V-FLO®

Specialist for Pumping Technology

LY Series

VERTICAL SINGLE-CASING SUMP PUMP

API 610-VS4

V-FLO PUMPS & SYSTEMS COMPANY LIMITED

V-FLO Pumps & Systems Company Limited

Production Base in Dalian

President's Speech

Kingston Wen
Founder & President
Managing Director

V-FLO Group has been growing on the fast track with a momentum without limit since its foundation in 2002 under the guidance of corporate vision to Creating First Class Enterprise With Super Team Plus Reputed Fame & Brands. Developed on the basis of V-FLO Pumps & Systems, it has successfully grown into a multidisciplinary group focusing on international operations with businesses covering equipment packaging and supply chain management, Projects EPC, subcontracting and related consulting services as well as the development of new and renewable energy.

V-FLO is actively turning into an integration platform of technologies, products, services, markets and capitals in a way that China power and global resources meet each other without gap to generate infinite energy.

V-FLO has started a new journey to serve our customers in diversified industries for power, oil & gas, petrochemical and others. This can be translated into a wide scope of services from private basement to municipal sewage treatment, from the boiler room in a high rise building to a marine pier, in processing plants, power generating stations, paper mills, construction sites, operation and maintenance fleets and in farm fields, in solar and wind power generation as well LED lighting applications delivering our products and services to dozens of countries such as Saudi Arabia, Iraq, Iran, Syria, Jordan, Pakistan, Switzerland, Sweden, Russia and so on.

V-FLO Group, with the new workshop in operation in Dalian, China, is going to have an even more powerful team working at positions of R&D, manufacturing, contracting, marketing and management. We are dedicated to strive for a higher standard of service and products. Our investment in technology and research is second only to the support we give to our customers and employees. We approach the 21st century reaffirming our dedication to our customers, employees and vendors.

Why V-FLO?

- Experienced Management
- Win-win Cooperation
- Instant Response
- Professional Solutions
- High-quality Products

V-FLO Solution

- Optimal Solution
- Economic Cost
- Customer Service

V-FLO Products

- Latest Technologies
- Extensive Applications
- Better Customer Experience

V-FLO PUMPS & SYSTEMS COMPANY LIMITED

About Us

V-FLO Pumps & Systems, as the core business of V-FLO Group, covers wide markets and applications in the areas of oil & gas, chemical & petrochemical, power & energy, environment protection, metallurgy & mining, water supply and sewage treatment, sea water desalination, offshore platforms, underground coal gasification and so on.

Adding to the strength of V-FLO Group, the completion and commissioning of V-FLO Dalian Production Base brings brilliance to V-FLO manufacturing capability and capacity for pumps and systems. The production capacity has been increased to 8000 units of different pump systems with casting of 40,000t per year, maxi. weight of single piece up to 25 tons, machining capacity of 2 million hours according to international codes and standards such as ASME, ANSI, HIS, ISO and API610. V-FLO attributes the pump quality to our total quality control philosophy from raw materials, fabrication and machining, NDT & dimensions, hydrotest & dynamic balance, assembling & performance test, painting and packaging strictly in accordance with procedures and standards.

V-FLO Pumps & Systems are guaranteed with reliable high quality due to the strict execution of APIQ1, ISO9000-01 and ISO14000 management systems through the whole manufacturing process from products R&D, engineering design, fabrication and production, inspection and file management. V-FLO customer confidence and satisfactions are ensured with careful and humble services.

Business Licenses

营业执照

(副本)

Business License

(Duplicate) (1-1)

Unified social credit code: 91110112757717791M

Name: V-FLO PUMPS & SYSTEMS CO., LTD.

Enterprise Type: Company of Limited Liability(invested or controlled by natural person)

Address: No.321 Haizi Road, Jufuyuan, YujiawuCountry,Tongzhou District, Beijing, China

Legal Representative: Wen Xingquan

Registered Capital: RMB50 Million

Date of Establishment: December 26, 2003

Business Period: December 26, 2003 - December 25, 2023

Business Scope: Pumps and valves manufacturing; Sales of mechanical & electrical products, metal material, chemical products (excluding dangerous chemicals), hardware electric products, and special equipment; Technology promotion; Supply chain management; Energy performance contracting; Import and export of goods and technology; Agent for imports and exports.(Business activities shall be carried out as per the approved contents by relevant department of government)

Issued by: TongzhouBranch,Beijing Industry & Commerce Administrative Bureau

Nov. 13, 2015

质量管理体系认证证书

CERTIFICATE OF CONFORMITY OF QUALITY MANAGEMENT SYSTEM CERTIFICATION

Certificate 03114Q20168R2M

This is to certify the quality management system of

V-FLO PUMPS&SYSTEMS CO.,LTD

is in conformity with

GB/T19001-2008 / ISO9001:2008 standard

V-FLO PUMPS & SYSTEMS COMPANY LIMITED

营业执照

注册号 210200400074325

名称

类型 有限责任公司（台港澳法人独资）分公司

营业场所

负责人

成立日期 2015年09月24日

营业期限 2015年09月24日至2024年05月12日

经营范围

登记机关

Business License

Registration No.: 210200400074325

Name: V-FLO PUMP R & D INSTITUTION

Enterprise Type: Branch Company of Limited Liability(solely invested by legal person from Hongkang, Taiwan, Macao)

Address: No. 6 Kaiyang Road, Lvshun Economic &Technological Zone, Dalian, Liaoning, China

Legal Representative: OuyangChunbao

Date of Establishment: Sep.24, 2015

Business Period: Sep.24, 2015 - May12, 2024

Business Scope: Manufacturing, research, design and test ofpumps, valves and devices for solar power generation and other renewable power generation ;(Business activities shall be carried out as per the approved contents by relevant department of government)

Issued by: Dalian Industry & Commerce Administrative Bureau

Sep. 24, 2015

营业执照

统一社会信用代码

名称 大连威福陆机器制造有限公司

类型 有限责任公司（台港澳法人独资）

住所

法定代表人

注册资本

成立日期 2014年05月13日

营业期限 自2014年05月13日至2024年05月12日

经营范围

登记机关

Business License

Unified social credit code：912102000995443734

Name: V-FLO （DALIAN）MACHINE CO., LTD.

Enterprise Type: Company of Limited Liability(solely invested by legal person from Hongkang, Taiwan, Macao)

Address: No. 6 Kaiyang Road, LvshunkouEconomic & Technological Zone, Dalian, Liaoning, China

Legal Representative: Wen Xingquan

Registered Capital: USD17 Million

Date of Establishment: May13, 2014

Business Period: May13, 2014 - May12, 2024

Business Scope: Manufacturing, research, design and test ofpumps, valves and devices for solar power generation and other renewable power generation ;(Business activities shall be carried out as per the approved contents by relevant department of government)

Issued by: Dalian Industry & Commerce Administrative Bureau

March 15, 2016

V-FLO Pump Series

V-FLO Pump Series							
Product types		Oil & Gas	Hydrocarbon Processing	Mining & Metallurgic Industries	Power Generation	Water	General Industry
Single Stage Pumps	VZA	Y	Y	Y	Y	Y	Y
	VZE	Y	Y	Y	Y	Y	Y
	IS/ISO			Y	Y	Y	Y
	HW			Y	Y	Y	Y
	WZ			Y	Y	Y	Y
	DSJH	Y	Y	Y	Y		
Two Stage Pumps	GSJH	Y	Y	Y	Y		
Barrel Pumps	TD	Y	Y	Y	Y		Y
Ring Section Pumps	D	Y		Y	Y	Y	Y
	DG	Y		Y	Y	Y	Y
Axial Split Pumps	VSD	Y	Y	Y	Y	Y	Y
	CPS			Y	Y	Y	Y
	SA			Y	Y	Y	Y
	KY	Y	Y	Y	Y	Y	Y
	KDY	Y	Y	Y	Y	Y	Y
Vertical Pumps	VHGA	Y	Y	Y	Y	Y	Y
	VMC	Y	Y		Y	Y	Y
	LY	Y	Y	Y	Y	Y	Y
	VTMC	Y	Y		Y	Y	Y
	ISG			Y	Y	Y	Y
	LUV				Y		
	HB/HK/H			Y	Y	Y	Y
	ZLB(Q)			Y	Y	Y	Y
	FYL	Y	Y	Y	Y		
	NLTD				Y		
Others	KWP			Y	Y	Y	Y
	XBD/XBC	Y	Y	Y			Y
	GQL/GQW	Y	Y	Y			Y
	KCB/YCB/2CY	Y	Y	Y			Y
	EH/2G/3G	Y	Y	Y			Y
	CQ	Y	Y	Y	Y		Y
	PW/PL	Y	Y	Y	Y		Y
	GQJ/SG			Y	Y	Y	Y
	QW			Y	Y	Y	Y
	QZ			Y	Y	Y	Y
	2DS/3DS	Y	Y	Y			Y
	ZX,ZZB,ZW	Y	Y	Y			Y
	J/JM	Y	Y	Y			Y
	ZD,ZG,ZX			Y	Y		Y
	2BE/2BV	Y	Y	Y	Y		Y

V-FLO PUMPS & SYSTEMS COMPANY LIMITED

Typical Pumps

VZ

VSD

VHGA

KY KDY

DSJH/GSJH

VTMC

VMC

LY

TD

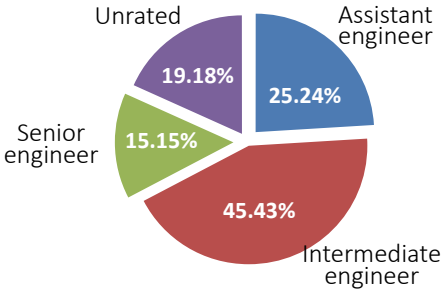
GQL/GQW

PW/PL

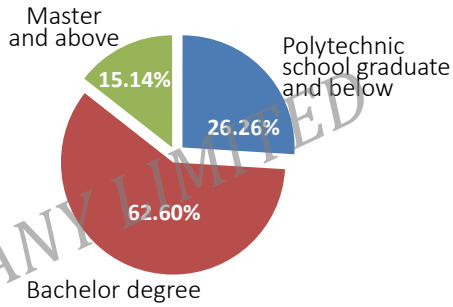
Research & Design

V-FLO Pumps & Systems in Beijing, V-FLO Shen Yang Branch and V-FLO Dalian Machine are responsible for development of all kinds of pumps & systems to meet any complicated and demanding requirements from customers. V-FLO R&Ds are carried out by ways of further improvements and upgrading of existing technologies, independent high-tech patents as well as reverse engineering design for special purposes. In addition, V-FLO also joint our hands working together with domestic and foreign leading institutes as well as colleges and universities to develop special pumps to meet demanding challenges from fields of various applications.

➢ V-FLO R&D Teams



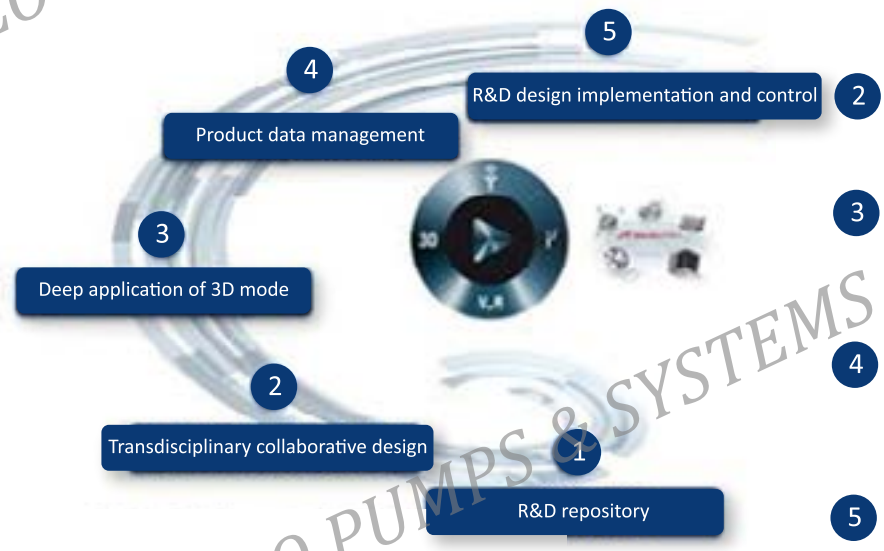
Position composition



Education composition

➢ R&D Procedures

Perfect Combination of 3D Experience & Management Philosophy



1
- Centralized management of engineering data
- 3D basic library management
- Data search and reusing
- Data security

2
- 3D based parallel collaboration
- Multiple professional design system
- Multi stations and mobile application

3
- Large-scale applied analysis
- Upstream and downstream based on reusing 3D mode
- 3D based configuration management

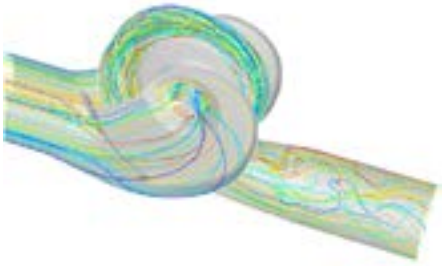
4
- Parts management
- BOM management and derivation
- Process resource and manufacturing process management
- Manufacturing system integration

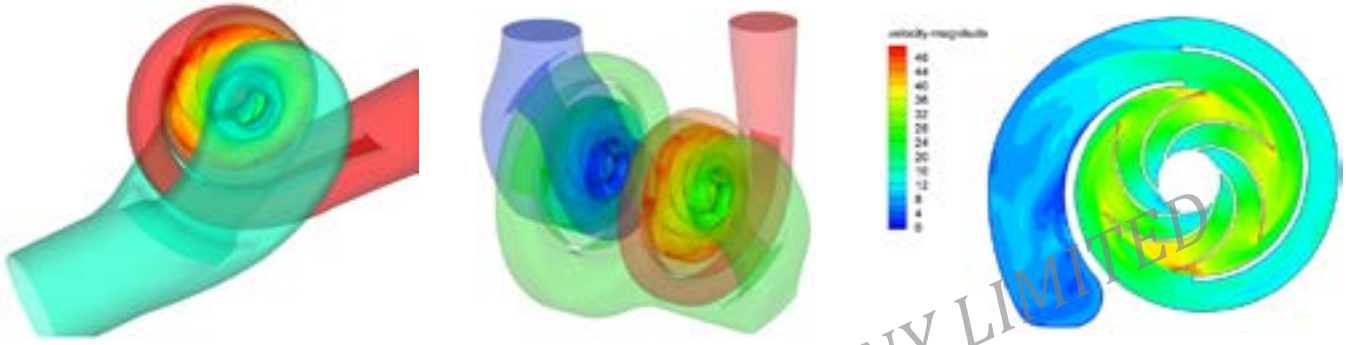
5
- Project template formulation
- Project planning and resource dividing
- Project implementation monitoring and controlling
- Report and analysis

V-FLO PUMPS & SYSTEMS COMPANY LIMITED

➢ CFD Simulation & Analysis

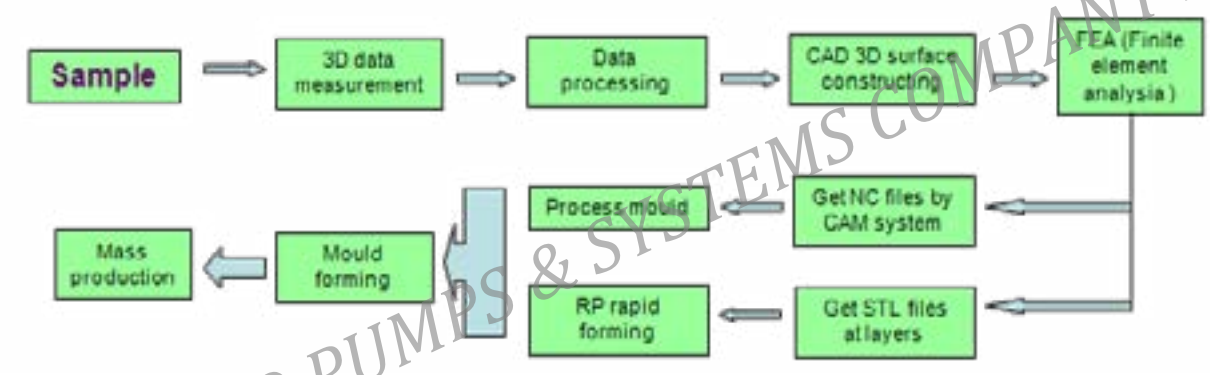
CFD flow field analysis helps to improve the pump efficiency and ensure pump reliability.





➢ Reverse Engineering

- Holographic imaging for sample, intuitive and accurate, reproduce the internal three-dimensional structure of object;
- Make non-destructive slices and cross-section imaging in any direction;
- Replace traditional destructive slice detection and analysis;
- Spatial resolution and density resolution is excellent.



Flowchart of Reverse Engineering

V-FLO PUMPS & SYSTEMS COMPANY LIMITED
V-FLO PUMPS & SYSTEMS COMPANY LIMITED

R&D capability& achievements

V-FLO Pumps & Systems has 3 research centers located in Beijing, Dalian and Shenyang committed to pump R&D with many achievements, 22 patents have been awarded up till now. In addition, V-FLO has been conferred as the National High-tech Enterprises by Beijing Municipal Government and Beijing Municipal Science& Technology Commission.

Manufacturing

Enterprise Resource Planning (ERP) has been employed in V-FLO to improve the production and management efficiency as well as better satisfaction of customer needs.

Casting: 40,000t per year.
Forging: 60,000t
Machining: Working capability up to 2 million hours.
Pump testing capability: 5000KVA
Pump production capacity: 8000 units


Casting– Mould Machining


Forging Materials– Mould Forging Machine


Welding– Pipe Welding


Monitoring System Integration


Assembly Workshop


machining workshop


Paint Workshop

Performance Test Exhibition

➢ Chemical & Mechanical Lab

HIR-944 HF-IR Carbon-Sulfur Analyzer

HR-150 Manual Rockwell Hardness Tester

KH170 Portable Hardness Tester

TMR5000 Metallurgical Microscope

UTD9800 Ultrasonic Flaw Detector

CMT-300 Universal Electronic Testing Machine for Metal Materials

XL2-800 PMI Alloy Analyzer

AR930 Coating Thickness Gauge

V-FLO PUMPS & SYSTEMS COMPANY LIMITED

➢ Dynamic Balancing Test

HM40U Dynamic Balancing Machine

HM40U Dynamic Balancing Machine	
Model	HM40U
Trademark	SCHENCK
Max. rotor weight	3000 kg
Range of bearing journal	90mm - 5000mm
Max. shaft diameter of rotor support	Φ240 mm
Max. balance speed	3600 rpm
Allowable revolution diameter of rotor	Φ1600 mm
Drive power	15 KW
Minimum achievable residual unbal.	emax≤0.1g·mm/kg
Applicable standard	ISO2953

DH1000Q Belt Driven Hard Bearing Balancing Machine

DH1000Q Belt Driven Hard Bearing Balancing Machine	
Model	DH1000Q
Max. weight of workpiece	1000 kg
Max. diameter of workpiece	ϕ1500 mm
Bearing Distance	100-1800 mm
Shaft diameter range of roller bearing	ϕ10 mm-ϕ200 mm
Balance speed	approximately 1900 r/min （VF stepless speed regulation）
Drive power	VF motor 4KW
Minimum achievable residual unbal.	emax≤0.1g·mm/kg
Measuring instrumentation	with DYJ-S80 microcomputer digital electric measuring system

➢ Pump Performance Test Loop

Closed Pump Test Loop

Open Pump Test Loop- Installation Platform & Water Pool

10KV/6KV/5000KVA Transformer

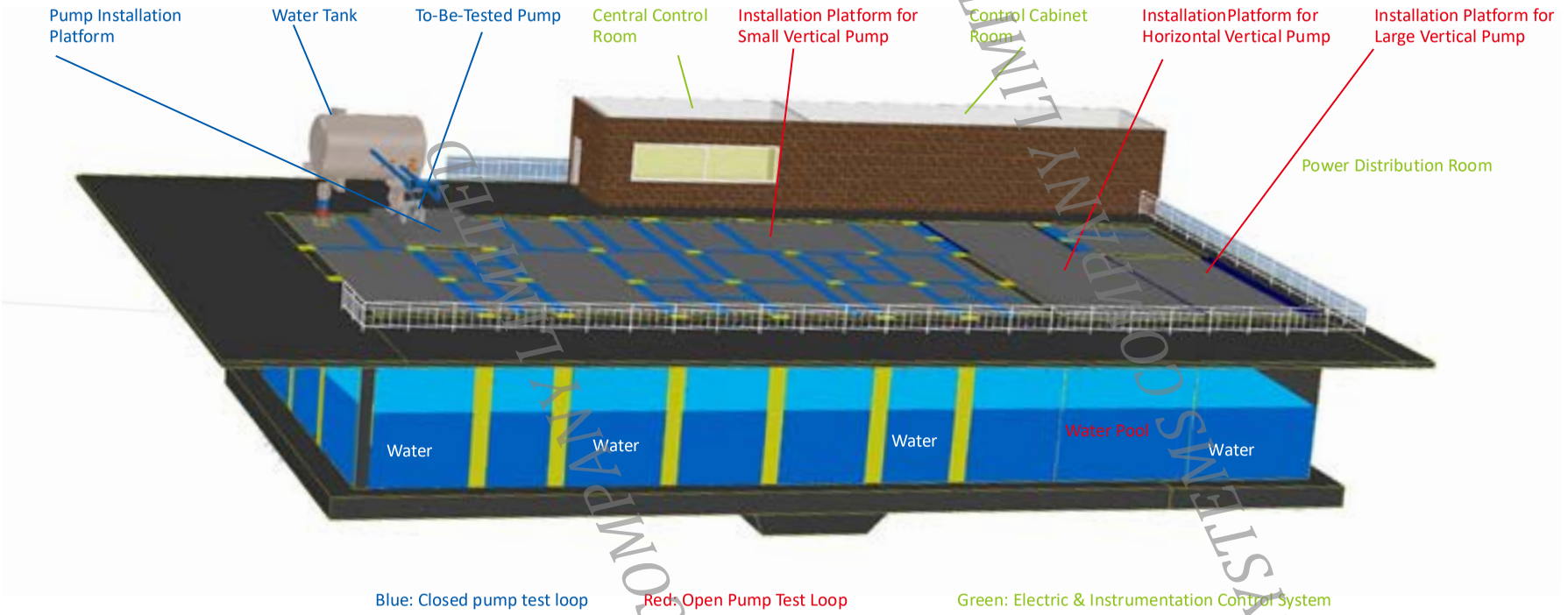
400KW/380V soft starter cabinet and control cabinet

Central Control Desk

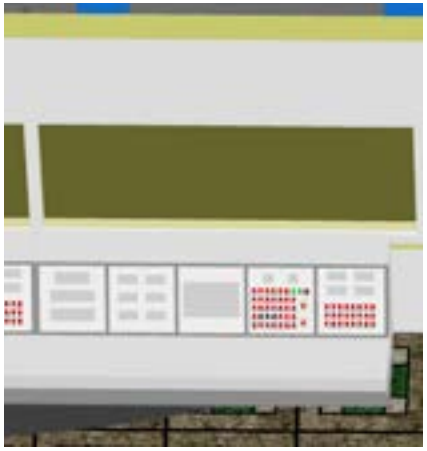
10KV Power Distribution Cabinet

Open Test Loop	**Closed Test Loop**
Area	**Area**
50mx15m	Close loop system.
Flow Measurement System	**Flow Measurement System**
Magnetic Flowmeters	**Magnetic Flowmeters**
Φ1600 mm, Φ1000 mm, Φ600 mm, Φ300 mm, Φ250 mm Φ200 mm, Φ150 mm, Φ100 mm, Φ50 mm, Φ25mm	Φ300 mm, Φ250 mm, Φ200 mm, Φ150mm, Φ100 mm Φ50mm, Φ25mm Maximum flow: 500 m^3/h
Water Pit	**Tank Dimensions**
Volume of wet sump 3600 m^3 Maximum depth 12 m	Tank capacity 60 m^3
Power Supply	**Power Supply**
5000KVA/6KV 2000KVA/3.3KV	315KW/380V, 660V
VFD Test Motor Range	**VFD Test Motor Range**
160kw, 800 kW @ 20HZ~60HZ	160kw @ 20HZ~60HZ
Maximum Lifting Facilities	
50T	

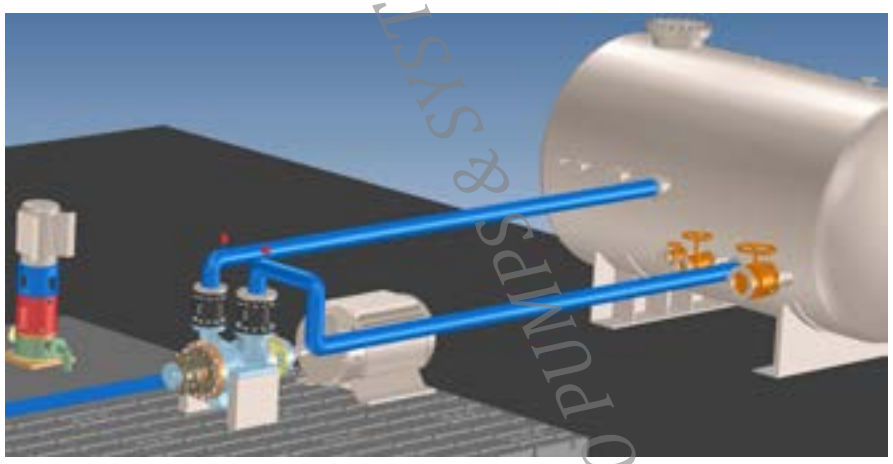
V-FLO PUMPS & SYSTEMS COMPANY LIMITED



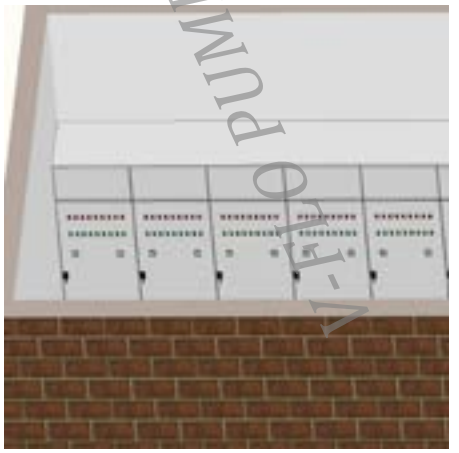
3D Model of Pump Test Loops



Central Control Table



Pump in test



Soft starter cabinet and control cabinet

After sale & Maintenance

Installation and Commissioning

V-FLO after sales service not only covers supervision for site installation and commissioning, but also offers training for operation, maintenance and even a lot more as customers may require.

Quality Control

Quality Plan Overview																									
Designation				Material						NDE					Welding			Function						
		Form of Supply	Responsibility	Chemical Analysis	Tensile Properties	Impact Properties	IHardness	Corrosion Test	Heat Treament	Visual	Liquid Penetice MT	Magnetic Particle MT	Ultrasonic UT	Radiographic RT	Procedure Qualification	Procedure Specification	Casting Repair	Hydrostatic Pressure Test	Dimension Check	Balancing	Performance Test	Final Inspection	Notes
1	Volute Casing	C	MS	3	3				3	5	4	4			4	4	5						Note
			MA															4	5				
2	Casing Covers	C	MS	3	3				3	5	4	4			4	4	5						Note
			MA															4	5				
3	Impellers	C	MS	3	3				3	5	4	4			4	4	5						Note
			MA																5	4			
4	Pump Shaft	B	MS	3	3				3	5			4										
			MA																5				
5	Wear Rings	CW	MS	1						5													
			MA																5				
6	Bearing Housing	C	MS	1						5													
			MA																5				
7	Pressure Retaining Fasteners	B	MS	ST						5													
			MA																5				
8	Auxiliary & Process Pipework	W	MS	ST																			
			FW							5					4	4			5				
			MA															4					
9	Baseplate	P	MS	1																			
			FW							5					4	4			5				
			MA																5				
10	Pump Complete		MA																5		4	4	

Note:MT can be applied when material is carbon steel.

Subiect to legislation, verification documentation detailed above may be held at Sulzer or supplier premises. When required, Manufacturing Record Dossiers shall be compiled in accordance with project requirements and hela by Sulzer.

Form of Supply

B Bar
C Casting
F Forging
P Plate and Sections
W Wrought

Location of Test

MS Material Supplier
FW Fabrication Welding
MA Manufacturer

Verification Documents

1 Certificate of Compliance (EN 10204 2.1)
2 Test Report (EN 102004 2.2)
3 Inspection Certificate (EN 10204 3.1)
4 With Report
5 Without Report
ST Product Marking

V-FLO Pumps & Systems, as per API Q1 management system, has QA and QC departments in the Headquarters, while QC teams with professional inspectors are working in branches and production workshops. More than 30 QA & QC engineers are directly involved in the pump quality control activities.

In the meantime, TPI has been a normal practice in V-FLO production activities. TUV, BV, LR, SGS, IKA, DNV, GL and other international parties have been working with us for the last 14 years.

PIDEC N.I.O.C N.I.O.E.C N.I.S.O.C PEDEC ICOFC POF Schneider Electric ODCC

Warranty

18 months after delivery or 12 months after commissioning shall be guaranteed for trouble free operation under normal working conditions.

KINGDOM OF SAUDI ARABIA
ROYAL COMMISSION FOR
JUBAIL AND YANBU

Fatima Group

Bharat Heavy Electricals Limited

GE imagination at work

Content

V-FLO PUMPS & SYSTEMS COMPANY LIMITED

I. Overview

LY series are single stage single suction radial split case long shaft submerged pumps designed and fabricated as per API 610 11th Edition VS4. Pump shaft shall be supported by rolling bearings inside the bearing housing as well as sleeve bearings inside the column pipes. The pump shall be installed under water as deep as 6m. Selection chart is able to cover the range of the flow rate up to 8 00m^3/h and head up to 200m. It is applicable for pumping clean or polluted media.

Structural support parts, bearing assembly and pump shaft follow the principle of standard design so as to facilitate better spare parts interchangeability and easy for manufacturing and maintenance.

Rigid shaft is designed to guarantee stable operation of pump. The pump operating speed is designed well lower than the 1st critical speed of the rotor so as to guarantee the stable operation under severe conditions.

Pump is of radial split casing structure; pumps with nominal flange nozzle lager than 80mm are designed as double volute structure to balance radial force and vibration caused by hydraulic actions.

II. Applications

LY series are special pumps designed for pumping various liquids under severe conditions. It is applicable for discharging sewage, waste solution or chemical liquids under normal or high temperature in open sump pit or sealed pressure vessels, such as:

- Slurry pump to pump corrosive liquids with particles
- Land pit pump for discharging incrustation in steel mill and rolling mill
- Chemical process pump
- Sewage pump in sewage treatment plant
- Sewage pump in cement plant & paper mill
- Auxiliary pump in power station
- Effluent oil treatment in oil refinery and chemical plant
- Transportation of Sulphur

III. Performance Range

Flow rate: Q = 2 ~ 8 00 m^3/h
Disch. Head: H = 5 ~ 200 m
Working pressure: up to 2.5 Mpa
Working temperature: t=-20 ℃ ~ +120 ℃

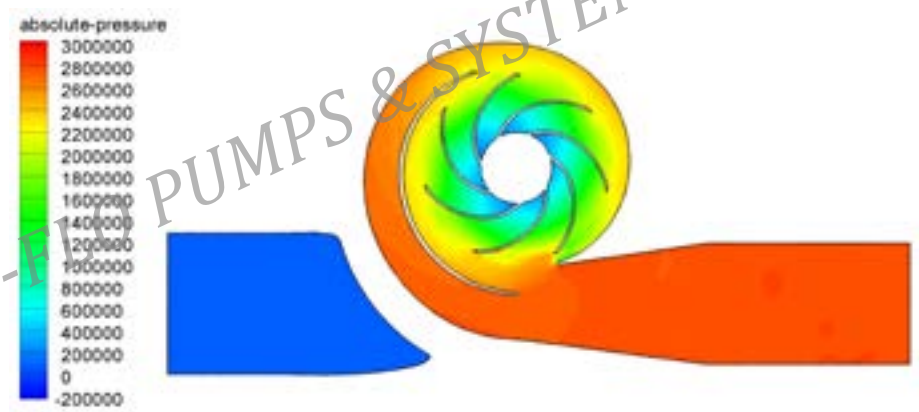
IV. Model Description

LY25-200

- Impeller nominal diameter(mm)
- Discharge diameter(mm)
- **Vertical single-casing sump pump**

V. Hydraulic Design

Its selection chart is of wide range with various impeller designs to meet the requirements of performance and service conditions. Hydraulic performance of each pump is the optimized output of international advanced design software and CFX fluidized simulation analyzer in combination with simulation verification.



V-FLO PUMPS & SYSTEMS COMPANY LIMITED

VI. Pump Structure

1. Connecting structure

- Connecting structure is of safety and reliability to guarantee operation of pump.

2. Pump casing

- It is of double volute structure (for pump nozzle larger than 80mm) to balance most of the radial force with less shaft deflection and vibration.

3. Support

- Rotor is designed with multi-points supporting and the guide bearing intervals conforming to API 610 standard to ensure that max. allowable continuous speed is lower than the 1st critical speed. Rolling bearing is lubricated by grease or oil to guarantee the service life as per API610 recommendation. Submersible sleeve bearings are equipped with external flushing or self-flushing.

4. Shaft seal

- Due to independent discharge pipe and non-pressurized medium leakage at shaft stretching direction, shaft seal is not needed for pumping non-volatile liquid. However, other forms of cartridge mechanical seals can be installed as per API682 in case of need. Mechanical seal chamber design conforms to API610.

5. Pump shaft

- High strength rigid shaft design shall guarantee the stable operation of pump.

6.Heat trace and insulation structure

- Steam heat trace jacket is designed and fabricated around the pump casing, connection column and discharge pipes so that high temperature liquid sulphur can be transferred.

VII. Material Table

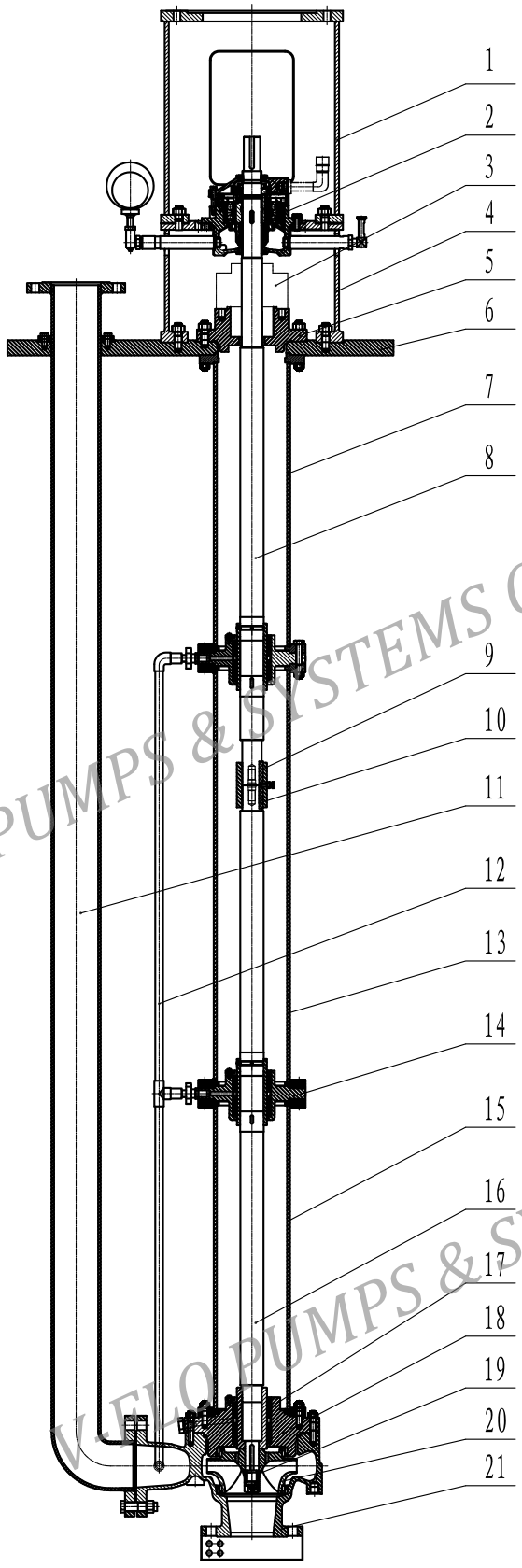
Parts Name	Material Grade and Code Number				
	I-1	I-2	S-1	S-3	S-4
Pump casing	ASTM A278 Class 30	ASTM A278 Class 30	ASTM A216 Gr.WCB	ASTM A216 Gr.WCB	ASTM A216 Gr.WCB
Impeller	ASTM A278 Class30	ASTM C90700	ASTM A278 Class 30	ASTM UNS F41000	ASTM A216 Gr.WCB
Shaft	ASTM A576 Gr.1045	ASTM A576 Gr.1045	ASTM A576 Gr.1045	ASTM A576 Gr.1045	ASTM A576 Gr.1045
Casing wear ring	ASTM A48 Class 25/30/40 HF	UNS C90700	ASTM A48 Class 25/30/40 HF	UNS F41000 HF	ASTM A48 Class 25/30/40 HF
Impeller wear ring	ASTM A48 Class 25/30/40 HF	UNS C90700	ASTM A48 Class 25/30/40 HF	UNS F41000 HF	ASTM A48 Class 25/30/40 HF

Parts Name	Material Grade and Code Number				
	S-5	S-6	S-8	S-9	C-6
Pump casing	ASTM A216 Gr.WCB	ASTM A216 Gr.WCB	ASTM A216 Gr.WCB	ASTM A216 Gr.WCB	ASTM A217 Gr.CA15
Impeller	ASTM A216 Gr.WCB	ASTM A743 Gr.CA15	ASTM A743 Gr. CF8M	ASTM A494 M30C	ASTM A743 Gr.CA15
Shaft	ASTM A434 Class BB	ASTM A434 Class BB	ASTM A479 Gr. 316	ASTM B164 Class A	ASTM A276 Gr. 410
Casing wear ring	ASTM A473 Type 410 HF	ASTM A473 Type 410 HF	ASTM A182 Gr.F316 HF	UNS04400 HF	ASTM A473 Type 410 HF
Impeller wear ring	ASTM A473 Type 410 HF	ASTM A473 Type 410 HF	ASTM A182 Gr.F316 HF	UNS04400 HF	ASTM A473 Type 410 HF

Parts Name	Material Grade and Code Number			
	A-7	A-8	D-1	D-2
Pump casing	ASTM A351 Gr. CF8	ASTM A351 Gr. CF8M	ASTM A890 Gr.1A	ASTM A890 Gr.5A
Impeller	ASTM A743 Gr. CF8	ASTM A743 Gr. CF8M	ASTM A890 Gr.1A	ASTM A890 Gr.5A
Shaft	ASTM A479 Gr. 304	ASTM A479 Gr. 316	ASTM A276-S31803	ASTM A276-S32760
Casing wear ring	ASTM A182 Gr.F304 HF	ASTM A182 Gr. F316.HF	ASTM A182 Gr. F51 HF	ASTM A182 Gr.55 HF
Impeller wear ring	ASTM A182 Gr.F304 HF	ASTM A182 Gr. F316.HF	ASTM A182 Gr. F51 HF	ASTM A182 Gr.55 HF

VIII. Cross Section Drawings

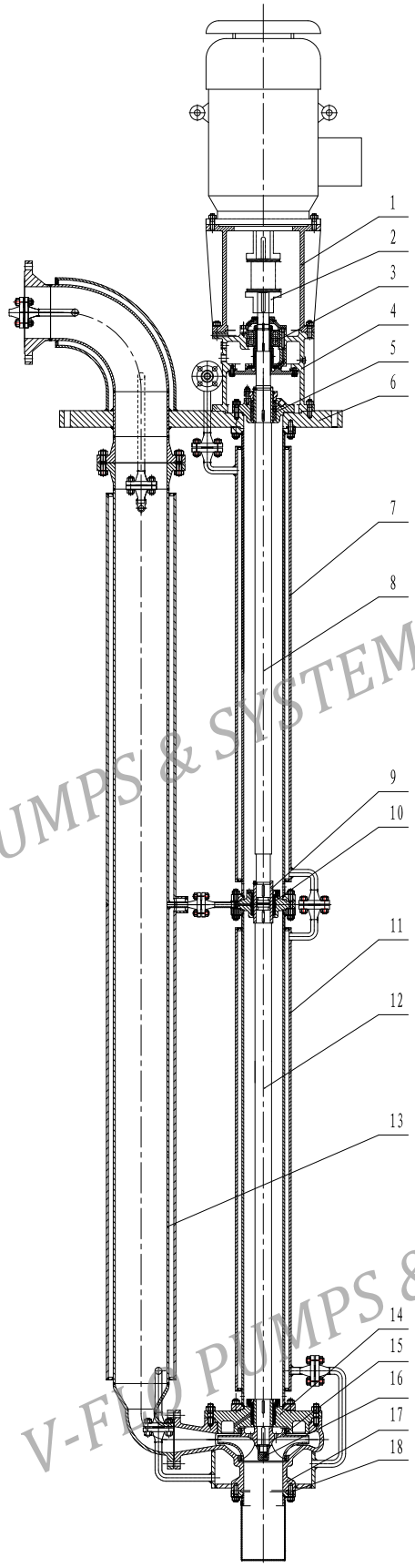
1. Structural diagram of LY series single stage single suction centrifugal oil pump



1. Motor bracket
2. Bearing house
3. Mechanical seal
4. Bearing bracket
5. Sealing gland body
6. Base plate
7. Upper support pipe
8. Upper shaft
9. Connection sleeve
10. Connection key
11. Discharge pipe
12. Flushing pipe
13. Middle support pipe
14. Plain bearing body
15. Lower support pipe
16. Lower shaft
17. Guide spindle bearing
18. Pump cover
19. Impeller nut
20. Impeller
21. Pump casing

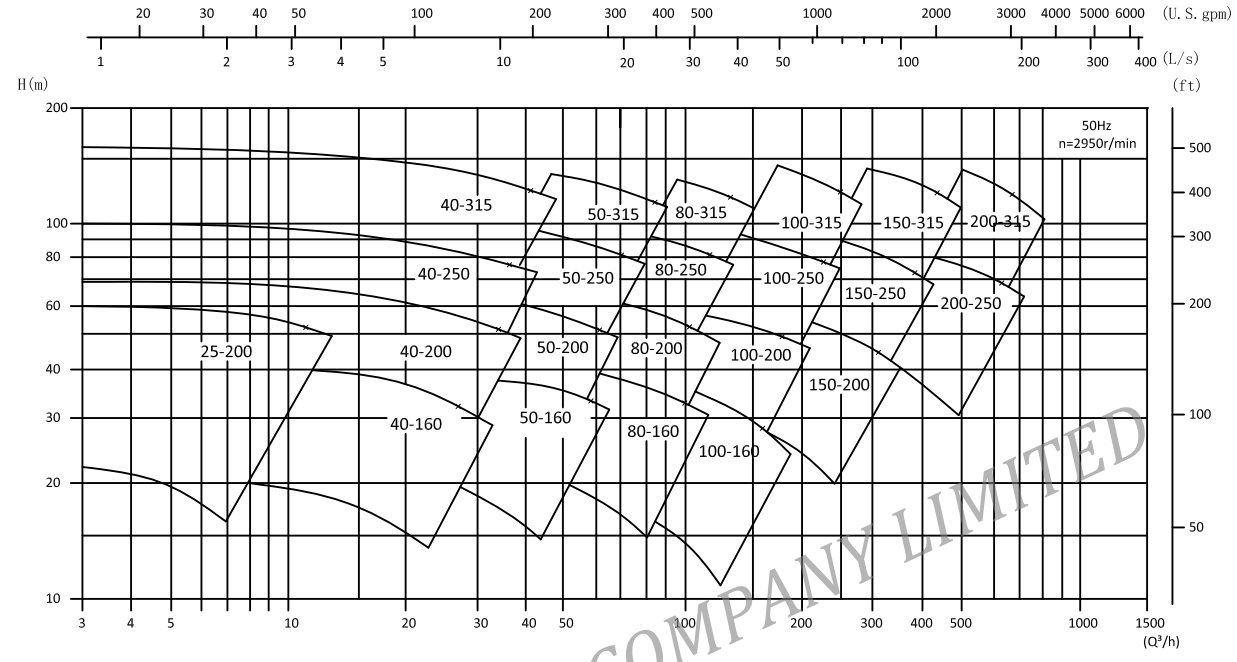
V-FLO PUMPS & SYSTEMS COMPANY LIMITED

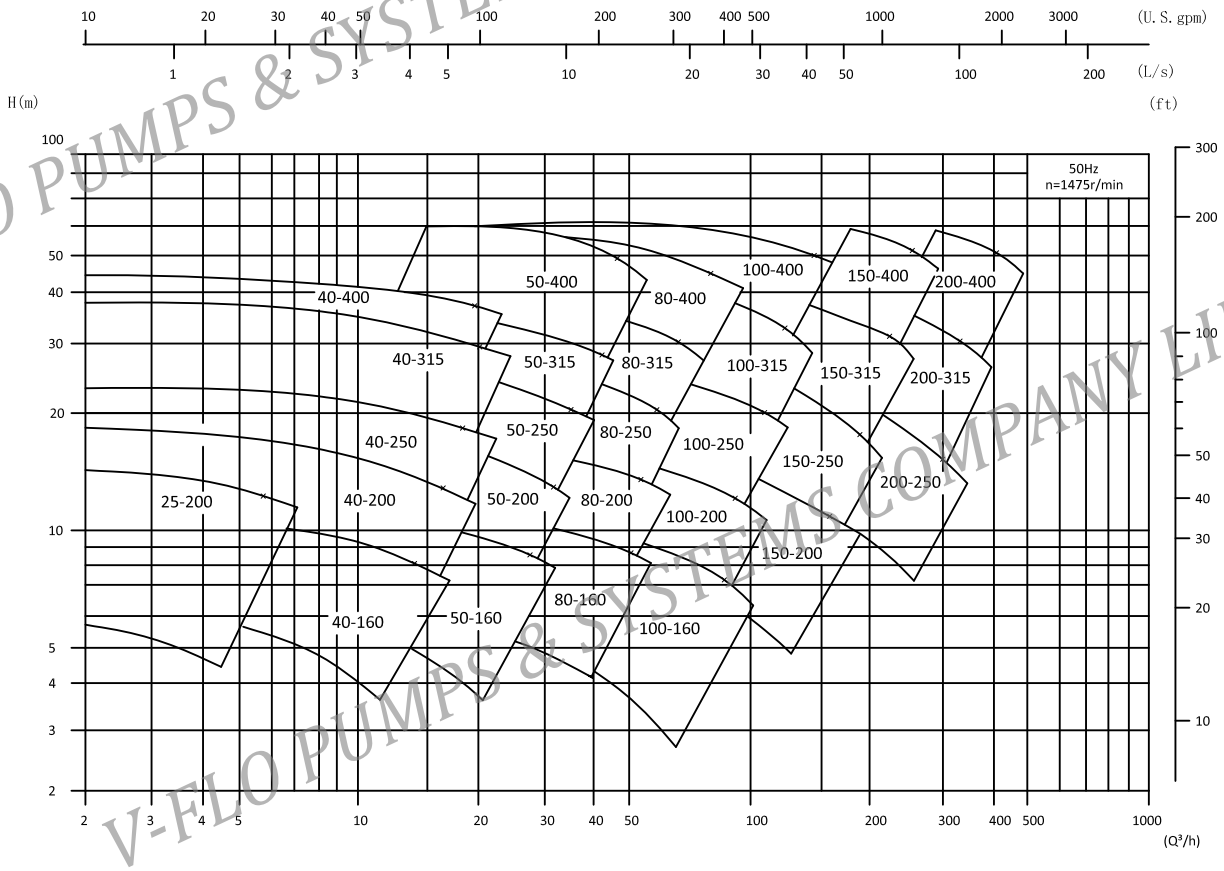
2. Structural diagram of LY series single suction centrifugal pump(Heat trace and insulation structure)



1. Motor bracket
2. Coupling
3. Bearing
4. Bearing bracket
5. Packing seal
6. Base plate
7. Upper support pipe
8. Upper shaft
9. Connection sleeve
10. Guide bearing
11. Lower support pipe
12. Lower shaft
13. Discharge pipe
14. Pump cover
15. Impeller
16. Impeller nut
17. Pump casing
18. Strainer

IX. LY Series Family Curves



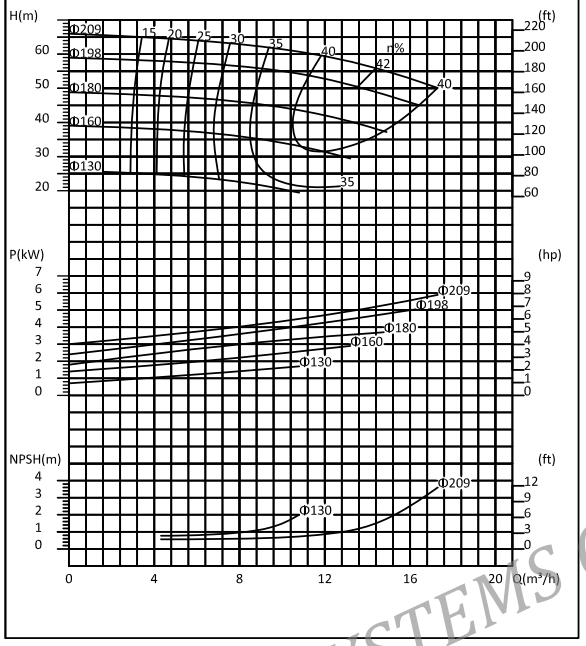


X. LY Series Performance Data Charts

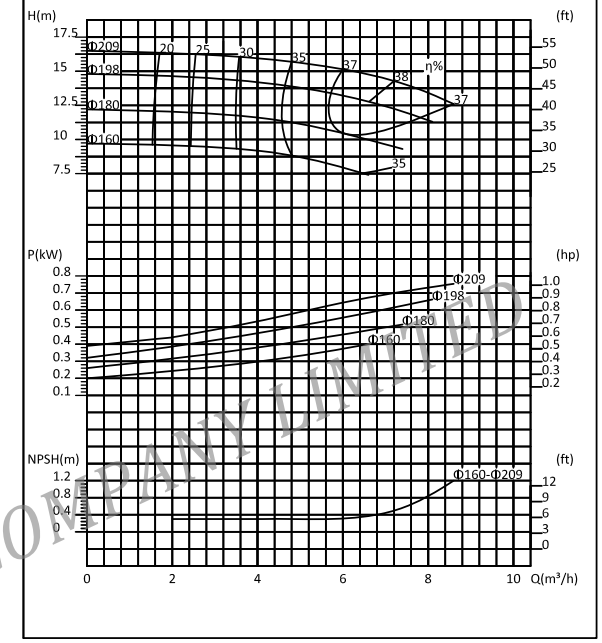
Model	Flow rate (m^3/h)	Disch. Head (m)	Speed (r/min)	Eff. (%)	NPSHr (m)	Shaft power (Kw)	Motor power (Kw)
LY25-200	14.4	55.9	2950	42	1.5	5.2	7.5
	7.2	14	1475	38	0.6	0.7	1.1
LY40-160	28	34	2950	63.5	3	4.1	5.5
	14	8.5	1475	61	1	0.5	0.75
LY40-200	34	53	2950	61	2	8.0	11
	17	13	1475	58	0.7	1.0	1.5
LY40-250	34.4	77	2950	54.5	1.9	13.2	18.5
	17.2	19.3	1475	50.2	0.75	1.8	3
LY40-315	45	108	2950	52	2	25.5	30
	22.5	27	1475	48	0.7	3.4	5.5
LY40-400	22.8	36.5	1475	41	0.65	5.5	7.5
LY50-160	50	35	2950	71.5	2.3	6.7	11
	25	8.8	1475	68.5	0.8	0.9	1.5
LY50-200	60	52	2950	68	2.6	12.5	18.5
	30	13	1475	65	0.9	1.6	2.2
LY50-250	67	87	2950	68	2.5	23.4	30
	33.5	21.8	1475	64	0.7	3.1	4
LY50-315	84	120	2950	65	2.8	42.3	55
	42	30	1475	61	0.8	5.6	7.5
LY50-400	51	48.5	1475	53	0.8	12.7	18.5
LY80-160	95	32	2950	78	3.3	10.6	15
	47.5	8	1475	74	1	1.4	2.2
LY80-200	100	56	2950	76	3.5	20.1	30
	50	14	1475	74	1	2.6	4
LY80-250	123.5	82.2	2950	73	3.8	37.9	45
	61.8	20.6	1475	72	1	4.8	7.5
LY80-315	133.7	127.4	2950	69	4	67.3	75
	66.9	31.9	1475	66.5	1.2	8.7	11
LY80-400	84	46.8	1475	60	1.1	17.9	22
LY100-160	150	30	2950	80	4.5	15.3	22
	75	7.5	1475	77	1.2	2.0	3
LY100-200	180	50	2950	80.5	4.5	30.5	37
	90	12.5	1475	78.5	1.2	3.9	5.5
LY100-250	220	80	2950	81	5.3	59.2	75
	110	20	1475	79	1.4	7.6	11
LY100-315	250	130	2950	76	5.8	116.5	132
	125	32.5	1475	74	1.5	15.0	22
LY100-400	150	48	1475	71	1.6	27.6	37
LY150-200	320	44	2950	83.5	7.2	45.9	55
	160	11	1475	82	2	5.8	7.5
LY150-250	380	75	2950	82.5	7.6	94.1	110
	190	18.8	1475	80.5	2.2	12.1	18.5
LY150-315	424	130	2950	81	8	185.4	220
	212	32.5	1475	79	2	23.8	30
LY150-400	260	51.3	1475	77.5	2.4	46.9	55
LY200-250	600	72.5	2950	84.5	9.8	140.3	160
	300	18	1475	83.5	2.5	17.6	22
LY200-315	710	122	2950	85	9.7	277.7	315
	355	30	1475	84	2.5	34.5	45
LY200-400	425	50.8	1475	81	3.4	72.6	90

XI. LY Series Performance Curves

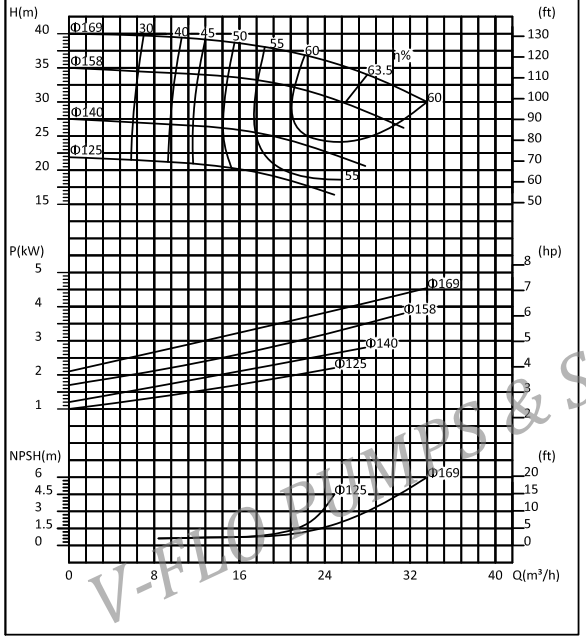
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY25-200	2950	40	25



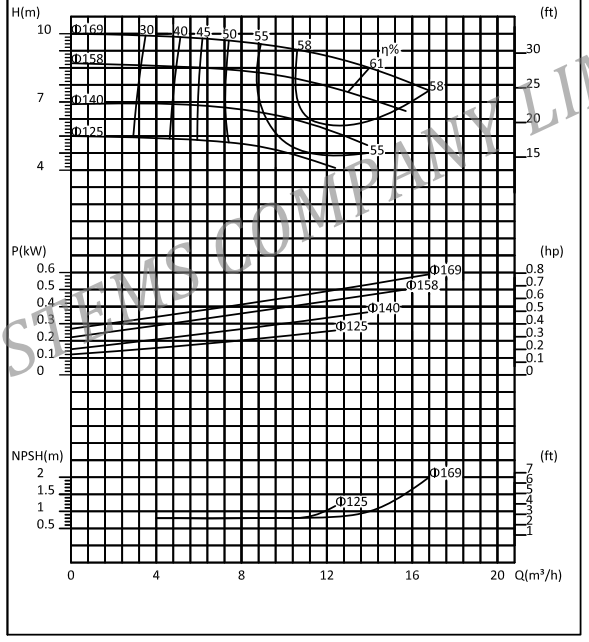
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY25-200	1475	40	25



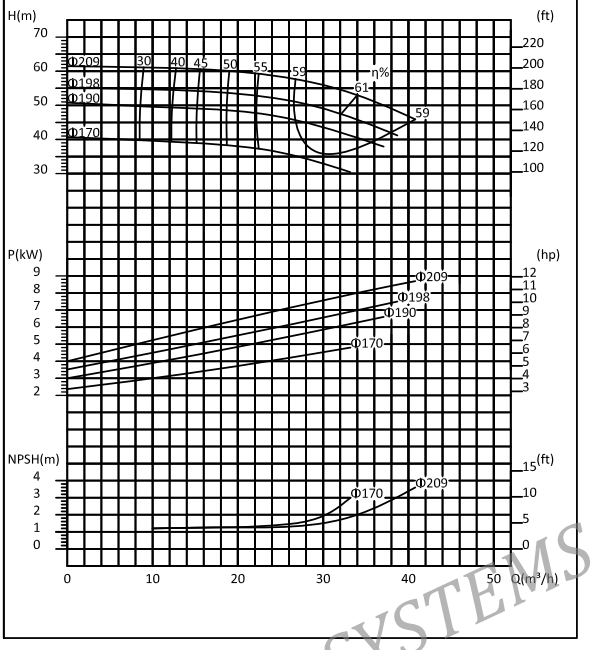
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY40-160	2950	80	40



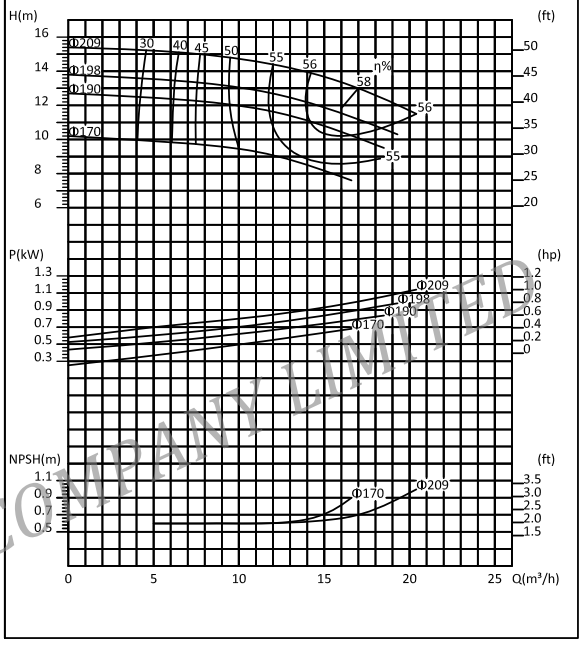
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY40-160	1475	80	40



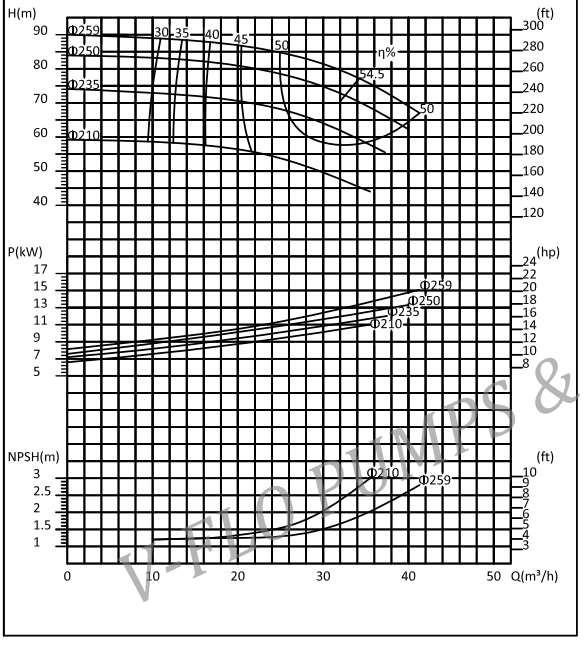
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY40-200	2950	80	40



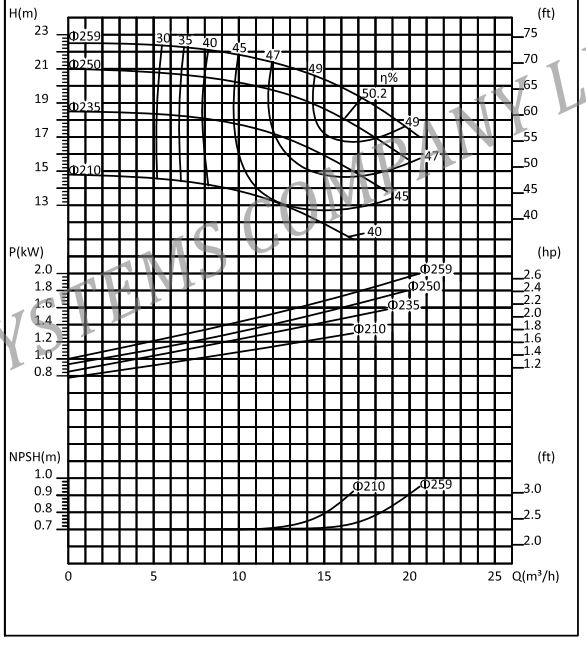
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY40-200	1475	80	40



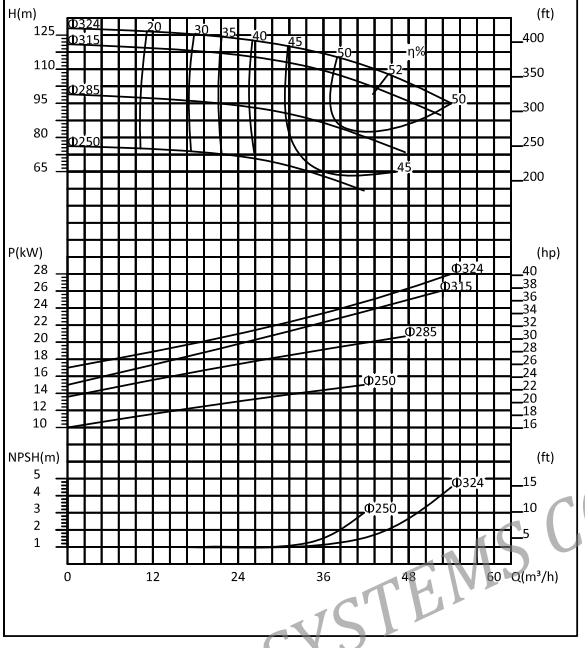
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY40-250	2950	80	40



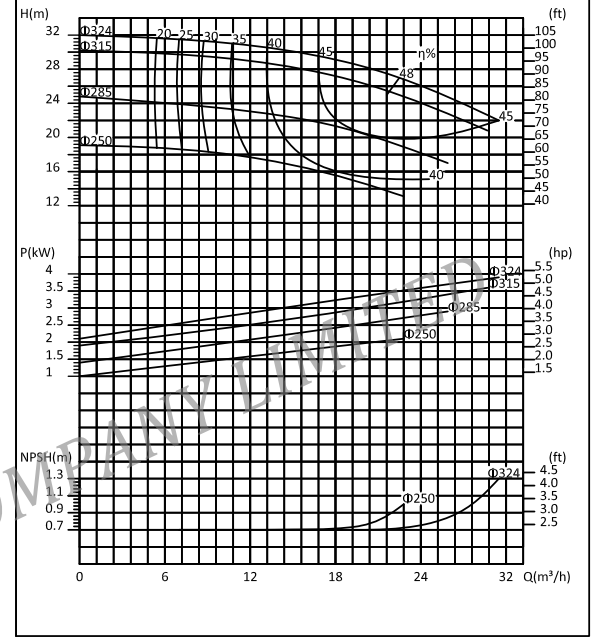
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY40-250	1475	80	40



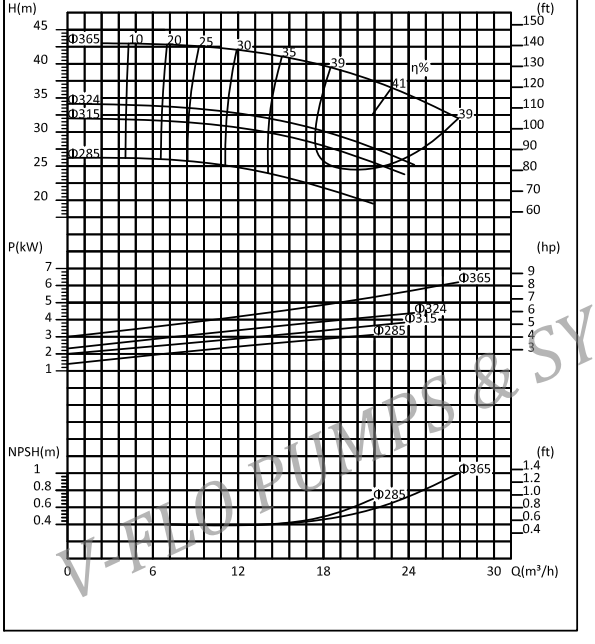
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY40-315	2950	80	40



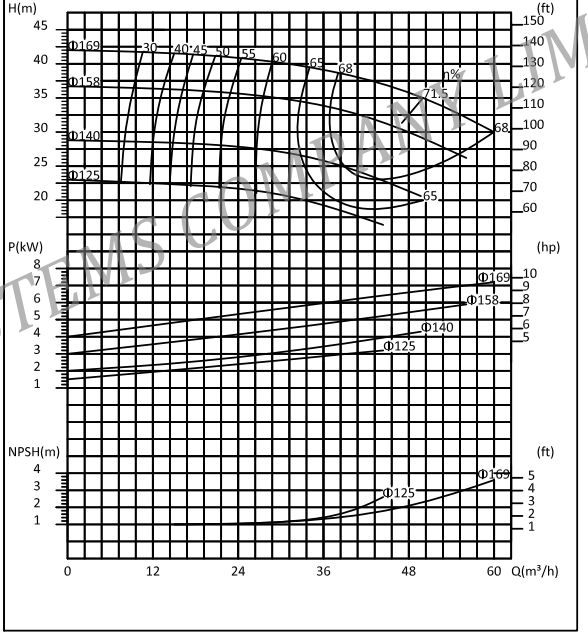
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY40-315	1475	80	40



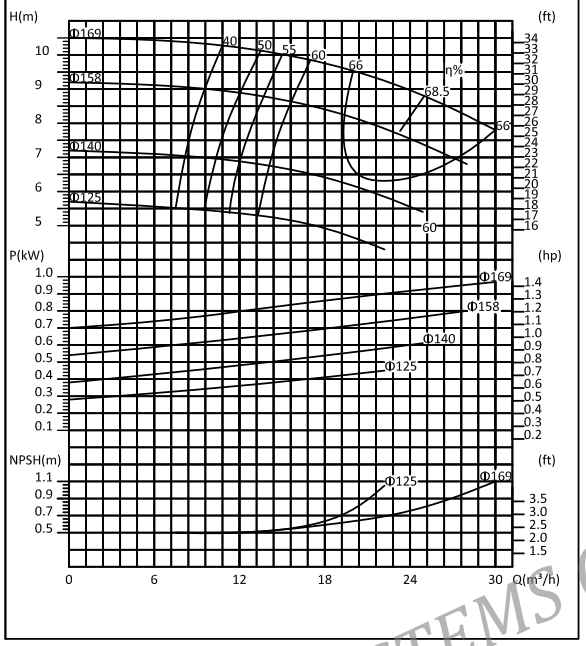
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY40-400	1475	80	40



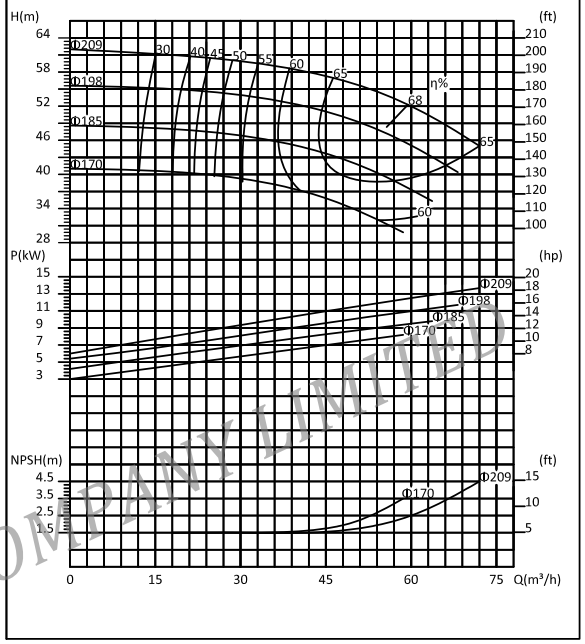
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY50-160	2950	80	50



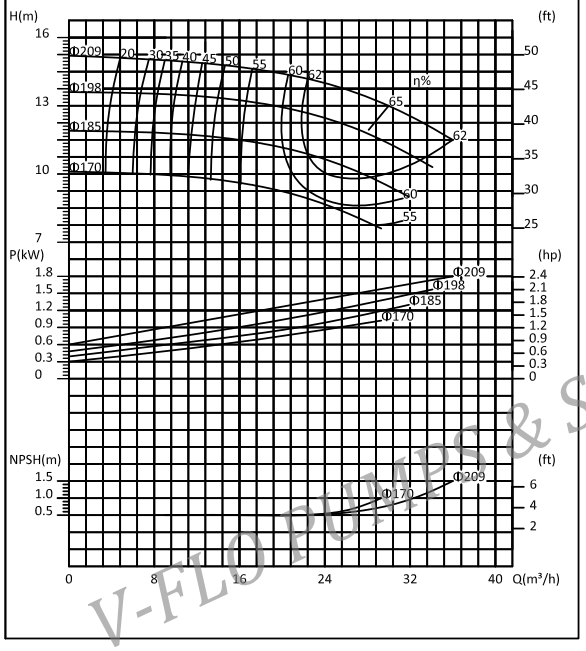
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY50-160	1475	80	50



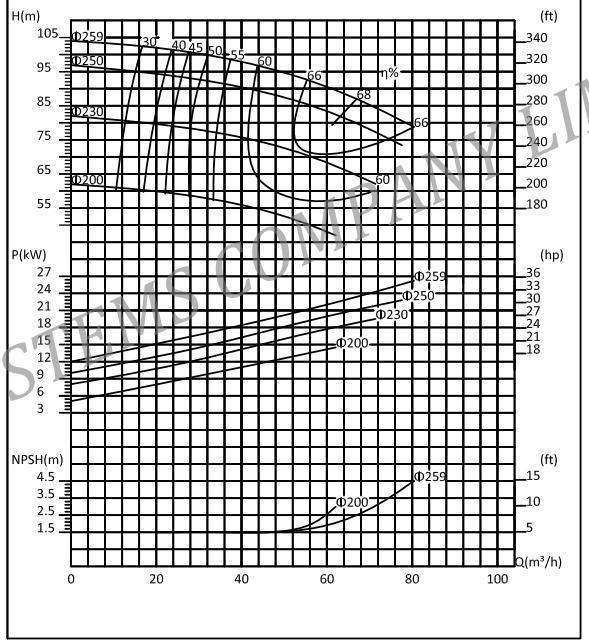
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY50-200	2950	80	50



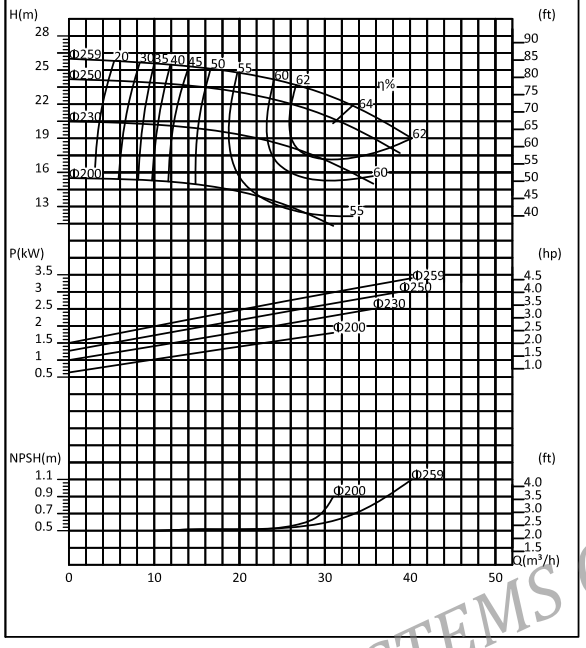
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY50-200	1475	80	50



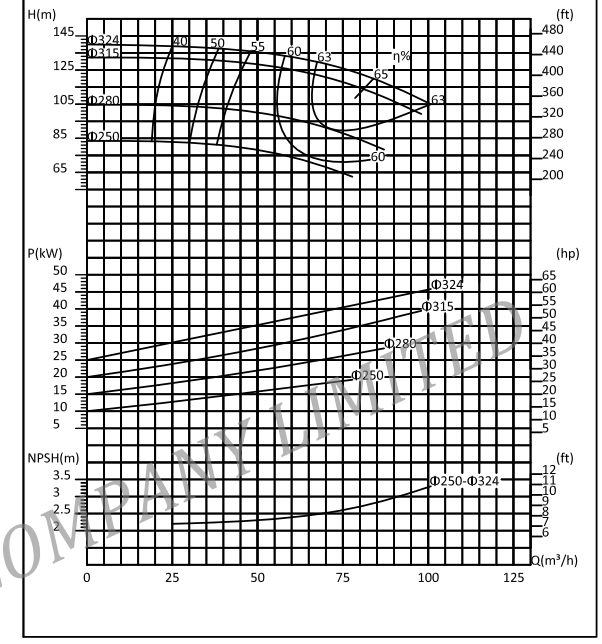
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY50-250	2950	80	50



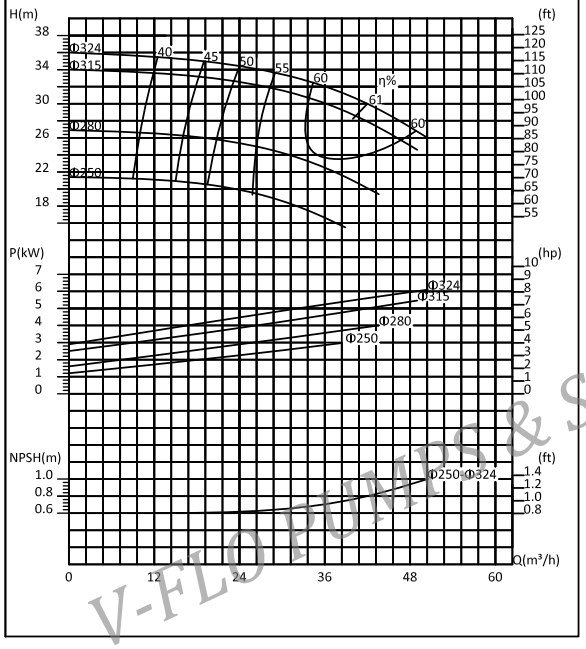
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY50-250	1475	80	50



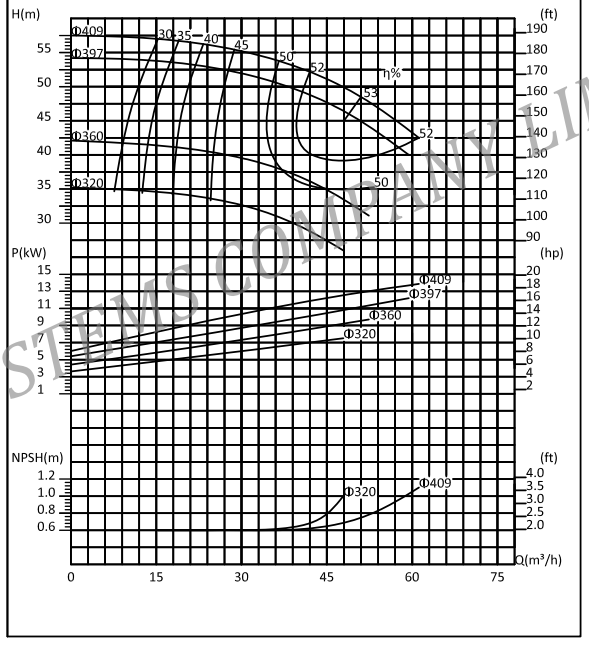
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY50-315	2950	100	50



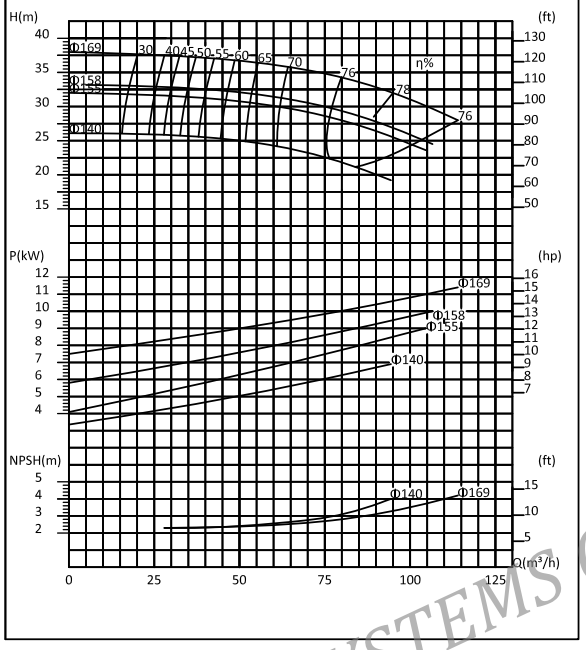
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY50-315	1475	100	50



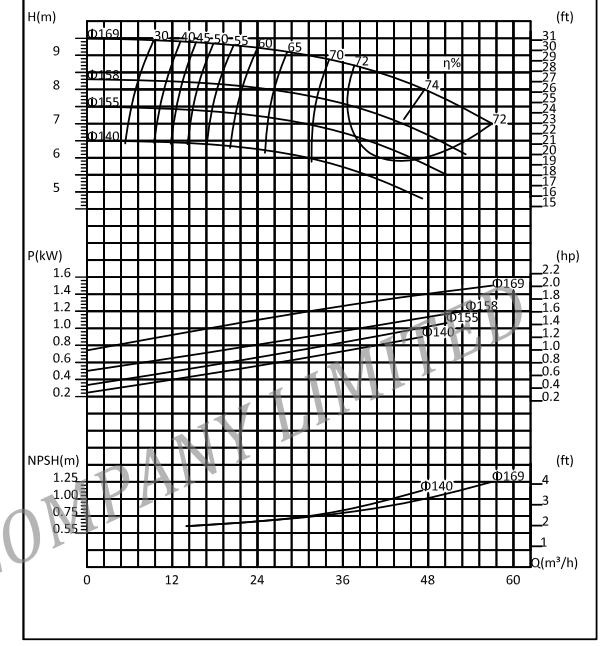
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY50-400	1475	100	50



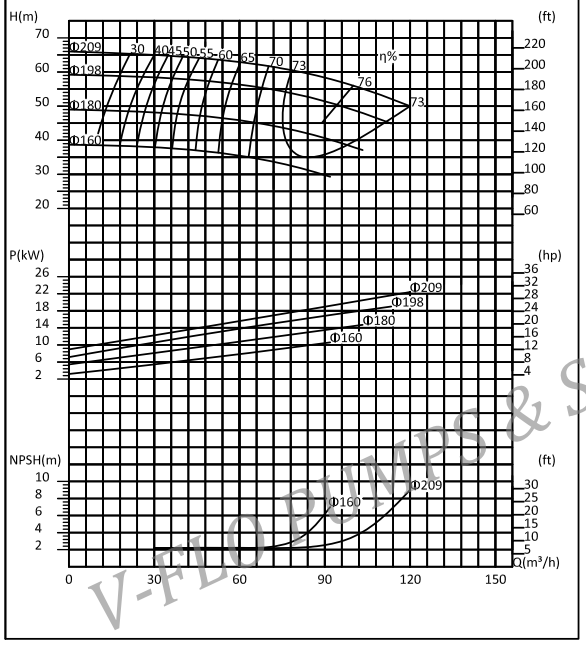
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY80-160	2950	100	80



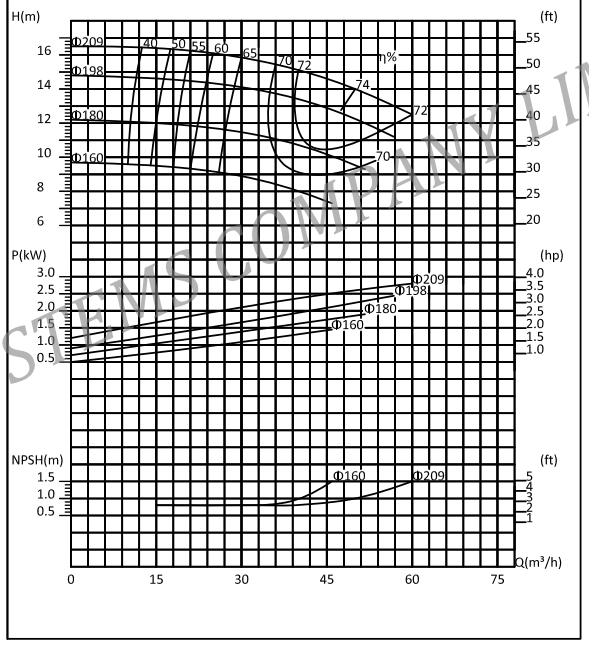
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY80-160	1475	100	80



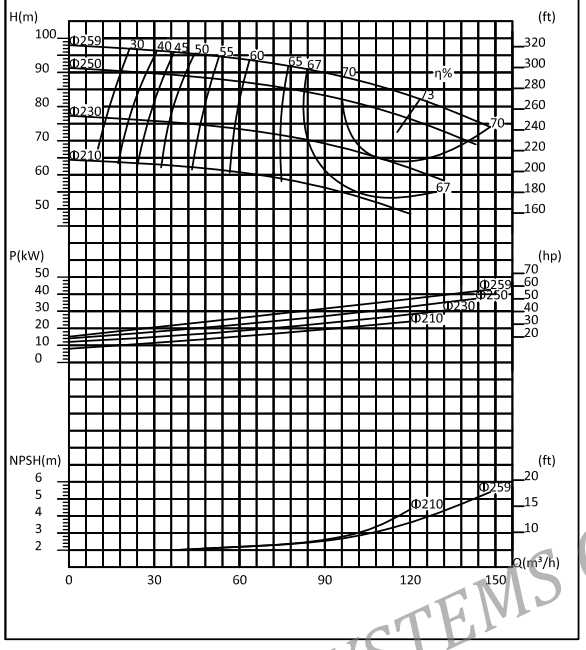
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY80-200	2950	100	80



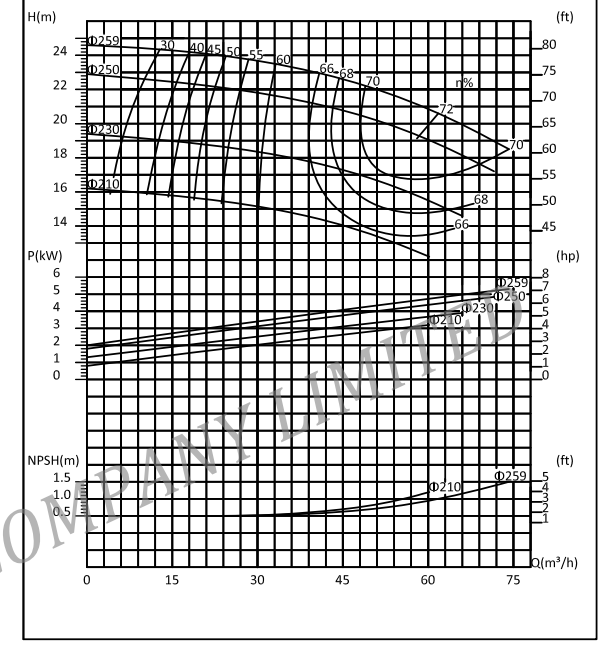
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY80-200	1475	100	80



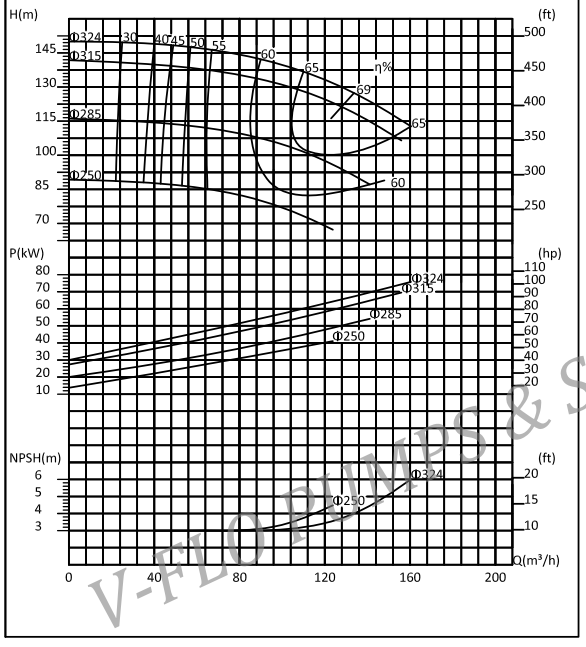
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY80-250	2950	100	80



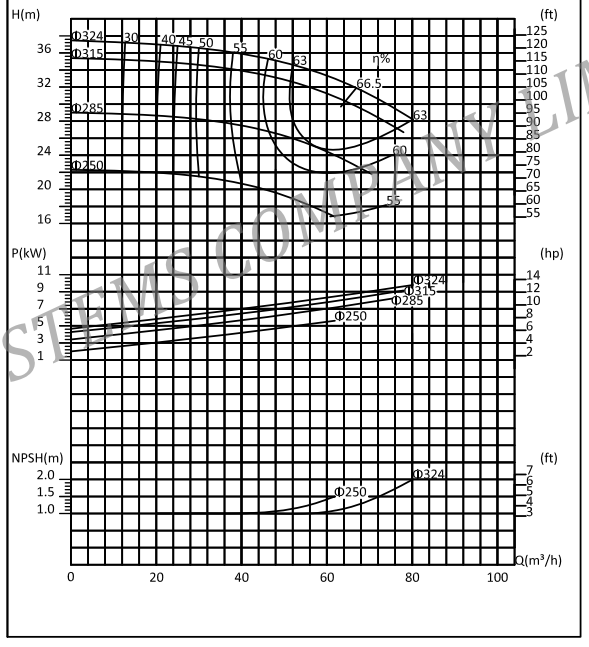
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY80-250	1475	100	80



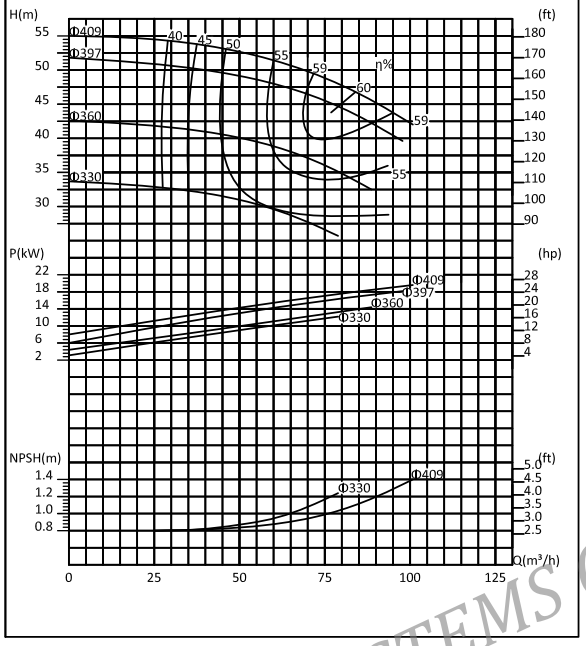
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY80-315	2950	100	80



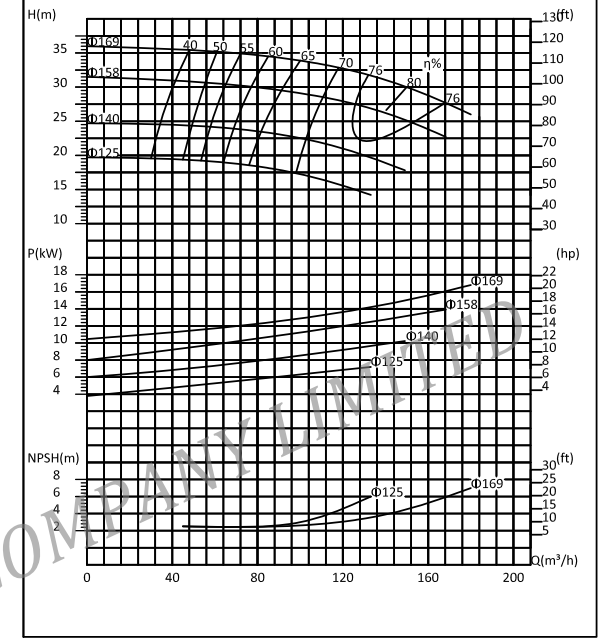
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY80-315	1475	100	80



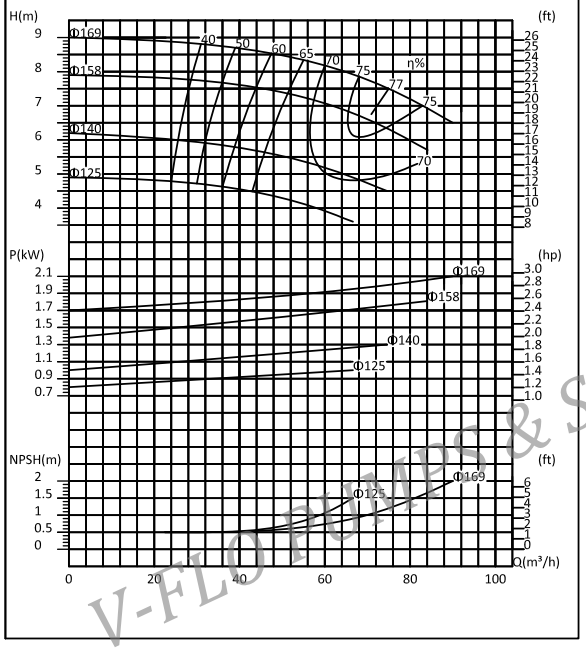
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY80-400	1475	100	80



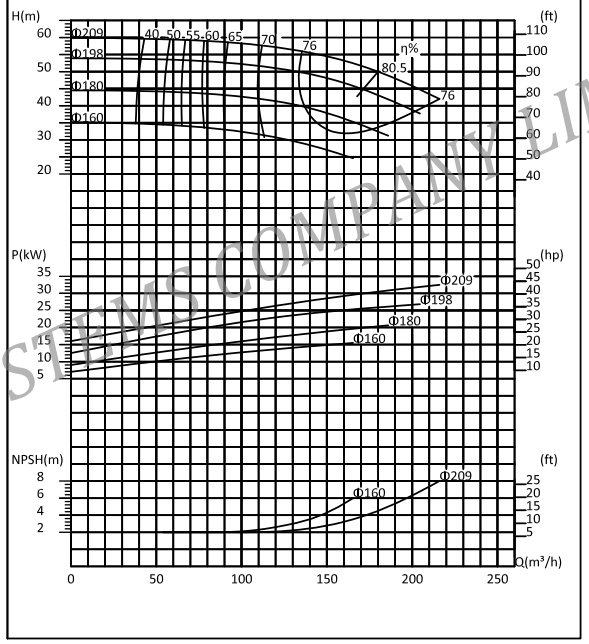
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY100-160	2950	100	100



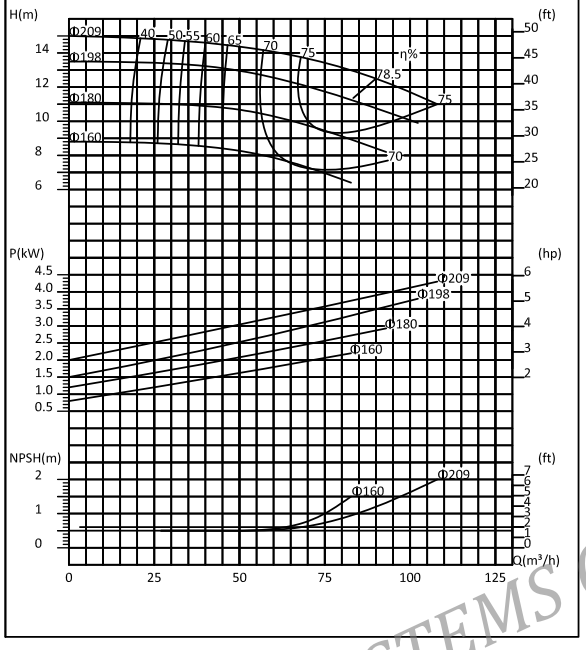
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY100-160	1475	100	100



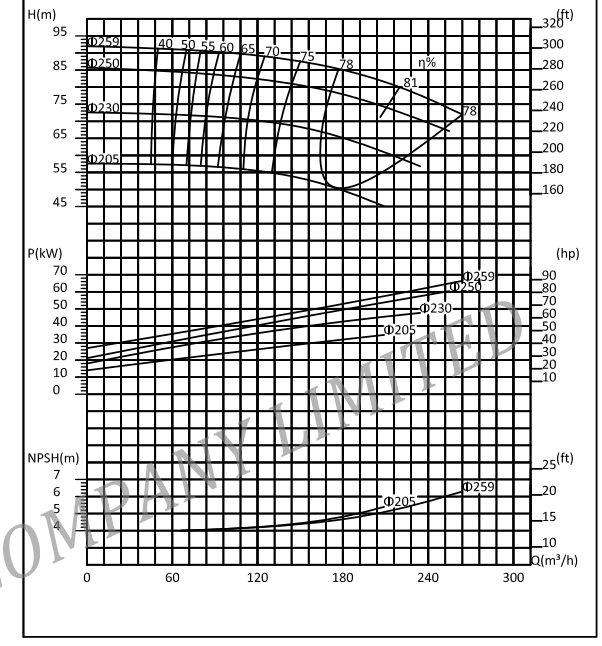
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY100-200	2950	100	100



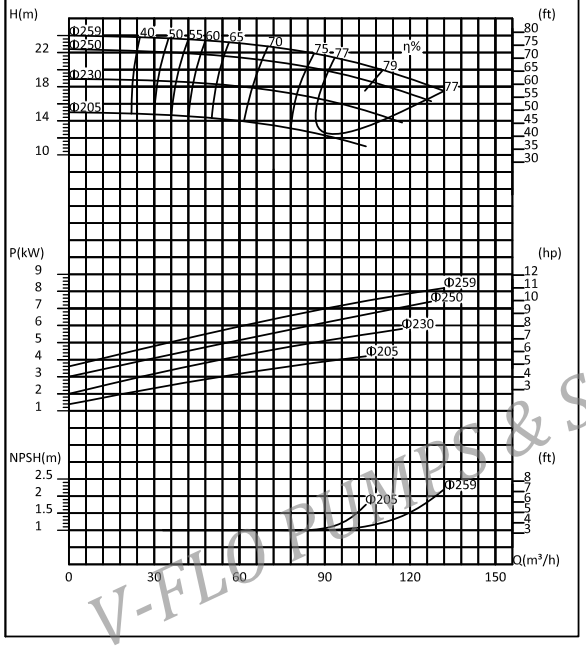
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY100-200	1475	100	100



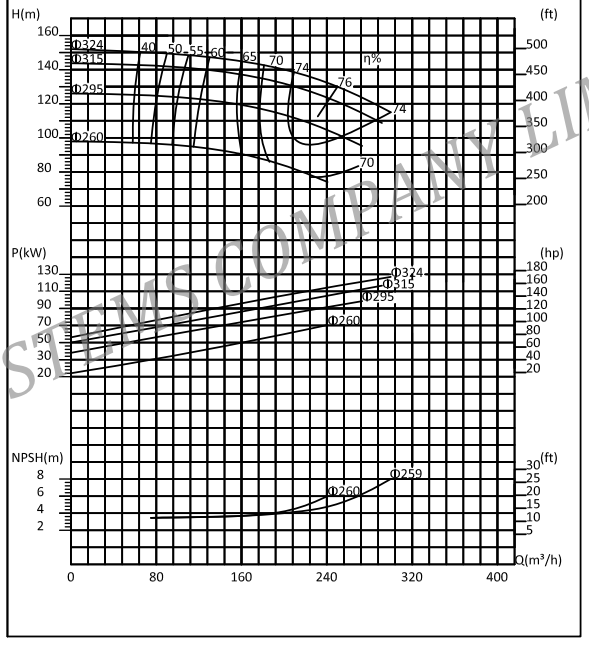
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY100-250	2950	150	100



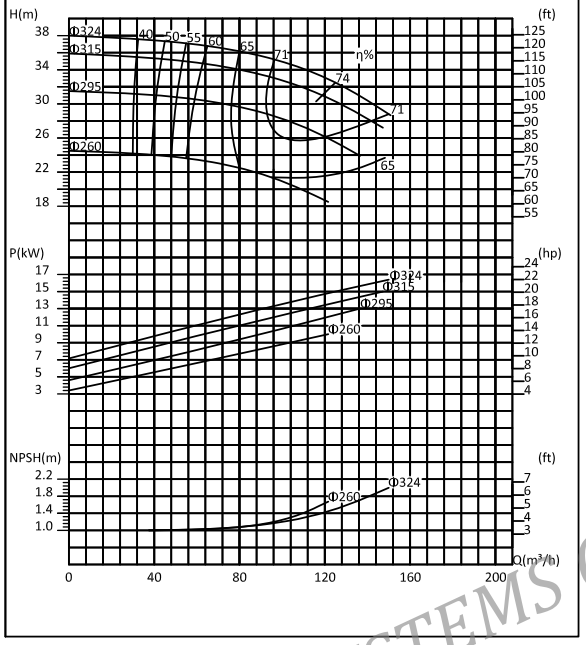
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY100-250	1475	150	100



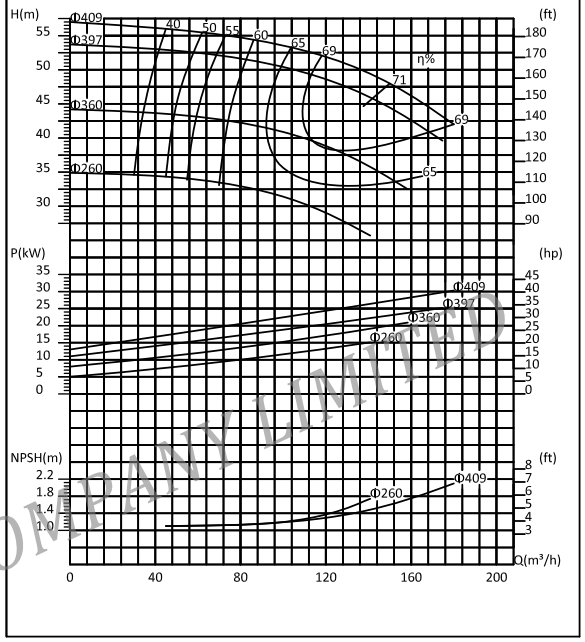
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY100-315	2950	150	100



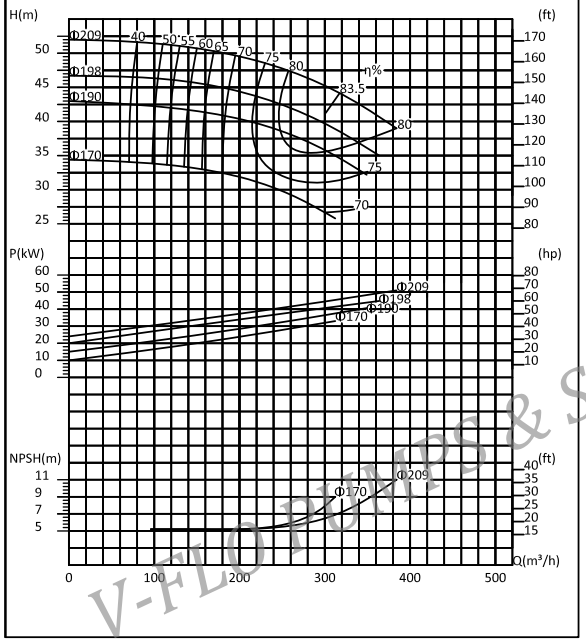
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY100-315	1475	150	100



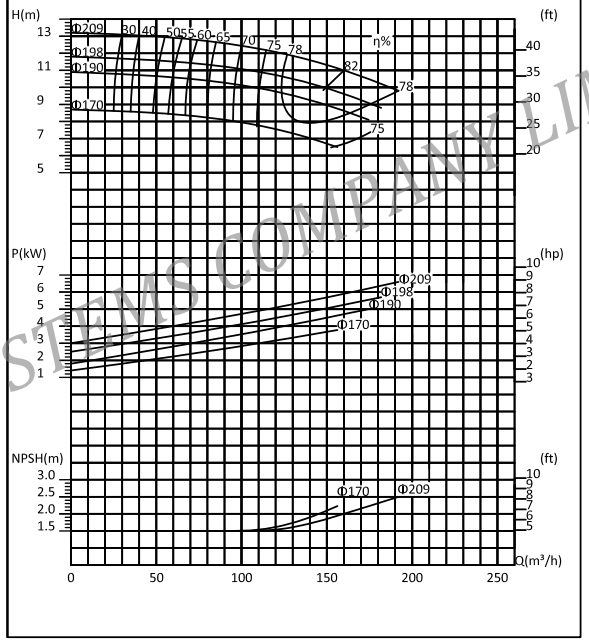
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY100-400	1475	150	100



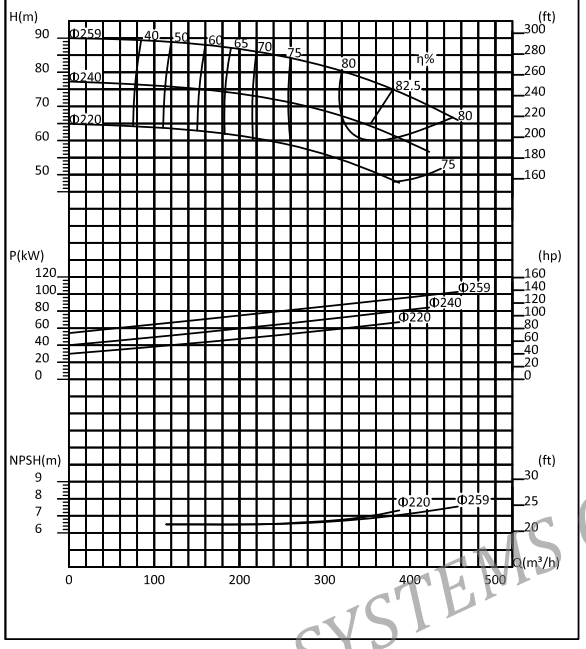
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY150-200	2950	150	150



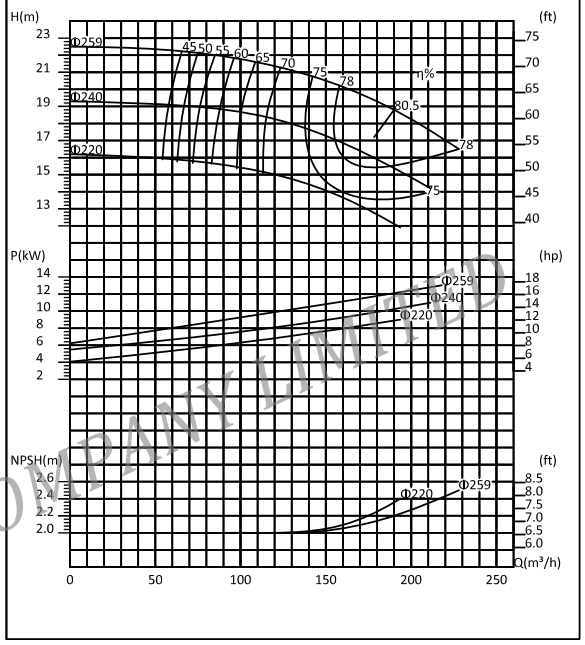
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY150-200	1475	150	150



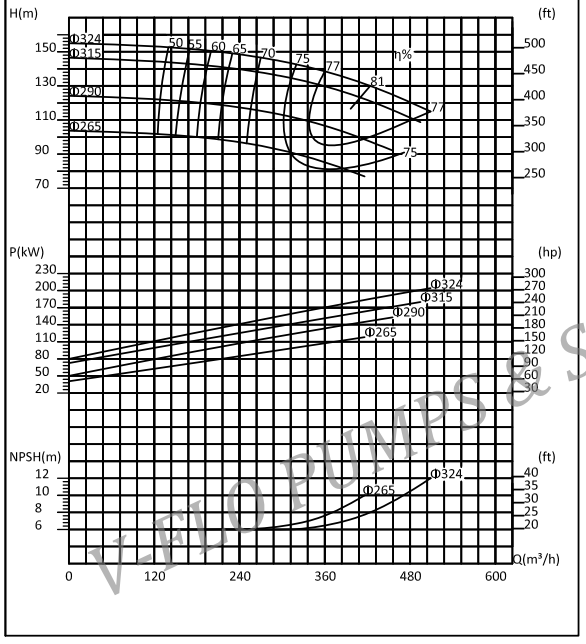
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY150-250	2950	150	150



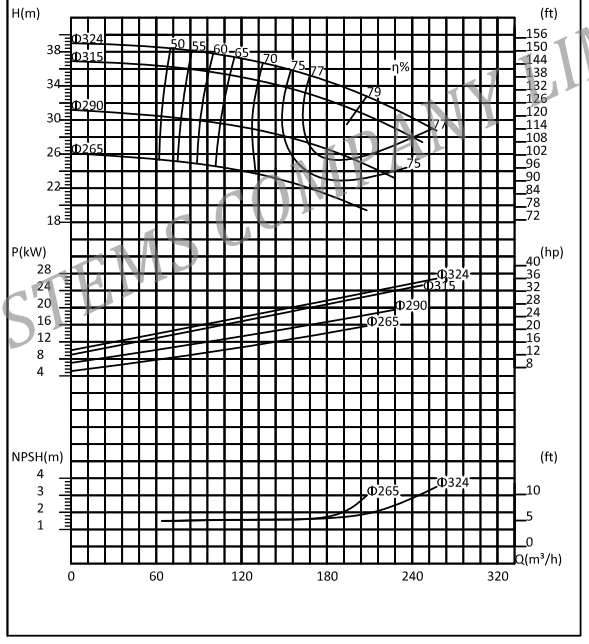
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY150-250	1475	150	150



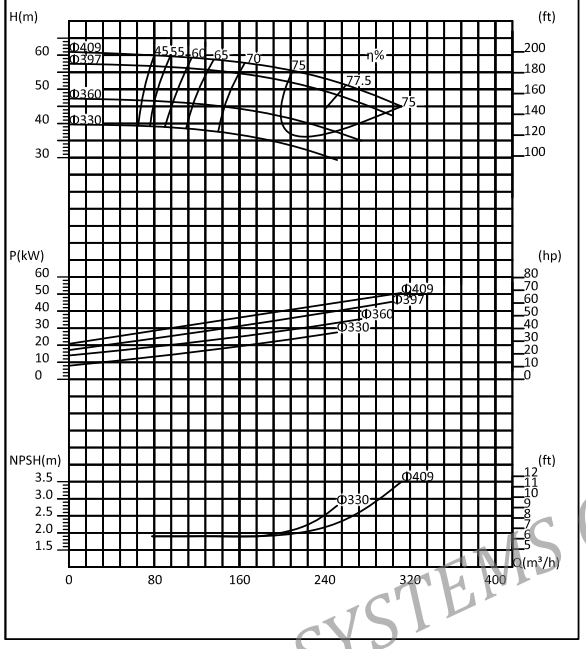
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY150-315	2950	150	150



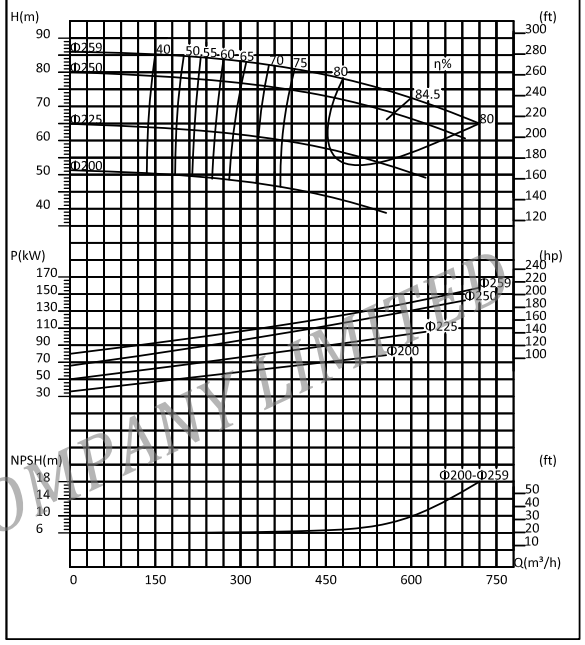
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY150-315	1475	150	150



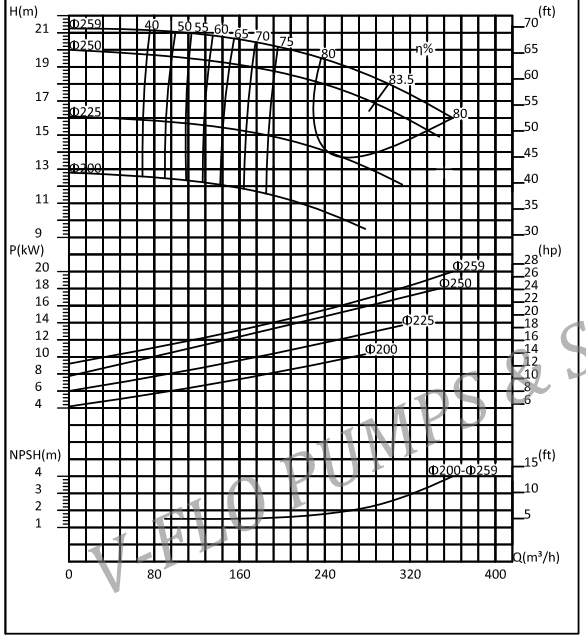
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY150-400	1475	150	150



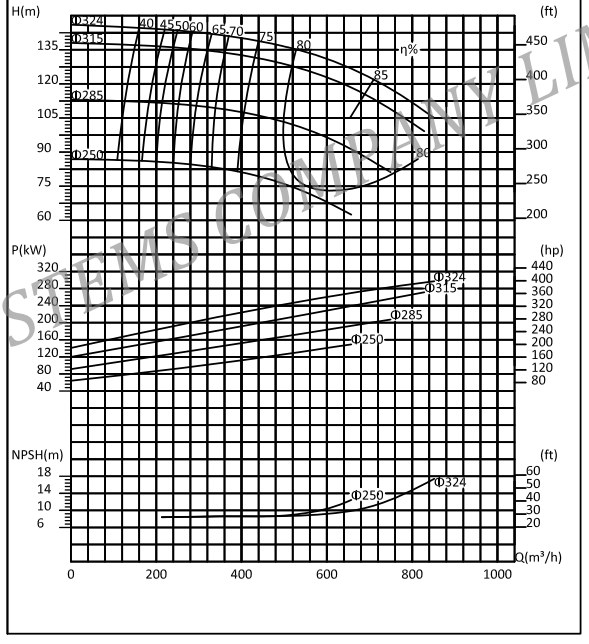
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY200-250	2950	200	200



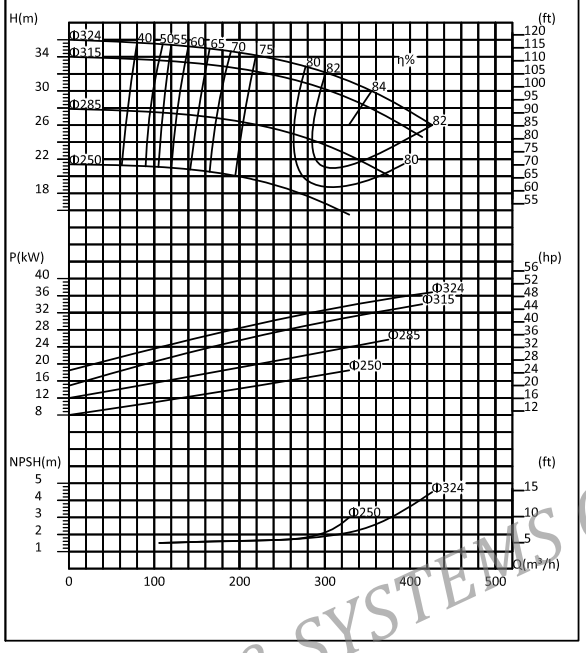
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY200-250	1475	200	200



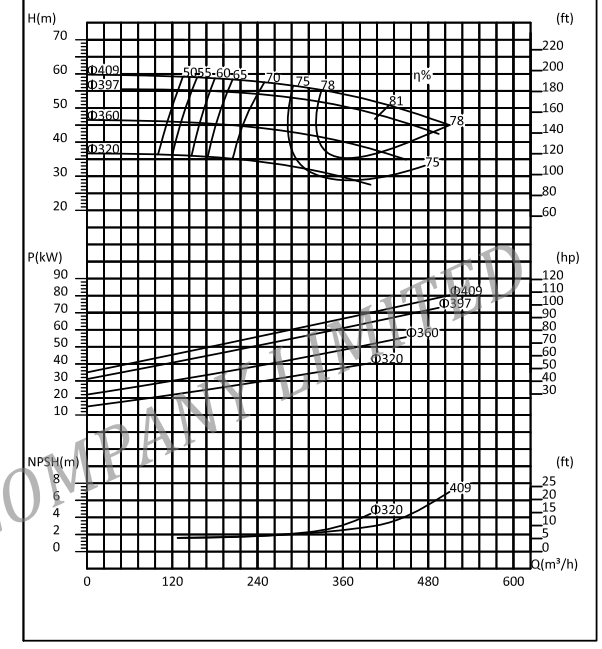
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY200-315	2950	200	200



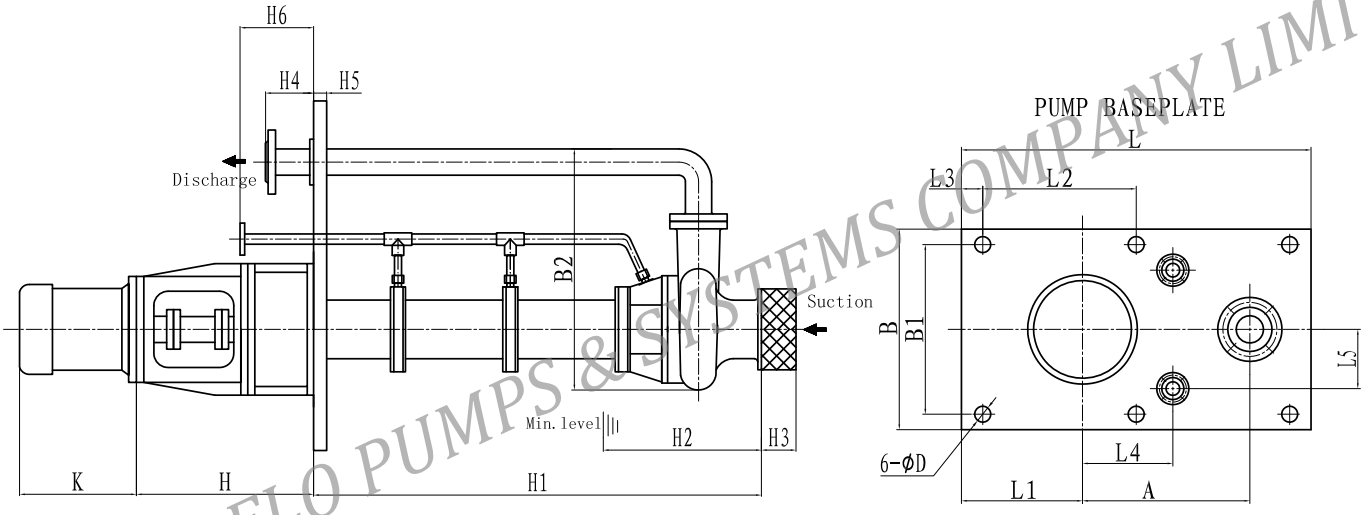
Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY200-315	1475	200	200



Type of Pump	Speed (r/min)	Suction Nozzle (mm)	Discharge Nozzle (mm)
LY200-400	1475	200	200



XII. LY Series Installation Drawings & Dimensions



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Pump type	MOTOR	B	B1	B2	L	L1	L2	L3	L4	L5	ΦD	A	H	H1	H2	H3	H4	H5	H6	K
LY25-200	YB3-132S	500	450	467	730	290	340	25	220	125	18	290	645	5315	255	40	100	25	150	507
	YB3-112M												625	4915						452
	YB3-100L													4315						440
	YB3-90L												615	3865						377
	YB3-90S													3265						352
	YB3-80M												605	2655						322
LY40-160	YB3-132S	500	450	518	730	270	340	25	220	125	18	335	645	5360	285	40	120	25	150	507
	YB3-112M												625	4960						452
	YB3-100L													4360						440
	YB3-90L												615	3910						377
	YB3-80M												605	2710						322
	YB3-71M												595	2110						284
LY40-200	YB3-160M	500	450	510	730	270	340	25	220	125	18	330	675	5370	295	40	120	25	150	642
	YB3-132S												645	4970						507
	YB3-112M												625	4370						452
	YB3-100L													3920						440
	YB3-90L												615	2720						377
	YB3-90S													2120						352
LY40-250	YB3-160L	580	530	532	860	335	405	25	280	140	18	335	725	5390	300	40	100	25	150	672
	YB3-160M													4990						642
	YB3-132S												695	4390						507
	YB3-112M												675	3940						452
	YB3-100L													3340						440
	YB3-90L												665	2740						377
LY40-315	YB3-132S	630	580	644	900	350	425	25	280	140	18	400	695	5410	320	40	100	25	150	507
	YB3-112M												675	5010						452
	YB3-100L													4410						440
	YB3-90L												665	3960						377
LY40-400	YB3-160M	700	650	720	980	370	465	25	300	150	18	440	705	5430	340	40	120	25	150	642
														5030						
	YB3-132M												685	4430						542
														4030						

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Pump type	MOTOR	B	B1	B2	L	L1	L2	L3	L4	L5	ΦD	A	H	H1	H2	H3	H4	H5	H6	K
LY50-160	YB3-160M	500	450	538	730	270	340	25	220	125	18	350	675	5370	295	40	120	25	150	642
	YB3-132S												645	4970						507
	YB3-112M												625	4370						452
	YB3-100L													3920						440
	YB3-90S												615	2720						352
	YB3-80M												605	2120						322
LY50-200	YB3-160L	500	450	540	730	270	340	25	220	125	18	350	675	5380	305	40	120	25	150	672
	YB3-160M													4980						642
	YB3-132S												645	4380						507
	YB3-112M												625	3930						452
	YB3-100L													3330						440
	YB3-90L												615	2730						377
LY50-250	YB3-200L	580	530	550	860	325	405	25	280	140	18	310	725	5405	320	40	100	25	150	796
	YB3-180M													5005						687
	YB3-160L													4405						672
	YB3-160M												675	3955						642
	YB3-112M													2755						452
	YB3-100L													2155						440
LY50-315	YB3-132M	630	580	675	900	350	425	25	280	140	18	430	695	5425	355	40	100	25	150	542
	YB3-132S													5025						507
	YB3-112M												675	4425						452
	YB3-100L													3975						440
LY50-400	YB3-180L	700	650	753	1000	380	475	25	320	160	18	500	735	5430	370	40	100	25	150	707
	YB3-180M													5030						
													705	4430						687
														4030						
LY80-160	YB3-160L	580	530	580	860	310	405	25	280	140	18	380	725	5405	320	40	135	25	150	672
	YB3-160M													5005						642
	YB3-132S												695	4405						507
	YB3-112M												675	3955						452
	YB3-100L													2755						440
	YB3-90L												665	2155						377

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Pump type	MOTOR	B	B1	B2	L	L1	L2	L3	L4	L5	ΦD	A	H	H1	H2	H3	H4	H5	H6	K
LY80-200	YB3-200L	580	530	605	860	310	405	25	280	140	18	400	725	5410	320	40	135	25	150	796
	YB3-180M													5010						687
	YB3-160L													4410						672
	YB3-160M													3960						642
	YB3-112M												675	2760						452
	YB3-100L													2160						440
LY80-250	YB3-250M	630	580	655	900	325	425	25	280	140	18	430	755	5415	320	40	135	25	150	915
	YB3-225M												725	5015						837
	YB3-200L													4415						796
	YB3-180M												695	3965						687
	YB3-132M													2765						542
LY80-315	YB3-132S	630	580	738	970	360	460	25	320	140	18	480	845	2165	380	40	100	30	150	507
	YB3-160M												815	5470						642
	YB3-132M													5070						542
	YB3-132S												795	4470						507
LY80-400	YB3-200L	700	650	760	1000	380	475	25	340	160	18	520	905	5480	400	40	135	30	150	796
	YB3-180L												875	5080						707
														4480						
														4080						
LY100-160	YB3-180M	630	580	662	900	305	425	25	280	140	18	450	725	5433	340	50	127	25	150	687
	YB3-160L													5033						672
	YB3-160M													4433						642
	YB3-132S												695	3983						507
	YB3-100L												675	2783						440
	YB3-90L												665	2183						377
LY100-200	YB3-200L	630	580	637	900	305	425	25	280	140	18	410	765	5415	330	50	135	25	150	796
	YB3-180M													5015						687
	YB3-160L													4415						672
	YB3-160M													3965						642
	YB3-132S												735	3365						507
	YB3-112M												715	2765						452

Pump type	MOTOR	B	B1	B2	L	L1	L2	L3	L4	L5	ΦD	A	H	H1	H2	H3	H4	H5	H6	K
LY100-250	YB3-280S	630	580	738	970	340	460	25	280	140	18	485	795	5451	365	50	134	25	150	970
	YB3-250M													5051						915
	YB3-225M												765	4451						837
	YB3-200L													4001						796
	YB3-160M													3401						642
	YB3-132M												735	2801						542
LY100-315	YB3-180L	660	610	835	1050	375	550	25	320	140	18	545	845	4030	390	50	100	30	150	707
	YB3-180M													3430						687
	YB3-160L													2830						672
	YB3-160M													2230						642
LY100-400	YB3-225M	720	670	887	1130	400	540	25	340	160	18	590	875	5530	400	50	135	30	150	837
														5130						
	YB3-225S												845	4530						807
														4130						
LY150-200	YB3-250M	630	580	844	1050	325	500	25	280	140	18	560	795	5457	365	75	128	25	150	915
	YB3-225M												765	5057						837
	YB3-200L													4457						796
	YB3-180M													4007						687
	YB3-132M												735	3407						542
	YB3-132S													2807						507
LY150-250	YB3-315S	660	610	845	1100	360	525	25	320	140	18	545	875	5485	400	75	100	30	150	1190
	YB3-280M													5085						1025
	YB3-280S													4485						970
	YB3-250M													4035						915
	YB3-180M												845	3435						687
	YB3-160L													2835						672

Pump type	MOTOR	B	B1	B2	L	L1	L2	L3	L4	L5	ΦD	A	H	H1	H2	H3	H4	H5	H6	K
LY150-315	YB3-200L	720	670	912	1200	385	575	25	320	140	18	580	845	4040	400	75	100	30	150	796
	YB3-180L													3440						707
	YB3-180M													2840						687
	YB3-160L													2240						672
LY150-400	YB3-280S	770	720	998	1250	415	600	25	350	160	18	600	905	5515 4915	400	75	128	30	150	970
	YB3-250M												875	4515 3915						915
LY200-250	YB3-315L	720	670	1056	1200	340	575	25	320	140	18	705	945	5525	430	95	100	30	150	1290
	YB3-315M													5125						1190
	YB3-315S													4525						
	YB3-280M													4075						1025
	YB3-180L												915	3475						707
	YB3-180M													2875						687
LY200-315	YB3-225M	760	710	1107	1300	385	625	25	320	140	18	735	945	5530	440	95	105	30	150	837
	YB3-225S													5130						807
	YB3-200L												915	4530						796
	YB3-180L													4080						707
LY200-400	YB3-315S	800	750	1190	1380	420	665	25	350	160	18	750	955	5545 5145	450	100	128	30	150	1240
	YB3-280M												925	4545 4095						1025

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