

Vertical Turbine Pumps

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CNP Vertical Turbine Pumps

The 4 different model vertical turbine pumps have one thing in common the hydraulic design of the pump bowl assembly. Using a new techniques in turbine pump design. It covers a wide range of hydraulic conditions to meet virtually every pumping service with optimum efficiency.

CNP flexibility of design allows the use of a wide range of material and design features to meet the custom requirements of user. No matter what the requirements, whether low first cost, ease of maintenance, optimum efficiency. Tough service conditions, CNP can make the pump to best satisfy the requirements.

- VTC Centrifugal or mixed-flow pump for high pressure
- VTM Mixed-flow pump for high flow and middle pressure
- VTA Axial-flow pump for high flow low pressure
- VTG Pump for fire and marine gear box engine driven

Model VTC

Vertical Industrial Turbine Pumps

VTC series is a single or multistage pump with centrifugal or mixed-flow enclosed type impeller, designed for high pressure services.



Model VTM

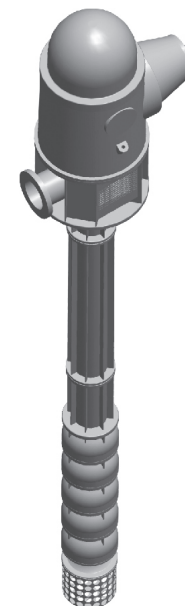
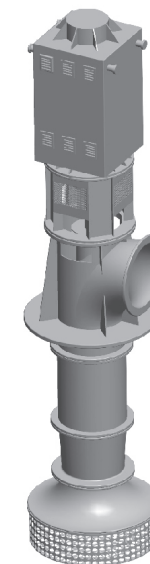
High Capacity Vertical Turbine Pumps

VTM series is a single stage pump with mixed-flow semi-open or enclosed type impeller, designed for high capacity, medium to high head services.

Model VTA

Low Head Vertical Turbine Pumps

VTA series is a single stage pump with axial-flow impeller, designed for high capacity, low head services.



Model VTG

Right Angle Gear Box Driven Vertical Turbine Pumps

VTG series is vertical turbine pump designed for engine driven through a right angle gear box, for the place where electric power is not available services.

Standard Design Features Of VTP

The bowl assembly is the heart of the VTP . The impeller and diffuser type casing are designed to deliver the head and capacity that your system requires in the most efficient way possible. The fact that the VTP can be multi-staged allows maximum flexibility both in the initial pump selection and in the event that future system modifications require a change in the pump rating. Submerged impellers allow pump to be started without priming.

A variety material options allows the selection of a pump best suited for even the most severe services. The many bowl assembly options available assure that the VTP satisfies the user's need for safe, efficient, reliable and maintenance-free operation.

1. Strainers

316SS Basket strainers to provide protection from large solids.

2. Suction bell

Allows smooth entry of liquid into impeller eye, minimizes vortex formation.
Scotchkote custom fusion bonded epoxy coating inside.

3. Suction bell bearing

Provided for shaft stability.

4. Sand collar

Prevents solids from entering suction bearing.

5. Impeller

Hydraulic balancing to reduce axial down thrust and achieve long thrust bearing life.
Dynamic balancing of impellers are available.

6. Pump shaft

Heavy duty, 416SS standard, other alloys for strength and corrosion resistance.
Hollow pump shaft with flushing hole special for bearing flushing on corrosive/abrasive services.

7. Diffuser bowl

Available in variety of cast material. Scotchkote custom fusion bonded epoxy coating inside to

improved the efficiency and longer life. Registered fits assure positive alignment, ease of maintenance.

8. Sleeve type bearing

Provided at each stage to assure stable operation away from critical speed.

9. Wear rings

Dual wear rings for enclosed impellers and bowls, permits re-establishing initial running clearances and efficiency at lower cost. Hard facing of wear surface available for longer life.
Wear ring can be flushed when solids are present in the pumping liquid.

10. Keyed impeller

Keyed impeller for all the pumps, suitable for pumping liquid in high temperatures. Keyed impellers provide ease if maintenance and positive locking under fluctuating load and temperature conditions.

11. Flanged column

Heavy duty seamless column pipe sections are provided with flanged ends incorporating registered fits for ease of alignment during assembly.

12. Lineshaft and coupling

a. Open lineshaft

Flanges column/product lubricated lineshaft is recommended for ease of maintenance or whenever a special bearing material is required. Precision keyed lineshaft coupling available in all sizes for ease of maintenance. Various bearing material available. Renewable shaft sleeve or hard facing of shaft available for longer life.

b. Enclosed lineshaft

The lineshaft is protected by water flushing tube, flushing water for bearing and wear ring on corrosive/abrasive services.

13. Bearing retainer and lineshaft bearing

Ductile cast iron bearing retainer for size smaller than 24". Various bearing material available.

14. Discharge head and motor riser

Discharge head and motor riser designed for all modes of drivers including hollow shaft or solid shaft motors, right angle gears, vertical steam turbines, etc. Fabricated elbow discharge head engineered to minimize losses. Large access holes provide easy access to coupling and stuffing box. Above ground and below ground discharge head for requirement.

15. Thrust bearing

Oil lubricated thrust bearing assembly set with water cooling system make the pumps running safely in longer life

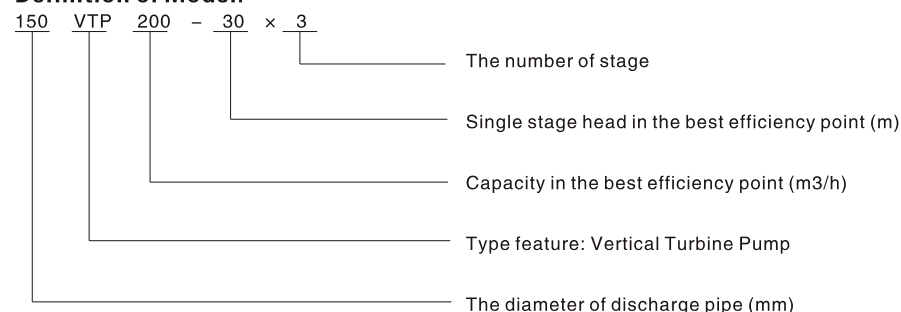
16. Packing box

Whenever packing lubrication leakage can be tolerated and the discharge pressure does not exceed 300psi, a packed box may be used. Optional headshaft sleeve available to protect shaft.

17. Coupling for pump and motor

Flexible coupling for pump and motor when pump with thrust bearing. impeller adjustment by the nut on the top shaft.

Definition of Model:



VTC, VTG Industrial Turbine Pumps

Specification range

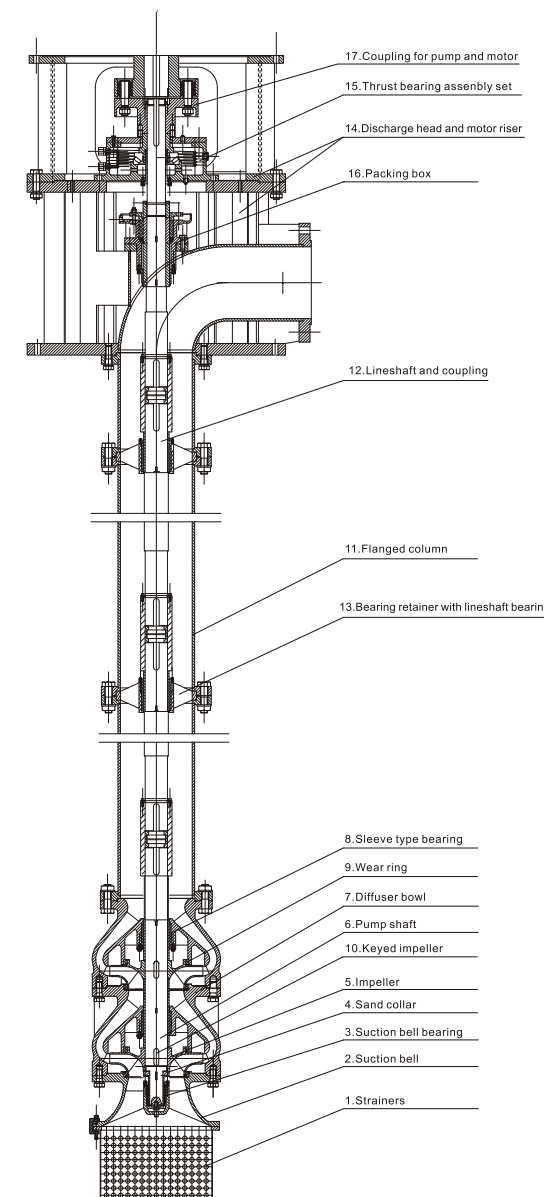
- Capacities to 4000m³/h (18,000GPM)
- Heads to 380m (1250ft)
- Temperatures to 200°C(388°F)

Design Advantages

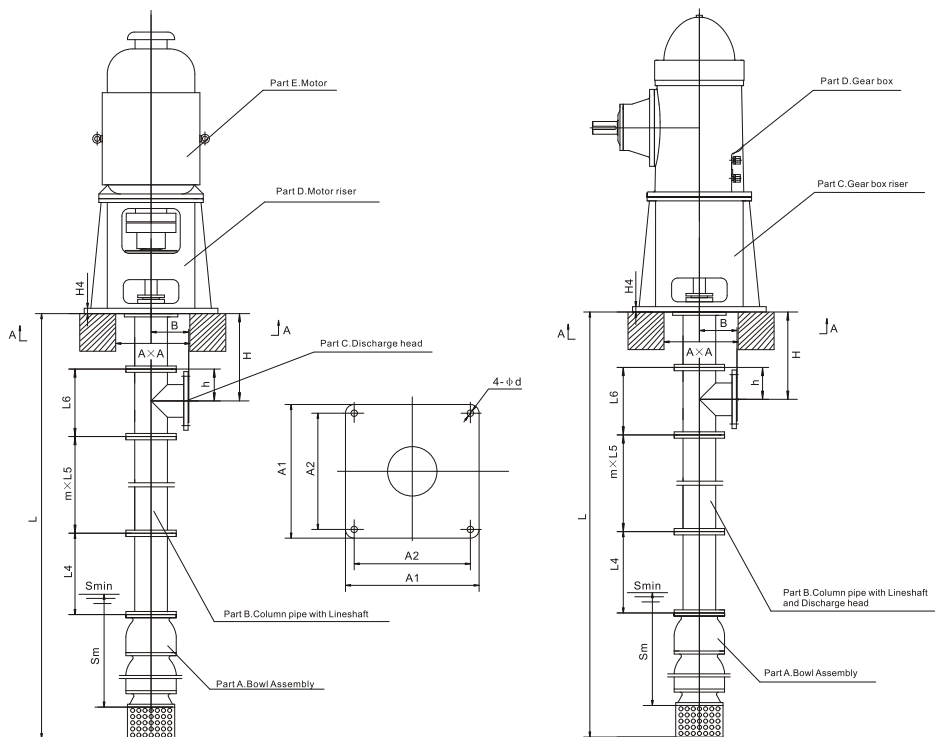
1. Fabricated discharge head for 10" or larger sizes. Suitable for temperaturer liquid pumping.
2. Seamless flanged ends column pipe and flanges bowl construction incorporating registered fits for ease of assembly during assembly.
3. Alloy construction with external tube flush of critical wear areas available for abrasive services.
4. Build-in alignment and simple piping for less costly installation and ease of maintenance reduced downtime.
5. 416SS shafting. Keyed lineshaft coupling available in all size for ease of maintenance. The lineshaft can be protected by water flushing the enclosing tube bearing on corrosive/abrasive services.
6. Various bearing material available.
7. Renewable shaft sleeve or hard facing of shaft available for long life.
8. Dual wear rings for impellers and bowls. Hard facing wear surfaces available for longer life. Wear rings can be flushed when solids are present in pumpage.

Services

Cooling Water
Seawater and Raw Water Intake
Industrial Process Pumps
Utility Circulating Water
Condenser Circulating Water Pumps
Ash Sluice
Fire-fighting



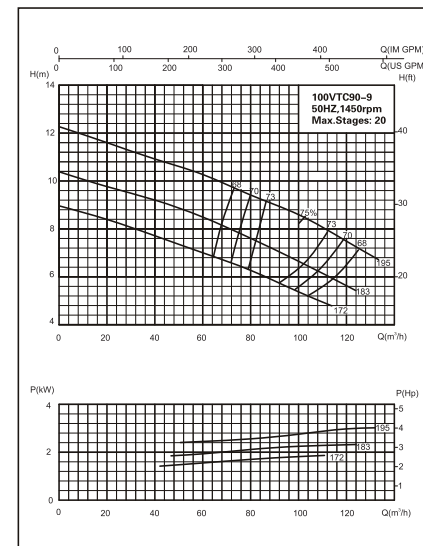
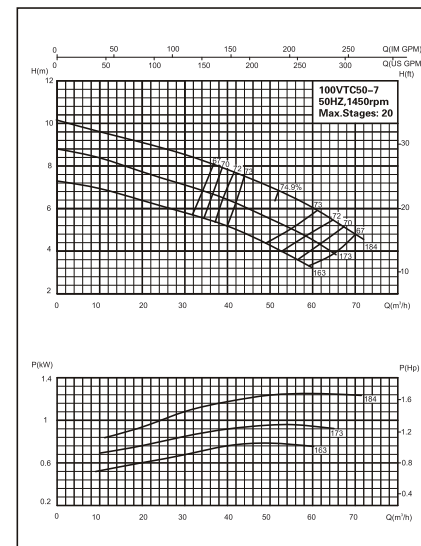
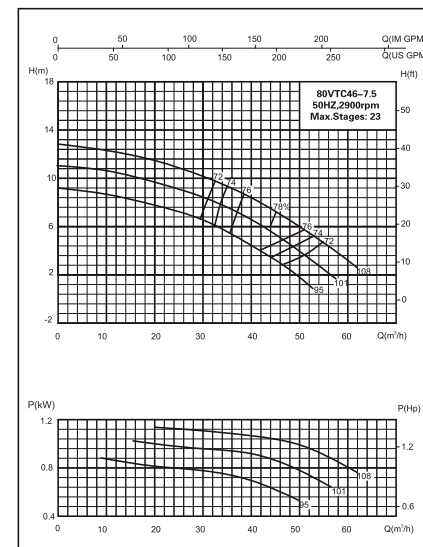
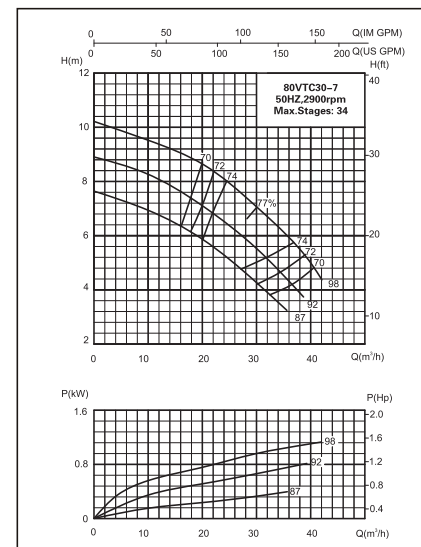
VTC, VTG Pump Dimensions (Below Ground Discharge)



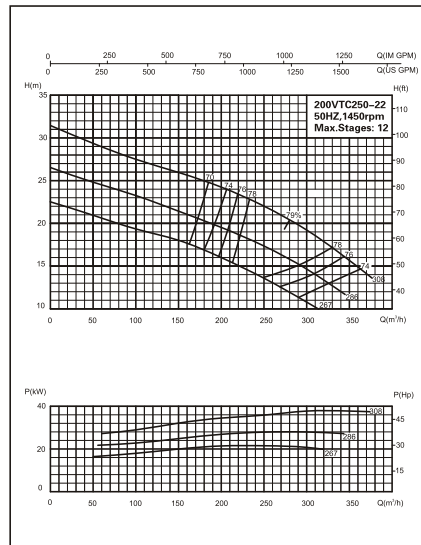
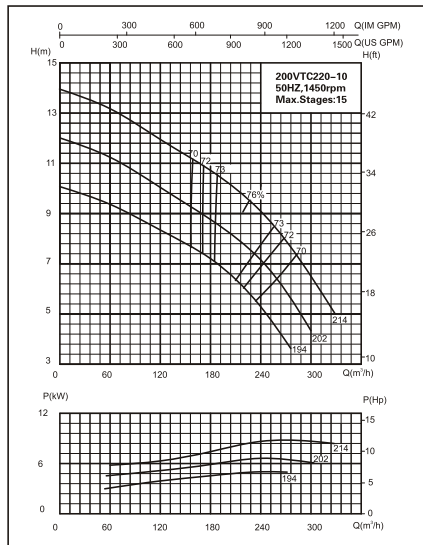
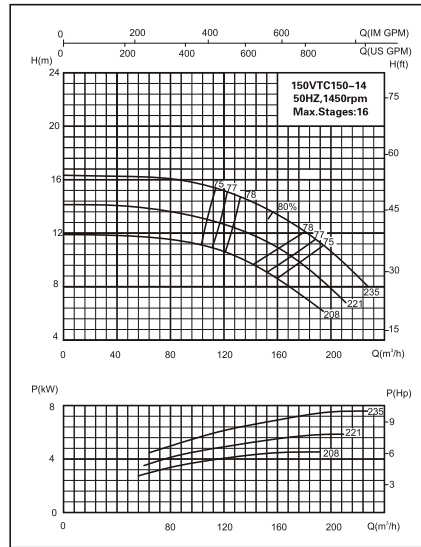
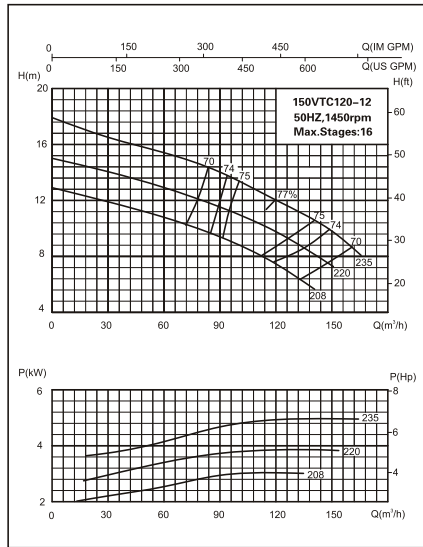
Model	A1	A2	d	L5	L6	h	B	Sm	A×A
80VTC	450	400	25	2000	500	200	120	250	300×300
100VTC	450	400	25	2000	500	200	140	300	300×300
150VTC	520	470	25	2000	500	200	180	350	380×380
200VTC	600	540	30	2000	500	200	220	400	480×480
250VTC	730	670	30	2500	500	200	280	450	550×550
300VTC	830	770	30	2500	550	230	330	500	650×650
350VTC	930	870	30	2500	630	260	380	600	680×680
400VTC	1030	960	33	2500	720	300	430	700	600×600
450VTC	1130	1060	33	2500	800	330	480	800	1000×1000
500VTC	1230	1160	33	2500	880	350	540	900	1000×1000
600VTC	1380	1310	33	2500	1050	420	640	1000	1000×1000

L & H according to the custom requirement
Discharge Flanges drilled to ISO.DIN.BS or ANSI

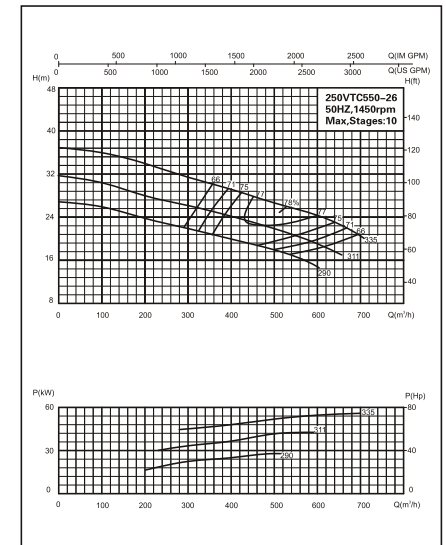
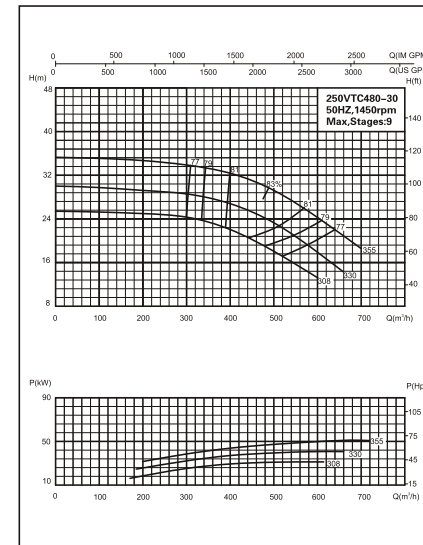
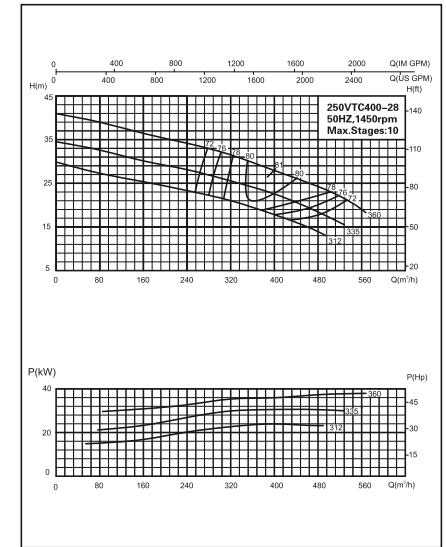
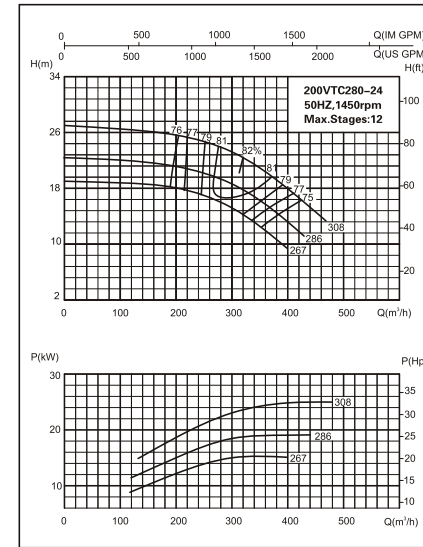
VTC, VTG Pump Curves (Single stage)



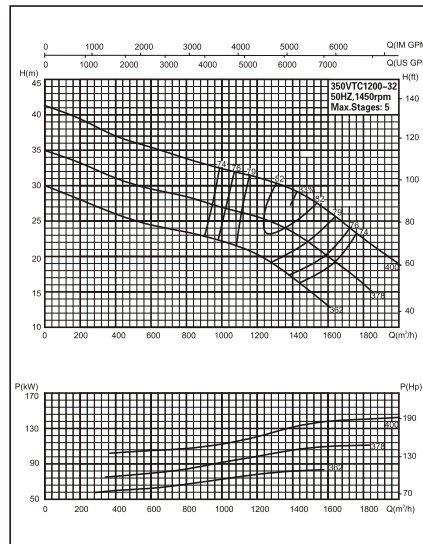
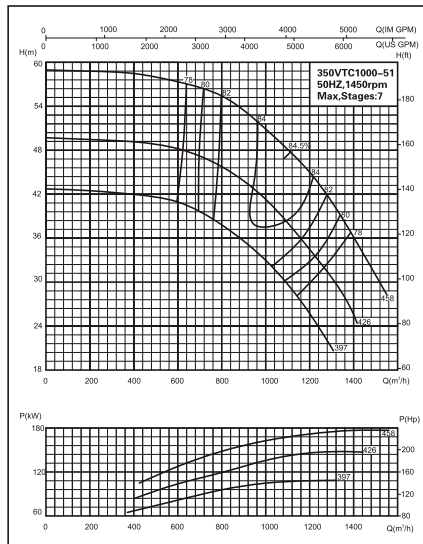
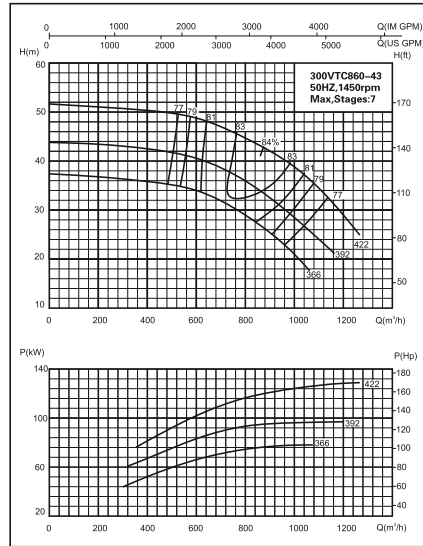
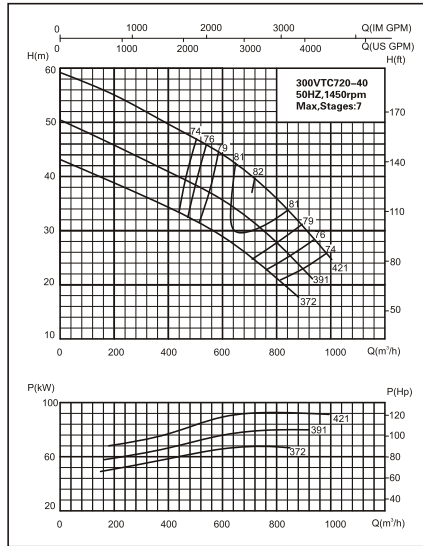
VTC, VTG Pump Curves (Single stage)



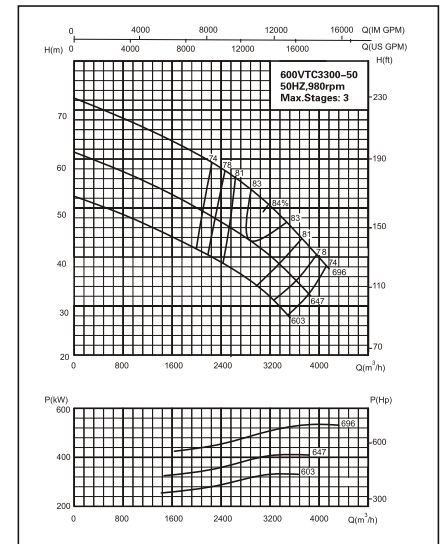
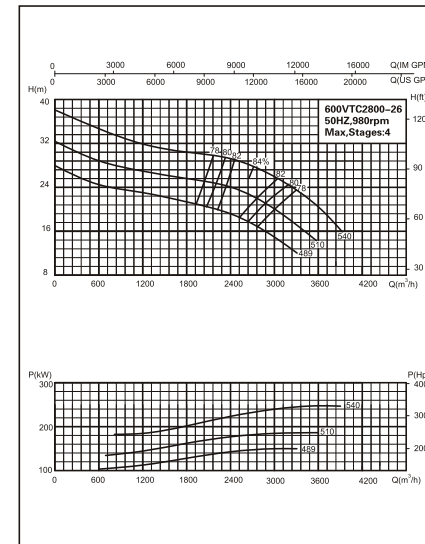
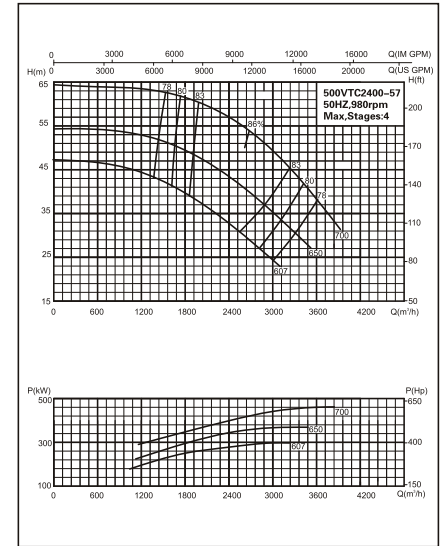
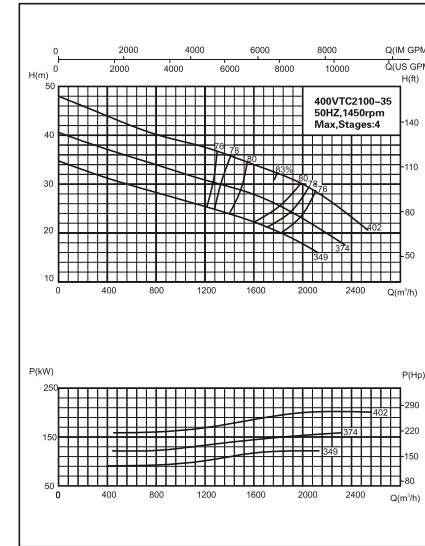
VTC, VTG Pump Curves (Single stage)



VTC, VTG Pump Curves (Single stage)



VTC, VTG Pump Curves (Single stage)



VTM, VTG Vertical Turbine Pumps

Specification range

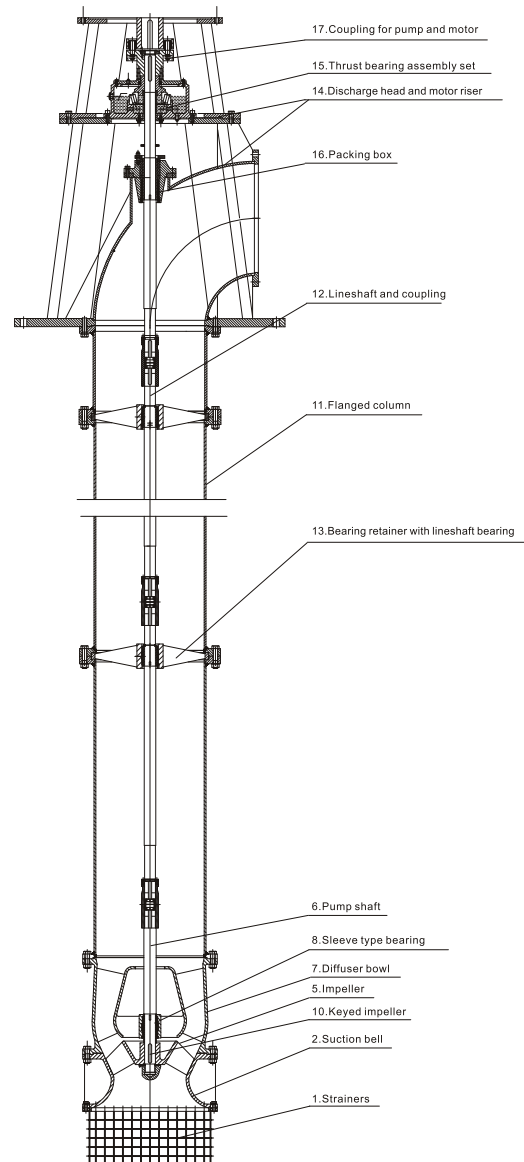
- Capacities to 25,000 m³/h (110,000GPM)
- Heads to 70 m (210ft)

Design Advantages

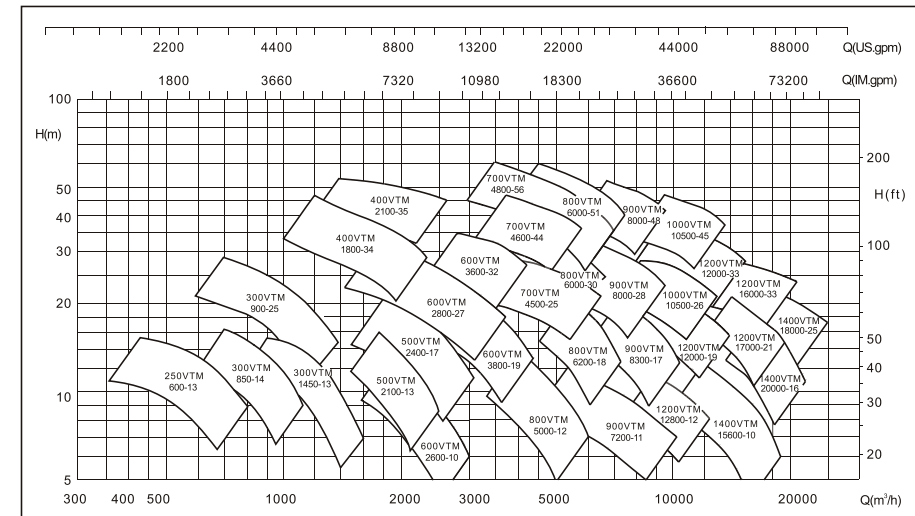
1. Fabricated discharge head for all sizes.
2. Seamless flanged ends column pipe and flanges bowl construction incorporating registered fits for ease of assembly during assembly.
3. Alloy construction with external tube flush of critical wear areas available for abrasive services.
4. Available with semi-open or enclosed impeller, with or without wear rings, optimum diffuser and impeller match for maximum efficiency.
5. 416SS shafting. Keyed lineshaft coupling available in all size for ease of maintenance. The lineshaft can be protected by water flushing the enclosing tube bearing on corrosive/abrasive services.
6. Various bearing material available.
7. Wide range of corrosion and erosion resistant materials.
8. Hollow shaft for bowl bearing flushing.
9. Flexible design to accommodate fixed or existing dimensions above and below ground discharge.

Services

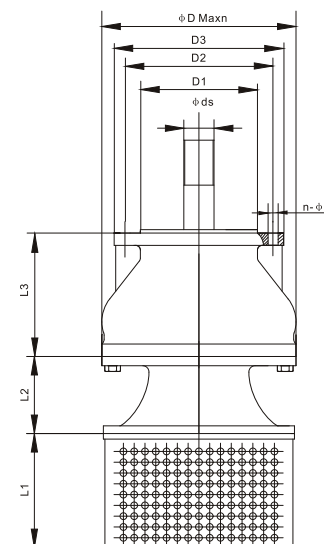
Cooling Water
Seawater and Raw water intake
Industrial Process Pumps
Utility Circulating Water
Condenser Circulating Water Pumps
Irrigation and Drainage
Storm and Flood water
River Water Intake
Municipal Water Supply



VTM Selection Charts



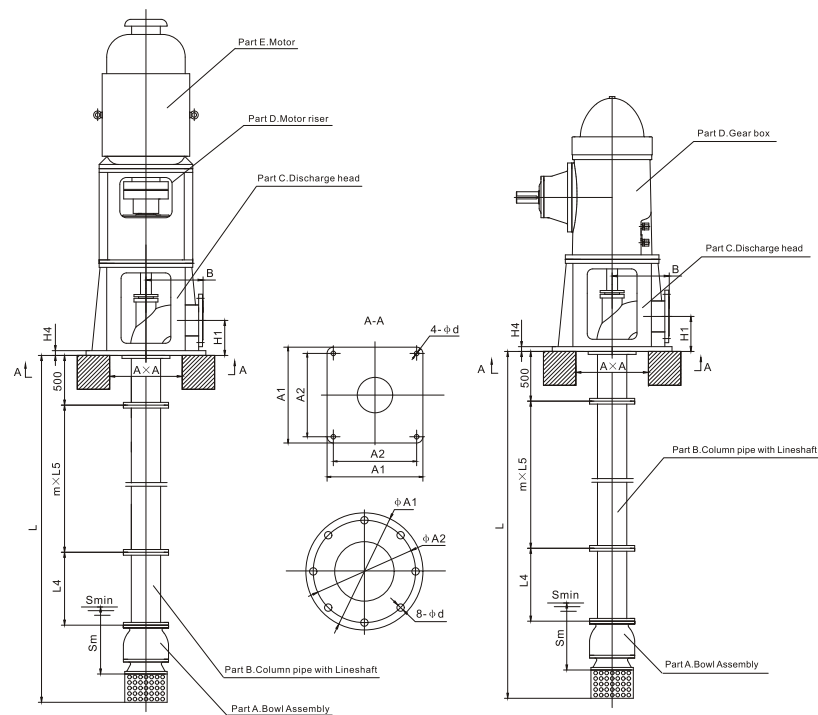
VTM Pump Bowl Assembly Dimensions



Model	Dmax	L1	L2	L3	φ ds	D1	D2	D3	n-φ d
250VTM600-13	393	320	110	385	40	305	350	393	12-φ 23
300VTM850-14	427	320	120	415	40	330	385	427	12-φ 23
300VTM900-25	435	320	180	513	50	320	360	400	12-φ 23
★ 350VTM1450-13	480	320	240	410	40	395	440	480	16-φ 23
400VTM1800-34	550	320	230	600	70	440	500	550	16-φ 25
400VTM2100-35	550	320	230	600	70	440	500	550	16-φ 25
★ 500VTM2100-13	670	320	350	450	50	520	620	670	20-φ 25
500VTM2400-17	750	320	400	475	60	550	600	650	20-φ 25
★ 600VTM2600-10	745	320	295	530	60	630	695	745	20-φ 30
600VTM3600-32	740	320	480	620	80	630	725	780	20-φ 30
600VTM2800-27	710	320	300	735	70	630	725	780	20-φ 30
★ 600VTM3800-19	760	320	330	640	70	630	725	780	20-φ 30
700VTM4500-25	875	320	570	730	90	730	840	895	24-φ 30
700VTM4600-44	1075	320	350	925	110	730	840	895	24-φ 30
700VTM4800-56	1295	320	405	890	120	730	840	895	24-φ 30
★ 800VTM5000-12	980	320	410	735	80	830	950	1010	24-φ 34
800VTM6000-51	1165	320	380	1000	120	830	950	1010	24-φ 34
800VTM6000-30	965	320	625	810	100	830	950	1010	24-φ 34
★ 800VTM6200-18	990	320	430	835	90	830	950	1010	24-φ 34
★ 900VTM7200-11	1160	320	490	890	90	930	1050	1110	28-φ 34
900VTM8000-28	1135	320	960	740	120	930	1050	1110	28-φ 34
★ 900VTM8300-17	1165	320	515	990	100	930	1050	1110	28-φ 34
900VTM8000-48	1385	320	450	1190	140	930	1050	1110	28-φ 34
1000VTM10500-26	1325	320	865	1110	130	1030	1160	1220	28-φ 34
1000VTM10500-45	1610	320	525	1390	160	1030	1160	1220	28-φ 34
1200VTM12000-19	1500	320	985	1265	130	1230	1380	1450	32-φ 41
1200VTM12000-33	1830	320	600	1590	160	1230	1380	1450	32-φ 41
★ 1200VTM12800-12	1580	320	700	1330	120	1230	1380	1450	32-φ 41
1200VTM16000-33	1500	320	985	1265	160	1230	1380	1450	32-φ 41
1200VTM17000-21	1580	320	700	1330	140	1230	1380	1450	32-φ 41
★ 1400VTM20000-18	1800	320	805	1545	160	1430	1590	1675	36-φ 48
1400VTM18000-25	1720	320	1130	1450	170	1430	1590	1675	36-φ 48
★ 1400VTM15600-10	1700	320	750	1340	120	1430	1590	1675	36-φ 48

★ Semi-open impeller

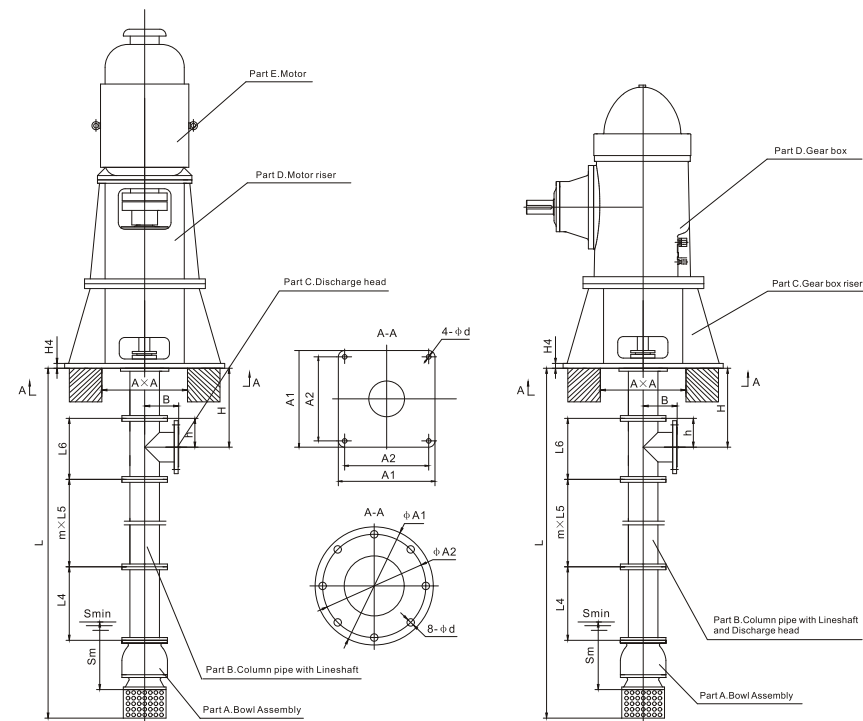
VTM, VTG Pump Dimensions (Above Ground Discharge)



Model	φ A1	φ A2	A1	A2	φ d	H1	H2	H4	L5	B	Sm	A×A
250VTM	/	/	730	670	30	265	560	30	2500	400	450	450×450
300VTM	/	/	830	770	30	320	640	35	2500	450	500	500×500
350VTM	/	/	930	870	30	370	720	35	2500	500	600	550×550
500VTM	/	/	1230	1160	33	520	960	40	2500	650	900	850×850
600VTM	/	/	1380	1310	33	620	1120	45	2500	1000	1000	850×850
700VTM	1500	1400	/	/	36	700	1250	50	2500	800	1200	1100×1100
800VTM	1650	1550	/	/	36	800	1400	50	2500	900	1400	1200×1200
900VTM	1800	1700	/	/	36	900	1550	60	2500	1000	1600	1350×1350
1000VTM	1950	1850	/	/	42	1000	1700	60	2500	1100	1800	1480×1480
1200VTM	2250	2150	/	/	42	1200	2000	60	2500	1200	2200	1600×1600
1400VTM	2550	2450	/	/	42	1400	2300	60	2500	1400	2600	1800×1800

L according to the custom requirement
Discharge Flanges drilled to ISO.DIN.BS or ANSI

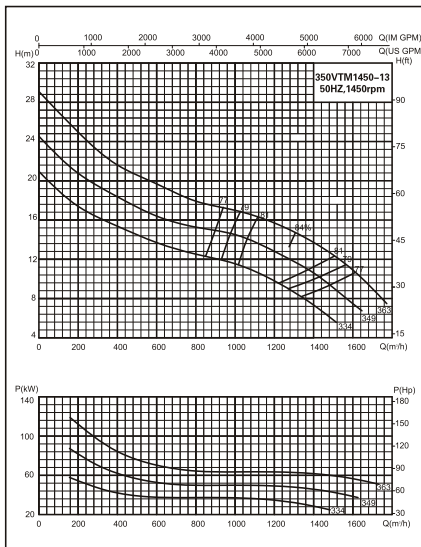
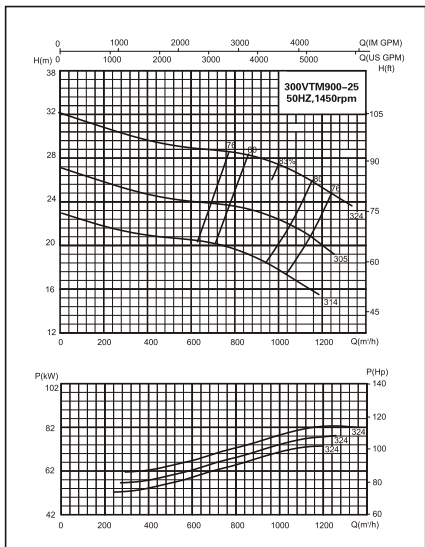
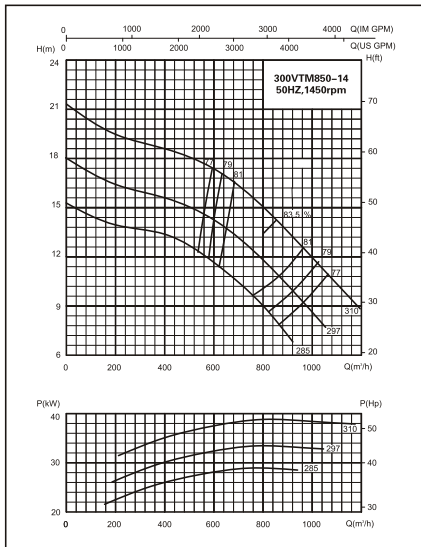
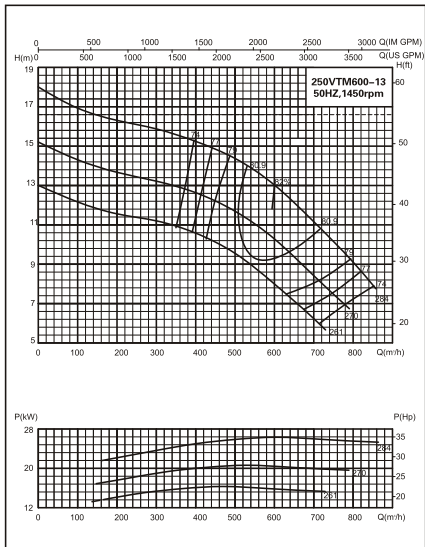
VTM, VTG Pump Dimensions (Below Ground Discharge)



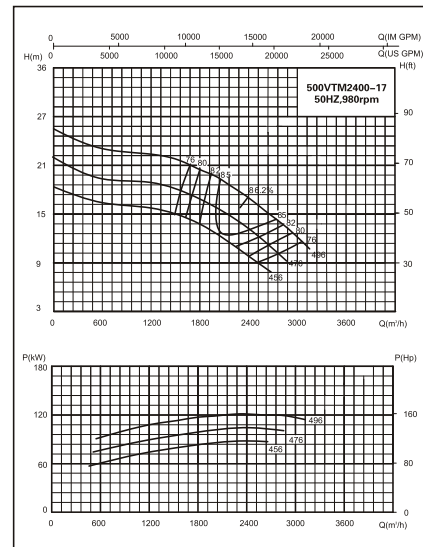
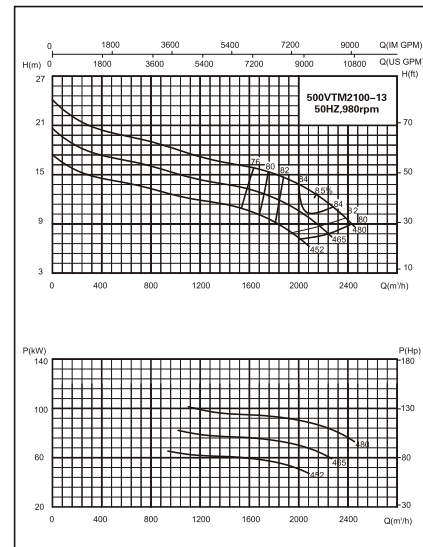
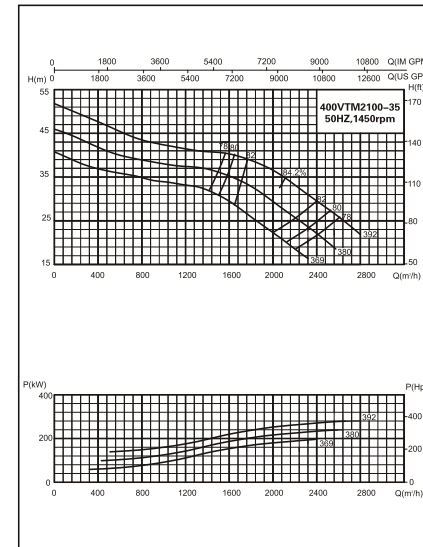
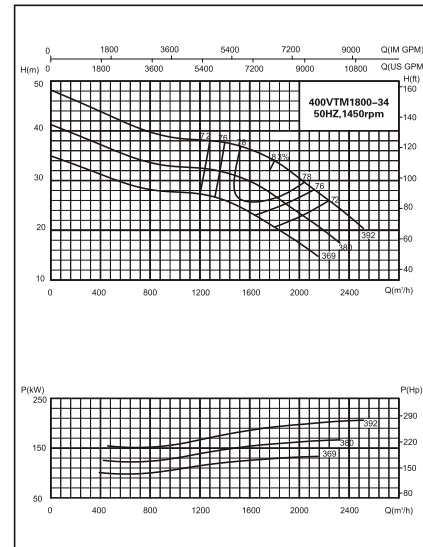
Model	φ A1	φ A2	A1	A2	φ d	L5	L6	h	B	Sm	A×A
250VTM	/	/	730	670	30	2500	500	200	280	450	550×550
300VTM	/	/	830	770	30	2500	550	230	330	500	650×650
350VTM	/	/	930	870	30	2500	630	260	380	600	680×680
500VTM	/	/	1230	1160	33	2500	880	350	540	900	1000×1000
600VTM	/	/	1380	1310	33	2500	1050	420	640	1000	1000×1000
700VTM	1500	1400	/	/	36	2500	2000	700	800	1200	1800×1800
800VTM	1650	1550	/	/	36	2500	2000	800	900	1400	2000×2000
900VTM	1800	1700	/	/	36	2500	2000	900	1000	1600	2200×2200
1000VTM	1950	1850	/	/	42	2500	2000	1000	1100	1800	2400×2400
1200VTM	2250	2150	/	/	42	2500	2000	1200	1200	2200	2600×2600
1400VTM	2550	2450	/	/	42	2500	2000	1400	1400	2600	3000×3000

L & H according to the custom requirement
Discharge Flanges drilled to ISO.DIN.BS or ANSI

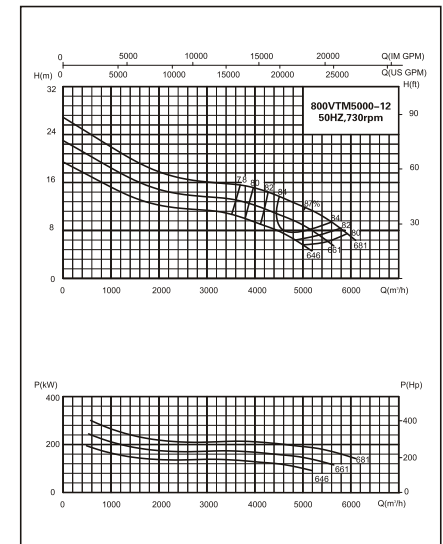
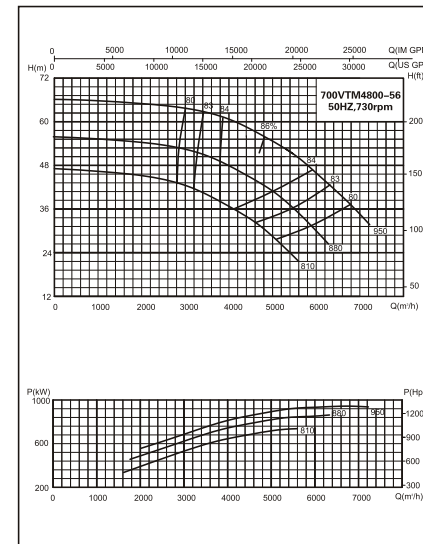
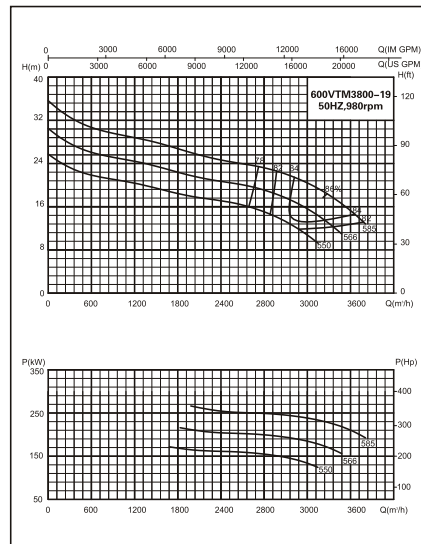
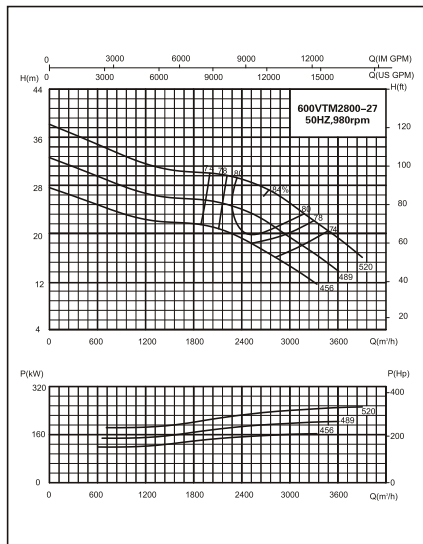
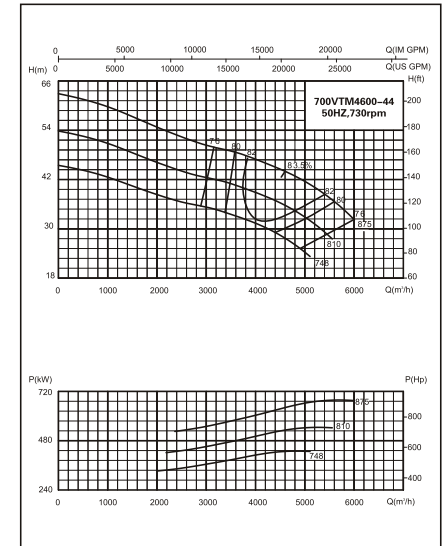
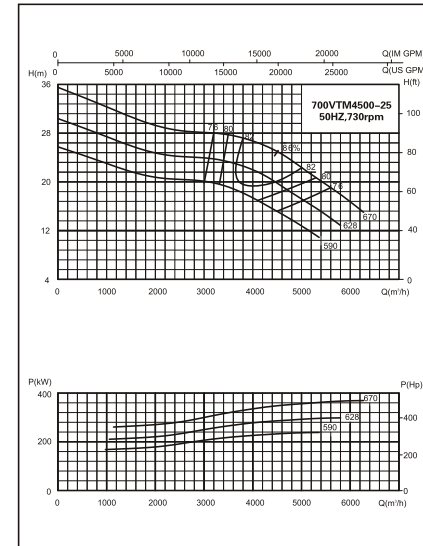
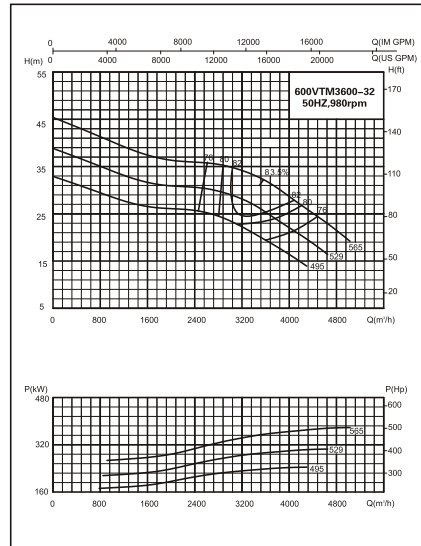
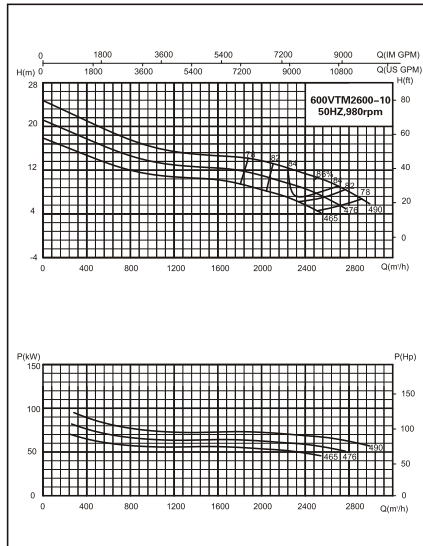
VTM, VTG Pump Curves



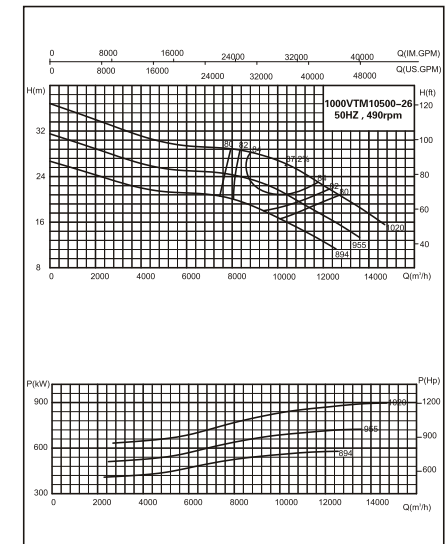
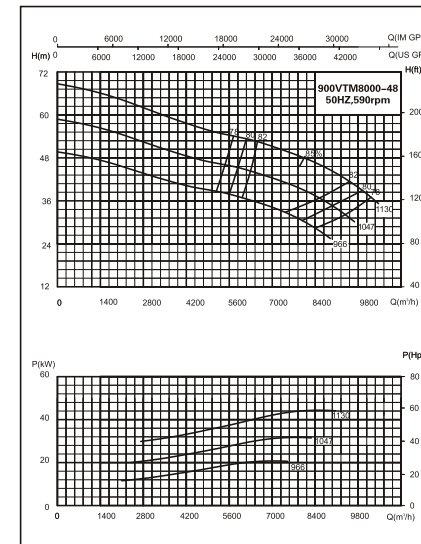
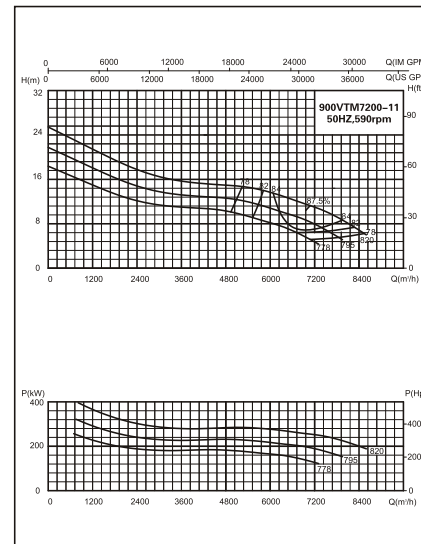
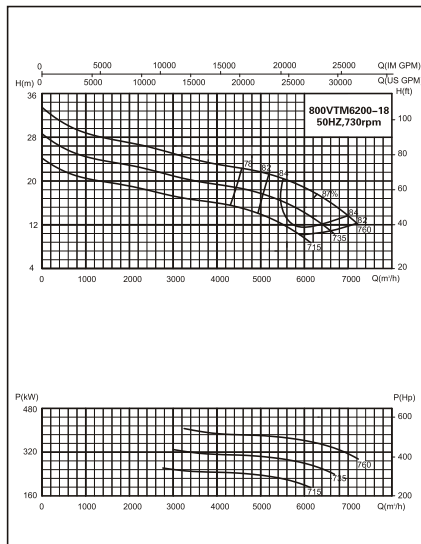
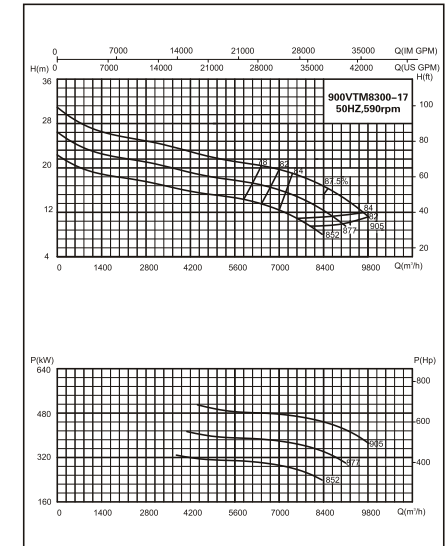
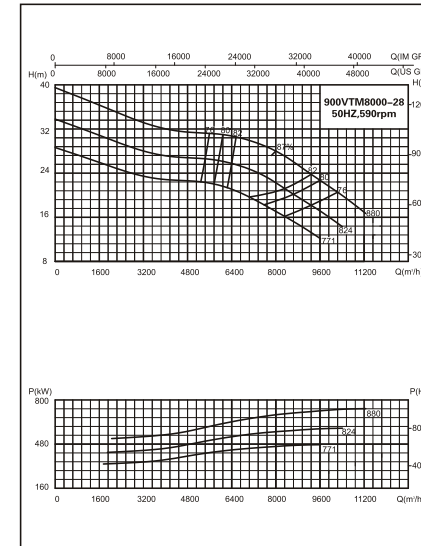
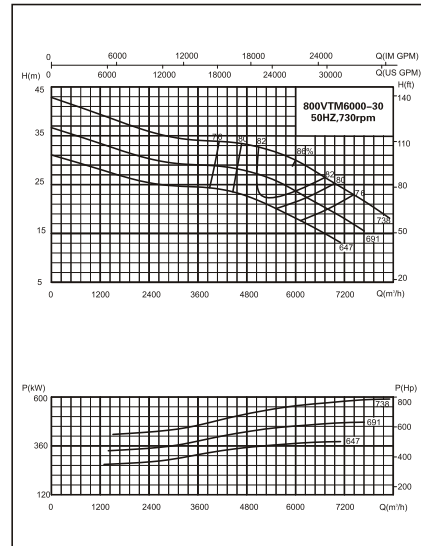
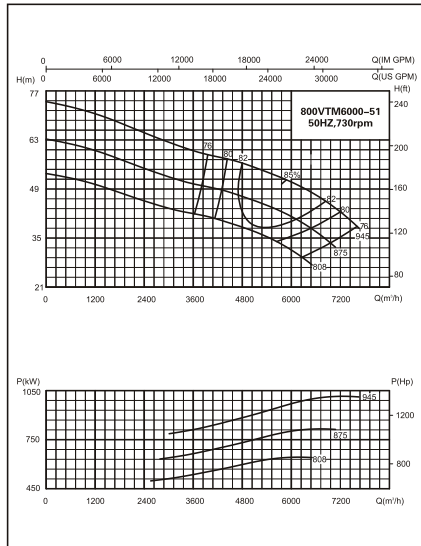
VTM, VTG Pump Curves



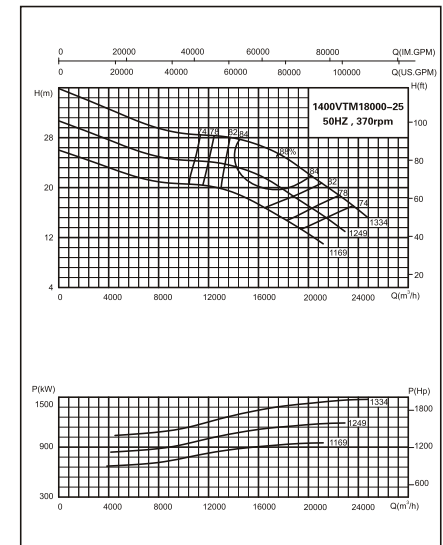
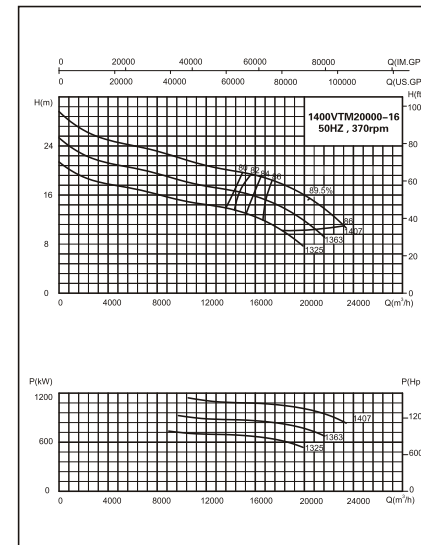
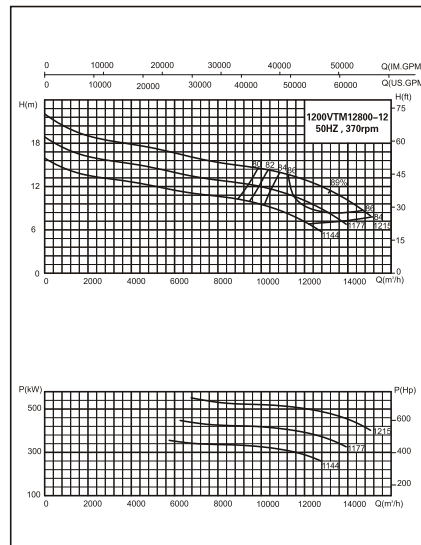
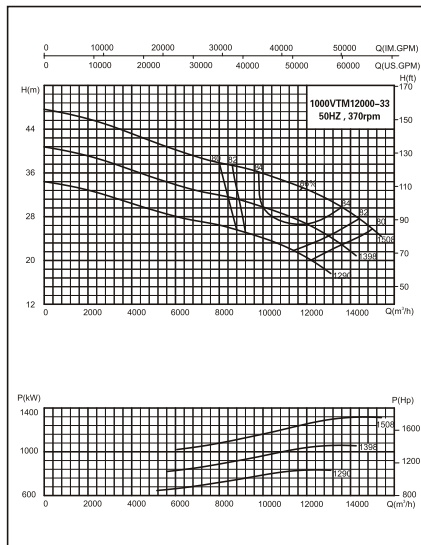
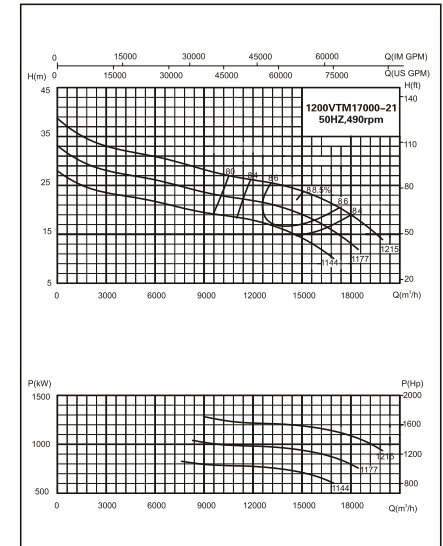
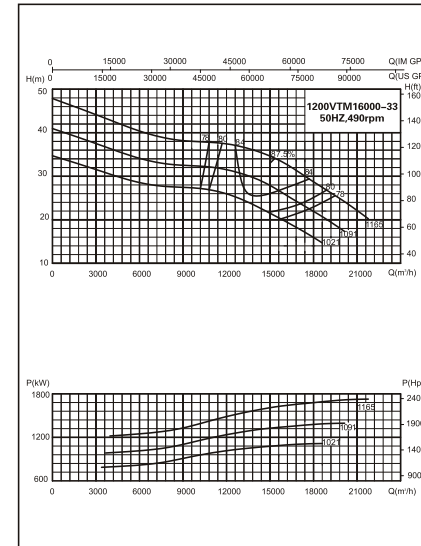
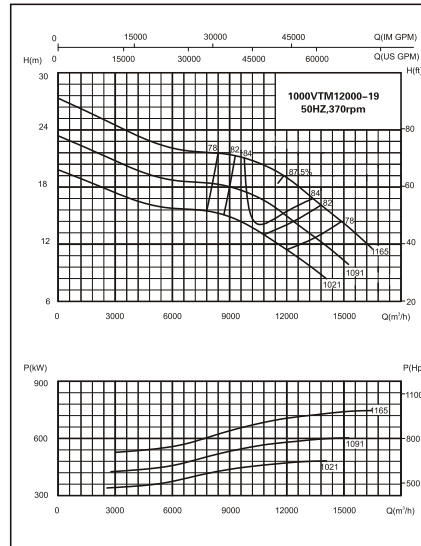
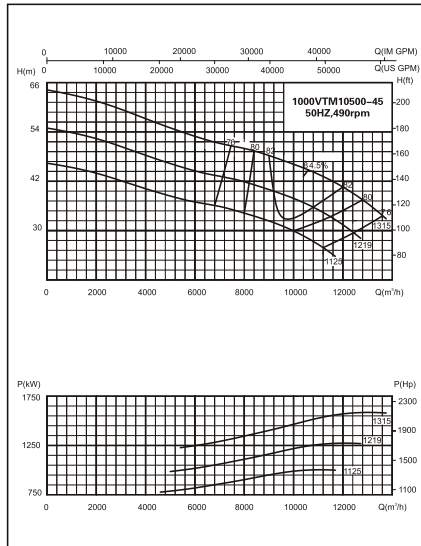
VTM, VTG Pump Curves



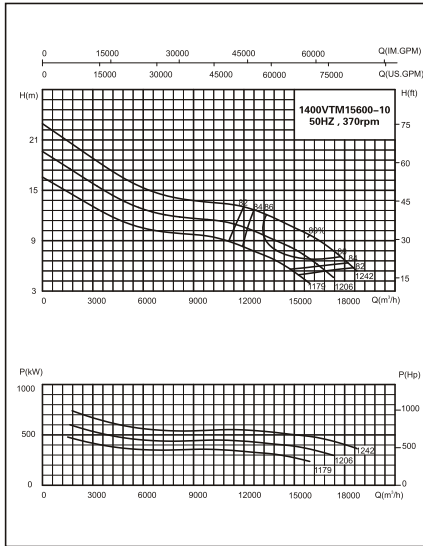
VTM, VTG Pump Curves



VTM, VTG Pump Curves



VTM, VTG Pump Curves



VTA, VTG Vertical Turbine Pumps

Specification range

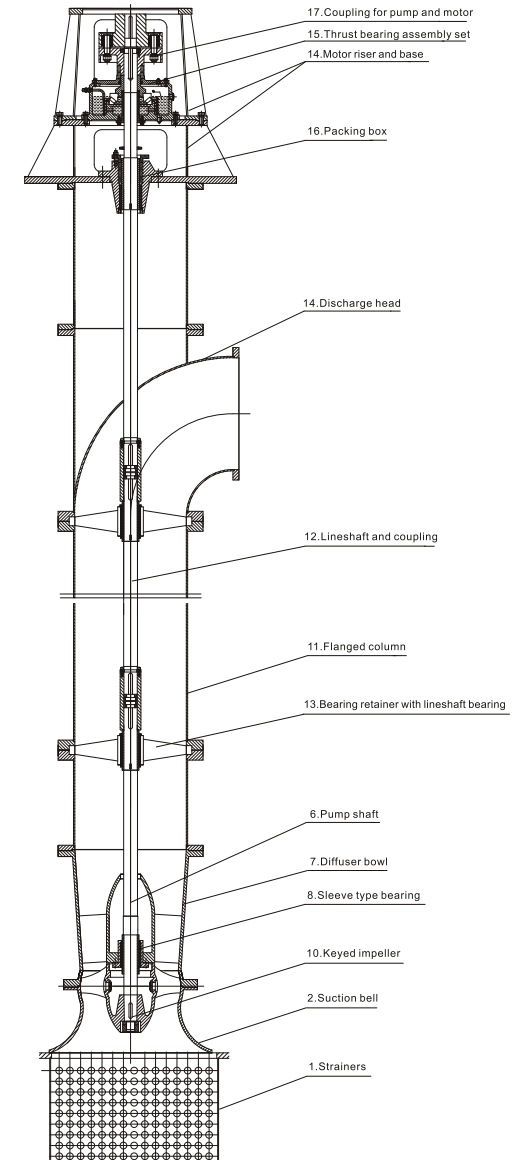
- Capacities to 20,000 m³/h (90,000GPM)
- Heads to 12 m (36ft)

Design Advantages

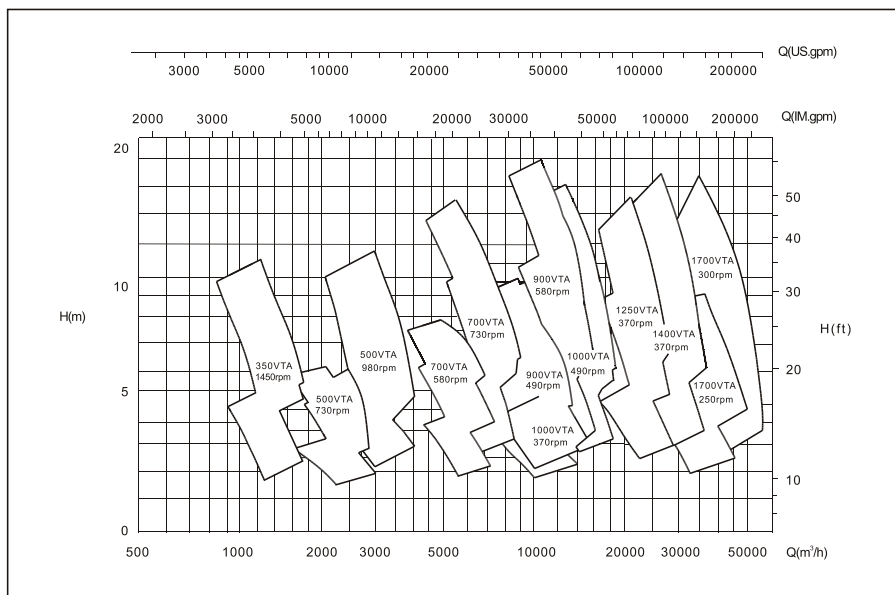
1. Fabricated discharge head for all sizes.
2. Seamless flanged ends column pipe and flanges bowl construction incorporating registered fits for ease of assembly during assembly.
3. Alloy construction with external tube flush of critical wear areas available for abrasive services.
4. High efficiency design. Broad hydraulic coverage provides best selection to meet specific operating conditions.
5. 416SS shafting. Keyed lineshaft coupling available in all size for ease of maintenance. The lineshaft can be protected by water flushing the enclosing tube bearing on corrosive/abrasive services.
6. Various bearing material available.
7. Wide range of corrosion and erosion resistant materials.
8. Flexible design to accommodate fixed or existing dimensions.

Services

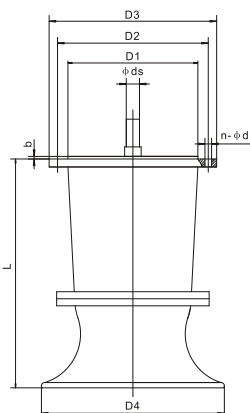
- Pollution Control
- Medium and Low Head Circulation
- Effluent Disposal
- Flood Control
- Dewatering
- River Water Intake
- Cooling Water
- Irrigation and Drainage
- Dry Docks



Selection Charts of VTA pumps

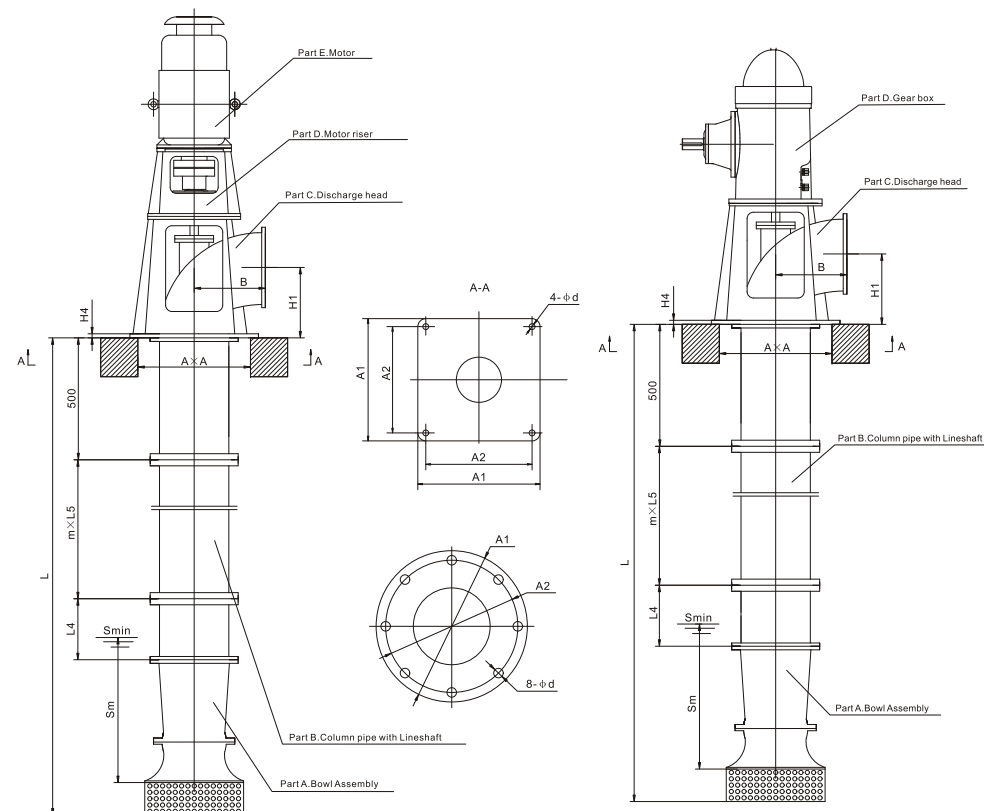


VTA Pump Bowl Assembly Dimensions



Model	Impeller Dia	D1	D2	D3	D4	L	φ ds	b	n-φ d
350VTA	300	370f7	415	450	516	590	40	5	8-φ 18
500VTA	450	520f7	600	650	700	900	60	5	12-φ 23
700VTA	650	720f7	810	865	1000	1000	90	7	20-φ 25
900VTA	850	920f7	1020	1080	1280	1150	110	8	24-φ 30
1000VTA	950	1020f7	1120	1180	1400	1200	120	10	28-φ 30
1250VTA	1200	1270f7	1380	1450	1600	1300	140	10	32-φ 30
1400VTA	1300	1420f7	1530	1600	1750	1400	160	10	36-φ 30
1700VTA	1600	1720f7	1830	1900	2150	1600	190	10	40-φ 30

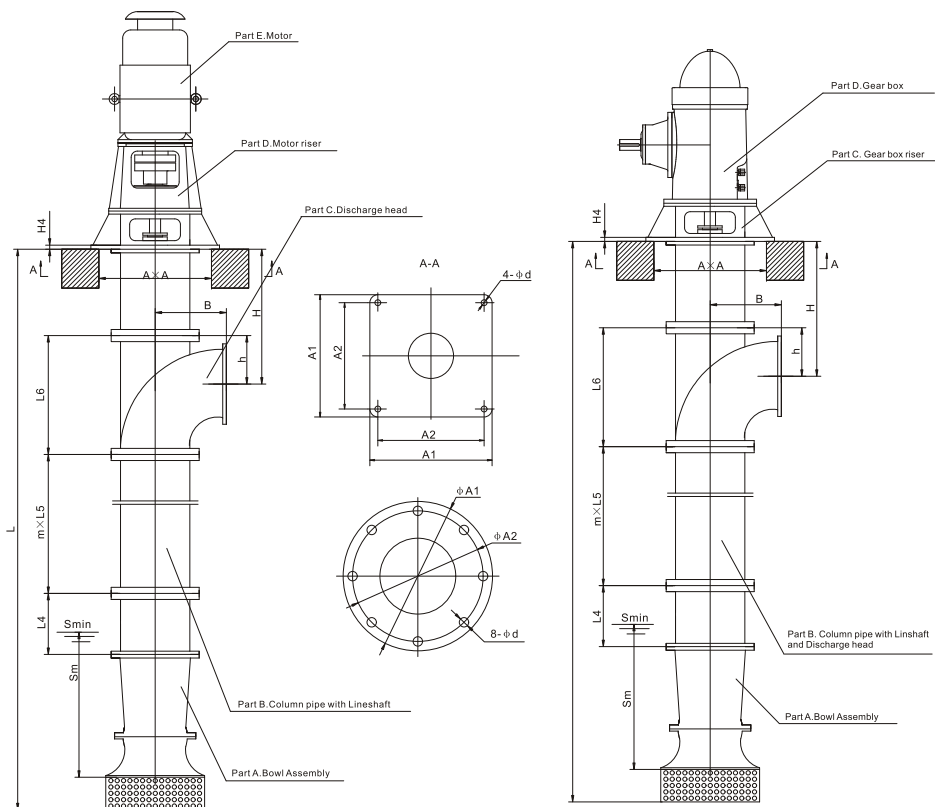
VTA, VTG Pump Dimensions (Above Ground Discharge)



Model	φ A1	φ A2	A1	A2	φ d	H1	H2	H4	L5	B	Sm	A×A
350VTA	/	/	930	870	30	370	720	35	1600	500	600	550×550
500VTA	/	/	1230	1160	33	520	960	40	1600	650	900	850×850
700VTA	1500	1400	/	/	36	700	1250	50	1600	800	1200	1150×1150
900VTA	1800	1700	/	/	36	900	1550	60	1600	1000	1600	1450×1450
1000VTA	1950	1850	/	/	42	1000	1700	60	1600	1100	1800	1700×1700
1250VTA	2250	2150	/	/	42	1250	2000	60	1600	1350	2200	1900×1900
1400VTA	2550	2450	/	/	42	1400	2300	60	1600	1400	2600	1900×1900
1700VTA	3220	3100	/	/	46	1700	2600	60	1600	1700	3000	2500×2500

L according to the custom requirement
Discharge Flanges drilled to ISO.DIN.BS or ANSI

VTA, VTG Pump Dimensions (Below Ground Discharge)

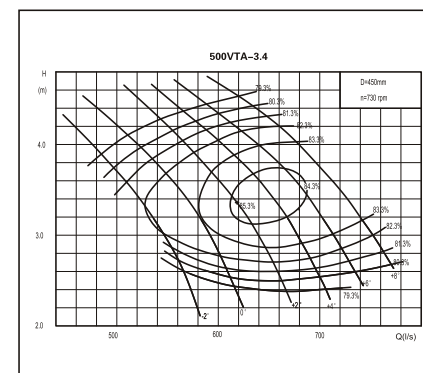
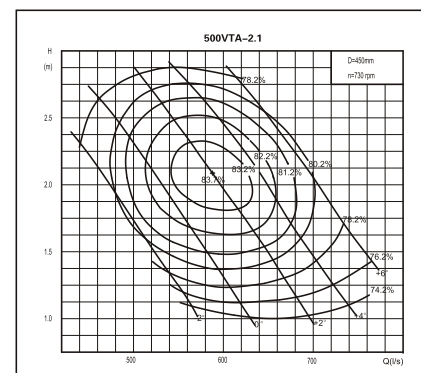
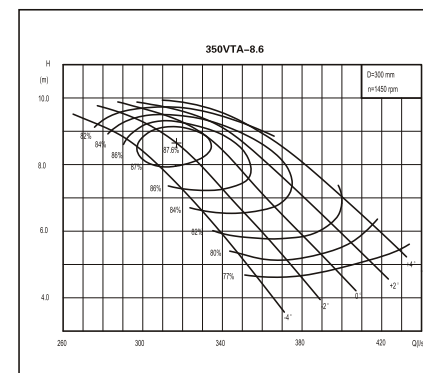
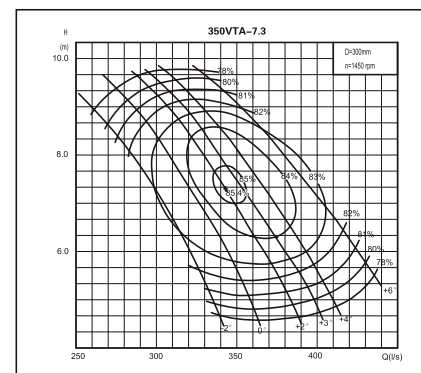
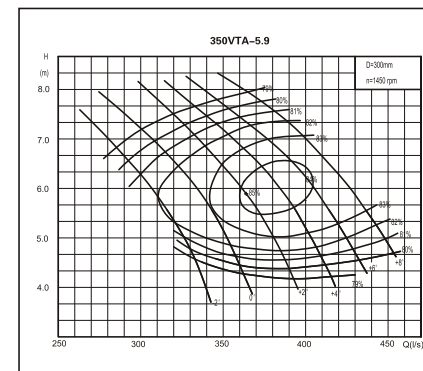
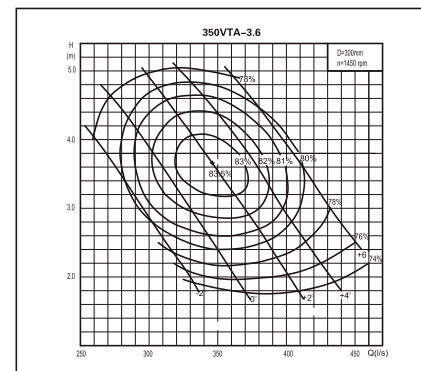


Model	φ A1	φ A2	A1	A2	φ d	L5	L6	h	B	Smin	A×A
350VTA	/	/	930	870	30	1600	630	260	380	600	680×680
500VTA	/	/	1230	1160	33	1600	880	350	540	900	1000×1000
700VTA	1500	1400	/	/	36	1600	2000	700	800	1200	1800×1800
900VTA	1800	1700	/	/	36	1600	2000	900	1000	1600	2200×2200
1000VTA	1950	1850	/	/	42	1600	2000	1000	1100	1800	2400×2400
1250VTA	2250	2150	/	/	42	1600	2000	1250	1250	2200	2600×2600
1400VTA	2550	2450	/	/	42	1600	2000	1400	1400	2600	3000×3000
1700VTA	3200	3100	/	/	46	1600	2000	1700	1700	3000	3500×3500

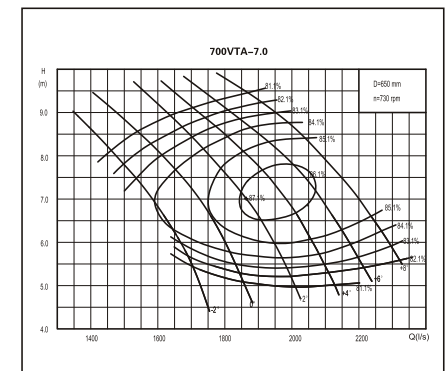
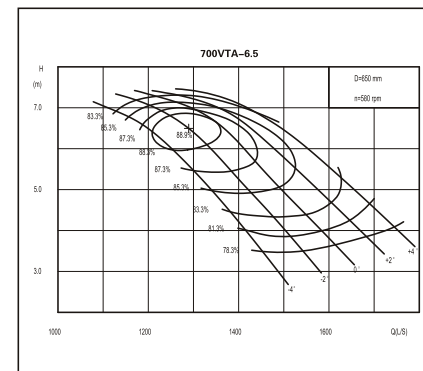
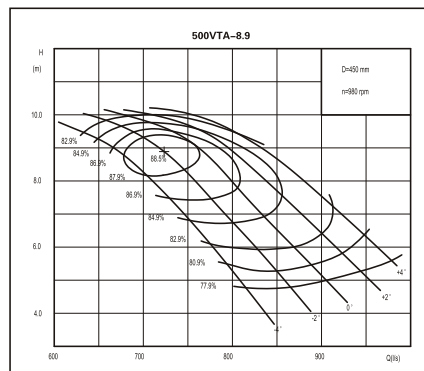
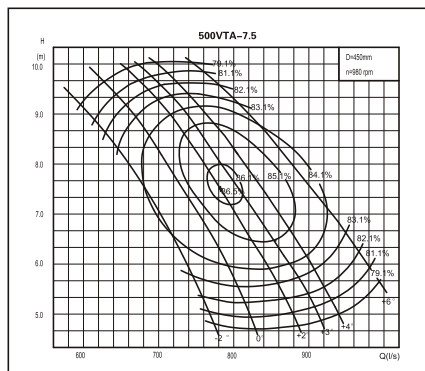
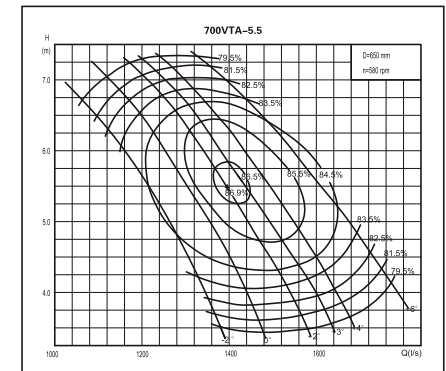
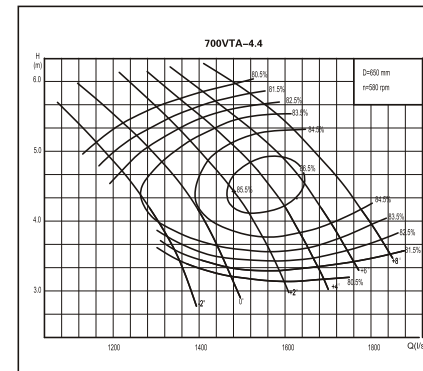
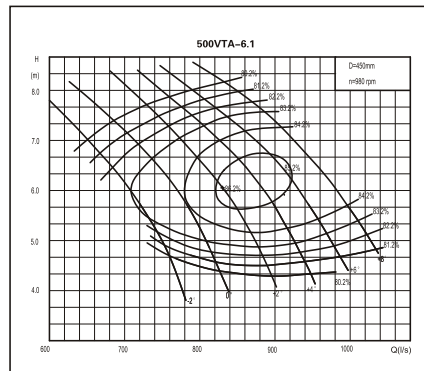
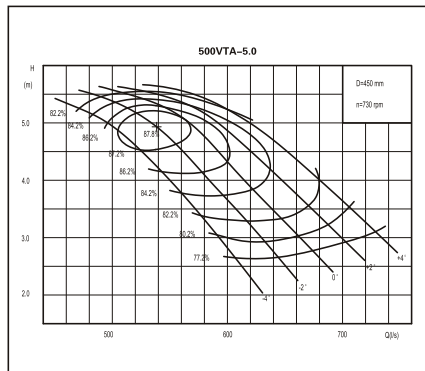
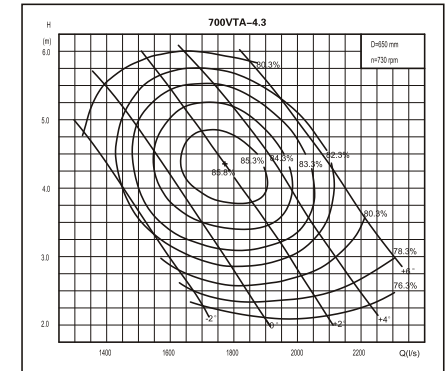
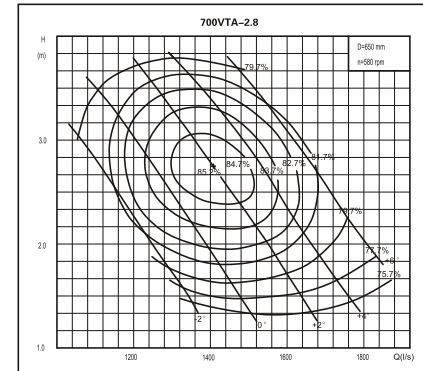
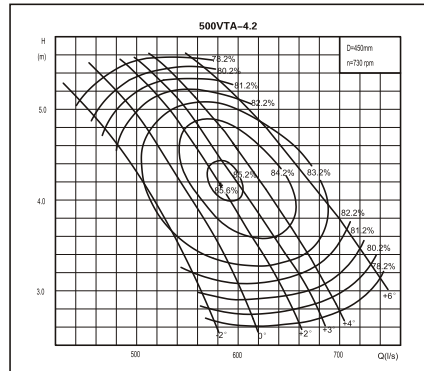
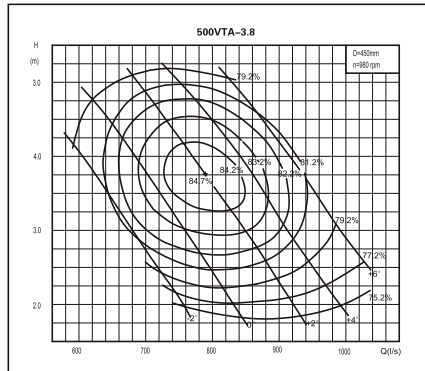
L & H according to the custom requirement

Discharge Flanges drilled to ISO.DIN.BS or ANSI

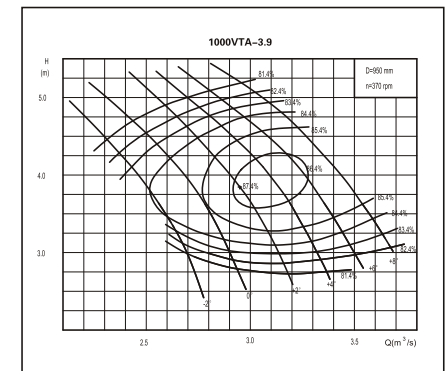
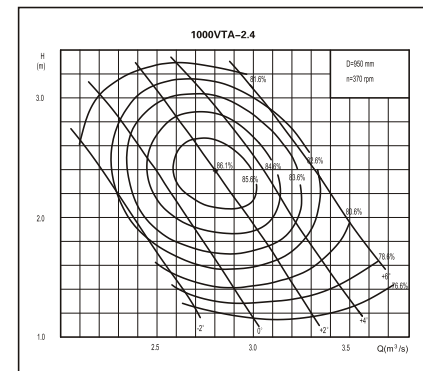
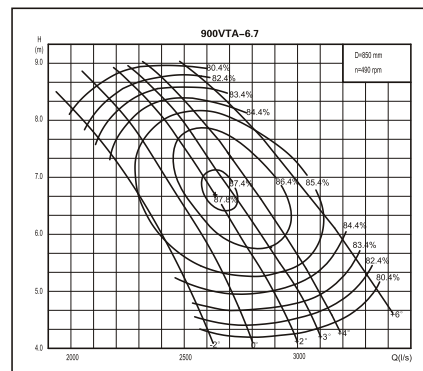
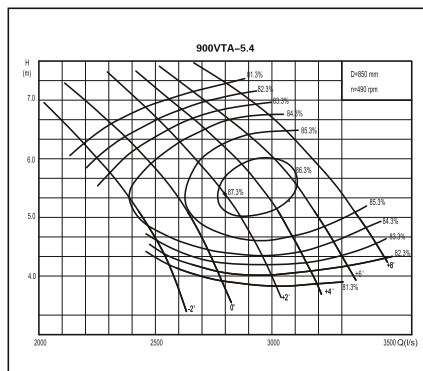
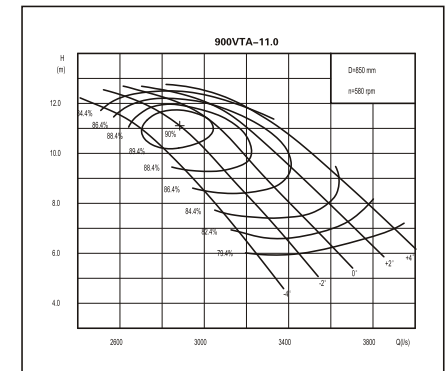
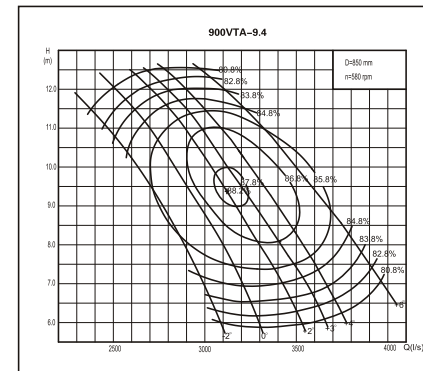
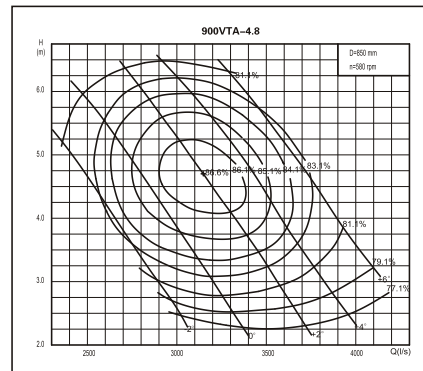
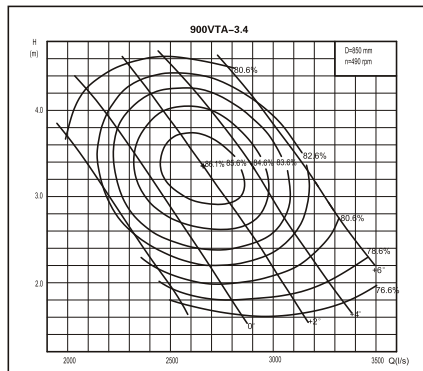
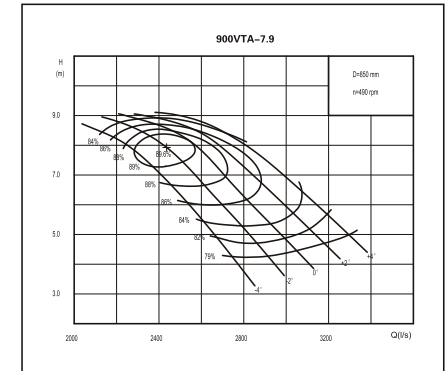
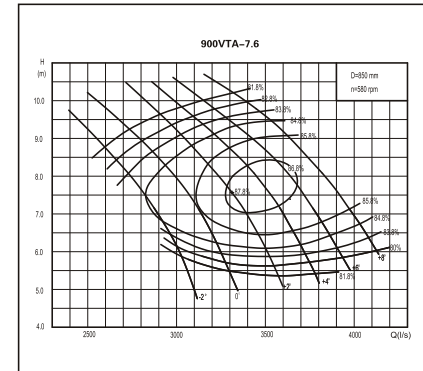
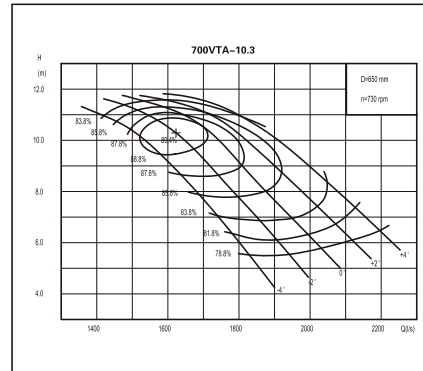
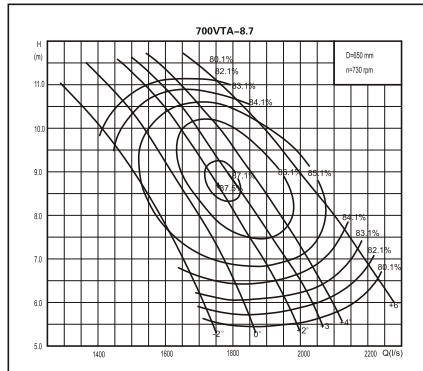
VTA,VTG Pump Curves



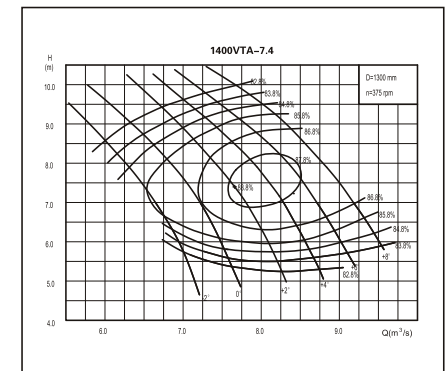
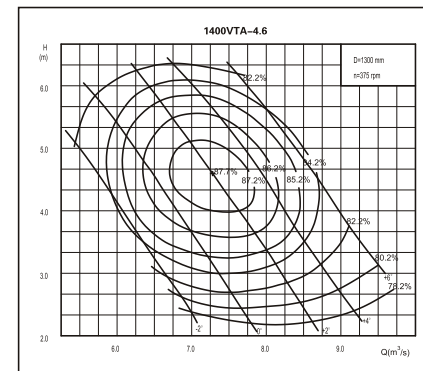
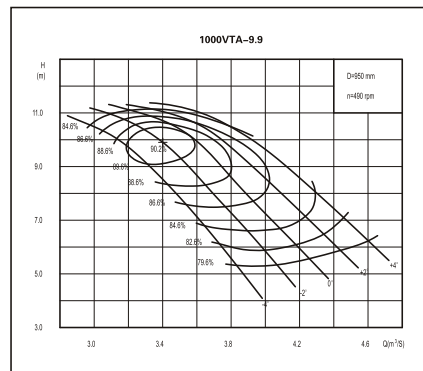
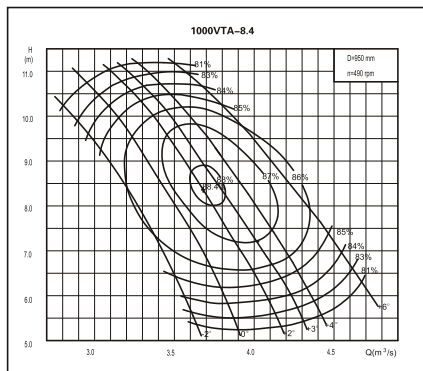
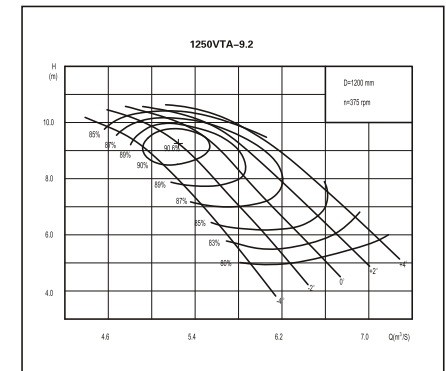
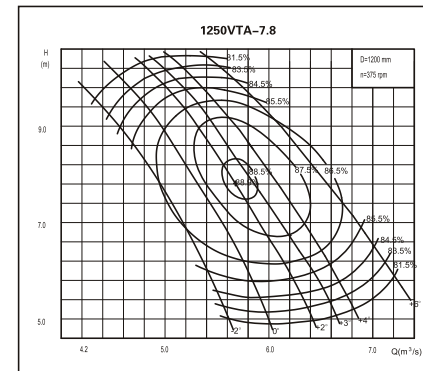
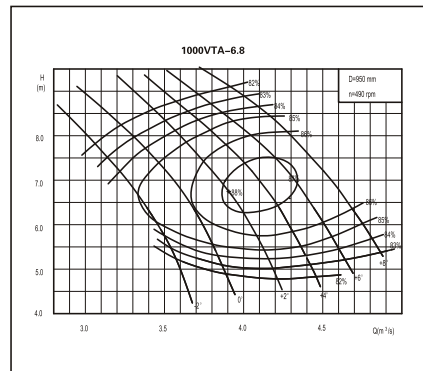
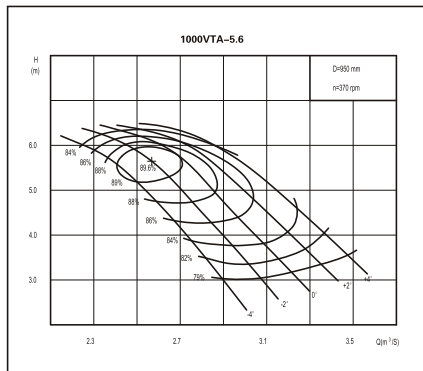
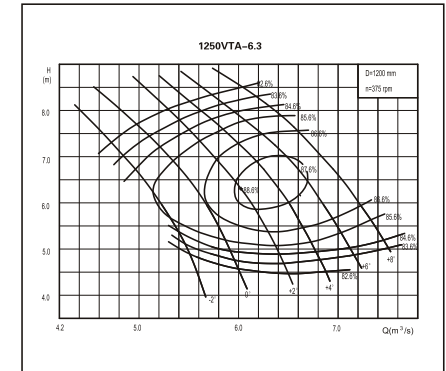
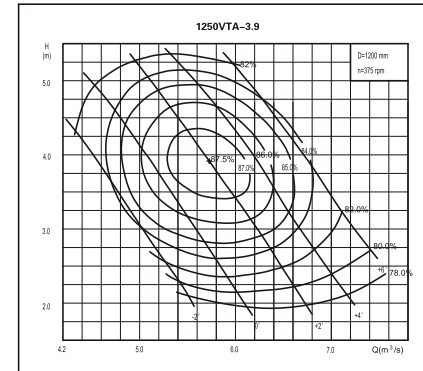
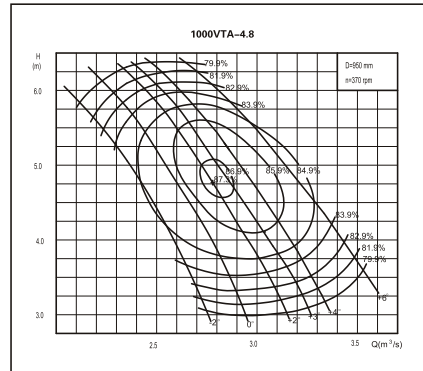
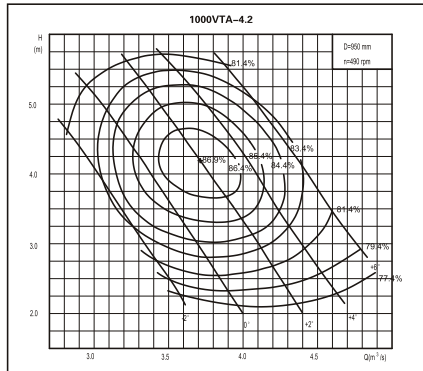
VTA,VTG Pump Curves



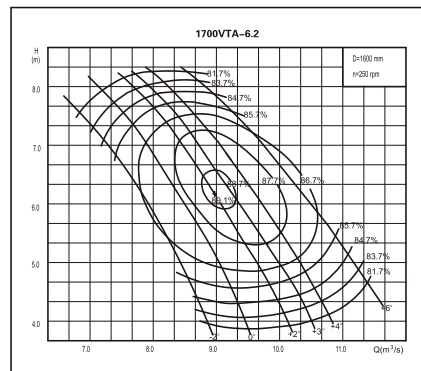
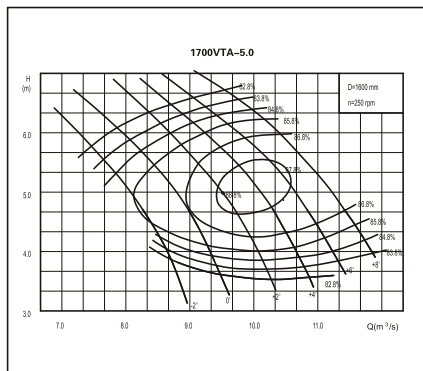
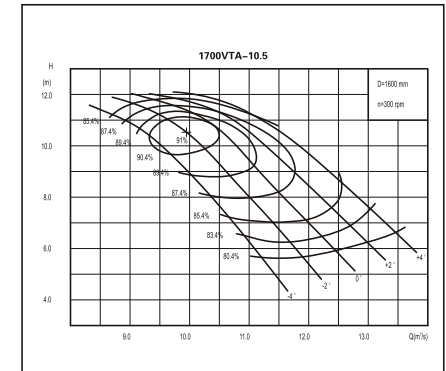
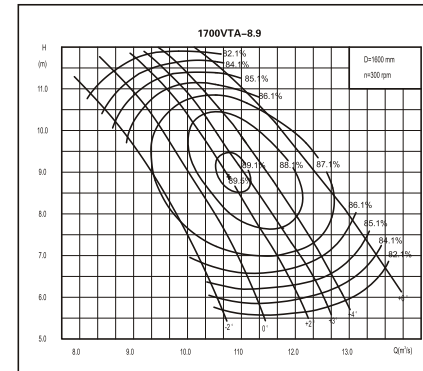
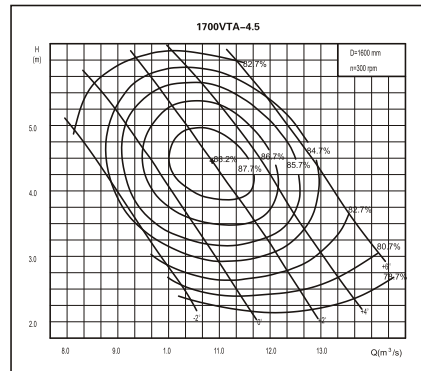
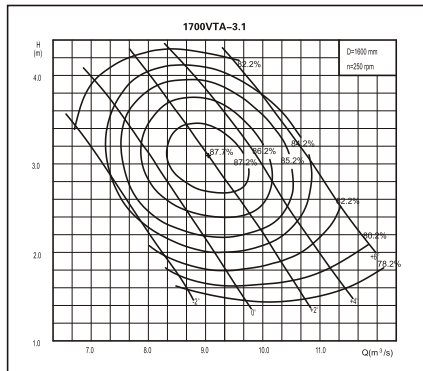
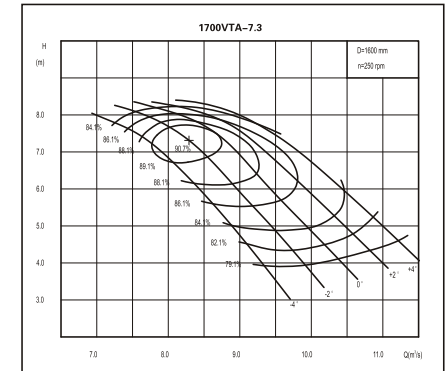
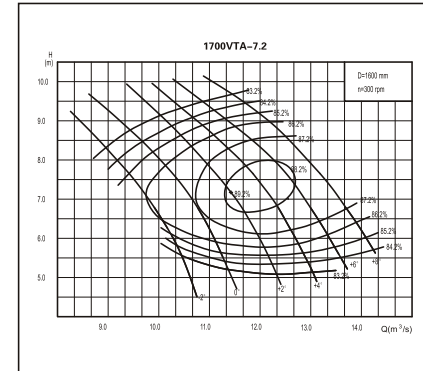
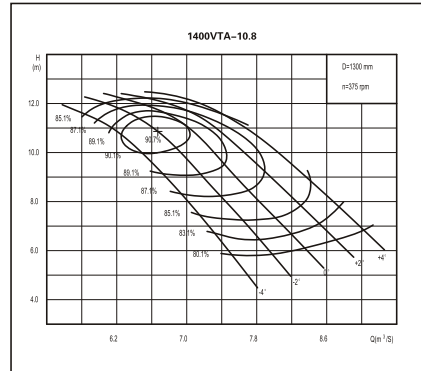
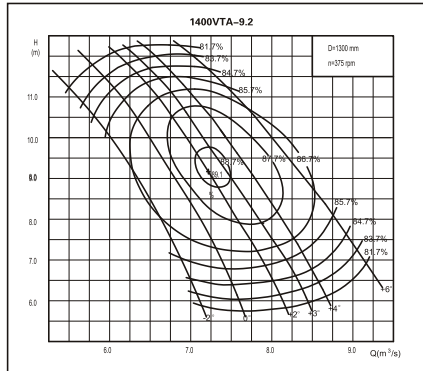
VTA,VTG Pump Curves



VTA,VTG Pump Curves



VTA,VTG Pump Curves

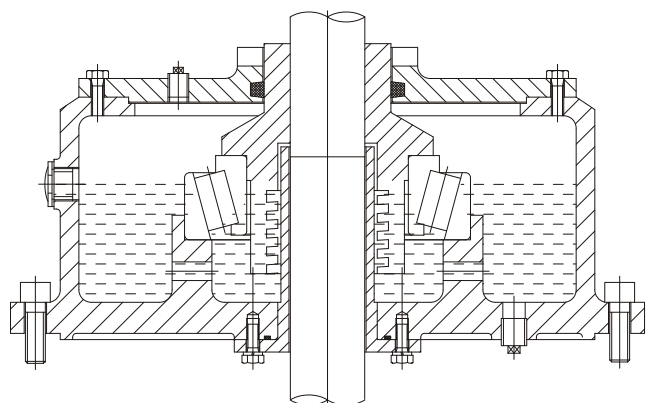


VTA,VTG Pump Curves

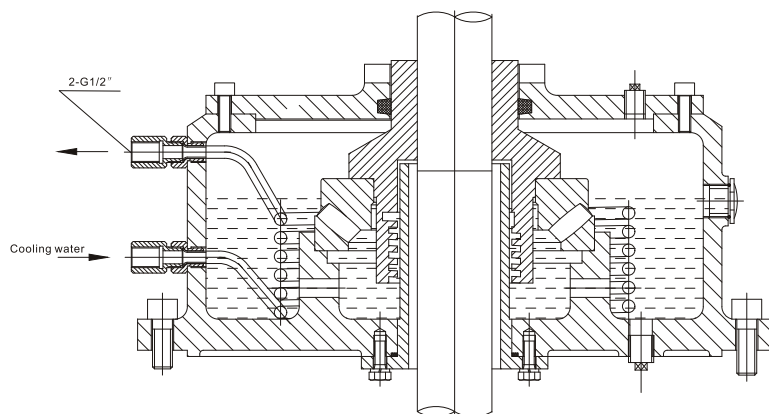
Oil Lubricated Thrust Bearing Assembling Sets

When the VTP designed driven by VSS motor, the pump's thrust will be loaded by the thrust bearing on the top of the pump or loaded by the top thrust bearing of the VSS motor.

CNP can supply two kinds of different thrust bearing assembly sets as following, design for the pumps with lower and higher thrust.



Standard thrust bearing assembly set



Water cooling heavy duty thrust bearing assembly set

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