hydroo®

NDROO SERIES
NSX/NSN

Horizontal single-stage centrifugal pump
60Hz

PRESENTATION

Hydroo Pump Industries SL is an enterprise specialised in the research, development and large-scale production of Stainless Steel centrifugal pumps. We have a vertical integration of the production processes, standing out stamping, welding and motor wiring in 6 value centers and production units. All of them with a high performance management on pump engineering and production quality.

HYDROO has set up a wide range of pumping solutions for many applications as building services, industry, irrigation and industrial process. Customers enjoy of the highest performance in booster sets and pressurization, fire-fighting sets, pumping of underground water, HVAC, drainage and sewage, utilities, desalination and OEM integrations. Versions in 50 Hz and 60 Hz are available, as well as any modification on materials, on request.

Global water challenges require excellence in pumping technologies and close cooperation between pump designers, manufacturers and pump engineers. In order to better meet the customers' needs and requirements our company is facing an expansion of its operations worldwide, providing timely and effective services in more than 30 countries. With tight relationships in many regions, we're proud to introduce a new regional value center for Europe. We are based near Barcelona at the Girona industrial area. Hydroo is a trademark to forge excellent and successful business relationships with our value customers by means of an operative assembling unit and an application engineering unit. HYDROO trademark wants to symbolize the firm commitment for a high level service to our value partners.

At Hydroo we bet on a high level service to our value pump partners.

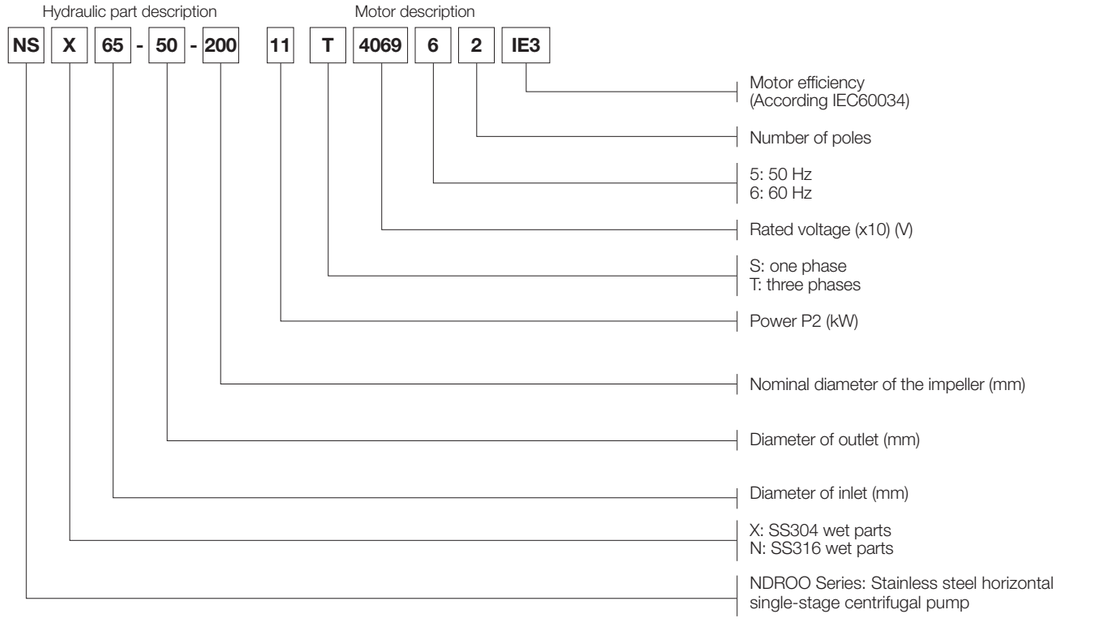
NSX/NSN

Stainless steel horizontal single stage centrifugal pump

Applications

Cooling water
Water supply/distribution
Drainage
General industrial services

Definition of model



Description

Horizontal single-stage centrifugal pumps made in Stainless Steel. Standard totally enclosed, fan cooled, insulation class F, IP 55 motors. Single phase motors up to 2,2 kW.

Standard versions are suitable for smart pumping of clean water with a temperature range between -20 °C and 100 °C.

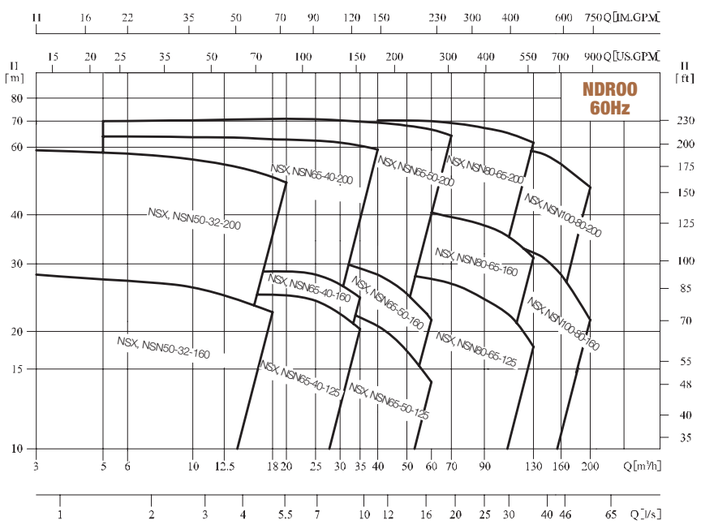
Performance range

Capacity: Q up to 200 m³/h
Head: H up to 70 m
Temperature: T up to 100 °C
Speed: n 2900 rpm or 3500 rpm
Power: P up to 37 kW

Standard material

All the parts in contact with the liquid are made in AISI304 Stainless Steel. Standard mechanical seals made in Carbon / Silicon Carbide.
Other specifications are available upon request.

Performance scope



Introduction

NDROO stainless steel horizontal single stage pumps are made to provide a high-end solution for the most demanding pump installations. This range of pumps are made by pressing and laser welding technologies to bring a corrosion resistant pump casing. These pumps are designed to provide a light solution according to EN733, with a high efficiency, energy saving, low noise, corrosion proof, durable and reliable operation.

Application

NDROO range are suitable for a wide range of applications. NDROO is suitable to handle water and any low chemical aggressive liquids for irrigation, HVAC and industrial applications. A wide range of fluid temperature allows NDROO be a satisfactory solution for the most demanding pumping conditions. Main applications are:

– Water supply, filtration, boostering and water transfer.

– Industrial pressurization in cleaning systems and spraying systems.

– Industrial liquids transferring in boiler feed, condensed water, cooling and heating, air conditioned, machine tools, light acid and alkali pumping.

– Water treatment systems, distilled water, separator and swimming-pools

– Irrigation, fertilisers pumping systems, sanitation and medicine installations.

Curves

Following conditions are suitable for the performance curves shown below:

1. Curve tolerance is in conformity with ISO9906 Annex A.

2. All curves are based on the measured value of motor 3x380V, 60Hz: under the constant speed of 3450rpm or 3500rpm.

3. The test medium is clear 20ºC water without any solid impurtty.

4. Pumps should not work if the flow is beyond the minimum or the maximum flow in the curves.

5. The motor power shall be adjusted if the viscosity or density of medium is different from water.

Motor

– TEFC motor, 2-pole.

– Protection class: Ip55.

– Insulation class: F.

– Standard voltage: 60Hz
1x220V
3x220V
3x380V
3x460V

Minimum inlet pressure NPSH

Cavitation might happen when pressure in the inlet pump side is lower that the steam pressure for a given liquid and suction conditions. In order to avoid this phenomenon a minimum pressure shall be guaranteed at the pump inlet side. Use the following calculation to assure the optimal suction operation conditions:

H=Pb x 10.2-NPSH-Hf-Hv-Hs

Pb-Atmosphere pressure (bar)
In a closed system, Pb means system pressure (bar).

NPSH-Net positive suction head (m)
It can be read from the point of Max. flow rate shown on NPSH curve.

Hf-Pipeline loss at the inlet (m)
It is in accordance with pipeline possible Max. Flow.

Hv-Steam pressure (m)
It depends on liquid temperature and steam pressure value.

Hs-Safety margin (m)
Minimum 0.5 delivery head
If the calculated result H is positive, the pump may run under the Max.

Suction head H. In case the calculated H is negative, a delivery head of Min. Inlet pressure is necessary.

Note: Normally, the above calculation will not be done. H is calculated in the following conditions:

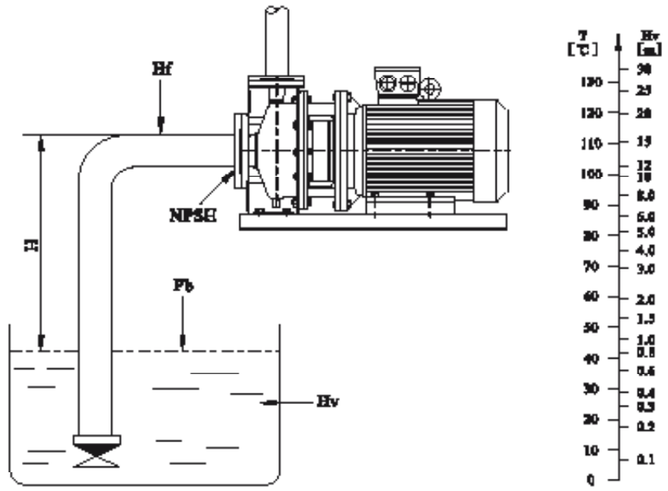
1. The liquid temperature is comparatively higher.

2. Liquid flow exceeds rated value

3. Suction head is comparatively large or inlet pipeline long.

4. System pressure is too low.

5. Bad inlet condition.



Installation requirements

The shaft connection type of NDROO pump is direct connection. The pump is composed of pump, shaft and standard motor.
– The pump shall be installed on the ventilating and anti-freezing place.

– The installation of the pump shall ensure that the pump will not be forced by the tension of the pipeline.

– If the pump is installed outdoor, suitable outer cover must be used to prevent electric elements from water inflow or coagulating dew.

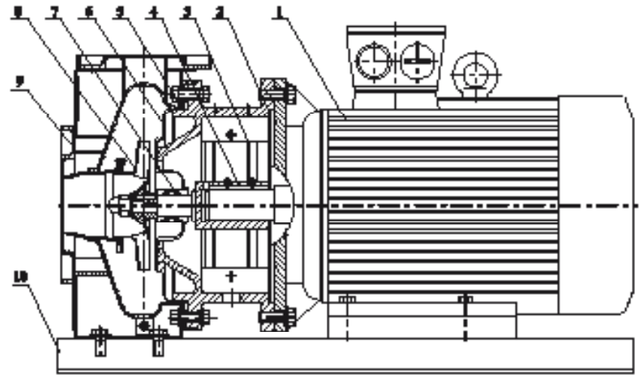
– To facilitate inspection and maintenance, enough space must be left around the machine group.

– Electric wiring device shall guarantee that the pump will not be damaged by lack of phase, unstable voltage, current leakage and overload.

– The pump shall be installed on the base Horizontally. Horizontal direction is the inlet for the pump, and vertical direction is the outlet for the pump.

– The flange connection dimension are in conformity with the related provisions PN 16 in GB/T 17241.6 or ISO7005-2/ DIN 2501.

Section drawing



Material

Nº	Parts	Material	AISI/ASTM
1	Motor		
2	Pump head	Cast iron	ASTM25B
3	Guard plate	0Cr18Ni9	AISI304
4	Shaft	2Cr13/0Cr18Ni9	AISI420/AISI304
5	O ring	NBR	
6	Lining of pump head	0Cr18Ni9	AISI304
7	Mechanical sea	Carbon/Silicon Carbide	
8	Impeller	0Cr18Ni9	AISI304
9	Casing	0Cr18Ni9	AISI304
10	Base plate	Q235	ASTMA570

Operating condition

– Clean, thin, non-flammable and explosive, not containing the liquid with solid particle and fibre.

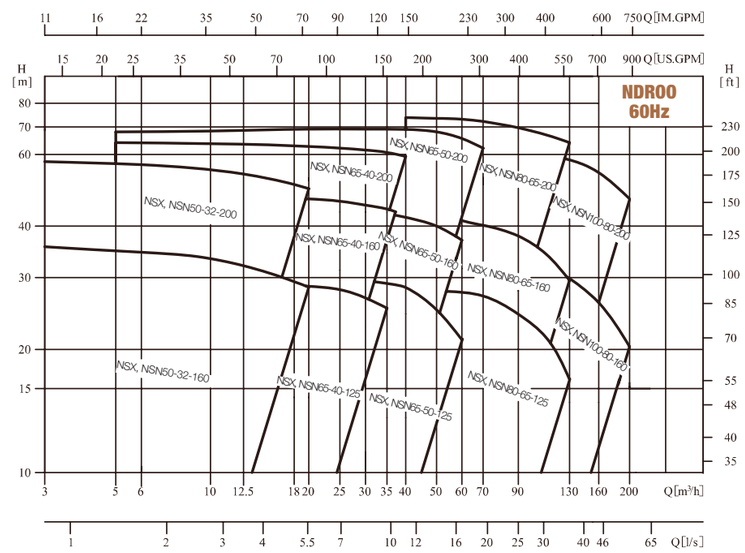
– Liquid temperature: -20 ºC ~+100 ºC.

– Ambient temperature: up to +40 ºC.

– Altitude: up to 1000m.

– Max. pressure of the system is 10 bar.

Scope of performance

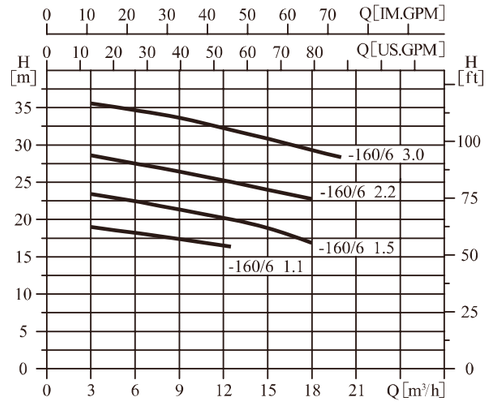


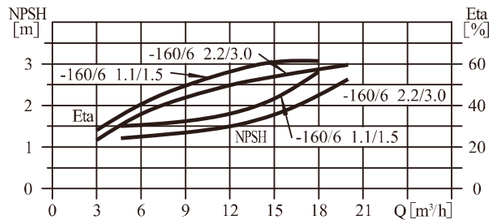
Product range

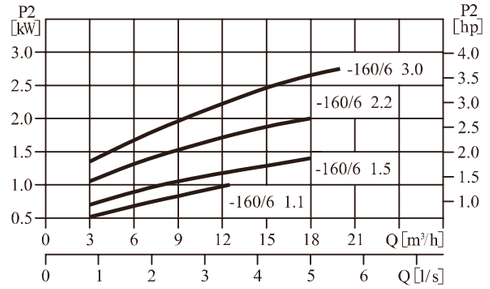
Nº	Model	Q (m³/h)	H (m)	n (r/min)	Standard voltage (V)	
					1x220V	3x380V
					P2 (kW)	P3 (kW)
1	NSX, NSN 50-32-160/6 1.1	6.3	18	3450	1.1	1.1
2	NSX, NSN 50-32-160/6 1.5	12.5	20		1.5	1.5
3	NSX, NSN 50-32-160/6 2.2	12.5	25		2.2	2.2
4	NSX, NSN 50-32-160/6 3.0	12.5	32			3
5	NSX, NSN 50-32-200/6 4.0	12.5	42			4
6	NSX, NSN 50-32-200/6 5.5	12.5	54			5.5
7	NSX, NSN 65-40-125/6 1.5	25	13		1.5	1.5
8	NSX, NSN 65-40-125/6 2.2	25	18		2.2	2.2
9	NSX, NSN 65-40-125/6 3.0	25	24			3
10	NSX, NSN 65-40-125/6 4.0	25	28			4
11	NSX, NSN 65-40-160/6 5.5	25	36			5.5
12	NSX, NSN 65-40-160/6 7.5	25	46			7.5
13	NSX, NSN 65-40-200/6 11.0	25	62	3500		11
14	NSX, NSN 65-50-125/6 3.0	50	13	3450		3
15	NSX, NSN 65-50-125/6 4.0	50	18			4
16	NSX, NSN 65-50-125/6 5.5	50	25			5.5
17	NSX, NSN 65-50-160/6 7.5	50	32			7.5
18	NSX, NSN 65-50-160/6 9.2	50	40			9.2
19	NSX, NSN 65-50-200/6 11.0	50	48	3500		11
20	NSX, NSN 65-50-200/6 15.0	50	58			15
21	NSX, NSN 65-50-200/6 18.5	50	68			18.5
22	NSX, NSN 80-65-125/6 5.5	100	12.5	3450		5.5
23	NSX, NSN 80-65-125/6 7.5	100	18			7.5
24	NSX, NSN 80-65-125/6 9.2	100	23			9.2
25	NSX, NSN 80-65-160/6 11.0	100	27	3500		11
26	NSX, NSN 80-65-160/6 15.0	100	36			15
27	NSX, NSN 80-65-200/6 18.5	100	45			13,5
28	NSX, NSN 80-65-200/6 22.0	100	53			22
29	NSX, NSN 80-65-200/6 30.0	100	66			30
30	NSX, NSN 100-80-160/6 15.0	160	20			15
31	NSX, NSN 100-80-160/6 18.5	160	26			18.5
32	NSX, NSN 100-80-200/6 22.0	160	33			22
33	NSX, NSN 100-80-200/6 30.0	160	45			30
34	NSX, NSN 100-80-200/6 37.0	160	54			37

NSX, NSN 50-32

NSX, NSN 50-32-***







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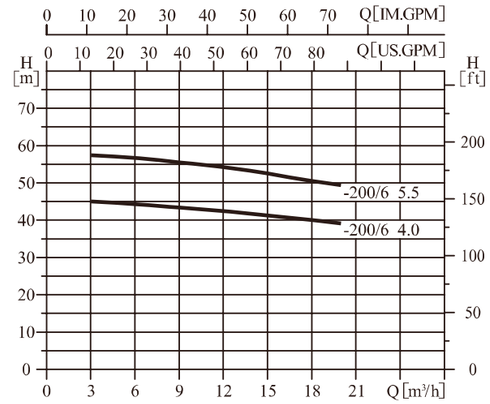
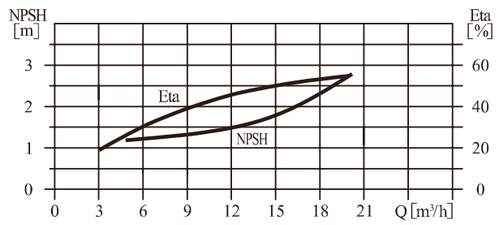
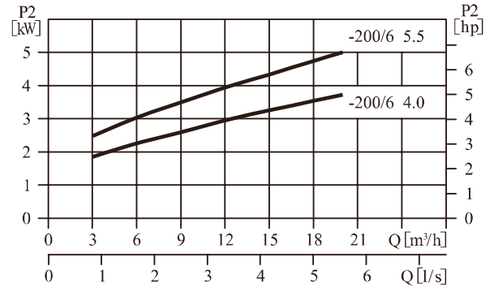




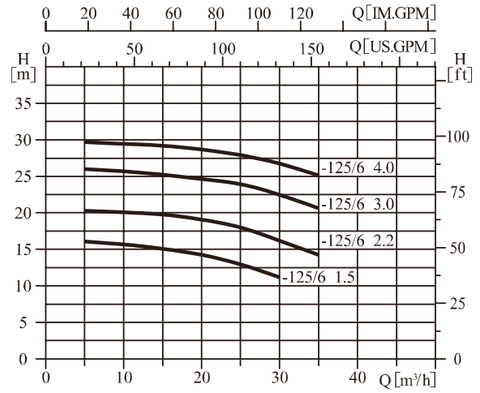


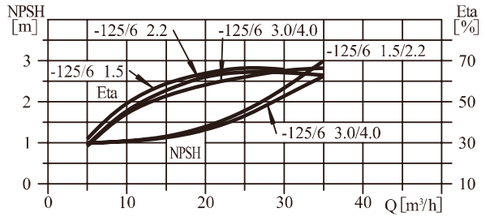
Performance table

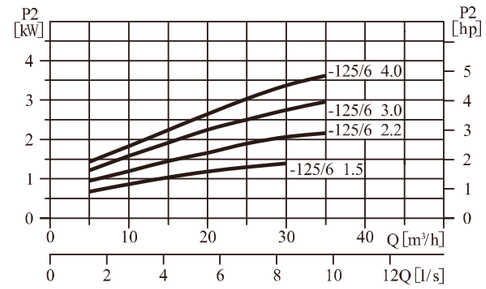
Model	Driving motor (kW)		Q (m³/h)	3	6.3	9	12.5	15	18	20
	(kW)	(hp)								
NSX, NSN 50-32-160/6 1.1	1.1	1.5	H (m)	19	18	17.3	16.4			
NSX, NSN 50-32-160/6 1.5	1.5	2		23.4	22.2	21.2	20	18.8	16.8	
NSX, NSN 50-32-160/6 2.2	2.2	3		28.6	27.4	26.4	25	24	22.8	
NSX, NSN 50-32-160/6 3.0	3	4		35.6	34.5	33.7	32	30.8	29.3	28.4
NSX, NSN 50-32-200/6 4.0	4	5.5		45	44.1	43.3	42	41.2	40	39.1
NSX, NSN 50-32-200/6 5.5	5.5	7.5		57.5	56.5	55.7	54	52.5	50.5	49.4

NSX, NSN 65-40

NSX, NSN 65-40-***







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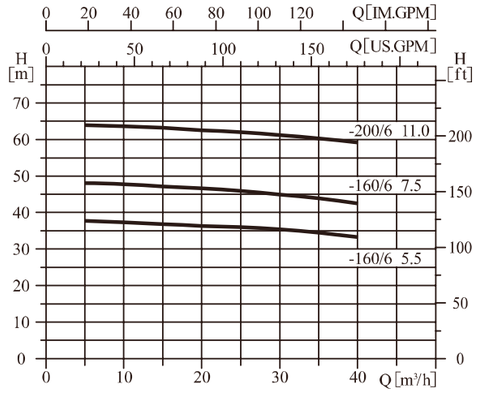
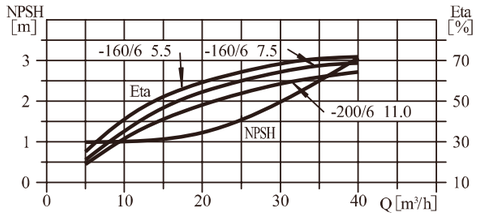
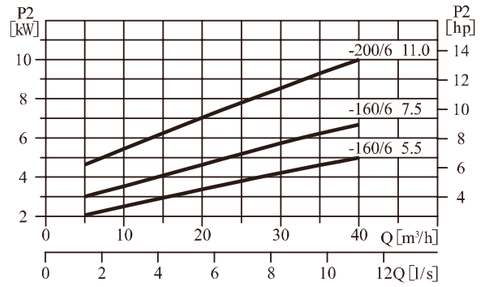




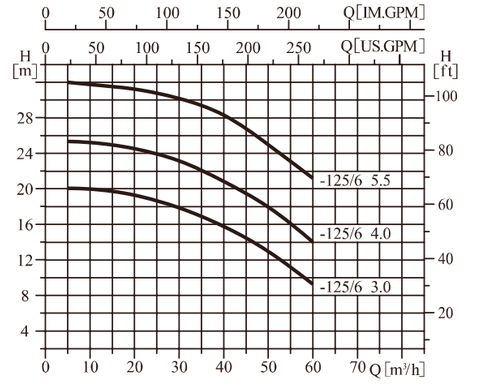


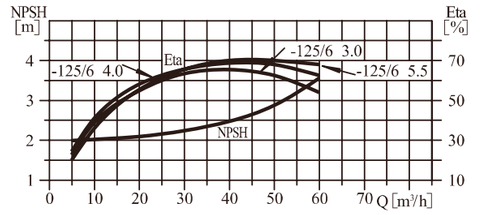
Performance table

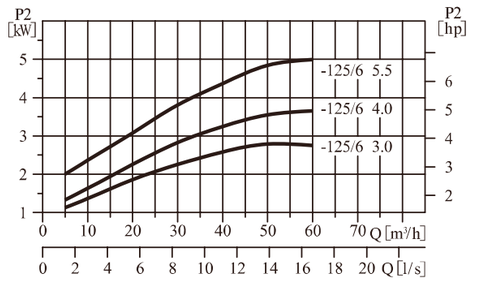
Model	Driving motor (kW)		Q (m³/h)	5	10	15	20	25	30	35	40
	(kW)	(hp)									
NSX, NSN 65-40-125/6 1.5	1.5	2	H (m)	16.1	15.6	15.1	14.2	13	11.2		
NSX, NSN 65-40-125/6 2.2	2.2	3		20.3	20	19.7	19.1	18	16.2	14.3	
NSX, NSN 65-40-125/6 3.0	3	4		26	25.6	25.2	24.6	24	22.5	20.7	
NSX, NSN 65-40-125/6 4.0	4	5.5		29.6	29.4	29.1	28.5	28	26.7	25.2	
NSX, NSN 65-40-160/6 5.5	5.5	7.5		37.8	37.3	36.8	36.3	36	35.5	34.5	33.2
NSX, NSN 65-40-160/6 7.5	7.5	10		48	47.8	47.22	46.6	46	45	44	42.5
NSX, NSN 65-40-200/6 11.0	11	15		64	63.6	63.2	62.6	62	61.3	60.5	59.2

NSX, NSN 65-50

NSX, NSN 65-50-***







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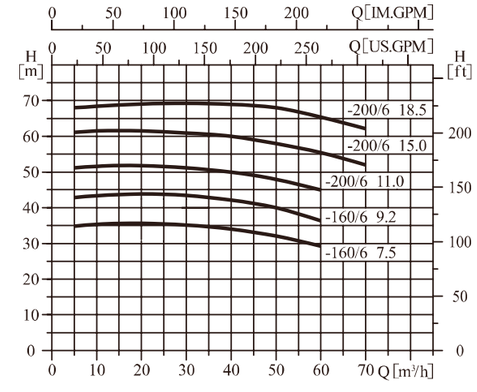
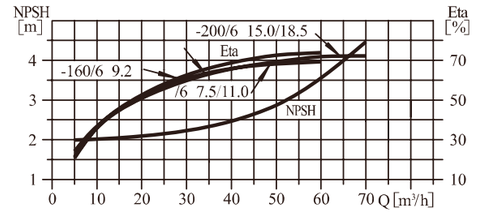
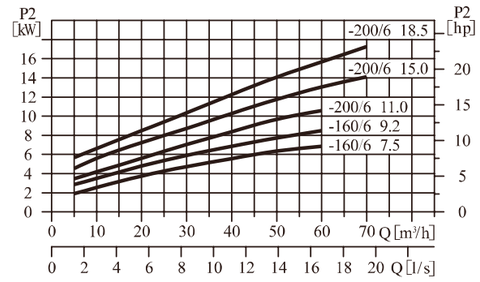




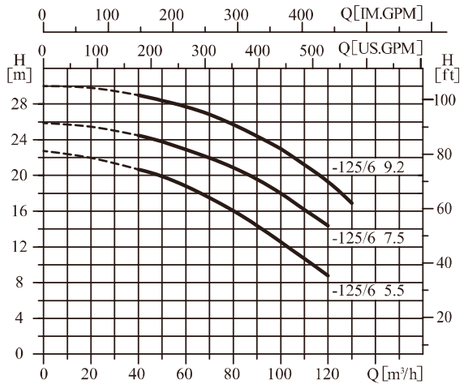


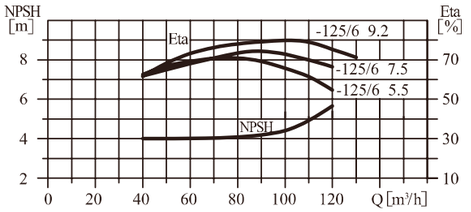
Performance table

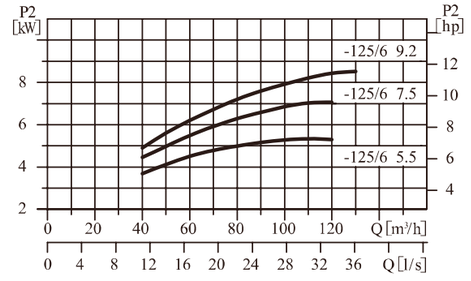
Model	Driving motor (kW)		Q (m³/h)	5	10	20	30	40	50	60	70
	(kW)	(hp)									
NSX, NSN 65-50-125/6 3.0	3	4	H (m)	20.1	20	19.3	17.9	15.8	13	9.3	
NSX, NSN 65-50-125/6 4.0	4	5.5		25.3	25.2	24.5	23.2	20.8	18	14.1	
NSX, NSN 65-50-125/6 5.5	5.5	7.5		32	31.7	31.2	30.2	28.3	25	21.1	
NSX, NSN 65-50-160/6 7.5	7.5	10		35	35.3	35.8	35.5	34.2	32	29.3	
NSX, NSN 65-50-160/6 9.2	9.2	12.5		43	43.2	44	43.5	42	40	37	
NSX, NSN 65-50-200/6 11.0	11	15		51.2	51.6	51.8	51.2	50	48	45	
NSX, NSN 65-50-200/6 15.0	15	20		61	61.5	61.5	61.3	60	58	55.5	52
NSX, NSN 65-50-200/6 18.5	18.5	25		68	68.3	69	69.2	68.9	68	65.4	62

NSX, NSN 80-65

NSX, NSN 80-65-***:







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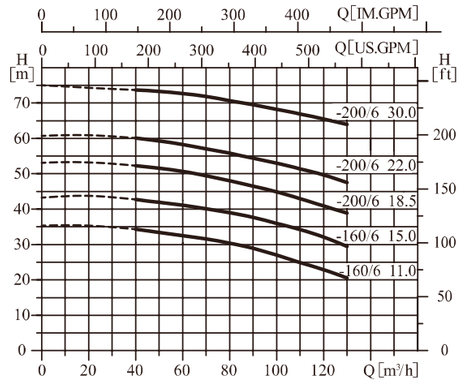
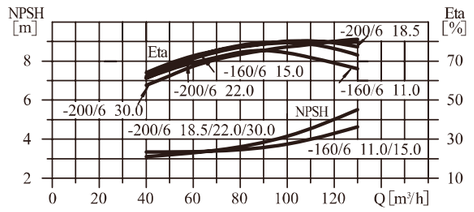
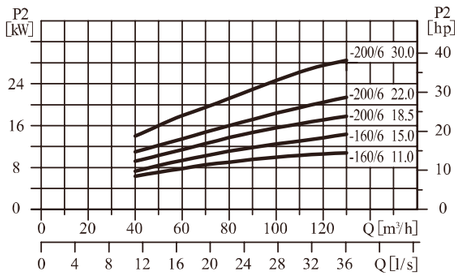




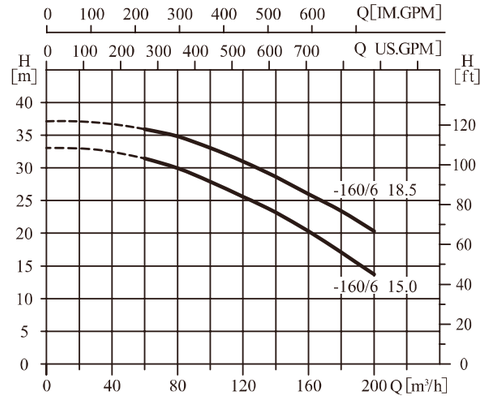


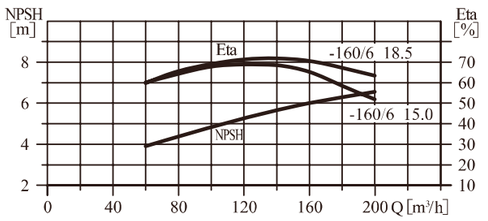
Performance table

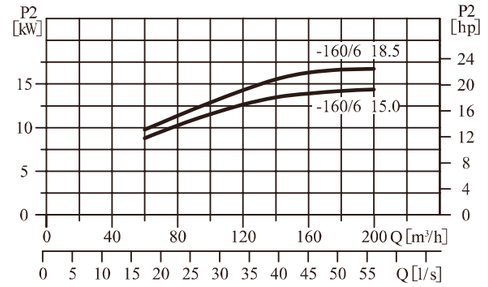
Model	Driving motor (kW)		Q (m³/h)	40	50	60	70	80	90	100	110	120	130
	(kW)	(hp)											
NSX, NSN 80-65-125/6 5.5	5.5	7.5	H (m)	20.6	20	18.8	17.4	16.1	14.4	12.5	11	8.8	
NSX, NSN 80-65-125/6 7.5	7.5	10		24.5	23.7	22.9	22	20.9	19.5	18	15.8	14.4	
NSX, NSN 80-65-125/6 9.2	9.2	12.5		29	28.4	27.7	27	25.8	24.4	23	21.3	19.3	16.9
NSX, NSN 80-65-160/6 11.0	11	15		34.3	33.5	32.5	31.6	30.6	29	27	24.7	22.9	20.5
NSX, NSN S0-65-160/6 15.0	15	20		42.7	41.8	41	40.2	38.8	37.8	36	34.1	32.2	29.5
NSX, NSN 80-65-200/6 18.5	18.5	25		52.2	51.6	50.8	49.2	47.7	46.3	45	43	40.9	38.9
NSX, NSN 80-65-200/6 22.0	22	30		60.1	59.2	58.3	57	55.8	54.4	53	51.4	49.7	47.5
NSX, NSN 80-65-200/6 30.0	30	40		73.7	73.3	73	72.1	70.7	69.5	68	66.8	65.5	64

NSX, NSN 100-80

NSX, NSN 100-80-***







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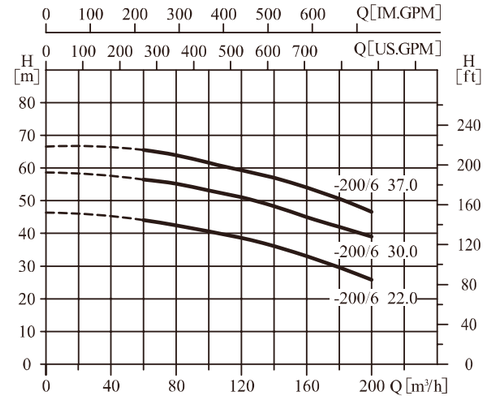
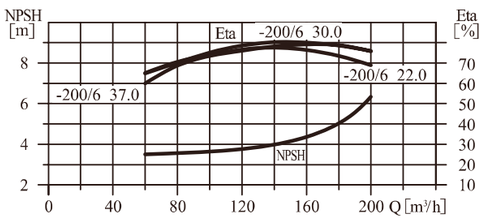
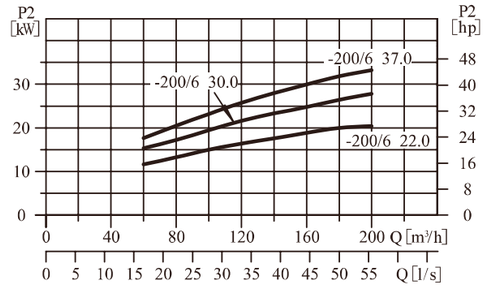


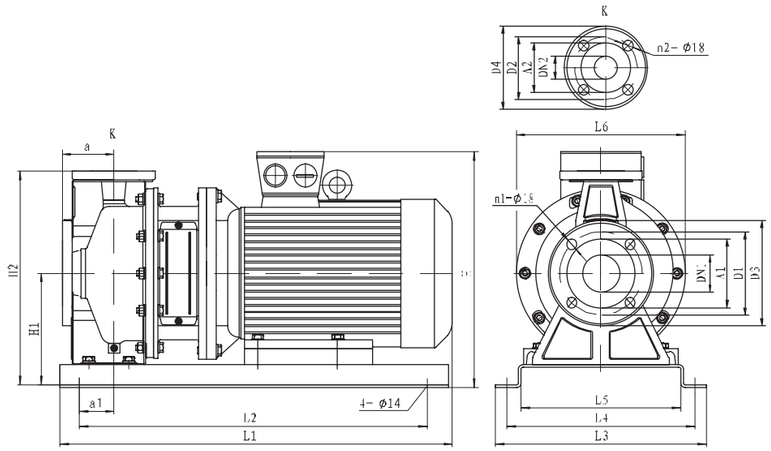




Performance table

Model	Driving motor (kW)		Q (m³/h)	60	80	100	120	140	160	180	200
	(kW)	(hp)									
NSX, NSN 100-80-160/6 15.0	15	20	H (m)	31.5	30	28.4	25.3	23.4	20	16.5	13.7
NSX, NSN 100-80-160/6 18.5	18.5	25		35.9	34.8	33.1	31	28.6	26	23.5	20.3
NSX, NSN 100-80-200/6 22.0	22	30		44.1	42.5	40.3	38.5	35.8	33	29.6	25.8
NSX, NSN 100-80-200/6 30.0	30	40		56.5	55.2	52.7	50.6	48.7	45	42	39.1
NSX, NSN 100-80-200/6 37.0	37	50		65.5	63.9	61.6	59	57	54	50.5	46.6

Installation sketch



Size and weight

Model	Size (mm)																				Weight (kg)
	DNI	DN2	A1	A2	D1	D2	D3	D4	n1	n2	a	a1	H	H1	H2	L1	L2	L3	L4	L5	L6	
NSX, NSN 50-32-160/6 1.1	50	32	98	75	125	100	160	139	4	4	80	32	290	152	296	470	370	280	240	192	210	31
NSX, NSN 50-32-160/6 1.5	50	32	98	75	125	100	160	139	4	4	80	46	307	152	296	500	430	280	240	192	210	37
NSX, NSN 50-32-160/6 2.2	50	32	98	75	125	100	160	139	4	4	80	46	307	152	296	500	430	280	240	192	210	39
NSX, NSN 50-32-160/6 3.0	50	32	98	75	125	100	160	139	4	4	80	46	322	152	296	532	460	300	260	212	250	47
NSX, NSN 50-32-200/6 4.0	50	32	98	75	125	100	160	139	4	4	84	47	393	200	386	560	480	330	290	242	300	58
NSX, NSN 50-32-200/6 5.5	50	32	98	75	125	100	160	139	4	4	84	50	413	200	386	660	580	370	330	280	300	77
NSX, NSN 65-40-125/6 1.5	65	40	118	84	145	110	185	145	4	4	80	45	307	152	294	502	430	280	240	192	210	33
NSX, NSN 65-40-125/6 2.2	65	40	118	84	145	110	185	145	4	4	80	45	307	152	294	502	430	280	240	192	210	35
NSX, NSN 65-40-125/6 3.0	65	40	118	84	145	110	185	145	4	4	80	45	322	152	294	532	460	300	260	212	250	47
NSX, NSN 65-40-160/6 4.0	65	40	118	84	145	110	185	145	4	4	80	45	345	152	294	557	480	330	290	242	250	52
NSX, NSN 65-40-200/6 5.5	65	40	118	84	145	110	185	145	4	4	100	50	413	200	380	680	580	370	330	280	300	78
NSX, NSN 65-40-200/6 7.5	65	40	118	84	145	110	185	145	4	4	100	50	413	200	380	680	580	370	330	280	300	82
NSX, NSN 65-40-200/6 11.0	65	40	118	84	145	110	185	145	4	4	100	50	456	200	380	790	690	420	380	330	350	161
NSX, NSN 65-50-125/6 3.0	65	50	118	98	145	125	185	160	4	4	86	45	342	172	338	548	468	330	290	242	250	49
NSX, NSN 65-50-125/6 4.0	65	50	118	98	145	125	185	160	4	4	86	45	365	172	338	570	490	330	290	242	250	54
NSX, NSN 65-50-125/6 5.5	65	50	118	98	145	125	185	160	4	4	86	37	385	172	338	680	580	370	330	280	300	78
NSX, NSN 65-50-160/6 7.5	65	50	118	98	145	125	185	160	4	4	86	37	385	172	338	680	580	370	330	280	300	82
NSX, NSN 65-50-160/6 9.2	65	50	118	98	145	125	185	160	4	4	86	37	385	172	338	680	580	370	330	280	300	85
NSX, NSN 65-50-200/6 11.0	65	50	118	98	145	125	185	160	4	4	100	50	456	200	380	790	690	420	380	330	350	161
NSX, NSN 65-50-200/6 15.0	65	50	118	98	145	125	185	160	4	4	100	50	456	200	380	790	690	420	380	330	350	171
NSX, NSN 65-50-200/6 18.5	65	50	118	98	145	125	185	160	4	4	100	50	456	200	380	830	730	420	380	330	350	188
NSX, NSN 80-65-125/6 5.5	80	65	130	118	160	145	200	185	8	4	100	50	413	200	380	690	590	370	330	280	300	79
NSX, NSN 80-65-125/6 7.5	80	65	130	118	160	145	200	185	8	4	100	50	413	200	380	690	590	370	330	280	300	83
NSX, NSN 80-65-125/6 9.2	80	65	130	118	160	145	200	185	8	4	100	50	413	200	380	690	590	370	330	280	300	87
NSX, NSN 80-65-160/6 11.0	80	65	130	118	160	145	200	185	8	4	100	50	456	200	400	790	690	420	380	330	350	163
NSX, NSN 80-65-160/6 15.0	80	65	130	118	160	145	200	185	8	4	100	50	456	200	400	790	690	420	380	330	350	173
NSX, NSN 80-65-200/6 18.5	80	65	130	118	160	145	200	185	8	4	100	50	476	220	445	830	730	420	380	330	350	190
NSX, NSN 80-65-200/6 22.0	80	65	130	118	160	145	200	185	8	4	100	50	500	220	445	880	780	455	415	365	350	220
NSX, NSN 80-65-200/6 30.0	80	65	130	118	160	145	200	185	8	4	100	50	550	240	465	950	850	495	455	405	400	292
NSX, NSN 100-80-160/6 15.0	100	80	150	130	180	160	220	200	8	8	125	75	476	220	445	830	730	420	380	330	350	173
NSX, NSN 100-80-160/6 18.5	100	80	150	130	180	160	220	200	8	8	125	75	476	220	445	870	770	420	380	330	350	185
NSX, NSN 100-80-200/6 22.0	100	80	150	130	180	160	220	200	8	8	125	75	500	220	470	915	810	455	415	365	350	223
NSX, NSN 100-80-200/6 30.0	100	80	150	130	180	160	220	200	8	8	125	75	550	240	490	985	880	495	455	405	400	295
NSX, NSN 100-80-200/6 37.0	100	80	150	130	180	160	220	200	8	8	125	75	550	240	490	985	880	495	455	405	400	315

Notes

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