Zenith® Pumps H-Series Gear Pumps




Precise,
Pulseless,
Repeatable
Performance

In High-Temperature
Applications.

Zenith® Pumps

BERLIN Technologies
ברלין טכנולוגיות בע"מ
שדרות גן רווה 13, יבנה, 8122214
http://www.berlintech.co.il/
mail@berlintech.co.il
טלפון: 073-7597171
פקס: 08-6638120

Zenith® Pumps

In 1926, Zenith Pumps was approached by the synthetic fiber industry to design a pump to provide a precise, pulseless, repeatable flow and assure better quality control. The options then were the same as those in the chemical process industry today–diaphragm, lobe, coarse gear, piston, plunger, and screw pumps. Each had problems with pulsation, flow inaccuracies, multiple seal areas and slippage, which required constant calibration, high maintenance, and extended downtimes.

Standard ZeDRIVE with 1/2 hp QM and rear-port HMB pumps.

Zenith Pumps met the challenge and designed a rotary external gear pump of unique precision and simplicity. Manufacturing techniques were developed to hold tolerances to ± .00005" minimizing internal clearances to assure accurate and precise metering. The pump's simplistic design of only three moving parts–two metering gears and a drive shaft–provided long life and easy maintenance.

For years since, process engineers have relied on Zenith to provide precision fluid handling solutions for their most difficult pumping applications. Zenith gear pumps can be found wherever *precise, pulseless, repeatable metering* of fluids is required.

Features

High Accuracy.
Stable, repeatable flows are assured even under varying conditions of pressure, viscosity and temperature.

Minimum Pulsation.
Unique design offers virtually pulseless flow without valves or flexible elements to hinder performance.

High Temperature Capability.
Operating temperatures to 950°F (510°C).

Maximum Life.
Only three moving parts; components are through-hardened tool and die steels to 64 R_C or better. Replaceable sleeve bearings for low-cost rebuilds.

High Volumetric Efficiency.
Maximum efficiency is achieved with optimum operating clearances and assured under pressure by built-in alignment dowels.

Precision Construction.
Ground and lapped components for close of operating clearances.

Specifications

Pump Type: Rotary external spur gear, single stream.

Rotation: Refer to pump drawing.

Operating Speed: 3–180 rpm depending upon application conditions and fluid viscosity.

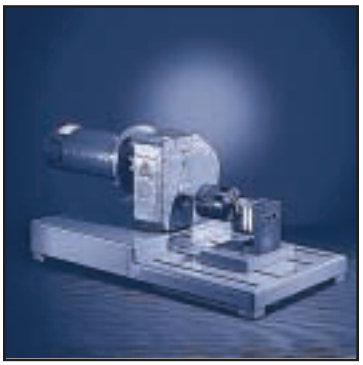
Temperature: To 950°F (510°C).

Applications

The H-Series pumps are ideal for metering in such applications as:

Adhesives	Foams	Urethanes	Plasticizers	Monomers
Additives	Coatings	Surfactants	Polyols	Oils
Asphalt	Inks	Oxide Slurries	Plastics	Pigments
Abrasives	Fibers	Lubricants	Paints	Tars
Bottoms	Pitch	Polymers	Resins	Many others

HPB Pump



Flow Rates: .00013 to 0.14 gpm (.00048-.526 l/min).

Capacities: .16/.297/.584/1.168/1.752/2.92 cc/rev.

Inlet Pressure: Flooded suction recommended;
40 psi (2.8 kg/cm^2) required to energize mechanical face seal.

Discharge Pressure: Limits: 4,000 psi (281 kg/cm^2).

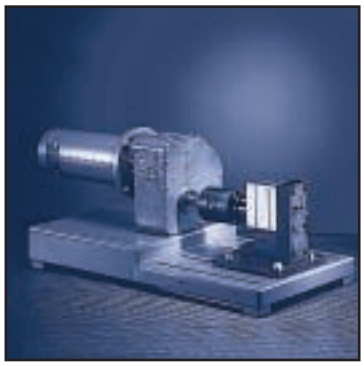
Viscosity: 1 to 2,000,000 cps.

Mounting: L-16 Parco-Lubrited cast iron mounting saddle.

Materials of Construction: D2 tool steel–Models 4647 and 5556.
M series tool steel–Models 5205 and 5557.
Model 5704 available in either D2 or M series.

Seals: Grafoil Packing–Model 5704.
Mechanical face with tang slot–Models 4647 and 5205.
Mechanical face with outer drive shaft–Models 5556 and 5557.

HMB Pump



Flow Rates: .0028 to .476 gpm (.011-1.8 l/min).

Capacities: 3.5/5.5/10.0 cc/rev.

Inlet Pressure: Flooded suction recommended;
40 psi (2.8 kg/cm^2) required to energize mechanical face seal.

Discharge Pressure: Limits: 4,000 psi (281 kg/cm^2).

Viscosity: 1 to 2,000,000 cps.

Mounting: L-5471 Parco-Lubrited cast iron mounting saddle.

Materials of Construction: M2 tool steel–All standard models.

Seals: Grafoil Packing–Model 5740.
Mechanical face with tang slot–Model 4892.
Mechanical face with outer drive shaft–Model 5555.

HLB Pump

Flow Rates: .008 to 2.4 gpm (.03-9.0 l/min).

Capacities: 10/20/30/50 cc/rev.

Inlet Pressure: Flooded suction recommended;
40 psi (2.8 kg/cm^2) required to energize mechanical face seal.

Discharge Pressure: Limits: 4,000 psi (281 kg/cm^2).

Viscosity: 1 to 2,000,000 cps.

Mounting: L-5139 Parco-Lubrited cast iron mounting saddle.

Materials of Construction: D tool steel–All standard models.

Seals: Grafoil Packing–Model 5592.
Mechanical face with tang slot–Model 4729.
Mechanical face with outer drive shaft–Model 5548.

HXB Pump

Flow Rates: .055 to 9.5 gpm (.21-36 l/min).

Capacities: 70/100/147.5/200 cc/rev.

Inlet Pressure: Flooded suction recommended.

Discharge Pressure: Limits: 4,000 psi (281 kg/cm^2).

Viscosity: 1 to 2,000,000 cps.

Mounting: L-5427 Parco-Lubrited cast iron mounting saddle.

Materials of Construction: M series tool steel–All standard models.

Seals: D-110 Packing–Model 4980.

Selection Guide

The following are general guidelines for pump selection and should be confirmed with the factory or sales representative before ordering.

1) Choose appropriate pump capacity based on flow rate. (See Chart 1)

2) Determine pump operating speed (N). N = Flow Rate (cc/min)÷(C) Pump Capacity (cc/rev)

3) Determine operating viscosity (V) in poise. If fluid is non-newtonian, follow steps 3a and 3b.

3a) Identify pump's operating shear rate. (See Chart 2)

3b) Refer to your viscosity vs. shear rate curve for operating viscosity (V) in poise.

4) Refer to Table 1 for pump constant (K).

5) Determine differential pressure (P) (discharge - inlet) in psi.

6) Calculate input torque using the following:
$T_h = .01 \bullet P \bullet C$
$T_v = N \bullet K \bullet V$
$T_t = T_h + T_v$

7) Determine maximum torques from Table 2.

8) Choose a speed reduction ratio (R) based on pump operating speed.
R = 22:1; 4 - 82 rpm
R = 11:1; 8 - 160 rpm
R = 5:1; 18 -180 rpm

9) Drive Horsepower = T_t / (35 • R • .87)

10) For hp <.5 choose .5 hp.
For hp between .5 and 1.0 choose 1 hp.
For larger hp round up to the nearest whole number.

Pump Capacity Selection Chart

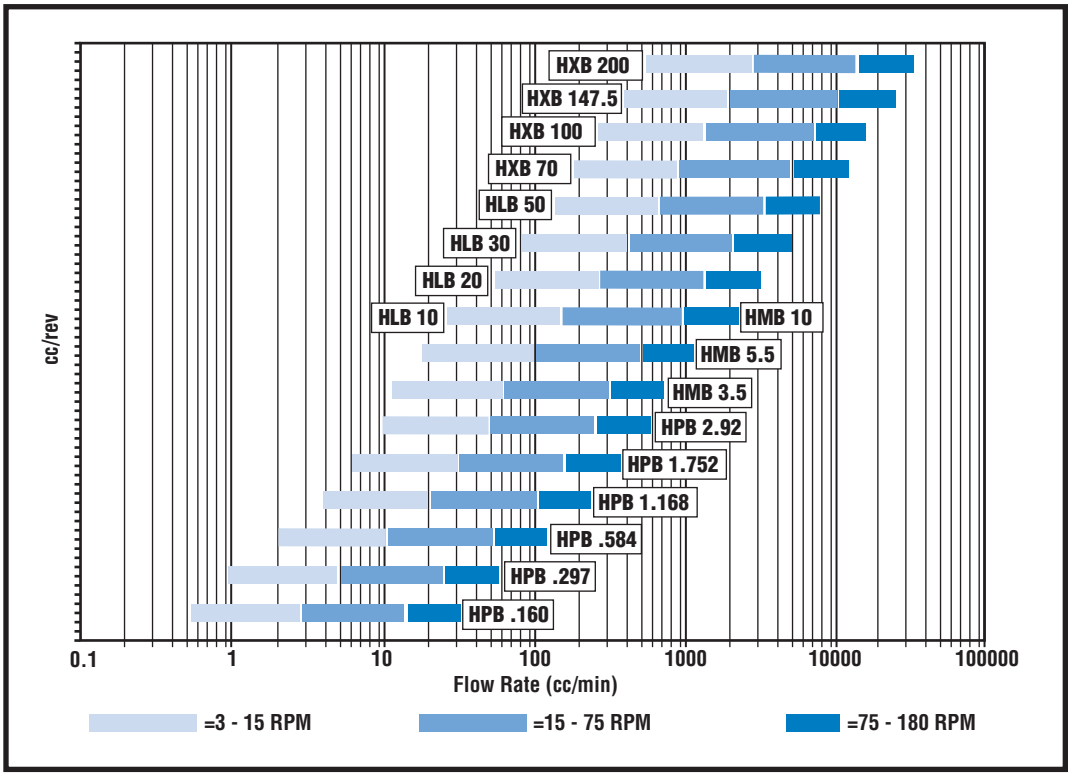


Chart 1

Shear Rate vs. Speed

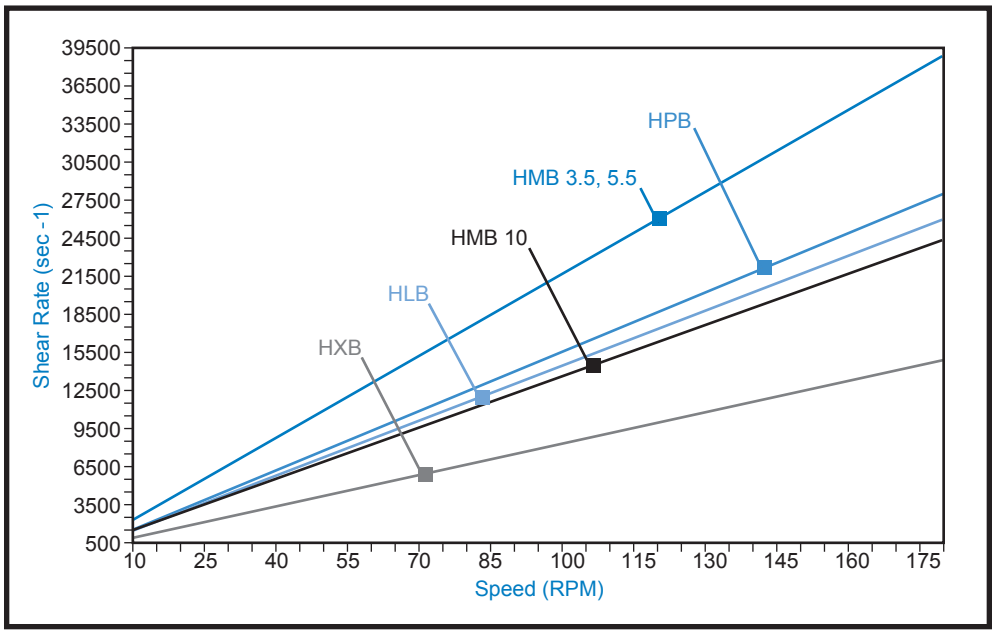


Chart 2

Constant (K)

HPB .160	0.0027	HLB 10	0.0267
HPB .297	0.0029	HLB 20	0.0356
HPB .584	0.0033	HLB 30	0.0445
HPB 1.168	0.0041	HLB 50	0.0623
HPB 1.752	0.0048	HXB 70	0.0409
HPB 2.92	0.0064	HXB 100	0.0456
HMB 3.5	0.0132	HXB 147.5	0.0531
HMB 5.5	0.0150	HXB 200	0.0610
HMB 10	0.0159		

Table 1

Maximum Torque

HPB .16-.297	(All Models)	80 lbs.-in.
HPB .584	(Except 4647)	195 lbs.-in.
HPB 1.168-1.752	(Except 4647)	410 lbs.-in.
HPB 2.92	(Except 4647, 5704)	460 lbs.-in.
HPB 2.92	(5704)	600 lbs.-in.
HPB .584-2.92	(4647)	200 lbs.-in.
HMB 3.5-10	(All Models)	1200 lbs.-in.
HLB 10-50	(4729, 5548)	900 lbs.-in.
HLB 10-50	(5592)	2000 lbs.-in.
HXB 70	(4980)	4000 lbs.-in.
HXB 100	(4980)	6500 lbs.-in.
HXB 147.5-200	(4980)	7000 lbs.-in.

Table 2

ISO 9001: 2000 Registered

Zenith® Pumps
1710 Airport Road
Monroe, NC 28110
Phone: 704-289-6511 • Fax: 704-289-9273
zenithpumps@colfaxcorp.com • www.zenithpumps.com

A Colfax Buisiness Unit