thickness	mm	3.3			6.4		4.8	
	inch	1/8			1/4		3/16	
Inside diameter	mm	6.4	9.6	12.7	9.5	19	12.7	25.4
	inch	1/4	3/8	1/2	3/8	3/4	1/2	1
Maximum pressure (Mpa)	Continuous	0.2			0.25			
	Intermittent	0.27			0.3			



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