



Pumps and electric pumping units of CNS type with the capacity of 40, 80, 200 m<sup>3</sup>/hour and head from 90 to 425 m are designed for pumping of pure and contaminated water with the following properties:

- PH index is from 6.5 to 8.5;
- total concentration of sulphate and chloride is up to 20 g/l;
- temperature to 70°C;
- solids contents to 1.5% as per weight;
- solids size is not more than 1 mm;
- micro-hardness is not more than 1.47 GPa.

Units are manufactured in climatic version UKhL (for areas with temperate and cold climate), placement category 4 according to GOST 15150.

#### Technical data

Designation	Temperature of pumped medium, °C	Rotational speed, s <sup>-1</sup> (rpm)	Capacity, m <sup>3</sup> /sec (m <sup>3</sup> /hour)	Head, m	Power, kW, not more	Inlet pressure, MPa (kgf/cm <sup>2</sup> )	Efficiency, %, not more	NPSH, m, not more	External leakage through the seal, m <sup>3</sup> /hour (l/hour), not more	Mechanical impurities content		Motor power, kW
										per weight, %	per solid particles size, mm	
<b>CNS 40-...</b>												
CNS 40-120	1 ... 70	24.6 (1480)	0.0111 (40)	120	24	0.1-0.6 (1.0-6.0)	55	3	13.9·10 <sup>-6</sup> (50)	1.5	1	22
CNS 40-180				180	36							30
CNS 40-240				240	59							45
CNS 40-300				300	60							55
CNS 40-330				330	65							75
<b>CNS 80-...</b>												
CNS 80-120	1 ... 70	24.6 (1480)	0.0222 (80)	120	45	0.1-0.6 (1.0-6.0)	70	3	13.9·10 <sup>-6</sup> (50)	1.5	1	75
CNS 80-180				180	75							75
CNS 80-240				240	91							90
CNS 80-300				300	110							110
CNS 80-330				330	130							132
<b>CNS 200-...</b>												
CNS 200-90	1 ... 70	24.6 (1480)	0.056 (200)	90	90	0.1-0.6 (1.0-6.0)	70	3	13.9·10 <sup>-6</sup> (50)	0.5	0.2	110
CNS 200-170				170	124							200
CNS 200-212				212	155							250
CNS 200-255				255	186							250
CNS 200-297				297	217							315
CNS 200-340				340	248							400
CNS 200-382				382	279							400
CNS 200-425				425	310							400

#### The example of pump designation

"Pump CNS-40-240",

- where CNS - centrifugal multistage pump;  
 40 (80, 200) - capacity, m<sup>3</sup>/hour;  
 240 - head, m.

The Company improves the pumping equipment and equips pumping units with the motors of different manufactures. Thereby when ordering, please specify overall and mounting dimensions and required parameters according to the recommended form of Data Sheet.

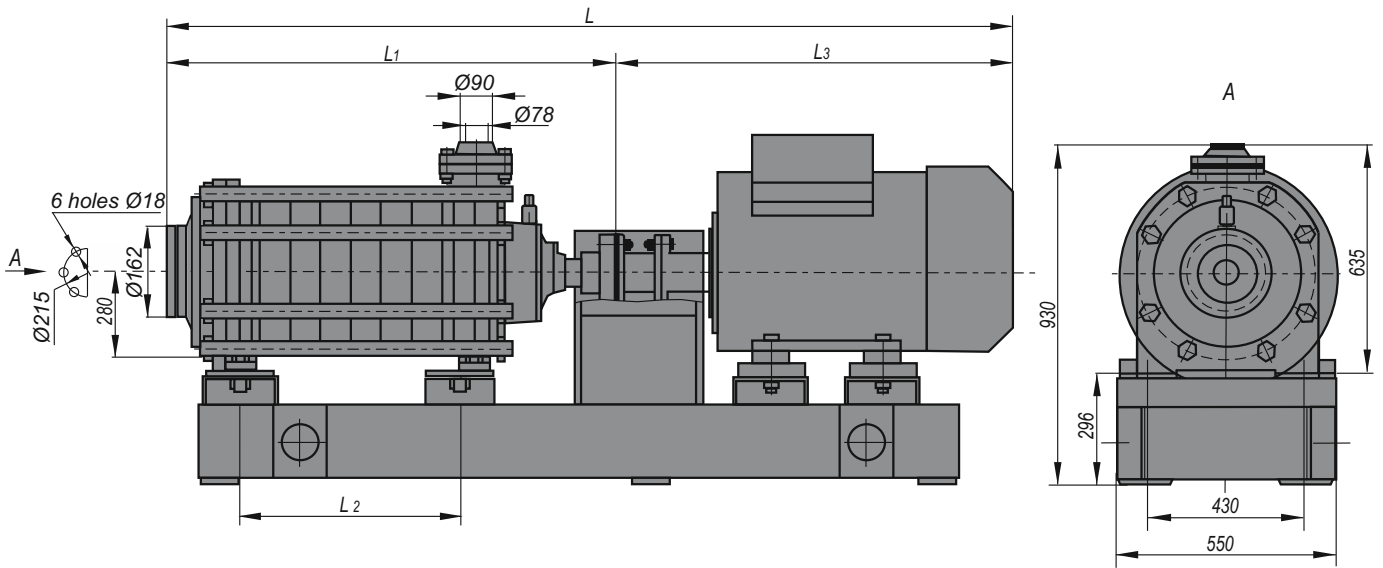
#### Delivery scope

- pump;
- frame;
- guards
- coupling;
- motor.

#### Material of main components

- base components - C420 (steel 25Л - CNS 200)
- inner flowing part - steel 20X13
- shaft - steel 45ХПМА (40ХФА)
- coupling - C420 - CNS 200

Dimensional drawing of CNS 40-, 80- pumps

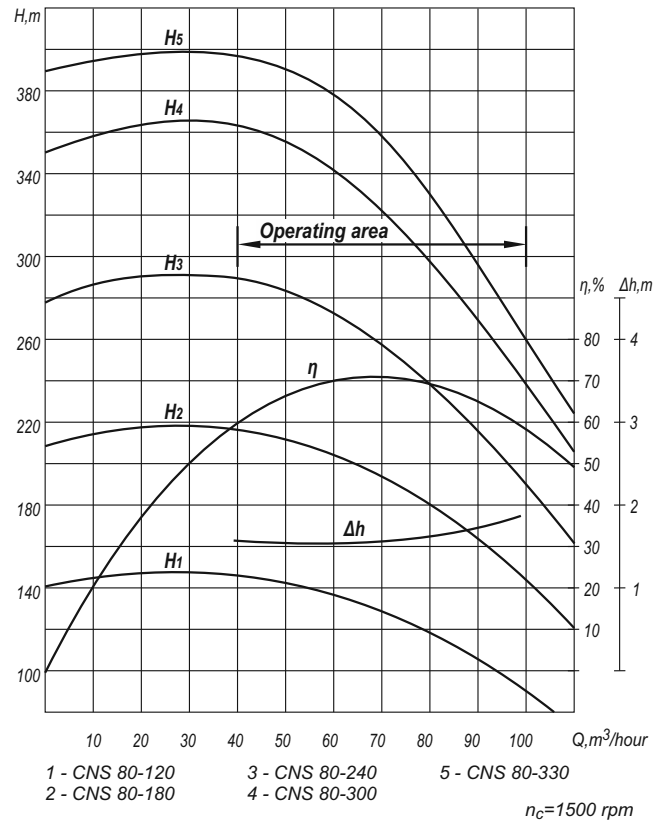
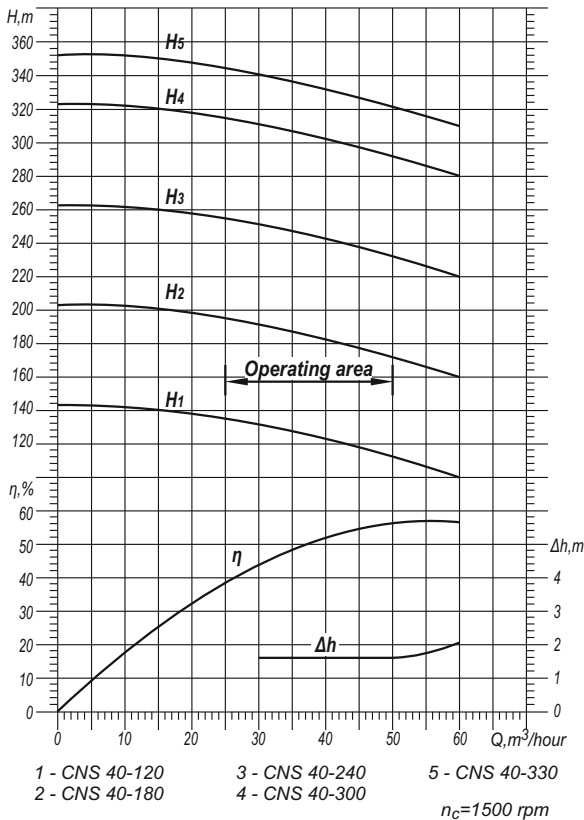


Overall dimensions and weight

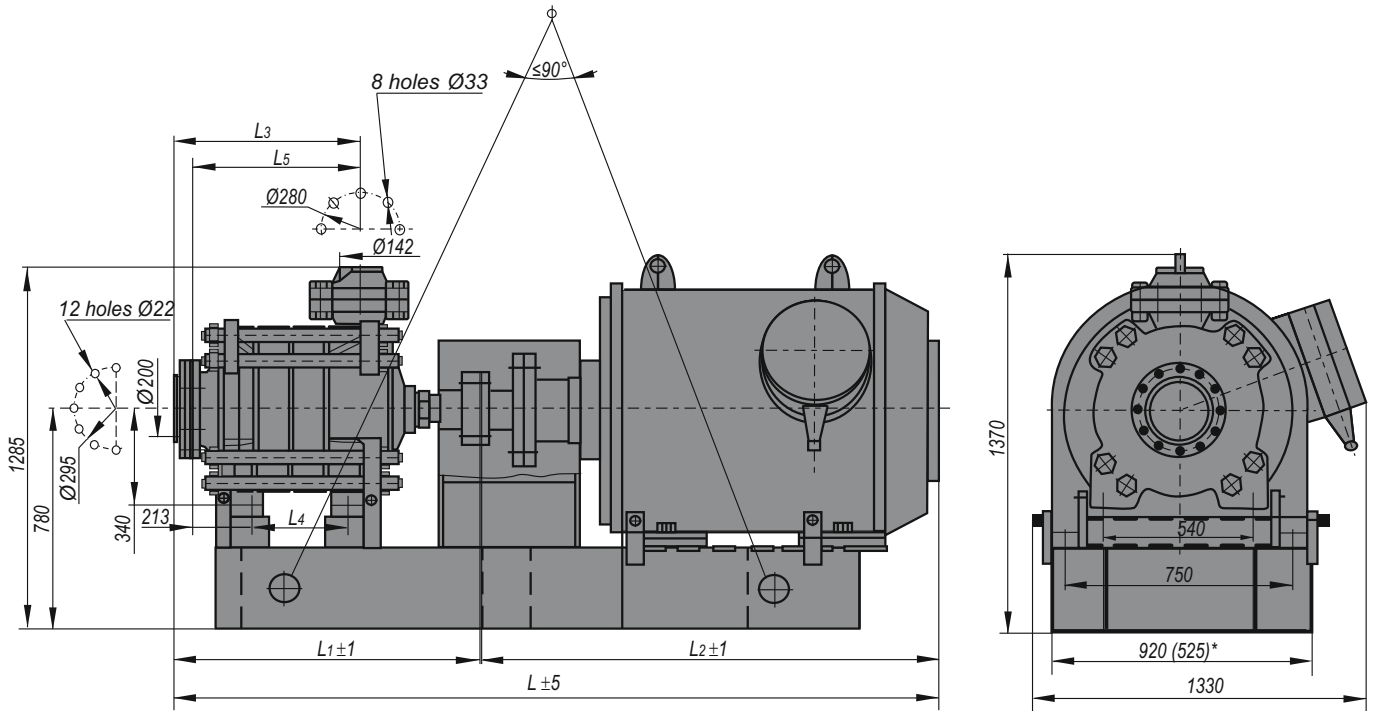
Designation	Dimensions, mm				Weight, not more, kg	
	L	L1	L2	L3	pump	unit
CNS 40-330	2634	1564	860	1070	750	1430
CNS 40-300	2432	1420	775	1012	685	1380
CNS 40-240	2142	1252	607	890	570	1210
CNS 40-180	1939	1084	439	855	460	984
CNS 40-120	1831	916	271	915	340	840

Designation	Dimensions, mm				Weight, not more, kg	
	L	L1	L2	L3	pump	unit
CNS 80-330	3055	1564	860	1550	750	1940
CNS 80-300	2970	1420	775	1550	685	1890
CNS 80-240	2700	1252	607	1450	570	1595
CNS 80-180	2465	1084	439	1680	460	1295
CNS 80-120	2245	916	271	1330	340	1105

Performances and curves of pumps



Dimensional drawing of CNS 200- pumps

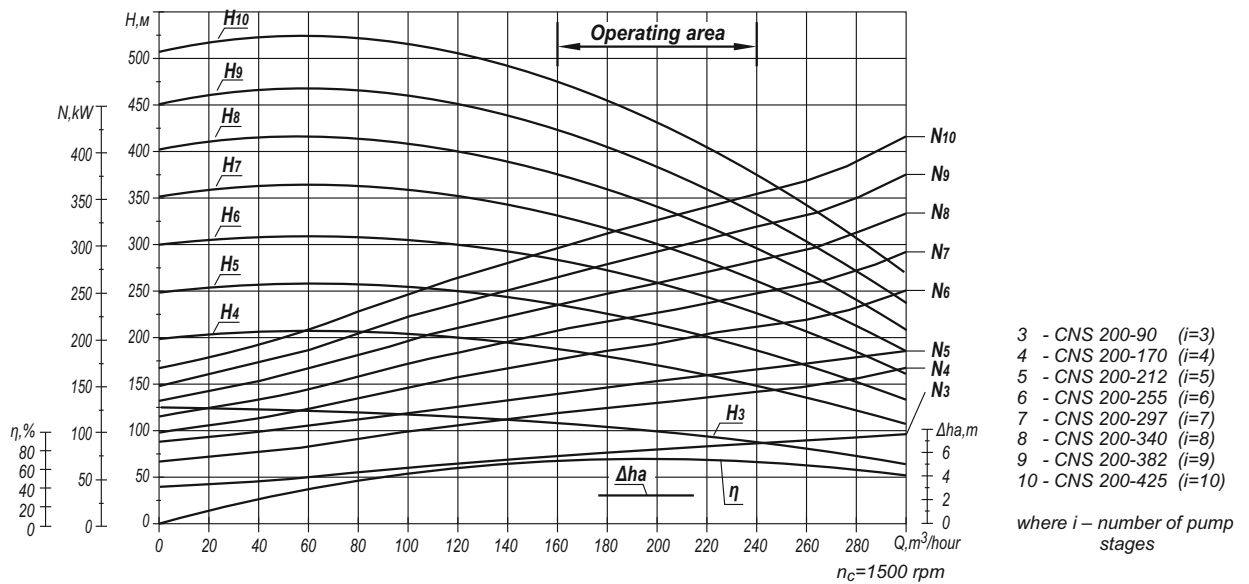


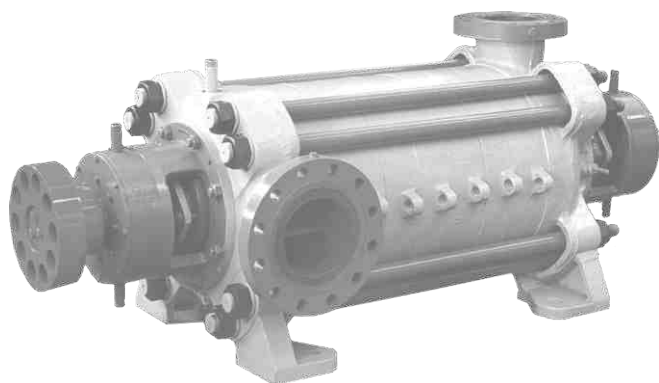
Overall dimensions and weight

\* for CNS 200-90

Designation	Dimensions, mm						Weight, not more, kg	
	L	L1	L2	L3	L4	L5	pump	unit
CNS 200-90	2200	950	-	531	200	-	1080	1980
CNS 200-170	2745	1072	1665	578	325	520	1220	3500
CNS 200-212	2929	1196	1722	703	450	645	1430	4020
CNS 200-255	3055	1322	1925	828	575	770	1630	4230
CNS 200-297	3374	1446	1920	953	700	895	1830	4790
CNS 200-340	3555	1572	1975	1078	825	1020	2030	5360
CNS 200-382	3679	1696	1975	1203	950	1145	2240	5570
CNS 200-425	3805	1822	1975	1328	1075	1270	2440	5780

Performances and curves of pumps





Centrifugal multistage mine pumps of NSSh 410 type are designed for pumping chemically low active and neutral low-impure fluids at water-drainage installations with fluid influx of 250-410 m<sup>3</sup>/h and elevation head of water lifting being equal to head in the nominal mode (taking into account the resistance of pipeline network).

Application: water-drainage installations of coal and iron-ore mines, mining and smelting enterprises, oil-producing and oil-refining industry, feed water supply, etc.

Horizontal multistage pumps with impellers being installed in single direction and hydraulic balancing device to sustain axial forces.

### Physical and chemical performances of pumped medium

Temperature, K (°C), not more	318 (45)
Solid impurities maximum size, mm, not more	0.2
Content of mechanical impurities, kg/m <sup>3</sup> , not more	5
pH index	6.5..8.5
Total concentration of sulfates and chlorides, g/l, not more	20
Microhardness of solid impurities, GPa, not more	1.47

### Technical data (in nominal mode)

Designation	Capacity, m <sup>3</sup> /sec (m <sup>3</sup> /hour)	Head, m	Rotational speed, s <sup>-1</sup> (rpm)	Recommended motor power, kW	NPSH, m, not more	Pump efficiency, %, not less
NSSh 410-182	410 (0.1139)	182	24.6 (1475)	315	4	72
NSSh 410-273		273		500		
NSSh 410-364		364		630		
NSSh 410-455		455		800		
NSSh 410-546		546		1000		
NSSh 410-637		637		1250		
NSSh 410-728		728		1250		
NSSh 410-819		819		1600		
NSSh 410-910		910		1600		
NSShD 410-910		910		1600 (800x2)		

Note: 1. Allowable head deviation is +5%, -3% from nominal value.  
2. Efficiency is a design value and shall not be considered as an acceptance one.

### The example of designation

"Pump NSSh 410-910, TY Y3. 19-05747991-085-98",  
where NSSh - multistage mine pump;  
410 - rated capacity, m<sup>3</sup>/h;  
182 - head, m.

"Pump NSShD 410-910, 1.3330-33.001.00 TU",  
where NSShD - multistage mine dual-drive pump;  
410 - rated capacity, m<sup>3</sup>/h;  
910 - head, m.

The Company improves the pumping equipment and equips pumping units with the motors of different manufactures. Thereby when ordering, please specify overall and mounting dimensions and required parameters according to the recommended form of Data Sheet.

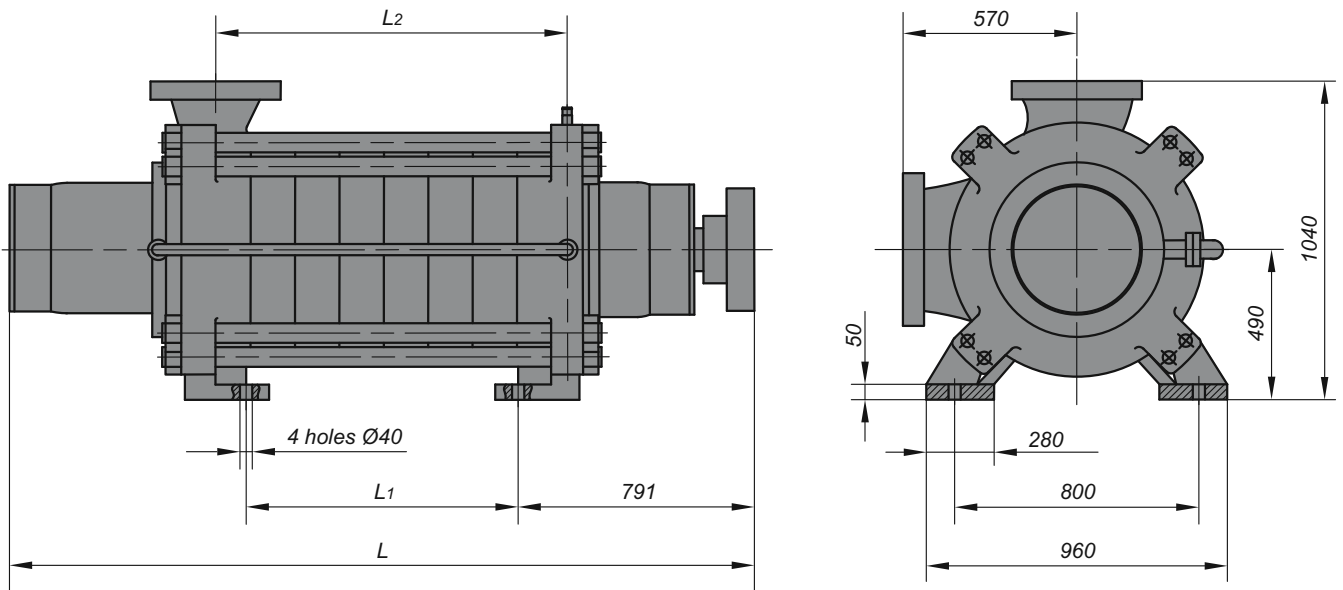
### Scope of supply

- pump of NSSh 410;
- coupling with guard (for NSShD 410-910-2 pcs.);
- set of spare parts;
- set of special tools and accessories.

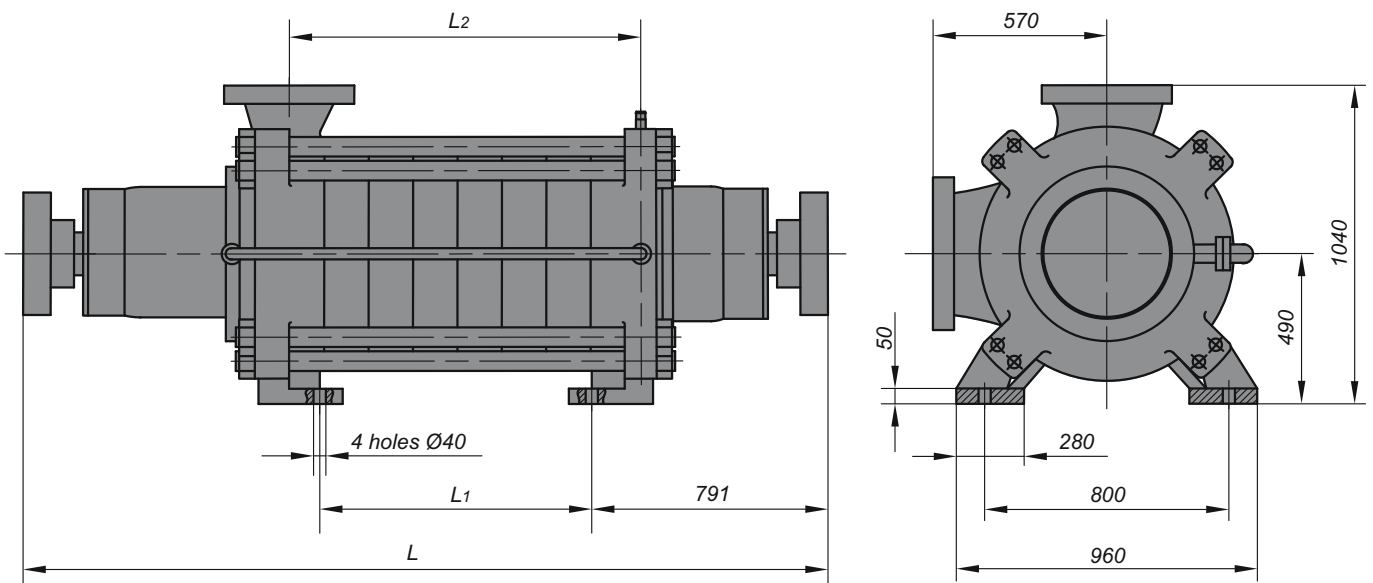
### Material of main parts

- inner flowing part - steel 20X13Л GOST 977-88;
- shaft - steel 40XΦA GOST 4543-71;
- suction and discharge covers - steel 25Л-1 GOST 977-88.

Dimensional drawing of NSSh 410- pumps

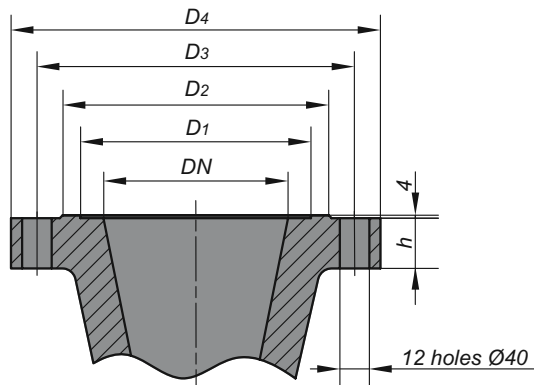


Dimensional drawing of NSShD 410-910 pump



Overall and installation dimensions

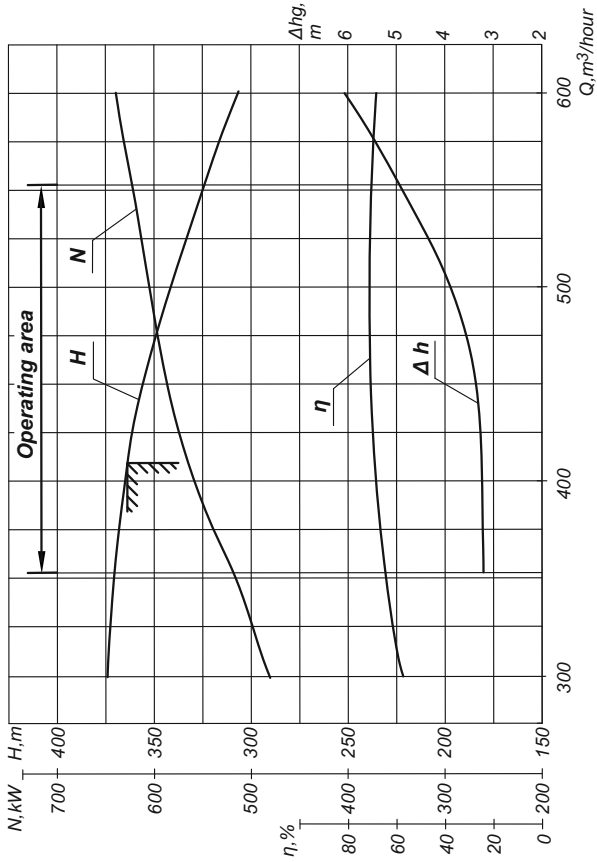
Pump Designation	Dimensions, mm			Pump weight, kg
	L	L <sub>1</sub>	L <sub>2</sub>	
NSSh 410-182	1910	169	373	2470
NSSh 410-273	2055	314	518	2790
NSSh 410-364	2200	459	663	3110
NSSh 410-455	2345	604	808	3430
NSSh 410-546	2490	749	953	3780
NSSh 410-637	2635	894	1098	4130
NSSh 410-728	2780	1039	1243	4480
NSSh 410-819	2925	1184	1388	4830
NSSh 410-910	3070	1329	1533	5180
NSShD 410-910	3100	1329	1533	5210



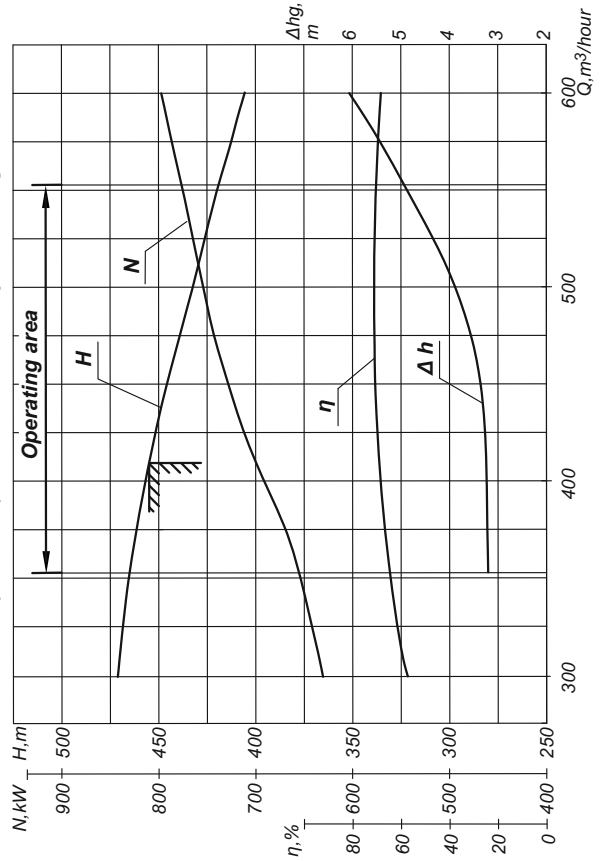
Connecting dimensions of pump nozzles

Dimensions, mm	Inlet nozzle	Outlet nozzle
$DN$	250	200
$D_1$	313	255
$D_2$	360	310
$D_3$	430	360
$D_4$	500	425
$h$	68	60

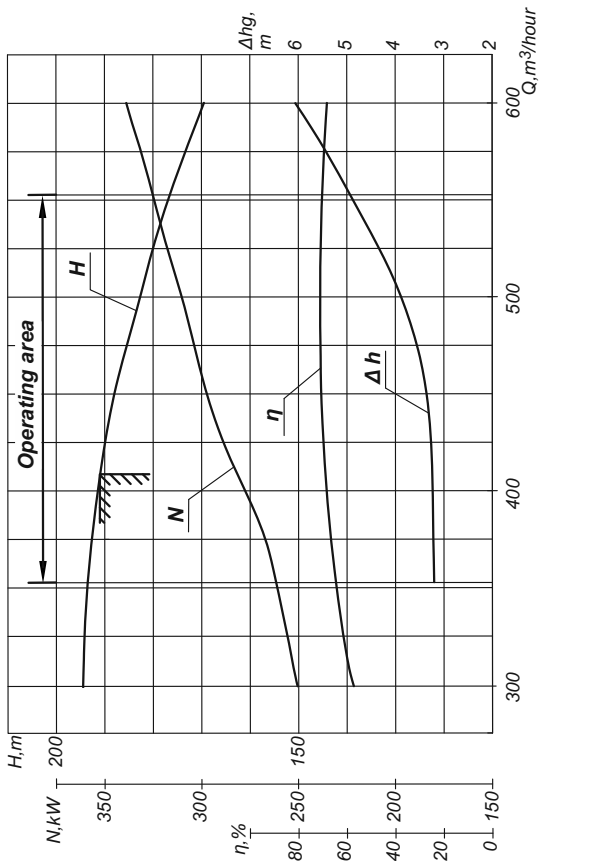
Performance and curves of NSSh 410-364 pump at the rotational speed  $n=24.59 \text{ s}^{-1}$  (1475 rpm) with water of density  $\rho=1000 \text{ kg/m}^3$



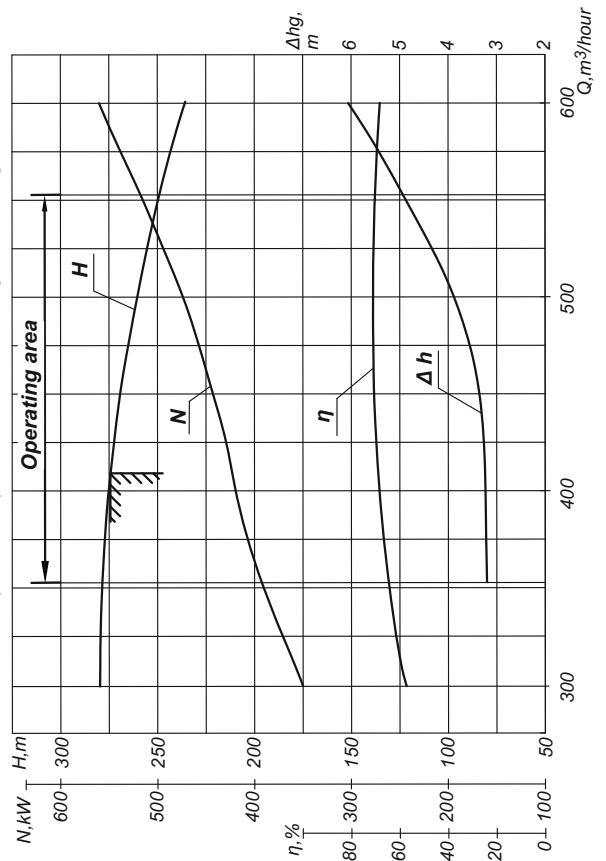
Performance and curves of NSSh 410-455 pump at the rotational speed  $n=24.59 \text{ s}^{-1}$  (1475 rpm) with water of density  $\rho=1000 \text{ kg/m}^3$

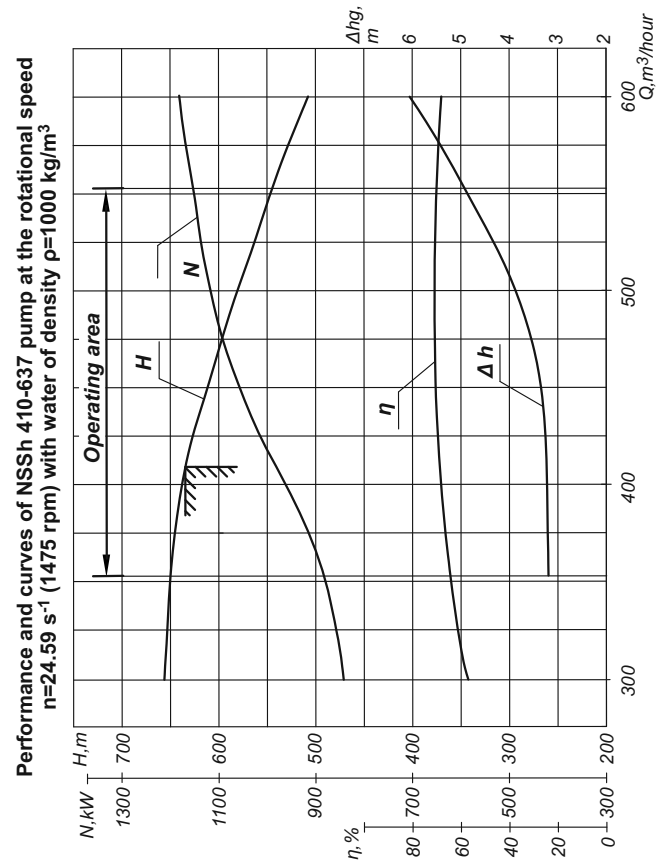
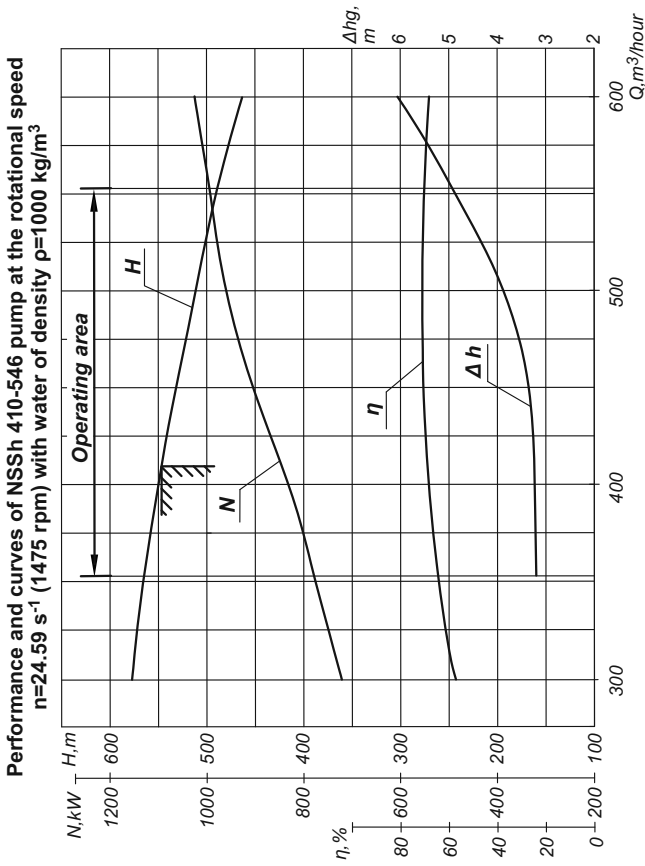
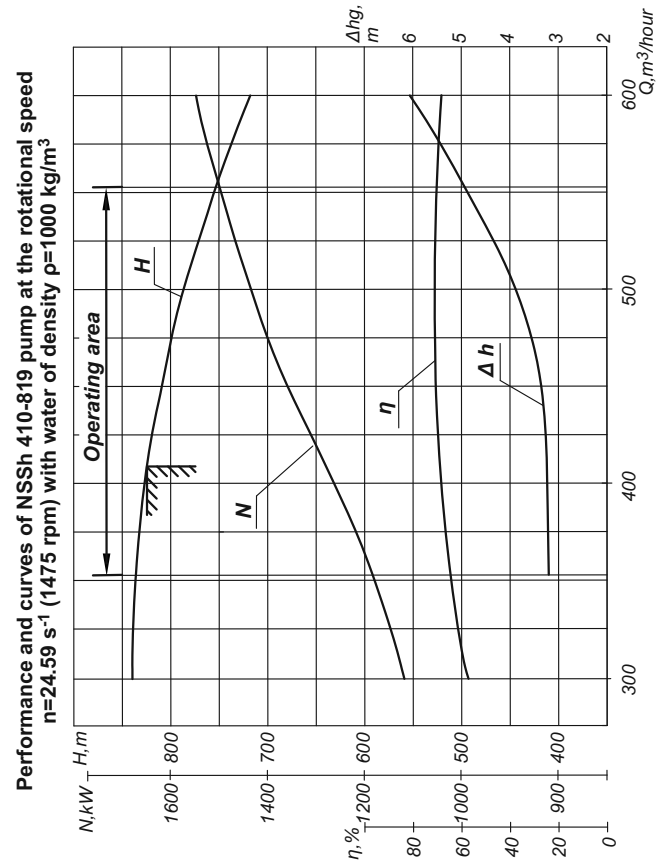
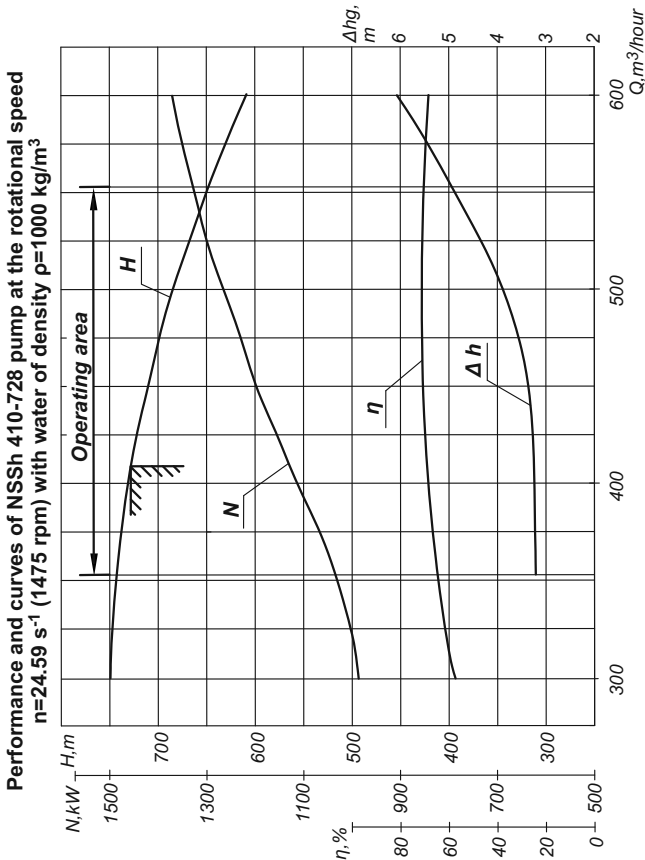


Performance and curves of NSSh 410-182 pump at the rotational speed  $n=24.59 \text{ s}^{-1}$  (1475 rpm) with water of density  $\rho=1000 \text{ kg/m}^3$

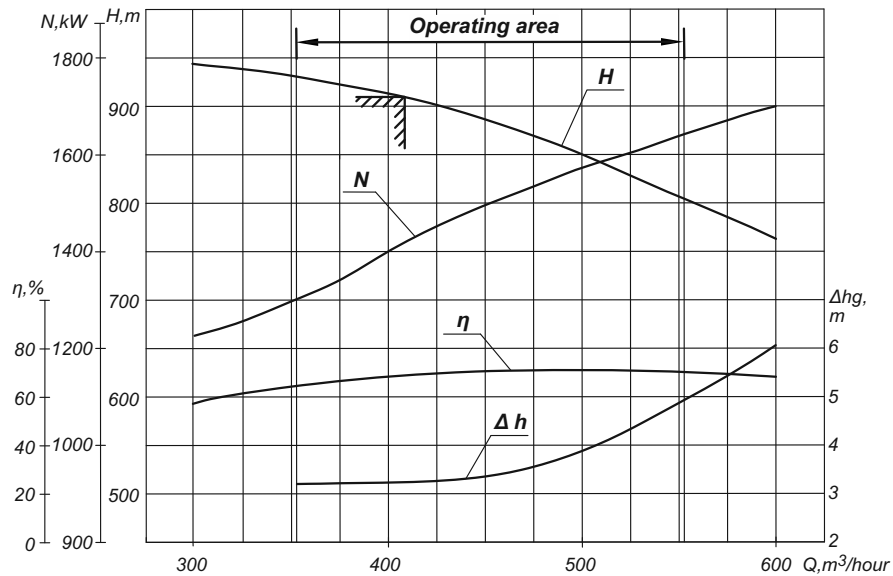


Performance and curves of NSSh 410-273 pump at the rotational speed  $n=24.59 \text{ s}^{-1}$  (1475 rpm) with water of density  $\rho=1000 \text{ kg/m}^3$

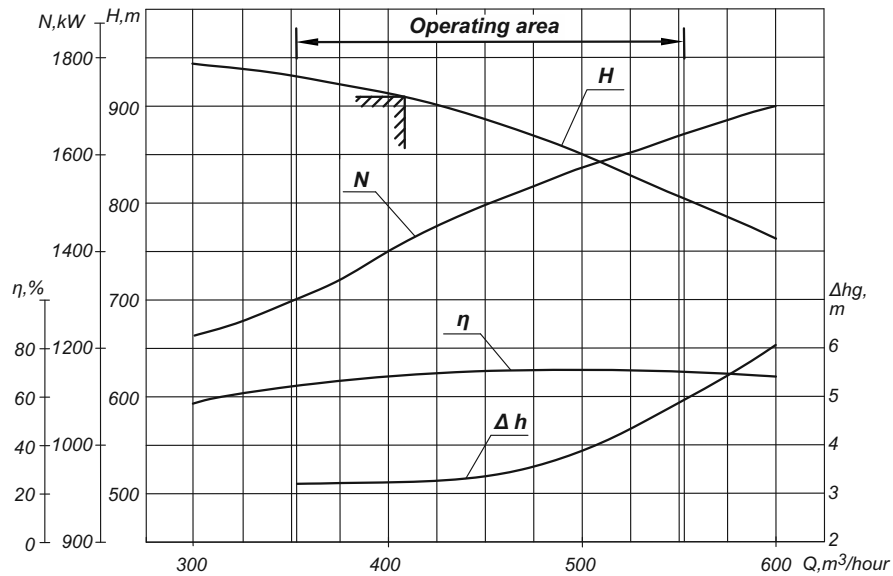




Performance and curves of NSSh 410-910 pump at the rotational speed  $n=24.59 \text{ s}^{-1}$  (1475 rpm) with water of density  $\rho=1000 \text{ kg/m}^3$

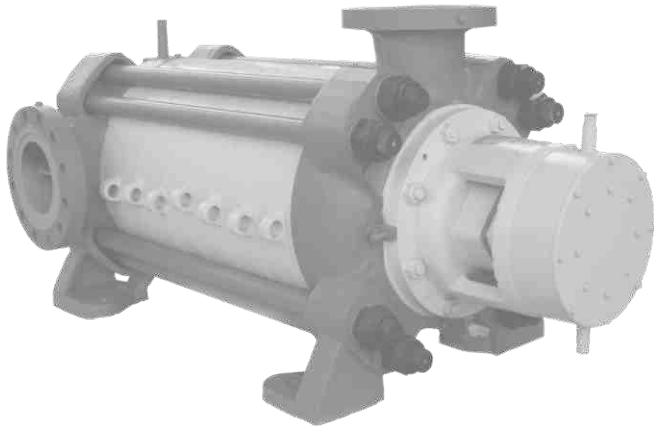


Performance and curves of NSShD 410-910 pump at the rotational speed  $n=24.59 \text{ s}^{-1}$  (1475 rpm) with water of density  $\rho=1000 \text{ kg/m}^3$



Due to continuous modernization of electric motors being delivered with pumps the motor identification mark as well as overall and installation dimensions of pump motor units are specified by Customer's individual requests.





Centrifugal multistage mine pumps of NSSh 500 type are designed for pumping of chemically non-aggressive and neutral slightly contaminated fluids at dewatering plants with inflows 350-500 m<sup>3</sup>/hour and elevation head of water corresponding to head at nominal conditions (taking into account pipeline network resistance).

Application: water-drainage installations of coal and iron-ore mines, mining and smelting enterprises, oil-producing and oil-refining industry, feed water supply, etc.

Horizontal multistage pumps with impellers being installed in single direction and hydraulic balancing device to sustain axial forces.

### Physical and Chemical Performances of Pumped Medium

Temperature, K (°C), not more	318 (45)
Solid impurities maximum size, mm, not more	0.2
Content of mechanical impurities, kg/m <sup>3</sup> , not more	5
pH index	6.5...8.5
Total concentration of sulfates and chlorides, g/l, not more	20
Microhardness of solid impurities, GPa, not more	1.47

### Technical data (in nominal mode)

Designation	Capacity, m <sup>3</sup> /sec (m <sup>3</sup> /hour)	Head, m	Rotational speed, s <sup>-1</sup> (rpm)	Recommended motor power, kW	NPSH, m, not more	Pump efficiency, %, not less	Weight, kg
NSSh 500-273Y	500	273	24.6	630	4	72	2790
NSSh 500-990	(0.1389)	990	(1475)	2000			5207

Note: 1. Allowable head deviation is +5%, -3% from nominal value.  
2. Efficiency is a design value and shall not be considered as an acceptance one.

### The example of pump designation

"Pump NSSh 500-273Y",  
where NSSh - multistage mine pump;  
500 - standard capacity, m<sup>3</sup>/hour;  
273 - head, m;  
Y - carbon version.

"Pump NSSh 500-990",  
where NSSh - multistage mine pump;  
500 - standard capacity, m<sup>3</sup>/hour;  
990 - head, m.

The Company improves the pumping equipment and equips pumping units with the motors of different manufactures. Thereby when ordering, please specify overall and mounting dimensions and required parameters according to the recommended form of Data Sheet.

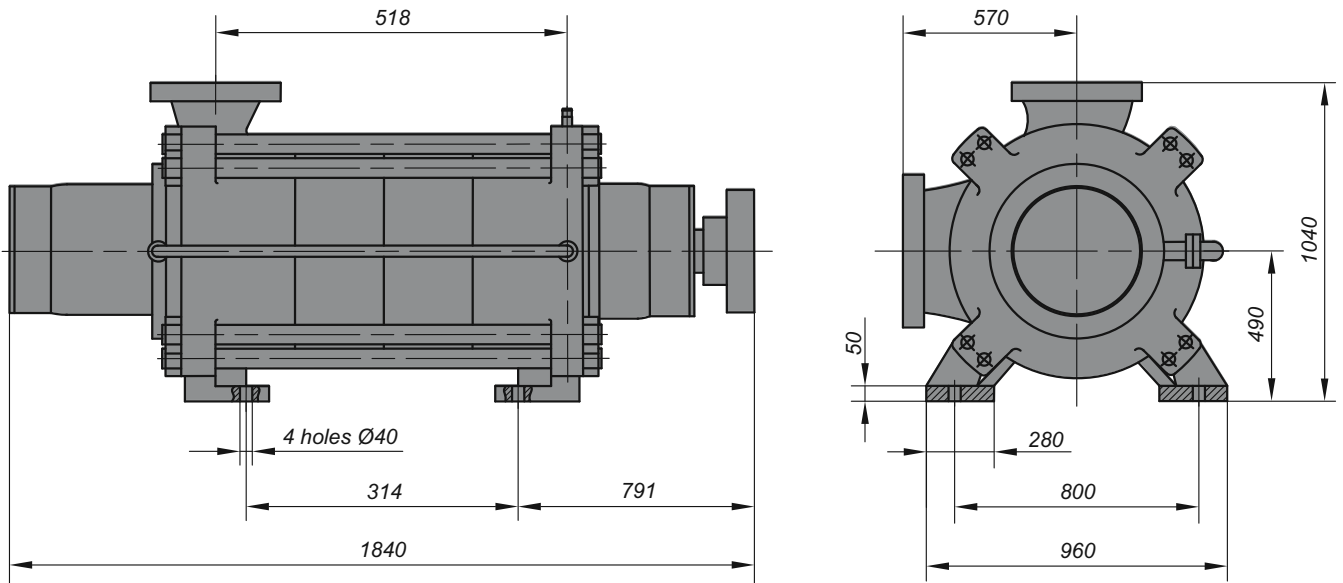
### Delivery scope

- pump of NSSh 500-273Y...990 type;
- coupling;
- spare parts set;
- set of special tools and accessories.

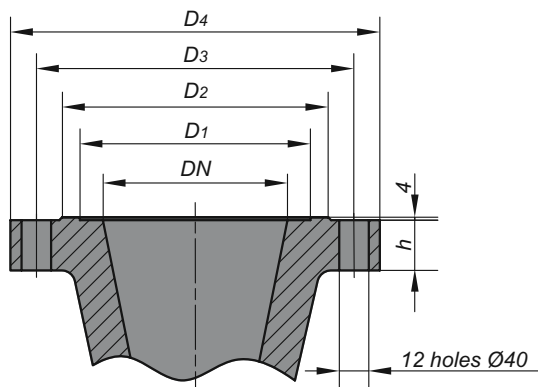
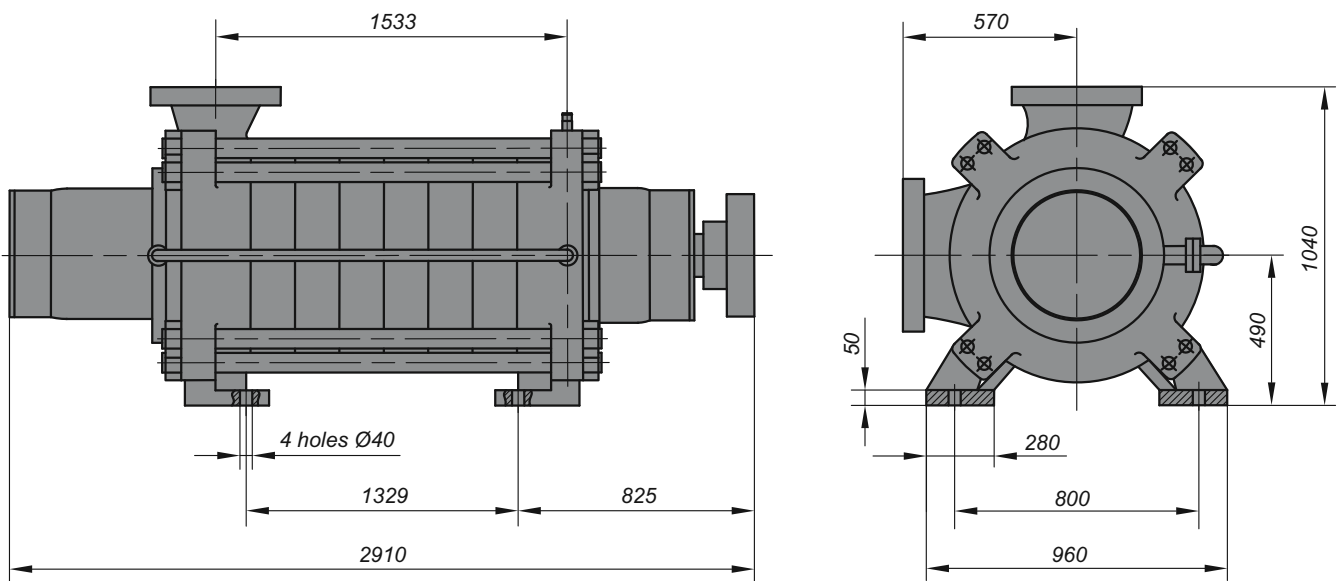
### Main components material

- inner flowing part - steel 20X13Л as per GOST 977-88 (for NSSh 500-273Y - carbon steel);
- shaft - steel 40XΦA as per GOST 4543-71;
- suction and discharge covers - steel 25Л-1 as per GOST 977-88.

Dimensional drawing of NSSh 500-237Y pump



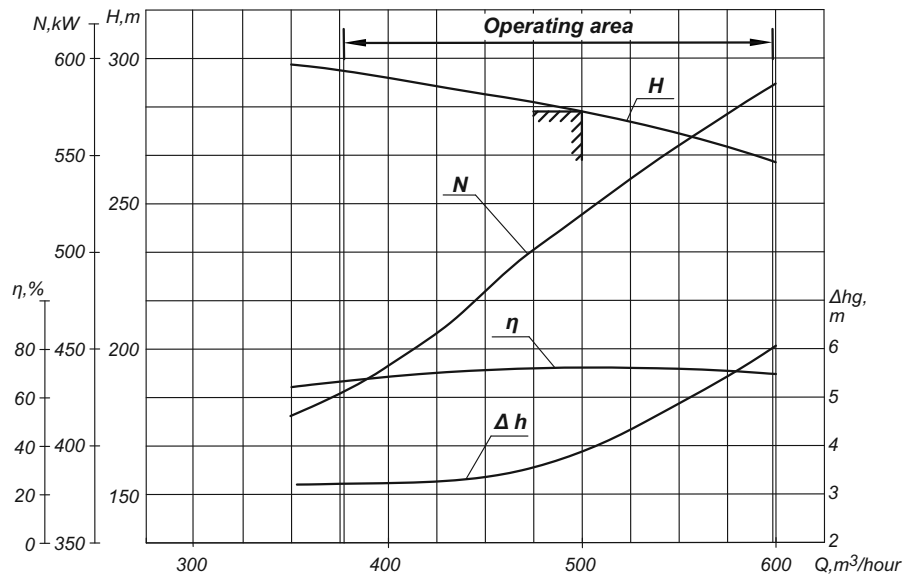
Dimensional drawing of NSSh 500-990 pump



Connecting dimensions of pump nozzles

Dimensions, mm	Inlet nozzle	Outlet nozzle
$DN$	250	200
$D_1$	313	255
$D_2$	360	310
$D_3$	430	360
$D_4$	500	425
$h$	68	60

Performance and curves of NSSh 500-273Y pump at the rotational speed  $n=24.59 \text{ s}^{-1}$  (1475 rpm) with water of density  $\rho=1000 \text{ kg/m}^3$



Performance and curves of NSSh 500-990 pump at the rotational speed  $n=24.59 \text{ s}^{-1}$  (1475 rpm) with water of density  $\rho=1000 \text{ kg/m}^3$

