COMPREHENSIVE CATALOG OF CHEMICAL GEAR PUMP

化工齿轮泵综合样本



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JINAN RUNWAY AUTOMATION

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COMPANY
INTRODUCTION



Jinan Runway Automation Co., Ltd. was established in 2018. It is the foreign trade sales company of Shandong Shijing Machinery and focuses on developing the international fluid transportation market.The high-precision helical gear metering pumps and ultra-quiet hydraulic gear pumps we research and produce are in a leading position in technology. We also produce and sell fluid accessories, helping related companies to upgrade industrial fluid transportation technology, improve production efficiency, save energy and reduce emissions, and are widely praised by various companies.

We are rooted in the field of transmission industry that we love, focus on the business philosophy of benign and sustainable development, and build a professional sales team and technical team to serve customers. Provide customers with feasible streaming media control and mechanical transmission solutions.

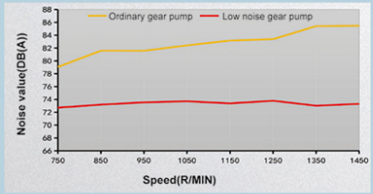
Our corporate purpose is "Pursue innovation, quality first, be rigorous and realistic, and unite and advance."

Advantages of spiral gear metering pumps

1. Noise reduction of 5-13 decibels
2. Pulse reduction by 70%
3. Increase volumetric efficiency by 5-8%
4. Broader scope of application

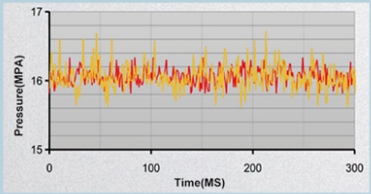




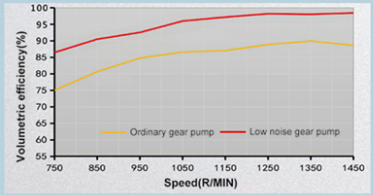


Noise contrast curve

Red is helical gear pump data

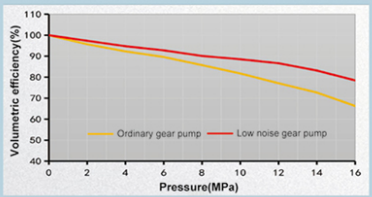


Rated pressure pulse curve



Volumetric efficiency comparison curve at rated pressure and different speeds

Yellow is spur gear pump data



Volumetric efficiency comparison curve at rated speed and different pressures

Model and material description Model Description

Example: HBB−10
1 2 3 4

1. Main structure series: H represents high-speed chemical pump series, Y represents hydraulic pump series, and G represents low-speed chemical pump series.

2. Substructure series: B series is a general structure of precision cast friction discs; C series is a polished friction disc structure; D series is a precision cast D-type sleeve structure; E series is a cast D-type sleeve heating structure; F series is a high-viscosity barrel Pump series; M series is the polished version of the D-type sleeve pump; P series is the high-abrasion pump type; W series is the friction plate precision-cast magnetic drive series; V series is the D-type sleeve magnetic polished version; N series is the polished version of the liquid heating pump ; L series is a polished version of the electric heating pump; K series is a precision cast version of the electric heating pump.

3. Single-turn displacement code: single-turn displacement 10ml/r, single-turn displacement summary table is attached.

Material Description

Shell material: 201, 304, 316L, 2507, 440C, zirconia ceramic, graphite, aluminum, QT400, HT200.

Shaft material: 440C, 2205, 2507, Cr12, 20CrMoTi, ceramic.

Friction plate material: PEEK, impregnated graphite, copper-based alloy, copper-aluminum alloy.

Mechanical seal material: silicon carbide-tungsten carbide, silicon carbide-graphite, silicon carbide-silicon carbide.

Static sealing material: nitrile rubber, fluorine rubber, perfluoroenzyme, fluorine-coated, perfluoroethylene.

Sliding sleeve material: composite copper sleeve, PEEK.

D-type sleeve material: 440C, Cr12, graphite, silicon carbide.

Base plate material: carbon steel bent base, welded channel steel base, stainless steel cast flange base, stainless steel bent and polished base.

Typical application materials


Vitamin


Edible oil


Beverage


Laundry detergent


Shampoo


Lubricating oil


Asphalt


Paper Additives


Defoamer


Dyestuff


Pesticide


Grinding aid

Health products: Vitamins, Lecithin, Polyols, Creamy Health products, Syrup.

Food and beverages: Edible oil, Milk, Fruit Juice, Cream, Honey, Chocolate.

Daily chemical products: Shampoo, Skincare Products, Shower Gel, Facial Cleanser, Toilet Cleaner, Disinfectant.

Petroleum and coal chemical industry: Crude oil, Heavy oil, Asphalt, Coal tar, Petrochemical Extracts, Lubricating oil.

Paper making: Chelating agent, Fixing agent, Dry strength agent, Defoamer, Retention aid, Stripping agent, etc.

Water treatment: Dilute hydrochloric acid, Flocculant, Defoamer, Reducing agent, and coagulant aid.

Textile printing and dyeing: Softener, Fixative, Dye, Oiling agent,Indigo, Sulfur black, Ink.

Modern agriculture: Liquid fertilizers, Pesticides, Agricultural Additives, Preservatives.

Adhesives: Resin, Silicone, Hot melt adhesive, Polyurethane adhesive, Silicone sealant, Liquid silicone rubber

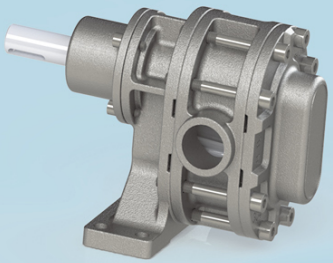
Other: Resin, Sulfonic acid, Grinding aids, Sulfur, Fertilizer Coating agents, Pharmaceutical intermediates.

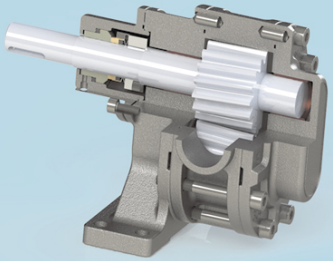
Type chart

Model	Theoretical displacement(m1/R)	Applicable series	B/C/W Import and Export		D/E/F/M/N/V Import and export	
			Pipe diameter	B Thread	Pipe diameter	D/E Thread
0.5	0.56	B/C/W/D/E/F/K/L/M/N/P/V	DN10	G3/8	DN15	G1/2
0.8	0.88	B/C/W/D/E/F/K/L/M/N/P/V	DN10	G3/8		
1.2	1.28	B/C/W/D/E/F/K/L/M/N/P/V	DN10	G3/8		
1.6	1.56	B/C/W/D/E/F/K/L/M/N/P/V	DN10	G3/8	DN15	G1/2
2.5	2.52	B/C/W/D/E/F/K/L/M/N/P/V	DN10	G3/8		
3.2	3.24	B/C/W/D/E/F/K/L/M/N/P/V	DN10	G3/8		
4.0	4.08	B/C/W/D/E/F/K/L/M/N/P/V	DN10	G3/8		
5.0	5.04	B/C/W/D/E/F/K/L/M/N/P/V	DN10	G3/8		
6.3	6.35	B/C/W/D/E/F/K/L/M/N/P/V	DN15	G1/2		
8.0	8.03	B/C/W/D/E/F/K/L/M/N/P/V	DN15	G1/2		
10	10.02	B/C/W/D/E/F/K/L/M/N/P/V	DN15	G1/2	DN20	G3/4
12	12.57	B/C/W/D/E/F/K/L/M/N/P/V	DN20	G3/4		
16	16.20	B/C/W/D/E/F/K/L/M/N/P/V	DN20	G3/4		
20	20.03	B/C/W/D/E/F/K/L/M/N/P/V	DN20	G3/4		
25	25.41	B/C/W/D/E/F/K/L/M/N/P/V	DN20	G3/4	DN32	G1-1/4
32	32.13	B/C/W/D/E/F/K/L/M/N/P/V	DN25	G1		
40	40.28	B/C/W/D/E/F/K/L/M/N/P/V	DN25	G1		
50	50.35	B/C/W/D/E/F/K/L/M/N/P/V	DN32	G1-1/4		
63	63.30	B/C/W/D/E/F/K/L/M/N/P/V	DN32	G1-1/4		
65	63.08	B/C/W/D/E/F/K/L/M/N/P/V			DN40	G1-1/2
80	80.13	B/C/W/D/E/F/K/L/M/N/P/V	DN32	G1-1/4		
100	100.59	B/C/W/D/E/F/K/L/M/N/P/V	DN40	G1-1/2		
120	117.64	B/C/W/D/E/F/K/L/M/N/P/V	DN40	G1-1/2		
155	158.56	B/C/W/D/E/F/K/L/M/N/P/V	DN40	G1-1/2		
160	161.12	B/C/W/D/E/F/K/L/M/N/P/V			DN50	G2
200	201.40	B/C/W/D/E/F/K/L/M/N/P/V				
250	251.27	B/C/W/D/E/F/K/L/M/N/P/V				
320	320.32	B/C/W/D/E/F/K/L/M/N/P/V			DN65	G2-1/2
400	402.37	B/C/W/D/E/F/K/L/M/N/P/V			DN80	G3
500	501.26	B/C/W/D/E/F/K/L/M/N/P/V				
630	630.84	B/C/W/D/E/F/K/L/M/N/P/V			DN100	G4
800	801.33	B/C/W/D/E/F/K/L/M/N/P/V				
1000	1001.66	B/C/W/D/E/F/K/L/M/N/P/V			DN125	G5
1200	1204.13	B/C/W/D/E/F/K/L/M/N/P/V			DN125	G5
1600	1603.73	B/C/W/D/E/F/K/L/M/N/P/V			DN150	G6
2000	2002.48	B/C/W/D/E/F/K/L/M/N/P/V			DN150	G6
2500	2501.18	B/C/W/D/E/F/K/L/M/N/P/V			DN200	G8
3200	3207.03	B/C/W/D/E/F/K/L/M/N/P/V			DN200	G8

The above is the general model theory single rotation displacement list,If you can not find the model you like in the list, please contact us for custom-made.

HBB series pump





HBB Series features

The B-series gear metering pump is a precision casting universal pump with good fluid compatibility and good performance in different fluid environments. Its typical feature is the friction plate structure on the side of the gear, which can achieve a metering accuracy of 1 ‰ under ideal working conditions. The internal bearings are corrosion-resistant sliding bearings, which also perform well in fluid environments with relatively poor lubrication.

Performance parameter

pressure:<30Bar，
speed:<1500r/min
viscosity:<1000Cps
temperature:0-90℃

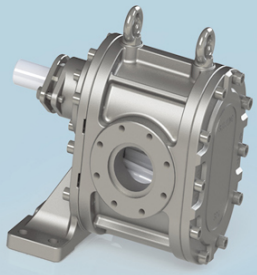
Common materials

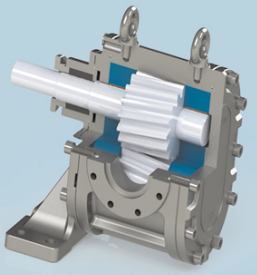
Pump casing material:304，316L，2205，2507，QT400
Axis material:440C，2205，2507
seal:Mechanical seal, packing seal
Static sealing:Fluorine rubber, perfluoroether, PTFE coated, perfluorinated

Typical applications of series

Resin,grinding aids,water reducing agents, papermaking auxiliaries,dyes,filling machines, honey,butter

HDD series pump





HDD series features

The D series is a precision cast shell D-shaped sleeve structure with smooth shaft sleeve lubrication and cooling design inside. This structure is suitable for highly viscous fluids and can be pumped under high vacuum conditions. The measurement accuracy can reach 1 ‰, and it is designed with various corrosion-resistant materials.

Performance parameter

Pressure:<100Bar
Speed:<1000r/min
Viscosity:<100000Cps
Temperature: -10-200 ℃
Vacuum degree: -0.98Bar

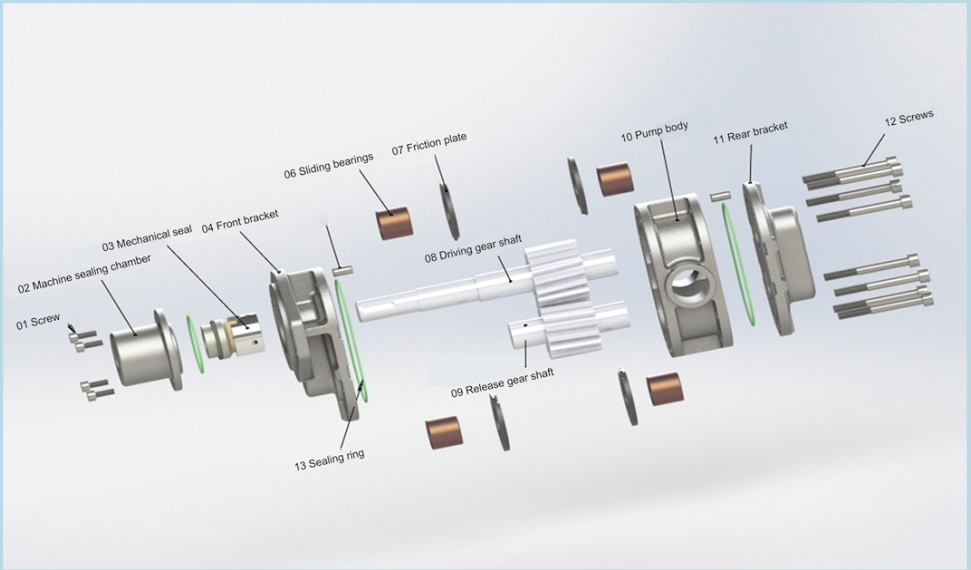
Common materials

Pump casing material: 304316L
Axis material: 440C, 22052507
Sealing: mechanical seal, packing seal
D-type sleeve material: 440C, Cr12, graphite, silicon carbide
Static sealing: fluororubber, perfluoroether, perfluorotetrafluoro

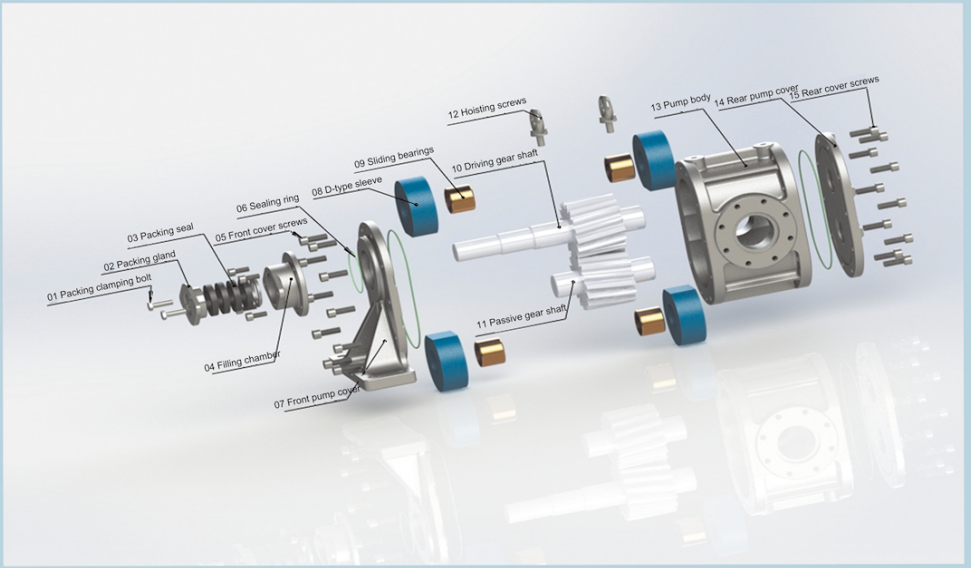
Typical applications of D-series

Molecular distillation, resin, water glass, plastic film, fertilizer coating agent, AB glue, heavy oil, honey, latex paint.

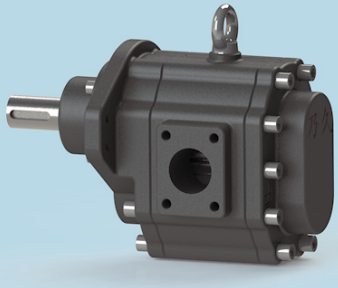
HBB Typical structure of the series

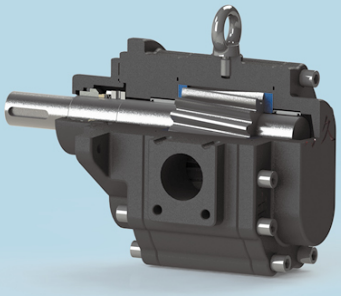


Typical Structure of HDD Series



HZB series pump





Characteristics of HZB series

The HZB series gear metering pump is a cast iron universal metering pump with good fluid compatibility and good performance in non corrosive fluid transmission. Its typical feature is the friction plate structure on the side of the gear, and the internal bearings are self-lubricating material bearings, which have good performance in medium environments with a certain degree of lubrication.

Performance parameter

Pressure:<30Bar
Speed:<1500r/min
Viscosity:<10000Cps
Temperature: 0-90 ℃

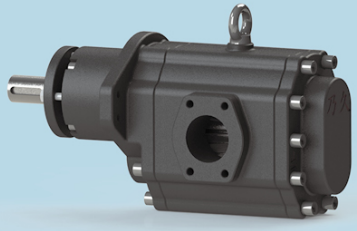
Common materials

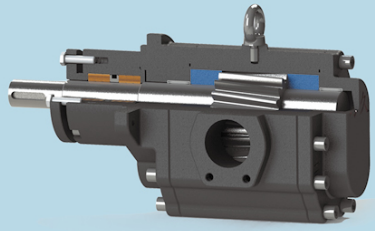
Pump casing materials: QT400, QT500, QT600, HT200
Axis material: 20CrMoTi, 38CrMoAl, 440C, high chromium wear-resistant steel
Seals: mechanical seals, packing seals, magnetic seals, and plug seals
Static sealing: fluororubber, perfluoroether, PTFE coated, perfluorinated

Typical applications

Crude oil, lubricating oil, hydraulic oil, mechanical oil, butter, polyurethane, isocyanate, epoxy resin, stearic acid, rosin, MDI

HZS series pump





Characteristics of HZS series

The HZS series is a cast iron dual bearing series, which is characterized by providing large radial support and reducing shaft wear under high load and high wear conditions. There is a significant advantage under abrasive conditions.

Performance parameter

Pressure:<30Bar
Speed:<1000r/min
Viscosity:<30000 Cps
Temperature: 0-90 ℃

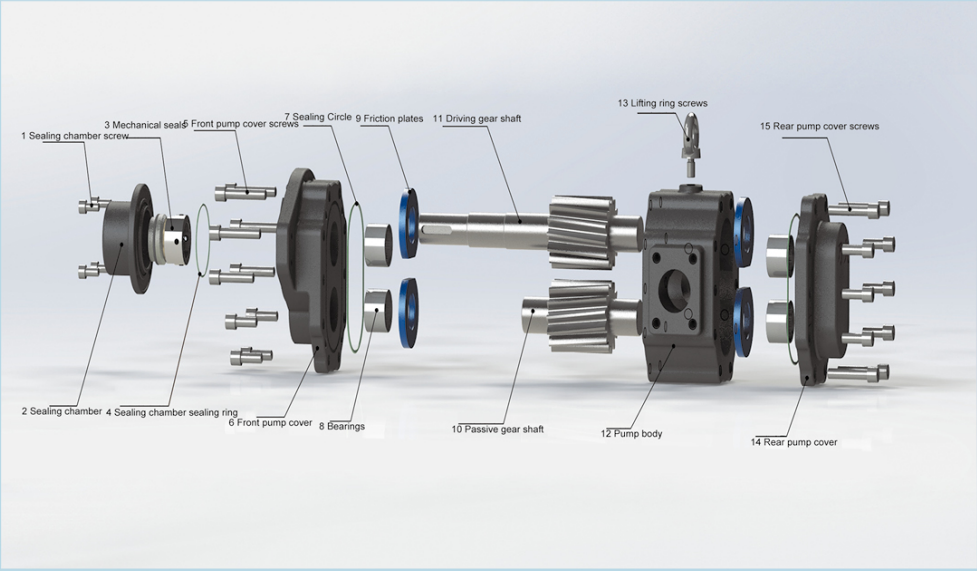
Common materials

Pump casing materials: QT400, QT500, QT600, HT200
Axis material: 20CrMoTi, 38CrMoAl, 440C, high chromium wear-resistant steel
Seals: mechanical seals, packing seals, magnetic seals, and plug seals
D-type sleeve material: 440C, Cr12, graphite, silicon carbide
Static sealing: fluororubber, perfluoroether, perfluorotetrafluoro

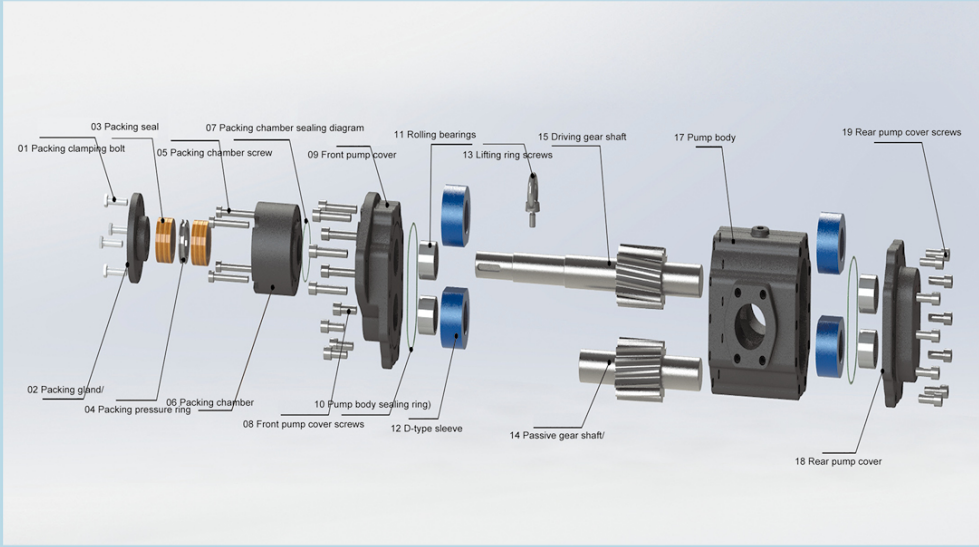
Typical applications

Water glass, paint, coal tar, polyurethane with fillers, silicone sealant with fillers

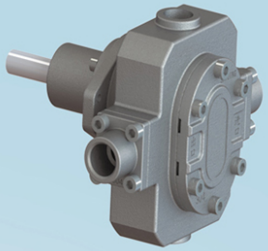
Typical Structure of HZB Series

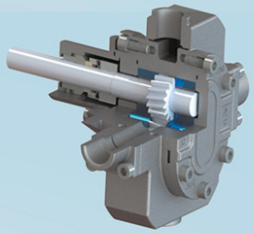


Typical Structure of HZS Series



HDE series pumps





HDE series features

The E series is a heat medium heating pump for precision casting shells. In the transportation of fluids that require heating, steam, hot water, and thermal oil are used to heat and insulate the pump body, conveying materials that are more convenient to transport at high temperatures. Substances such as paraffin and asphalt use the classic D-shaped sleeve structure inside, with liquid inlet and outlet on the left and right, and thermal medium inlet and outlet on the upper and lower sides. The thermal medium interface on the upper and lower sides avoids steam condensation and sedimentation.

Performance parameter

Pressure:<100Bar
Speed:<1000r/min
Viscosity:<100000Cps
Temperature: -10-300 ℃
Vacuum degree: -0.98Bar

Common materials

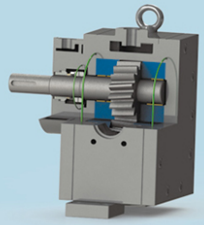
Pump casing material: 304316L
Axis material: 440C, 22052507
Sealing: mechanical seal, packing seal
D-type sleeve material: 440C, Cr12, graphite, silicon carbide
Static sealing: fluororubber, perfluoroether, perfluorotetrafluoro

Typical applications of E-series

Paraffin wax, asphalt, paint, hot melt adhesive, high viscosity resin,Polyamine ester, rosin.

HDN series pumps





HDN series features

The N series is a polished version of the thermal medium heating D-type sleeve structure pump, which provides a clean appearance while ensuring high viscosity transportation during heating. The sealing chamber of this structure can be heated synchronously. The heat medium is steam, hot water, thermal oil, etc., which transports various chemical media that need to be cleaned and heated, such as resins, medicines, petroleum chemicals, and sugars.

Performance parameter

Pressure:<100Bar
Speed:<1000r/min
Stickiness:<100000Cps
Temperature: -10-300 ℃
Vacuum degree: -0.98Bar

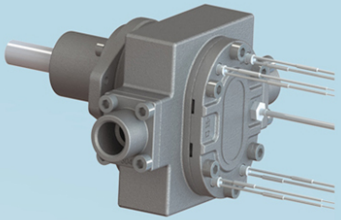
Common materials

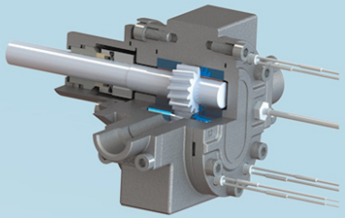
Pump casing material: 304316L
Axis material: 440C, 2205.2507
Sealing: mechanical seal, packing seal
D-type sleeve material: 440C, Cr12, graphite, silicon carbide
Static sealing: fluororubber, perfluoroether, perfluorotetrafluoro

Typical applications of D-series

Paraffin, asphalt, paint, hot melt adhesive, high viscosity resin, polyurethane, rosin.

HDK series pump





HDK series features

The K series has a D-type sleeve structure with an electrically heated precision-cast shell. The biggest feature of this pump is that it uses an electric heating rod to heat the pump body. It has good heating convenience and can accurately transport materials that need to be heated and transported. The precision-cast shell makes Lightweight construction and good economy.

Performance parameters

Pressure:<30Bar
Speed:<1000r/min
Viscosity:<100000Cps
Temperature:-10-300℃
Vacuum degree:-0.98Bar

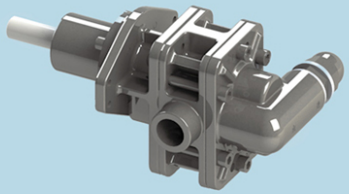
Commonly used materials

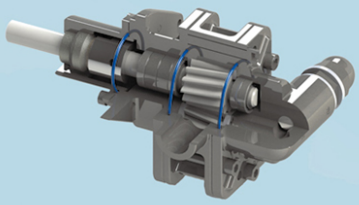
Pump shell material:304.316L
Shaft material: 440C, 2205, 2507
Seal: Mechanical seal, Packing seal D-type sleeve material: 440C, Cr12, Graphite, Silicon carbide
Static seal: Fluorine rubber, Perfluoroether, Perfluoroethylene

Typical application

Paraffin, Asphalt, Paint, Hot melt adhesive, High viscosity resin, Polyurethane.

HBS series pump





HBS series features

The B series gear metering pump is a precision-cast version of a general-purpose pump with good fluid compatibility and good performance in different fluid situations. Its typical feature is the friction plate structure on the side of the gear. The metering accuracy can reach 1 under ideal working conditions. %, the internal bearing is a corrosion-resistant sliding bearing, which also performs well in a fluid environment with relatively poor lubricity.

Performance parameters

pressure: <30Bar
Speed:<1500r/min
Viscosity:<1000Cps
Temperature: 0-90℃

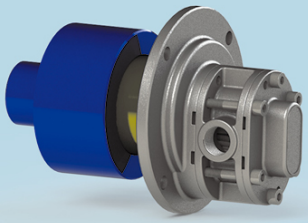
Common materials

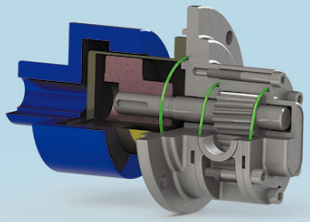
Pump shell material: 304, 316L, 2205, 2507, QT400
Shaft material: 440C, 2205, 2507
Seal: Mechanical seal, Packing seal
Static seal: Fluorine rubber, Perfluoroether, PTFE-coated, Perfluorocarbon

Typical application

Resin, Grinding aid, Water reducing agent, Papermaking aid, Dye, Filling machine, Honey, butter

HBBV series pump





HBBV series features

The V series is a magnetic driven friction plate structure, which is characterized by providing a completely sealed magnetic drive structure. It has obvious advantages in highly toxic, explosive, and corrosive environments, and the shell adopts a precision casting structure.

Performance parameter

Pressure:<30Bar
Speed:<1000r/min
Viscosity:<1000Cps
Temperature: -18-200 ℃

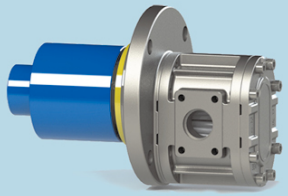
Common materials

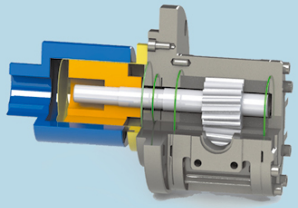
Pump casing material: 304316L, 2507
Axis material: 440C, 22052507
Sealing: mechanical seal, packing seal
D-type sleeve material: 440C, Cr12, graphite, silicon carbide
Static sealing: fluororubber, perfluoroether, perfluorotetrafluoro

Typical applications

Hydrochloric acid, dimethyl ether, ether, formaldehyde, liquefied gas transportation, Flammable and explosive fluids such as gasoline and benzene

HDDV series pumps





HDDV series features

The V series adopts a D-shaped sleeve structure for magnetic driven polishing shells, mainly suitable for use in low flow and high vacuum scenarios. It transports and measures liquids under certain vacuum conditions or initial pressure. The structure adopts a polished shell, making it easy to clean the shell.

Performance parameter

Pressure:<100Bar
Speed:<1000r/min
Viscosity:<50000Cps
Temperature: -10-200 ℃
Vacuum degree: -0.98Bar

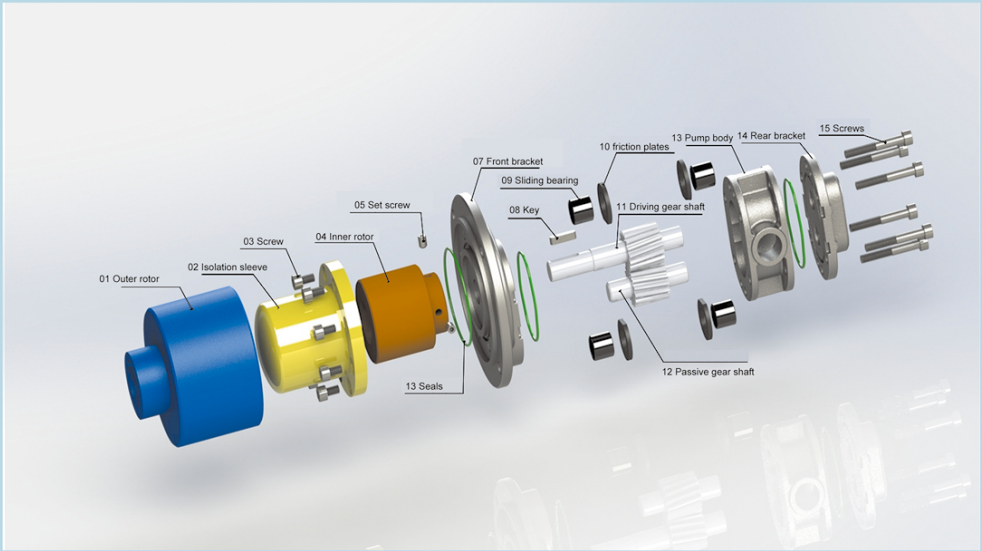
Common materials

Pump casing material: 304316L
Axis material: 440C, 22052507
Sealing: mechanical seal, packing seal
D-type sleeve material: 440C, Cr12, graphite, silicon carbide
Static sealing: fluororubber, perfluoroether, perfluorotetrafluoro

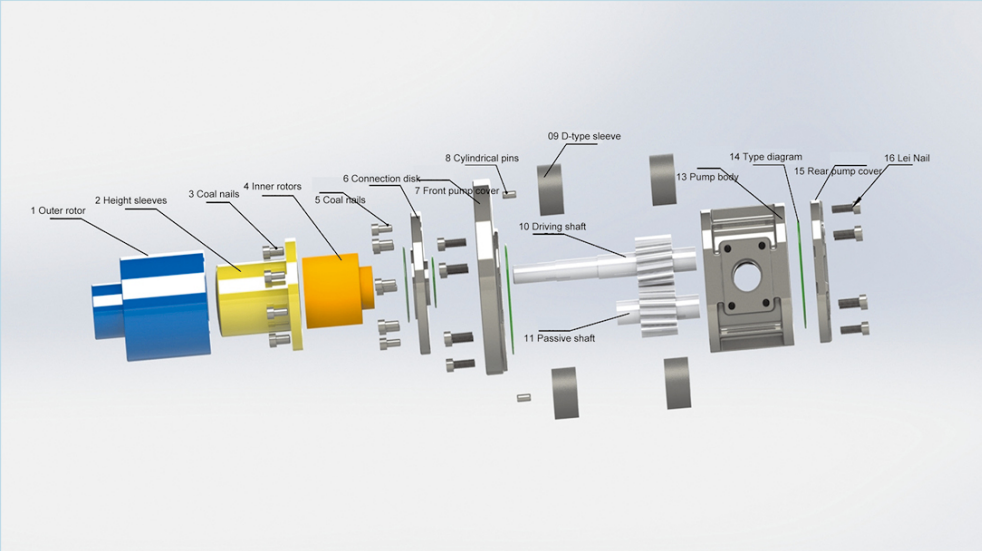
Typical applications

Flammable and explosive fluids such as hydrochloric acid, dimethyl ether, ether, formaldehyde, liquefied gas transportation, gasoline, benzene, etc

Typical Structure of HBBV Series



Typical Structure of HDDV Series



Miniature magnetic gear pump







Pump Bill of Materials:

Pump Body: 316L (Standard); Hastelloy, Titanium Alloy, 2205, etc. (Non-standard)

Gears: High-grade self-lubricating PEEK polymer material, precision injection-molded in a single process

Shaft: High-precision Zirconia Ceramic

Magnetic Drive: Rare earth permanent magnets; outer casing: PPS plastic (Standard); PEEK coating, 316 Stainless Steel coating, etc. (Non-standard)

Sealing Rings: Fluororubber (Viton), EPDM, Chloroprene Rubber (CR), PTFE, or others

Operating Temperature: Pump Body: -90 to 150°C (Standard) / -120 to 150°C (Non-standard)

Brushless DC Motor: -40 to 60°C (Integrated Driver); -40 to 150°C (External Driver)

Pump Body Pressure Rating: 20 Bar (Standard) ~ 100 Bar (Non-standard)

Max. Differential Pressure: 20 Bar (Non-standard) ~ 40 Bar (Non-standard); please consult the factory for details

Inlet/Outlet Thread Specifications: Standard configuration is NPT 1/8"; other connection types are available

Pump Performance Range: Refer to the Flow-Pressure Curve

Operating Environment Conditions: -40 to 60°C

Motor Rated Power: 70W

Supply Voltage: 12V

Motor Speed: 500–3500 rpm (Standard) — Please consult the factory for details.

Speed Control Method: 0–5V signal, PWM signal, or manual knob adjustment

Motor Overload Protection Point: 5.8A

Overload Protection Mode: Motor shutdown (requires power disconnection and restart) — Standard;

OR: Power-limited operation at 5.8A — Non-standard

Dry-Run Capability: The pump can operate dry for up to 1 hour at speeds of 1600 rpm or lower.

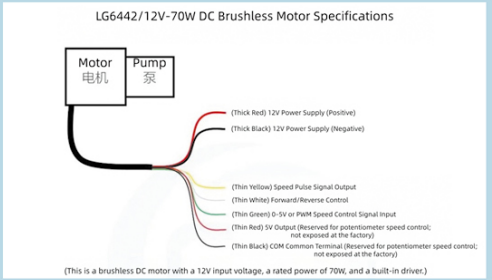
Maximum Motor Surface Temperature: 90°C (with built-in driver)

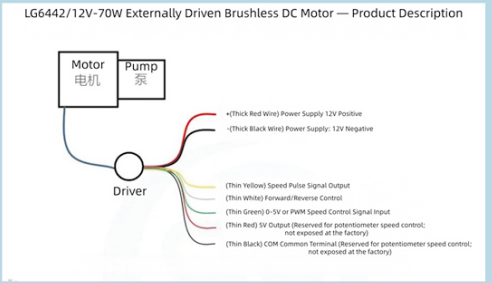
Operating Noise Level: < 56 dB(A) @ 1m

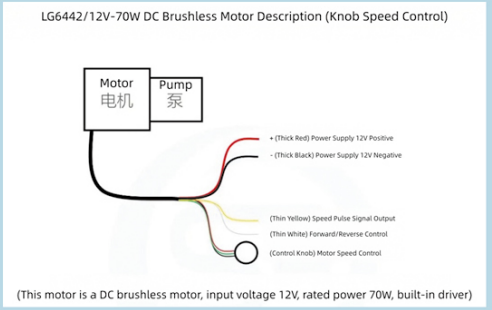
Pump Service Life: > 20,000+ hours

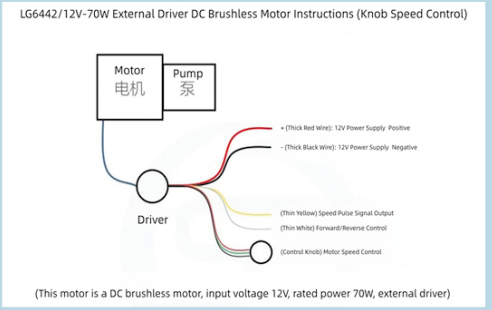
The liquid must be free of particles; if this cannot be guaranteed, please install a 400-mesh filter at the pump inlet.

Miniature magnetic gear pump









12V70W Motor Configuration

Motor Type	Wiring Method	Note Type
Integrated Drive	A、B、C、D、E、F、G	a、b、c、d
Integrated Drive (with Knob)	A、B、C、E、H	b、d
External Drive	A、B、C、D、E、F、G	a、b、c、d
External Drive (with Knob)	A、B、C、E、H	b、d

Wiring Reference:

A. Thick Red Wire: Power input (12V positive)

B. Thick Black Wire: COM Common Terminal (12V power negative; negative terminal for 0-5V or PWM signals; negative terminal for speed pulse signals; negative terminal for forward/reverse control lines)

C. Thin Yellow Wire: Speed pulse signal output (2 pulses per revolution)

D. Thin Green Wire: 0-5V or PWM speed regulation signal input

E. Thin White Wire: Forward/Reverse control line (Pump rotates forward when left unconnected; pump rotates in reverse when connected to the Black wire)

F. Thin Red Wire: 5V Output (Reserved for potentiometer-based speed control; leave unconnected if not used)

G. Thin Black Wire: COM Common Terminal (Same as the Thick Black wire; reserved for potentiometer-based speed control; leave unconnected if not used)

H. Speed Control Knob: Motor speed adjustment (If no specific rotation direction is required, the factory default setting is: counter-clockwise increases speed, clockwise decreases speed)

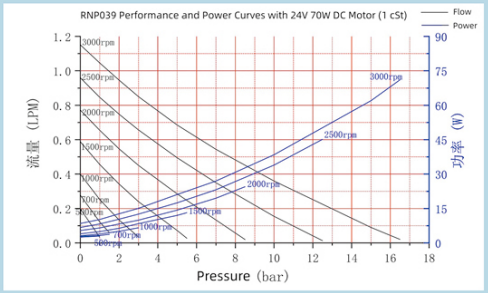
Important Notes:

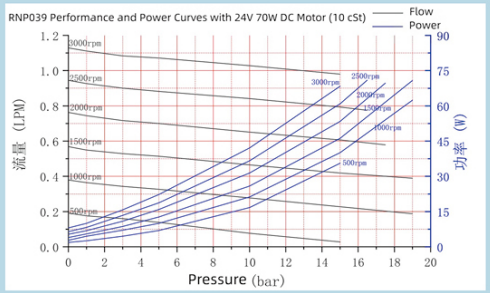
a. The Thin Green Wire serves as the speed regulation signal input; the input voltage must not exceed 5V, otherwise it will result in driver failure.

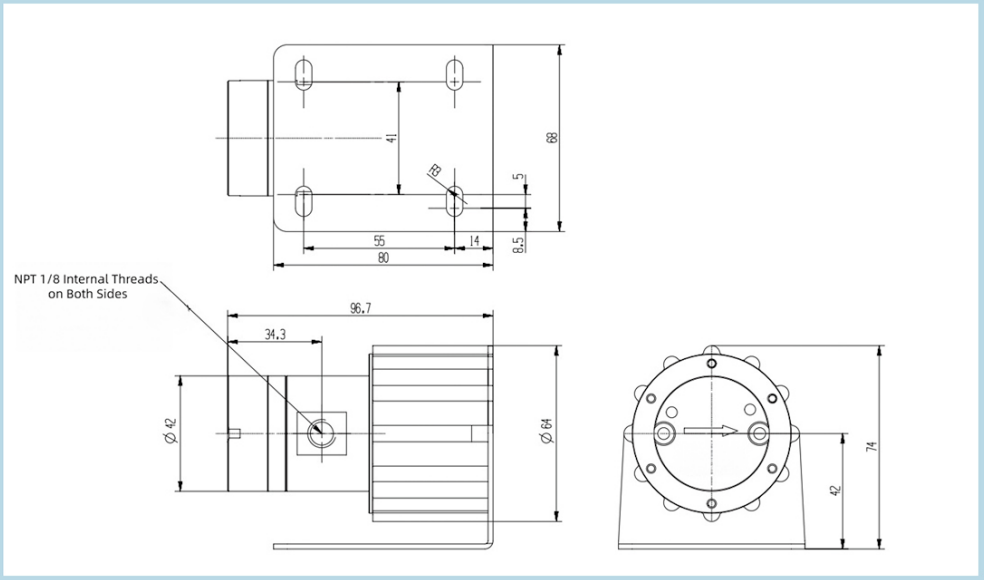
b. The Thin Yellow Wire serves as the speed pulse signal output; it must not be connected to any input source, otherwise it will cause the speed feedback function to fail.

c.When not utilizing potentiometer-based speed control, please ensure the Thin Red Wire and Thin Black Wire are properly insulated and isolated to prevent accidental contact that could lead to failure.

d. The driver features built-in over-current and over-temperature protection functions. If a protection mode is triggered, the motor will shut down; to clear the fault and resume operation, you must disconnect the power supply and then restart the device.

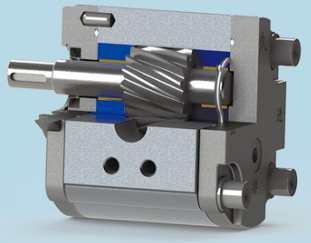






YDZ series medium pressure spiral gear metering pump





Characteristics of YDZ series hydraulic pump

The Z-series hydraulic pump is a medium pressure gear pump with an alloy aluminum pump body. The bearing is a classic double 8-shaped sleeve structure. In order to achieve responsive pressure and good volumetric efficiency, high-pressure oil floating structures are used on both sides of the 8-shaped sleeve. This structure is an important measure to establish pressure and ensure volumetric efficiency. The bearing part is made of integral copper based powder metallurgy material, which has good dimensional stability and lubrication. The pump body adopts a spiral tooth structure, which greatly reduces the noise during operation. Due to the use of the spiral tooth structure, the pressure oil obtained is less pulsating

Performance parameter

Pressure: 10~20MPa
Speed: ≤ 2500r/min
Medium: 32 # 46 # hydraulic oil
Temperature: -40 °C~90 °C

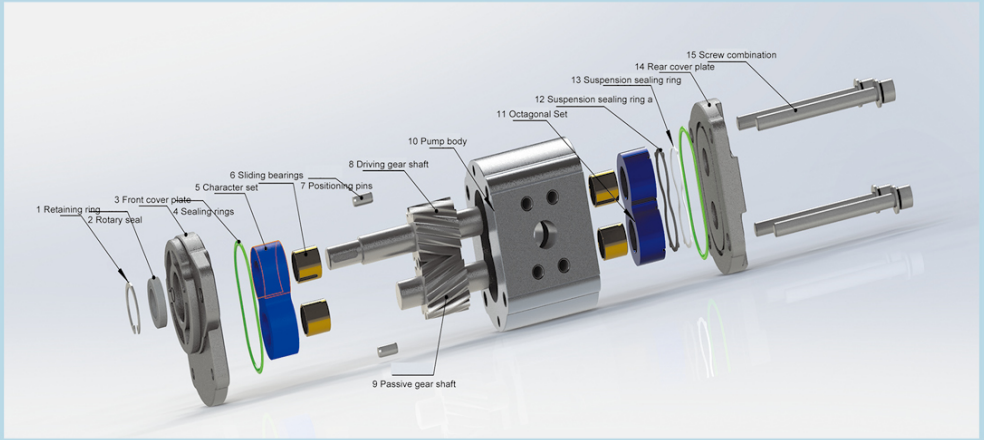
Common materials

Pump casing: carbon steel, aluminum alloy, QT400
Pump shaft: 20CrMoTi
Sealing: Dingqing rubber lip seal, Dingqing rubber O-ring fluorine.

Typical operating conditions

Pressure machines,cranes,construction machinery,tanks,armored vehicles,Aircraft,operating in an environment with an equal rated pressure of 10-20MPa.

Typical structure of YDZ series medium pressure spiral gear metering pump





APPLICATION SITE DIAGRAM OF GEAR PUMP

Edible oil filling

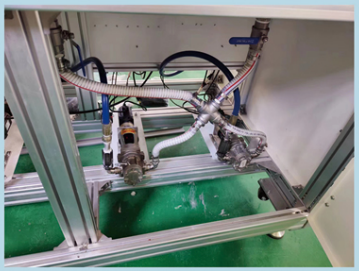
Food filling applications



Beverage filling applicatioas



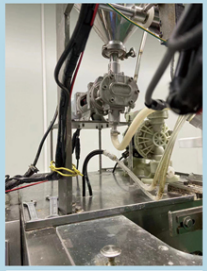
Chemical qlue application



A and B glue application



Food filling site



Food filling applications



Honey filling