ISO 9001
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Certification

JSC “SMNPO - Engineering”

PUMPING EQUIPMENT

FRUNZE
ESTABLISHED IN 1896

catalog
of products

MORE THAN A CENTURY AT PUMP MARKET
EGUIPMENT OF JSC "SMNPO - Engineering"

JSC "SMNPO - Engineering" is the largest manu-facturer of pumping equipment in Ukraine and CIS countries. Manufactured pumping equipment is rather diversified and finds wide application almost in all branches of industry.

Company's history in production of pumps has more than 115 years experience. The first water pumps were manufactured in 1902. There were pumps for sugar plants. In 30th the company mastered the production of liquid-packed ring-type pumps and at the end of 40th — vacuum rotary vane-type pumps. 60th years is the beginning of manufacturing of special chemical pumps made of titanium. In 80th it was actively continuing the mastering of new types of pumping equipment for oil, chemical and other branches of industry.

For stimulation of oil production by method of water flooding of oil beds under high pressure since 1980 JSC "SMNPO - Engineering" started to produce multi stage centrifugal pumps of ЦНС (CNS) type. Presently more than 10 000 of such pumps are under operation in oil industry. These pump units have been supplied not only to CIS countries but also to Iran, Syria, Argentina, Pakistan and other countries. They are in great demand among oil-industry specialists, especially in Western Siberia. For 30-year period of production of ЦНС (CNS) pumps designers considerably improved these pumps, mastered new types of this equipment.

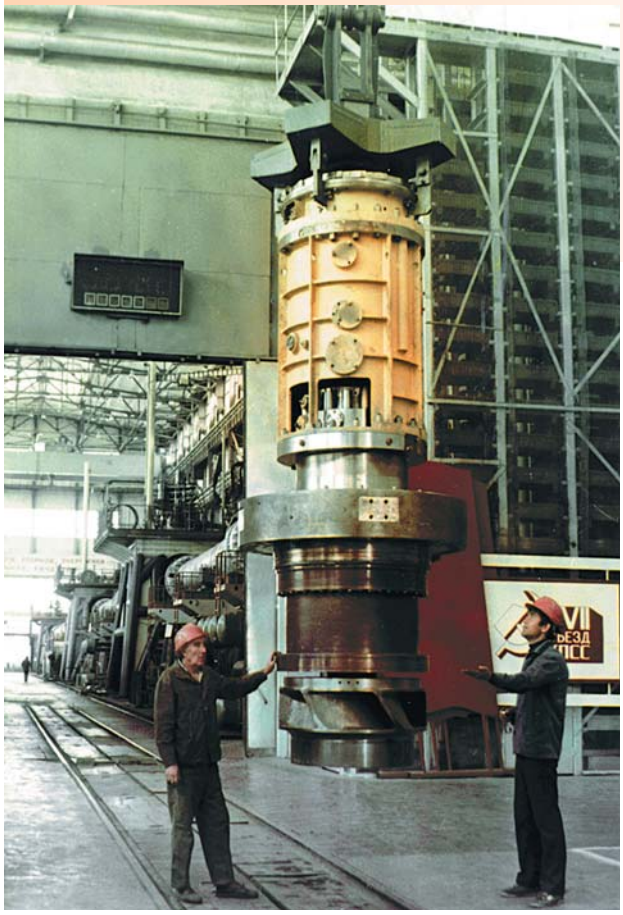
The development of industry in 90th determined the mastering of new types of pumping equipment.

We enlarge the range of vacuum liquid-packed ring-type and rotary vane-type pumps, centrifugal pumps for chemical, coal, metallurgical, paper making and other branches of industry and develop new types of pumping equipment.

JSC "SMNPO - Engineering" becomes the main supplier of special pumping equipment for nuclear power plants.

The range of production includes reactor coolant pump with power 8 000 kW and head 20 000 m^3 of coolant per hour for I circuit of power generating unit and 14 types of pumps of the II circuit (feed water, condensate, circulating pumps). Manufacturing of pumps is carried out in specialized workshops in full compliance with the requirements of Safety regulations for nuclear power energy and subject to strict technical inspection and tests. Total service life of this equipment is not less than 30 years.

Running nuclear power plants in Russia, Ukraine, Armenia, Lithuania, Bulgaria, Finland, Czech Republic, Hungary, Slovakia and China are completed with pump equipment manufactured by Sumy machine-builders.



CENTRIFUGAL MULTISTAGE PUMPS

Designed for pumping of chemically non-aggressive and neutral slightly contaminated fluids.

Application: water-drainage installation for coal mines, oil industry and oil refining, supply of feed water, etc.

Horizontal multistage pumps, with impellers disposed on one side and balancing ring to take up axial load.

Pumps are made of stainless steel.

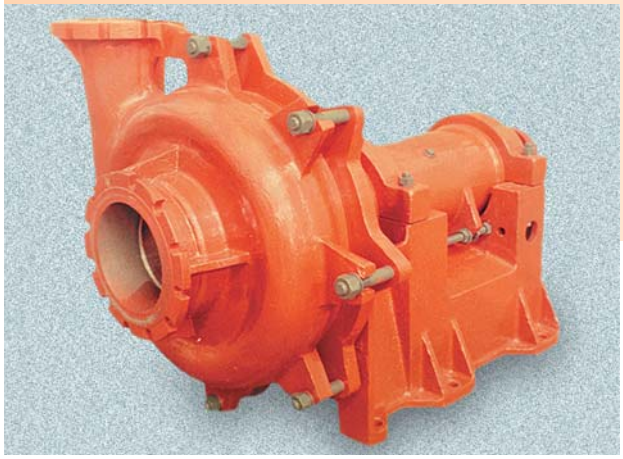
SPECIFICATION

Pump type	Capacity, m^3/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Overall dimensions, mm	Mass, kg
ЦНС 40-240	40	240	1500	75	1252 x 500 x 580	570
ЦНС 40-330	40	330	1500	45	1500 x 500 x 580	750
ЦНС 80-120	80	120	1500	75	915 x 500 x 580	340
ЦНС 80-180	80	180	1500	90	1090 x 500 x 580	460
ЦНС 80-240	80	240	1500	110	1250 x 500 x 580	570
ЦНС 80-300	80	300	1500	132	1420 x 500 x 580	685
ЦНС 80-330	80	330	1500	132	1500 x 500 x 580	750
ЦНС 200-90	200	90	1500	90	950 x 625 x 845	1080
ЦНС 200-170	200	170	1500	200	1015 x 625 x 740	1220
ЦНС 200-212	200	212	1500	250	1140 x 625 x 740	1430
ЦНС 200-255	200	255	1500	250	1265 x 625 x 740	1630
ЦНС 200-297	200	297	1500	315	1390 x 625 x 740	1830
НСШ 410-182	410	182	1500	315	1695 x 1050 x 1040	2470
НСШ 410-273	410	273	1500	400	1840 x 1050 x 1040	2790
НСШ 410-364	410	364	1500	630	1985 x 1050 x 1040	3110
НСШ 410-455	410	455	1500	800	2130 x 1050 x 1040	3430
НСШ 410-546	410	546	1500	1000	2275 x 1050 x 1040	3780
НСШ 410-637	410	637	1500	1250	2420 x 1050 x 1040	4130
НСШ 410-728	410	728	1500	1250	2565 x 1050 x 1040	4480
НСШ 410-819	410	819	1500	1600	2710 x 1050 x 1040	4830
НСШ 410-910	410	910	1500	1600	3070 x 1050 x 1040	5180
НСШ 410-1000	410	1000	1500	1600	3215 x 1050 x 1040	6530
НСШ 410-910	410	910	1500	1600 or 800 x 2	3100 x 1050 x 1040	5210
НСШ 500-990	500	990	1500	2000	2910 x 1050 x 1040	5207
НСШ 500-273У	500	273	1500	630	2790 x 1050 x 1040	2790

Remarks: У — inner flowing part is made of carbon steel

CENTRIFUGAL CRADLE-MOUNTED PUMPS FOR LIQUIDS WITH FOREIGN IMPURITIES

Pumps of ЦПН type are designed for pumping of slightly aggressive and neutral liquids containing solid impurities of different concentration and dimensions.



Applied for pumping of products of rocks processing, ash, slag, ferrous and nonferrous metal ores tails, argillo-arenaceous rocks, grained sands, sand and gravel rocks, gravel and spalling rocks. Application: ferrous and nonferrous industry, coal and metal mining industry, melioration and irrigation, industrial and public water supply.

Pumps of ЦН type are designed for pumping of household sewage and other contaminated liquids with density to 1300 kg/m^3.

Application: systems for industrial and public water supply.

Pumping of combustible liquids and installation of pumping units in areas containing explosive mixtures are not allowed.

SPECIFICATION

Pump type	Capacity, m^3/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Overall dimensions, mm	Mass, kg
ЦПН (ЦН) 225-70	225	70	1500	110	1435 x 750 x 960	1040
ЦПН (ЦН) 225-70а	225	60	1500	110	1435 x 750 x 960	1040
ЦПН (ЦН) 225-706	225	50	1500	110	1435 x 750 x 960	1040
ЦПН (ЦН) 540-95	540	107	1500	315	1520 x 975 x 1000	1080
ЦПН (ЦН) 540-95а	540	103	1500	250	1520 x 975 x 1000	1080
ЦПН (ЦН) 540-956	540	88	1500	250	1520 x 975 x 1000	1080
ЦПН (ЦН) 540-95в	540	72	1500	250	1520 x 975 x 1000	1080
ЦПН (ЦН) 540-95-1	360	50	1000	132	1520 x 975 x 1000	1080
ЦПН (ЦН) 540-95а-1	360	45	1000	90	1520 x 975 x 1000	1080
ЦПН (ЦН) 540-956-1	360	40	1000	90	1520 x 975 x 1000	1080
ЦПН (ЦН) 540-95в-1	360	35	1000	90	1520 x 975 x 1000	1080
ЦПН (ЦН) 550-45	427	45	1500	160	1505 x 730 x 880	1070
ЦПН (ЦН) 800-32	800	50	1500	250	1505 x 730 x 880	1070
ЦН (ЦН) 800-50-5	800	50	1500	160	1505 x 730 x 880	1250
ЦН (ЦН) 800-50а-5	800	50	1500	160	1505 x 730 x 880	1250
ЦН (ЦН) 800-506-5	800	50	1500	160	1505 x 730 x 880	1250

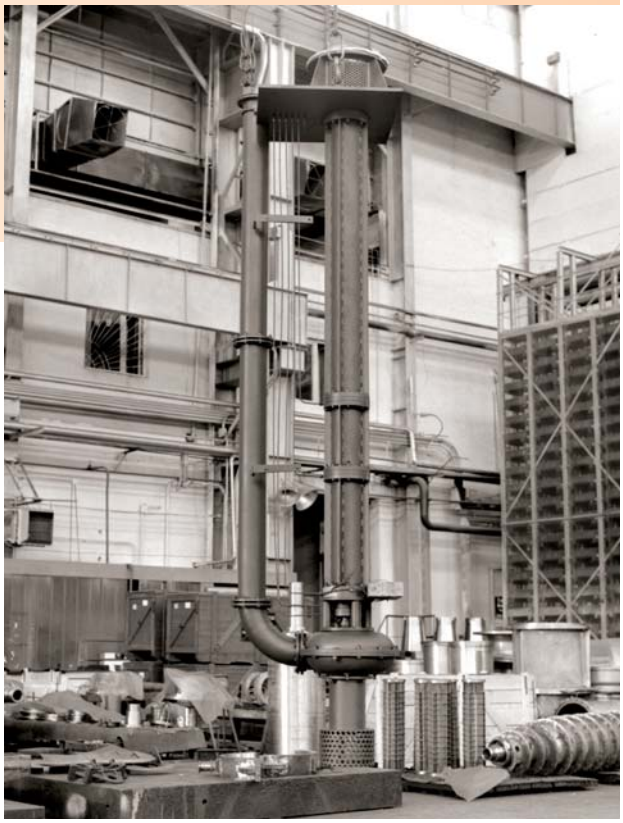
Remarks: inner flowing part of ЦПН pump is made of chrome cast iron ИЧХ-28Н2
inner flowing part of ЦН pump is made of gray cast iron СЧ25 alloyed with chrome and nickel

VERTICAL CENTRIFUGAL SLUDGE PUMPS

Designed for pumping of slightly aggressive and neutral liquids containing solid impurities of different concentration and dimensions. Hydrogen index of pumping medium pH 6–11.

Application: ferrous and nonferrous industry, coal and metal mining industry, melioration and irrigation and industrial and public water supply.

Pumps may be applied for pumping of products of rocks processing, ash, slag, ferrous and nonferrous metal ores tails, argillo-arenaceous rocks, grained sands, sand and gravel rocks, gravel and spalling rocks.



Design features:

- centrifugal pumps of single stage, one-casing, cradle-mounted type;
- pump inner flowing part consists of pump casing, armor-plated disk, impeller made of cast iron modified by nickel and chrome to improve wear-resisting properties;
- rolling bearings are used in pump bearing unit; bearing unit is highly unified and can be provided with heat exchanger for cooling of oil during pump operation in conditions exceeding operating pumping range;
- pump is driven through flexible pin coupling;
- it is provided for hydro seal of stuffing box seal.

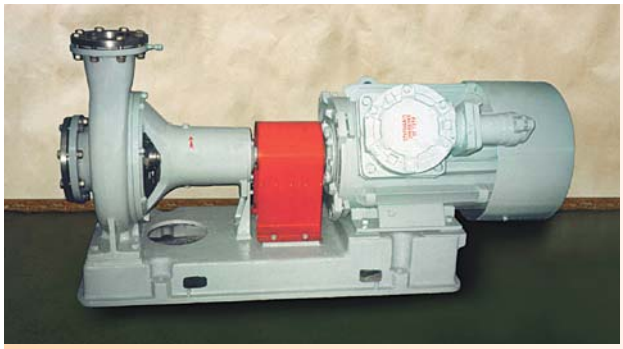
SPECIFICATION

Pump type	Capacity, m^3/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Overall dimensions, mm	Mass, kg
ЦВП 225-60	225	60	1500	110	1375 x 1040 x 4545	2400
НШБ 550-45	500 – 550	45	1500	160	5615 x 1320 x 1150	2040

CRADLE-MOUNTED CHEMICAL PUMPS

Designed for pumping of chemically active and neutral medium with hydrogen index pH 4...9 and temperature up to 70°C (for supply of oil, oil light products, chemically active and slightly aggressive liquids which may cause corrosion of pump inner flowing part material not more than 0.1 mm/year, and neutral liquids).

Pumps, inner flowing part of which is made of titanium, are designed for pumping of liquids with hydrogen index pH=2. Such pumps are applied in chemical, food, oil refining industries.



Design features:

- centrifugal cradle-mounted single stage pumps with horizontal shaft and one-side axial water feed to impeller and vertical discharge;
- impeller design provides maximal rotor load relief of axial force;
- axial force arisen during wearing is compensated by mounting group;
- rolling bearings work like supports;
- shaft sealing – end sealing or sealing with soft packing gland;
- pump unit can be equipped with any type of electric motor which parameters and modification meet operating conditions;
- bearing lubrication – liquid or consistent grease;
- in pumps with liquid grease control of oil level in crankcase mounting group is provided with constant level lubricator.

SPECIFICATION

Pump type	Capacity, m³/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Overall dimensions, mm	Mass, kg
XME 25-20-140-2/25 A-5	2	25	3000	1.1	189 x 216 x 240	18
XME 25-20-140-2/25 K-5	2	25	3000	1.1	189 x 216 x 240	18
XME 25-20-140-2/25 Д-5	2	25	3000	1.1	189 x 216 x 250	19
1XME 25-20-140 K-5	1	7	1500	0.55	189 x 216 x 240	18
XM 25-20-140 K-55	2	25	3000	1.1	229 x 216 x 240	21
X 50-32-125 Д,K	12.5/6.3	20/5	3000/1500	2.2/0.37	455 x 230 x 252	51
X (XE) 50-32-125 Д	12.5/6.3	20/5	3000/1500	3/0.25	920 x 360 x 425	50
X (XE) 50-32-160 Д,K	12.5	32	3000	5.5	465 x 276 x 297	56
X (XE) 50-32-200 Д,K	15/12.5	50	3000	5.5/4	465 x 276 x 340	88,4
X 50-32-200 A	6.3	12,5	1500	0.55	415 x 285 x 370	88
X 65-40-200 K,Д	30	50	3000	15	485 x 265 x 340	90,5
AX 65-40-200 K	30	50	3000	11	485 x 283 x 368	68
X 65-40-250 K	25	80	3000	11	600 x 340 x 405	87
X (XE) 65-40-315 K	12.5	32	1500	7.5	500 x 405 x 450	98,6
AX 65-40-315 K	25	125	3000	30	657 x 405 x 504	130
X 65-50-160 Д,K	25	32	3000	5,5	465 x 270 x 297	62
XE 65-50-160 Д	25/12.5	32/8	3000/1500	5.5/0.75	1085 x 450 x 480	62
X (XE) 80-65-160 Д,K	50	32	3000	15	485 x 290 x 340	64
X (XE) 80-50-200 Д,K	50	50	3000	15	485 x 300 x 360	95
X 80-50-250 Д,K	35/50/25	80/80/20	3000/1500	15/22/5.5	625 x 320 x 405	96
X 80-50-315 Д,K	50/25	125/32	3000/1500	45/11	625 x 406 x 505	112
XE 80-50-315 Д	25	32	1500	11	660 x 540 x 406	113
X 100-65-160 Д,K	100	32	3000	15	600 x 280 x 360	88
X (XE) 100-65-200 Д,K	100	50	3000	45	600 x 405 x 370	89
X (XE) 100-65-250 Д,K	100/50	80/20	3000/1500	55/11	625 x 360 x 450	97
X (XE) 100-65-315 Д,K	100/50	125/32	3000/1500	110/11	665 x 400 x 505	120
XE 100-65-315 Д	50	32	1500	11	625 x 400 x 505	124
X 125-80-200 Д-5, K-5	160	50	3000	45	625 x 365 x 430	95
X (XE) 125-100-400 K-5, K-55, K-СД	125	50	1500	37	710 x 510 x 673	212/217
X (XE) 150-125-400 Д-5, K-СД	200	50	1500	55	670 x 555 x 715	204
X 200-150-315 A,K	315	32	1500	55	830 x 550 x 715	230
X (XE) 200-150-315 T	315	32	1500	55	830 x 550 x 715	155
X (XE) 200-150-400 Д	400	50	1500	90	830 x 590 x 765	310
X 200-150-400 A	315	50	1500	75	830 x 550 x 765	272
X 200-150-400 T	315	50	1500	75	830 x 550 x 765	180
X 250-200-315 A	500	32	1500	90	890 x 550 x 715	370
X (XE) 250-200-315 T	500	32	1500	90	890 x 550 x 715	250

Note: Pump inner flowing part is made of Д – steel 20X13, K – chrome and nickel steel 12X18H10T, T – titanium alloy BT1-0, A – carbon steel. Motor power can be changed depending on pumping medium. Seals may be of 3 types: СД – doubled gland seal, 5 – single end seal, 55 – doubled end seal.

MULTISTAGE PUMPS

Designed for pumping of water into oil formations to maintain formation pressure. Pumps can be used for pumping of pure and slightly dirty water. Application: oil industry, oil refining and petrochemical industry.

Design features:

- centrifugal horizontal multistage pumps. Number of stages depends on required head at constant capacity;
- end shaft seal with friction pair made of siliconized graphite or gland seal made of wear-resistant material "Graphlex";
- friction bearings with oil lubrication serves as rotor support;
- pumps of series 3 are manufactured with built-in friction bearings operated on pumping medium;
- pumps are made of corrosion-resistant material;
- axial load is taken by thrust control valve made of hard alloy metals;
- actuation is carried out from electric motor through flexible plate coupling;
- pumps are equipped with automatic devices ensuring their reliable operation.

SPECIFICATION

Pump type	Capacity, m^3/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Overall dimensions, mm	Mass, kg
ЦНС 63-630-55	63	630	3000	200	1880 x 905 x 1211	1950
ЦНС 63-1900-2T-M		1900		800	2910 x 1200 x 1305	3890
ЦНС 63-1422-2T-M		1422		630	2530 x 1200 x 1305	3230
ЦНС 63-1050-2T-M		1050		500	2245 x 1200 x 1215	2750
ЦНС 90-1900-2	90	1900	3000		2930 x 1200 x 1305	3800
ЦНС 90-1422-2		1422			2550 x 1200 x 1305	3100
ЦНС 90-1050-2		1050			2265 x 1200 x 1215	2500
ЦНС 120-600-T-M	120	600	3000	500	1958 x 1200 x 1423	1530
ЦНС 120-1900-2		1900		1250	2928 x 1200 x 1305	3800
ЦНС 120-1422-2		1422		1000	2548 x 1200 x 1305	3800
ЦНС 120-1050-2		1050		800	2263 x 1200 x 1215	2500
ЦНС 120-1900-3T-M		1900		1250	2530 x 1210 x 1511	3690
ЦНС 120-1422-3T-M		1422		1000	2150 x 1210 x 1511	3050
ЦНС 120-1050-3T-M		1050		800	2186 x 1210 x 1511	2580
ЦНС 180-1900-2T-M	180	1900	3000	1600	2910 x 1200 x 1305	3800
ЦНС 180-1422-2T-M		1422		1250	2530 x 1200 x 1305	3170
ЦНС 180-1050-2T-M		1050		800	2245 x 1200 x 1215	2710
ЦНС 180-1900-3T-M		1900		1600	2627 x 1210 x 1510	3700
ЦНС 180-1422-3T-M		1422		1250	2447 x 1210 x 1510	2840
ЦНС 180-1050-3T-M		1050		800	2162 x 1210 x 1510	2200
ЦНС 200-2100-2T-M	200	2100	3000	1600	2910 x 1200 x 1305	3800
ЦНС 240-1900-2	240	1900	3000	1600	2910 x 1200 x 1305	3806
ЦНС 240-1422-2		1422		1250	2530 x 1200 x 1305	3164
ЦНС 240-1050-2		1050		1000	2245 x 1200 x 1215	2697
ЦНС 240-1900-3T-M		1900		1600	2627 x 1210 x 1510	3700
ЦНС 240-1422-3T-M		1422		1250	2447 x 1210 x 1510	2840

Notes: Pump inner flowing part is made of steel 20X13, modification M – of steel 12X18H12M3T.
Pumps ЦНС (CNS) 180 are completed with end seals –T or gland seal – C, bed plate for synchronous motor (C), asynchronous - (A)

LIQUID-PACKED RING-TYPE VACUUM PUMPS

Depending on material of inner flowing part designed for pumping (creation of vacuum) of air, inert or aggressive gases, insoluble in water, to produce or maintain vacuum. Operating medium — water.

Application: chemical, ore mining and smelting industry, food industry, pulp and paper industry, agriculture, construction and medicine.

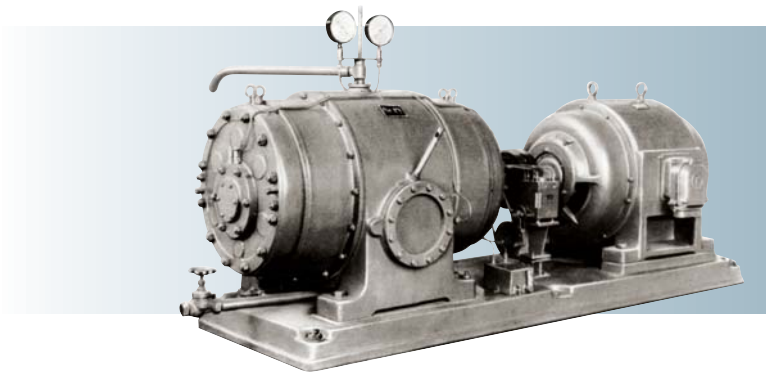
Main advantage of pumps – easy operation and maintenance. Pumps consist of small quantity of parts. They have no special system for lubrication and oil pumps. All clearances between rotor and static casing are sealed with operating medium. Simplicity of construction, no friction pairs in inner flowing part provide reliability and service life of pump operation.

SPECIFICATION

Pump type	Capacity as per initial conditions m^3/min	Pressure		Water consumption l/s	Consumed power, kW	Rotational speed (synchr.), rpm	Overall dimensions of pump without motor, mm	Mass of pump without drive, m
		Initial, MPa	Final, MPa					
ВВН-3/0,4	3	0.04	0.1013	0.12	4.85	1500	660 x 350 x 350	105
ВВН-А-3/0,4Н	3	0.04	0.1013	0.13	4.96	1500	730 x 435 x 410	140
ВВН-6/0,4	6	0.04	0.1013	0.2	9.6	1500	780 x 430 x 440	200
ВВН-12/0,4	12	0.04	0.1013	0.4	18.4	1000	1250 x 500 x 600	390
ВВН1-12ТМ	12	0.04	0.1013	0.4	18.6	1000	1250 x 500 x 600	300
ВВН-25/0,4	25	0.04	0.1013	0.87	37.1	750	1450 x 680 x 720	720
ВВН2-50/0,2Н	45	0.02	0.1013	1.29	63	600	1605 x 770 x 820	930
ВВН1-50ТМ	50	0.04	0.1013	1.3	70	600	1750 x 800 x 900	920
ВВН2-50М	52,5	0.02	0.1013	1.22	70.8	600	1750 x 850 x 900	1350
ВВН2-50Х	45	0.02	0.1013	1.3	63	600	1750 x 800 x 900	1100
ВВН2-50Н	45	0.02	0.1013	1.3	63	600	1750 x 800 x 900	1100
ВВН2-150М	150	0.02	0.1013	6.1	180	300	2560 x 1300 x 1400	5850
ДВВН-150Б	150	0.04	0.1013	11.75	187.5	186	2725 x 1860 x 1850	8200
ВВН2-300	340	0.02	0.1013	13.27	401.43	250	3200 x 1800 x 1950	12500

Note: M – modernized, P – for paper industry, Ch – chemically resistant modification
Pump inner flowing part is made of: SS – of stainless steel, T – of titanium.

ROTARY VANE-TYPE VACUUM PUMPS



Designed for pumping out of air and non-aggressive gases (creation of vacuum), preliminary purified from condensed moisture and mechanical impurities.

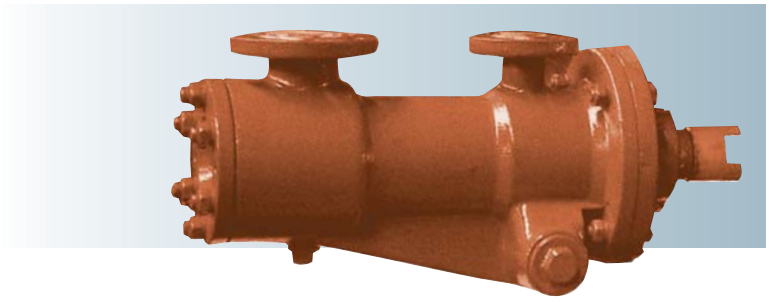
Application: chemical, paper, ore mining and metallurgical industry, agriculture, transport, industrial and public water supply.

SPECIFICATION

Pump type	Capacity as per initial conditions m^3/min	Pressure		Cooling water consump–tion, l/s	Oil con–sumption, kg/h	Consumed power, kW	Rotational speed (syn–chr.), rpm	Overall dimensions of pump without motor, mm	Mass of pump without drive, m
		Initial, MPa	Final, MPa						
PBH-25	25.0	0.013	0.1013	0.18	0.25	29	600	1250 x 950 x 900	1220
PBH-50	50.0	0.013	0.1013	0.36	0.3	60	500	1700 x 1150 x 1100	2750

Условные обозначения: М – модернизированный;
И – для передвижных установок с приводом от ходовой части установки (автомобиля).

THREE-SCREW PUMPS



Designed for pumping of liquids with lubricating capacity without abrasive contaminants, with viscosity 28–740 cSt , temperature up to 80°C.

Application: different types of oil systems for oil industry, oil refining, petrochemical industry.

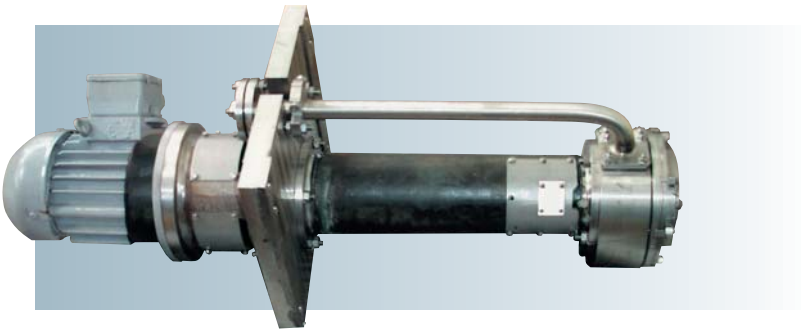
SPECIFICATION

Pump type	Capacity, m3/hour	Rotational speed (syn–chr.) rpm	Rotational speed (syn–chr.) rpm	Consumed power, kW	Pump overall dimensions, mm	Pump mass, kg
3B 2,5/100	3,8	10.0	2900	16.5	695 x 465 x 400	75
3B 4/25	6.84	2.5	2900	4.75	465 x 150 x 480	42
3B 8/100	12	10.0	3000	45	750 x 275 x 270	67.5
3B 16/25	22	2.5	3000	20.5	555 x 190 x 305	88
3B 16/25-1	22	2.5	3000	20.5	555 x 190 x 305	88
3B 63/25	46.8	2.5	1500	40	800 x 415 x 325	165

SUBMERGED AND SEMI SUBMERGED PUMPS

Designed for pumping out of chemically active and neutral liquids from receiving tanks.

As pump drive it is used built-in electric motor. Pump shaft sealing is carried out by mechanical end seal. Casing material – austenitic steel.



SPECIFICATION

Pump type	Capacity, m3/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Pump overall dimensions, mm	Pump mass, kg
АХМ 25-20-140К	2	18	3000	1.5	921 x 800 x 800	52/160
АХП 50-32-200К	12.5	48	3000	11	1380 x 590 x 590	94/255
АХП 80-50-200К	25	12.5	1500	2.2	2038 x 1500 x 1500	125/420
ЦПН 2/50	2	50	3000	2.2	925 x 332 x 160	220
ХПВ 2/25	2	25	3000	2.2	1142 x 420 x 400	155
ХПВ 45/54	50	50	3000	22	2892 x 685 x 685	235/465
ЦПН 180/32	180	32	1500	55	1512 x 575 x 1680	1200
ХПВ 80-50-200-Д	50	46	3000	15	3990 x ∅920	586
ХПВ 80-50-250-К	50	80	3000	22	4118 x ∅980	231
ХПЕ 50-32-200-Д	12.5	50	3000	5.5	4580 x ∅820	450
ХПЕ 80-50-200-Д	50	46	3000	15	4030 x ∅920/∅820	532
ХПЕ 80-50-250-Д	25	20	1500	5.5	4030 x ∅920	543

ISO 9001
BUREAU VERITAS
Certification

PUMPS FOR NUCLEAR POWER PLANTS

FRUNZE
ESTABLISHED IN 1896

catalog
of products

CONDENSATE PUMPS

Condensate pumps are designed for feed of turbine waste steam condensate, condensate of heating steam from heat exchangers of NPP power units and liquids similar to condensate on viscosity and chemical characteristics.

- According to design modifications pumps KcBA 900-180, KcBA 1000-190, KcBA 2200-100, KcBA 2200-170-1 are of centrifugal, vertical, double casing and multi staged type. They provide stable head at parallel operation of pumps and deficiency of air leak through operative and inoperative pump. Pumps are rated for operation with minimal available positive suction bead in vacuum at inlet at condensate temperature close to saturation temperature. To improve anticavitation characteristics before the first stage impeller it is installed booster impeller.

- Pumps KcBA 1500-240 are centrifugal, horizontal, single stage with double-entry impeller. Designed for feed of condensate to deaerator.

Pump casing is cast with semi-spiral feed and double-volute discharge, horizontally splitted. Pump suction and discharge nozzles located in casing bottom part are directed into different sides perpendicular to pump rotation axis.

SPECIFICATION

Pump type	Capacity, m^3/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Pump overall dimensions, mm	Pump mass, kg
KcBA 900-180	900	180	1500	1000	1625 x 1700 x 5435	12760
KcBA 1000-190	1040	190	1500	1000	1800 x 1700 x 5435	12760
KcBA 1500-120	1500	120	750	1000	2200 x 3200 x 7875	22440
KcBA 1500-120-1	1850	95	750	800	1860 x 2100 x 5225	20900
KcBA 1500-120a	1850	95	750	1000	2200 x 3200 x 6110	22000
KcA 1500-240-2	1500	240	3000	1600	4810 x 1740 x 1685	8750
KcA 1500-240-2a	1850	170	3000	1600	4810 x 1740 x 1685	8750
KcB 2200-100	2200	100	1500	1000	1895 x 1960 x 6210	18360
AKcBA 2200-170-1	2200	170	1500	1600	1960 x 2100 x 6840	20450
AKcBA 1500-120-2	1850*	95*	750	800	2100 x 2277 x 5383	21100
AKcBA 2200-220-1	2200*	211*	1500	2000	2309 x 2684 x 6805	23400

* – at current frequency 49 Hz.

FEED WATER PUMPS

Designed for supply of feed water to nuclear power station steam generators.

Feed water pumps are centrifugal, multi stage, horizontal pumps are accomplished as single or double sectional pumps. In new designs it is applied double casing modification allowing considerably decrease the time and to reduce labour costs for pump revision and repairing. As a pump drive it is used electric motor.

SPECIFICATION

Pump type	Capacity, m³/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Pump overall dimensions, mm	Pump mass, kg
ПЭА 65-50	65	580	3000	200	3135 x 1030 x 1100	3100
ПЭА 150-85	150	918	3000	800	4285 x 1210 x 1225	6800
ПЭА 850-65	850	714	3000	2500	5415 x 1680 x 1620	13730
ПЭА 1650-80	1650	910	3000	5000	6605 x 2130 x 2000	26300
ПЭА 1650-80а	1650	830	3000	5000	6605 x 2130 x 2000	26300
АПЭА 1150-75	1154	760	3000	3500	8850 x 2925 x 1975	20000
ЦН 150-90	150	910	3000	800	4260 x 1120 x 1409	6200
ЦН 150-90Г, -1	150	910	3000	800	4260 x 1275 x 1409	6650
ПЭА 150-85-1	150*	850*	3000	630	4390 x 1490 x 1940	7310
АЦНА 150-90-1	150	900	2973	525	4417 x 1380 x 1600	6600
АЦНА 150-90-2,3,4	190	900	2982	665	4390 x 1380 x 1140	7000

* – at current frequency 49 Hz

BA TYPE PUMPS

Pumps of type BA (BA 5500-50A, BA 4500-50A) are designed for application in systems for process water supply of main and auxiliary consumers of NPP power units.

Operating medium – sea water.

Pump are centrifugal, vertical, single stage. As a pump drive it is used electric motor. Connection of motor and pump shafts – flanged, fixed. Pump shaft sealing is of gland type. Slide bearings lubricated by operating medium serves as support for pump rotor.

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ

Pump type	Capacity, m³/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Pump overall dimensions, mm	Pump mass, kg
BA 4500-50 A	4460*	56.8*	600	1250	2520 x 4323 x 16400	29000
BA 5500-50 A	5400*	38.1*	600	1000	2520 x 4723 x 16300	28200

* – at current frequency 49 Hz

SPECIAL-PURPOSE PUMPS

Special purpose pumps are applied in special systems of NPP units with reactors ВВЭР-1000 РБМК (coolant makeup system, aftercooling system, sprinkler system, fire fighting system).

Special purpose pumps are centrifugal, multi stage or with double-entry impeller, horizontal, with forged or cast casing. Casing material – austenitic steel. As a pump drive it is used electric motor. Motor and pump drive are connected by gear-type or flexible plate coupling.

Rotor pump shaft is sealed by mechanical end seal.

Axial force relief is compensated in most cases by hydraulic discharging device.

SPECIFICATION

Pump type	Capacity, m^3/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Pump overall dimensions, mm	Pump mass, kg
ЦН 50-135	50	1320	9000	500	5145 x 1511 x 1345	10300
ЦН 60-180	60	1780	9000	800	5355 x 1511 x 1465	11030
АЦНА 25-180	25	1820	6000	400	4717 x 1565 x 1325	6300
АЦНА 60-185	60	1850	3000	800	4925 x 1500 x 1435	8390
АЦНА 60-185-1	60*	1613*	3000	800	5035 x 1300 x 1528	9065
АЦНА 60-185-2	60	1700	3000	800	5032 x 1355 x 1413	9065
АЦНА 60-185-3	60	1700	3000	800	5032 x 1355 x 1413	9090
ЦНА 125-80	125*	80*	3000	55	2380 x 1362 x 1710	1800
АЦНСА 150-90-4	150	900	2970	800	4595 x 1355 x 1395	7000
АЦНА 150-90Г-1	150	910	2973	800	4400 x 1596 x 1748	6650
ЦНА 200-180	160*	145*	3000	110	2655 x 850 x 1650	2350
АЦНА 400-100	400	100	3000	315	3380 x 1350 x 1335	3115
АЦНА 400-100Е	300	80	2970	90	2650 x 1035 x 1205	2530
АЦНА 400-100-1	400*	90*	3000	160	2715 x 1200 x 1200	3430
Д800-56	800	56	1500	200	3090 x 960 x 918	3250
АЦНА 50-90	48.2	930	2976	315	3928 x 1285 x 1075	4500
ЦНСА 800-90	800	90	1500	250	1390 x 1125 x 1000	1800
АЦНСА 800-90-1	800	90	1483	250	3245 x 1870 x 1578	4560

* – at current frequency 49 Hz.

CRADLE-MOUNTED PUMPS

Applied in different systems of NPP power units and designed for pumping out and feeding of process, chemical, neutral and aggressive mediums.

Cradle-mounted pumps are centrifugal, single stage, horizontal with forged or cast casing. Material of casing – austenitic or carbon steel.

As a pump drive it is used electric motor. Motor and pump shafts are connected with flexible plate coupling or pin coupling.

Rotor shaft is sealed with mechanical end seal. Axial forces are balanced by devices connecting discharge and suction chambers of the pump.

SPECIFICATION

Pump type	Capacity, m^3/hour	Head, m	Rotational speed (synchr.) rpm	Motor power, kW	Pump overall dimensions, mm	Pump mass, kg
X-A 40-25-160K-5	6.3	40	3000	4	1024 x 310 x 457	150
X-A 50-32-125K-5	12.5	20	3000	4	995 x 435 x 335	150
1X 50-32-125K-5	6.3	20	3000	3	968 x 416 x 344 и 315	130
AX-A 50-32-200K-5	12.5	48	3000	15	1400 x 520 x 348	290
AX-A 50-32-250K-5	12.5	88	3000	22	1448 x 426 x 568	402
X-A 65-50-160K-5	22	32	3000	11	1167 x 463 x 420	206
X-A 65-40-315K-5	25	120	3000	30	1640 x 692 x 425	410
X-A 80-65-160K-5	60	30	3000	15	1231 x 520 x 375	259
1X 80-65-160K-5	50	20	3000	11	1253 x 520 x 482	230
2X 80-65-160K-5	50	24.3 and 20	3000	22	1335 x 520 x 482	326
X-A 80-50-200K-5	50	50	3000	30	1362 x 610 x 566	400
X-A 80-50-250K-5	50	80	3000	55	1595 x 684 x 634	580
1-X 80-50-250K-5	50	80	3000	30	1480 x 608 x 370	470
X-A 100-65-160K-5	100	32	3000	30	1448 x 540 x 464	415
X-A 100-65-200K-5	100	51	3000	55	1595 x 684 x 634	585
1-X 100-65-200K-5	73	56	3000	30	1465 x 640 x 415	460
1-X 100-65-315K-5	100	126	3000	75	1780 x 716 x 770	865
X-A 150-125-315K-5	180	32	1500	75	1875 x 844 x 675	900
X 200-150-315K-5	147	7	750	7.5	1697 x 635 x 937	519
1-X 200-150-315K-5	200	10	1000	15	1777 x 635 x 937	561
1-X 200-150-500K-5	300	80	1500	132	2800 x 110 x 937	1700
TX 280/72	280	72	1500	110	2260 x 700 x 1160	1480
ЦНА 100/50	100	50	3000	22	1620 x 711 x 410	550
ЦНА 100-50-2	100	50	3000	22	1620 x 712 x 445	510
АЦНА 100-50-3	102	52	3000	30	1465 x 640 x 470	500
АЦНА 100-50-4	100	50	3000	30	1465 x 640 x 415	440
ЦНА 25/52	25	52	3000	11	1360 x 558 x 414	390
АЦНА 200-120	200	120	3000	110	2245 x 950 x 680	1360
ЦН 250-20	250	20	1500	22	1807 x 630 x 859	650
ЦН 6000-30	6048	30.6	1000	800	5170 x 2525 x 1780	11000
ЦНА 600-25	600	25	1000	75	2475 x 920 x 1350	2000
ЦН 400-40	400	40	1500	90	2605 x 1265 x 1160	1700
ЦН 420-45	420	45	1500	90	2225 x 670 x 915	1500
ЦН 2500-70	2500	70	8000	800	4290 x 1680 x 2405	12000
X-A50-32-250K-5	8	51.5	3000	11	1303 x 355 x 561	258,5
AX-A50-32-200K-5	12.5	48	3000	15	1320 x 355 x 520	290
AX-A40-25-160K-5	6.3	42	3000	7.5	1050 x 310 x 457	165
X250-200-315T	500	32	1500	90	2075 x 730 x 960	1010

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