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Pumps

Oil pumps (NK, NKV types)

are used for pumping oil, oil products, liquefied petroleum gases and other substances, which have similar physicochemical features and same corrosive impact to the pump component material

Available flow part materials:

- «S» (carbonic steel 25Л)
- «X» (chromic steel 20H5МЛ, 20H13)
- «N» (chromic-nickel steel 12H18N9TL)



| Type | Nominal supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|----------------|-----------------------------------|-------------|-------------------------|------------------|
| HK 12/40 | 12 | 40 | 2950 | 5,5/7,5 |
| NK 16/70 | 16 | 70 | 2950 | 5,5/7,5 |
| NK 16/125 | 16 | 125 | 2950 | 5,5/11 |
| NK 65/35-70 | 65/35 | 70 | 2950 | 5,5/22 |
| NK 32/80 | 32 | 80 | 2950 | 5,5/22 |
| NK 32/125 | 32 | 125 | 2950 | 11/55 |
| NK 63/80 | 63 | 80 | 2950 | 7,5/30 |
| NK 63/125 | 63 | 125 | 2950 | 11/55 |
| NK 65/35-125 | 65/35 | 125 | 2950 | 7,5/55 |
| NK 65/35-240 | 65/35 | 240 | 2950 | 11/110 |
| NK 120/80 | 120 | 80 | 2950 | 11/110 |
| NK 120/125 | 120 | 125 | 1950 | 18,5/132 |
| NK 210/80 | 210 | 80 | 2950 | 22/110 |
| NK 200/120-70 | 200/120 | 70 | 2950 | 11/110 |
| NK 200/120-120 | 200/120 | 120 | 2950 | 18,5/132 |

| Type | Nominal supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|----------------|-----------------------------------|-------------|-------------------------|------------------|
| NK 210/200 | 210 | 200 | 2950 | 37/250 |
| NK 200/210 | 200 | 210 | 2950 | 37/200 |
| NK 200/370 | 200 | 370 | 2950 | 75/315 |
| NK 560/335-70 | 560/335 | 70 | 2950 | 55/160 |
| NK 560/335-120 | 560/335 | 120 | 2950 | 75/400 |
| NK 560/335-180 | 560/335 | 180 | 2950 | 132/400 |
| NK 560/300 | 560 | 300 | 2950 | 400/630 |
| NKB 360/80 | 360 | 80 | 2950 | 160 |
| NKB 360/125 | 360 | 125 | 2950 | 55/250 |
| NKB360/200 | 360 | 200 | 2950 | 75/400 |
| NKB 360/320 | 360 | 320 | 2950 | 200/400 |
| NKB 600/125 | 600 | 125 | 2950 | 75/315 |
| NKB 600/200 | 600 | 200 | 2950 | 250/400 |
| NKB 600/320 | 600 | 320 | 2950 | 200/500 |

The gear-type clutches, the bolt couplings, flexible diaphragm couplings can be used to transfer the driving torque from the motor to the pump shaft.

At the pump barrel the mechanical seals and stuffing-box seals are adjusted to the places where the pump shaft exits the pump barrel; the pump drive – explosion proof motors

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Pumps

Oil pumps (NPS type)

Are used for transferring and piping oil, oil products, dry hydrocarbon gases and other liquids, which have similar physicochemical features and the same corrosive impact to the pump component material; temperature from minus 80°C to plus 400°C.

The allowed level of nonabrasive solid particles in the pumped fluid is not more than 0,2 % w/w; the allowed particle size is not more than 0,2 mm.

Pumps are used in technological installations petrochemical, petro- and the gas-processing enterprises, delivery system of fuel (Thermal Power Station), large boiler and inflate stations.



| Type | Nominal supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|----------------|-----------------------------------|-------------|-------------------------|------------------|
| NPS 65/35-500 | 65/35 | 500 | 3000 | 160 |
| NPS 120/65-750 | 120/65 | 750 | 3000 | 400 |
| NPS 200/700 | 200 | 700 | 3000 | 630 |

NPS type pumps are oil centrifugal interbasic eight-step sectioned cell type pumps with a flat horizontal case. Details of a running part of pumps are made of carbon steel. One-way pump impellers are located on a shaft in two groups by four wheels between portable ball-bearing support. For unloading of a rotor from axial forces, the entrance apertures of driving impellers of both groups are turned into the opposite sides. Greasing of bearings - liquid, circulating.

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Pumps

Sectional pumps (CNS type)

are used for pumping water which have hydrogen index of pH 7-8,5, level of mechanical impurities not more than 0,2% and the size of the solid particles not more than 0,2 mm, micro-hardness not more than 1,47 hPa and density not more than 1500 kg/m³, with the temperature up to 45°C.



| Type | Nominal supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|-------------|-----------------------------------|-------------|-------------------------|------------------|
| CNS 60-50 | 0,016 (60) | 50 | 12,4 | 3 |
| CNS 60-75 | | 75 | 18,6 | 3 |
| CNS60-100 | | 100 | 24,8 | 3 |
| CNS 60-125 | | 125 | 31 | 3 |
| CNS 60-150 | | 150 | 37,2 | 3 |
| CNS 60-175 | | 175 | 43,4 | 3 |
| CNS 60-200 | | 200 | 49,6 | 3 |
| CNS 60-225 | | 225 | 55,8 | 3 |
| CNS 60-250 | | 250 | 62 | 3 |
| CNS 180-85 | | 0,05 (180) | 85 | 59 |
| CNS 180-128 | 128 | | 89 | 4 |
| CNS 180-170 | 170 | | 119 | 4 |
| CNS 180-212 | 212 | | 148 | 4 |
| CNS 180-255 | 255 | | 178 | 4 |
| CNS 180-297 | 297 | | 208 | 4 |
| CNS 180-340 | 340 | | 238 | 4 |
| CNS 180-383 | 383 | | 268 | 4 |
| CNS 180-425 | 425 | | 297 | 4 |

| Type | Nominal supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|-------------|-----------------------------------|-------------|-------------------------|------------------|
| CNS 300-120 | 0,083 (300) | 120 | 140 | 4,5 |
| CNS 300-180 | | 180 | 210 | 4,5 |
| CNS 300-240 | | 240 | 280 | 4,5 |
| CNS 300-300 | | 300 | 350 | 4,5 |
| CNS 300-360 | | 360 | 420 | 4,5 |
| CNS 300-420 | | 420 | 490 | 4,5 |
| CNS 300-480 | | 480 | 560 | 4,5 |
| CNS 300-540 | | 540 | 630 | 4,5 |
| CNS 300-600 | | 600 | 700 | 4,5 |

High pressure sectional centrifugal pumps (type CNS)

are used for fresh, formation, waste water transmission to oil layers in order to sustain layer pressure. Pumps as part of the consumer units can be supplied in the following versions: various embodiments of the pump rotor in materials of impeller, shaft and dowels, with mechanical seals or stuffing, as well as with hydrocyclones for cleaning fluid that was supplied to the hydraulic balancing device camera.

| Type | Nominal supply, m ³ /s (m ³ /h) | Pressure, m | Rotation speed (synchronic) 1 (turnover/min) | Max power, kW | Input pressure, mPa (kgs/sm ²) | | Max output pressure, mPa (kgs/sm ²) |
|----------------|---|-------------|--|---------------|--|-----------|---|
| | | | | | Min | Max | |
| CNS 180-1900-2 | 0,05 (180) | 1900 | 50 (3000) | 1386 | 0,05 (0,5) | 3,04 (31) | 26,1 (266) |
| CNS 180-1422-2 | | 1422 | | 1037 | | | 20,3 (207) |
| CNS 180-1050-2 | | 1050 | | 766 | | | 15,8 (161) |

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Pumps

Pumps for hot water (PE type)

are used for pumping feed water with hydrogenous indicator pH 7-9,2, temperature not more than 438K (165 C), don't contain solid particles.

Pumps are used for steam boilers water supply with the absolute steam pressure 3,9; 5,2; 6,2 mPa (40, 53, 63 kgf/sm²).



| Type | Pumped medium, t °C | Supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|-----------|---------------------|---------------------------|-------------|-------------------------|------------------|
| PE 65-28 | W, up to +165 | 65 | 290 | 2940 | 110 |
| PE 65-32 | W, up to +165 | 65 | 320 | 2960 | 110 |
| PE 65-40 | W, up to +165 | 65 | 440 | 2960 | 132 |
| PE 65-53 | W, up to +165 | 65 | 580 | 2965 | 200 |
| PE 100-32 | W, up to +105 | 100 | 330 | 2960 | 160 |
| PE 100-53 | W, up to +165 | 100 | 580 | 2980 | 315 |

Pumps for hot water (SE type)

are used pumping water with the temperature up to 180°C, with the size of hard particles not more than 5 mg/l. Pumps are used to pump water in the heat supply network

| Type | Pumped medium, t °C | Supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|---------------|---------------------|---------------------------|-------------|-------------------------|------------------|
| SE 500-70-16 | W, up to +180 | 500 | 70 | 3000 | 160 |
| SE 800-55-11 | W, up to +180 | 800 | 55 | 1500 | 200 |
| SE 1250-70-11 | W, up to +180 | 1250 | 70 | 1500 | 315 |

Pumps for hot water (Ksb type)

are used for pumping condensates and liquids similar to water in viscosity and chemical reactivity. Minimal temperature of pumping liquid is 10°C, maximal – (depending on the dimensional type of the pump) 125°C, 160°C. Pumps are used in heat supply network, that work on the organic fuel.

| Type | Pumped medium, t °C | Supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|---------------|---------------------|---------------------------|-------------|-------------------------|------------------|
| KsV 125-55 | K, up to +125 | 125 | 55 | 2950 | 30 |
| KsV 125-55a | K, up to +125 | 125 | 45 | 2950 | 30 |
| KsV 125-556 | K, up to +125 | 125 | 40 | 2950 | 30 |
| KsV 125-140 | K, up to +125 | 125 | 140 | 2950 | 75 |
| KsV 125-140a | K, up to +125 | 125 | 125 | 2950 | 75 |
| KsV 125-1406 | K, up to +125 | 125 | 125 | 2950 | 55 |
| KsV 320-160-2 | K, up to +140 | 320 | 320 | 1480 | 250 |

Pumps for hot water (Ks type)

are used for pumping condensate in the steam water networks in the thermal electric power stations, and liquids that are similar in viscosity and chemical activity rate, with the temperature not more than 125°C and 160°C. Pumps are used in steam power industry.

| Type | Pumped medium, t °C | Supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|-------------|---------------------|---------------------------|-------------|-------------------------|------------------|
| Ks 32-150-2 | K, up to +160 | 32 | 150 | 2900 | 22 |
| Ks 50-55-2 | K, up to +125 | 50 | 55 | 2920 | 15 |
| Ks 50-110-2 | K, up to +125 | 50 | 110 | 2920 | 30 |
| Ks 50-110-2 | K, up to +160 | 80 | 155 | 2940 | 55 |

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Pumps

Pumps for cold water (D type)

are used for water and other liquids being identical in chemical activity at a temperature of up to 85°C and viscosity of up to 36 cSt. The content of solid inclusions not exceeding 0,05% by mass and up to 0,2mm.

Double-entry pumps of D type are characterized by high efficiency and good absorbing abilities. Pumps are widely used in pumping systems of industrial and public utilities, and in irrigation (dehydrating) systems.



| Type | Nominal supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|---------------|-----------------------------------|-------------|-------------------------|------------------|
| D 2000-21-2 | 2000 | 21 | 1000 | 160 |
| D 2000-21-2 | 1600 | 11 | 750 | 75 |
| D 2000-21a-2 | 1850 | 19 | 1000 | 132 |
| D 2000-21a-2 | 1500 | 10 | 750 | 55 |
| D 2000-216-2 | 1700 | 17 | 1000 | 110 |
| D 2000-216-2 | 1400 | 9 | 750 | 55 |
| D 2000-100-2 | 2000 | 100 | 1000 | 800 |
| D 2000-100a-2 | 1900 | 88 | 1000 | 630 |
| D 2000-1006-2 | 1800 | 80 | 1000 | 630 |
| D 2500-62-2 | 2500 | 62 | 1000 | 630 |
| D 2500-62-2 | 2000 | 34 | 750 | 250 |
| D 2500-62a-2 | 2300 | 52 | 1000 | 500 |
| D 2500-62a-2 | 1900 | 29 | 750 | 250 |
| D 3200-33-2 | 3200 | 33 | 1000 | 400 |
| D 3200-33-2 | 2500 | 17 | 750 | 160 |

| Type | Nominal supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|---------------|-----------------------------------|-------------|-------------------------|------------------|
| D 3200-33a-2 | 3000 | 29 | 1000 | 315 |
| D 3200-33a-2 | 2400 | 15 | 750 | 132 |
| D 3200-336-2 | 2800 | 25 | 1000 | 315 |
| D 3200-336-2 | 2300 | 13 | 750 | 110 |
| D 3200-75-2 | 3200 | 75 | 1000 | 1000 |
| D 3200-75-2 | 2500 | 42 | 750 | 400 |
| D 3200-75a-2 | 3000 | 65 | 1000 | 800 |
| D 3200-75a-2 | 2300 | 35 | 750 | 400 |
| D 4000-95-2 | 4000 | 95 | 1000 | 1600 |
| D 4000-95-2 | 3200 | 50 | 750 | 630 |
| D 4000-95a-2 | 3700 | 82 | 1000 | 1250 |
| D 4000-95a-2 | 3000 | 45 | 750 | 630 |
| D 6300-27-3 | 6300 | 27 | 750 | 630 |
| D 6300-27-3 | 5000 | 32 | 600 | 315 |
| D 6300-27-3-1 | 5000 | 32 | 750 | 630 |
| D 6300-27-3-1 | 4000 | 20 | 600 | 315 |
| D 6300-27a-3 | 5800 | 24 | 750 | 500 |
| D 6300-27a-3 | 4620 | 15 | 600 | 250 |
| D 6300-276-3 | 5450 | 22 | 750 | 400 |
| D 6300-276-3 | 4350 | 14 | 600 | 200 |
| D 6300-80-2 | 6300 | 80 | 750 | 2000 |
| D 6300-80-2 | 5000 | 50 | 600 | 1000 |
| D 6300-80a-2 | 5900 | 70 | 750 | 1600 |
| D 6300-80a-2 | 4700 | 45 | 600 | 800 |
| D 6300-806-2 | 5500 | 60 | 750 | 1250 |
| D 6300-806-2 | 4400 | 38 | 600 | 630 |

Pumps for cold water (CN type)

are used for pumping water and other liquids that are identical with water in viscosity and chemical activity level, with the temperature up to 100°C, with maximum concentration of solid particles of 0,05% and with the size 0,2 mm.

Pumps are used in thermal power industry and in water supply of industrial and public utilities



| Type | Nominal supply, m ³ /h | Pressure, m | Rotation speed, per min | Engine power, kW |
|----------------|-----------------------------------|-------------|-------------------------|------------------|
| CN 400-105 | 400 | 105 | 1500 | 200 |
| CN 400-105a | 380 | 96 | 1500 | 160 |
| CN 400-1056 | 360 | 83 | 1500 | 132 |
| CN 400-210 | 400 | 210 | 1500 | 400 |
| CN 400-210a | 380 | 192 | 1500 | 315 |
| CN 400-2106 | 360 | 166 | 1500 | 250 |
| CN 1000-180-3 | 1000 | 180 | 1500 | 630 |
| CN 1000-180a-3 | 900 | 157 | 1500 | 500 |

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Pumps

Metering Pumps (ND type)

are used for voluminous pressure metering of neutral and aggressive liquids, emulsions and slurry oils of kinematic viscosity from 8.5×10^{-7} to 8×10^{-4} m²/s (from 0,0085 to 8 St); temperature 258 K to 473 K (from minus 15 °C to plus 200 °C and more); nonabrasive solid phase concentration not more than 10% in mass with maximum particle density up to 2000 kg/m³; particle size of nonabrasive solid phase not more than 1% from internal diameter of inlet nozzle.



| Type | Supply under max plunger stroke, l/h | Ultimate pressure, kgs/sm ² |
|-------------|--------------------------------------|--|
| ND 25/400 | 25 | 400 |
| ND 40/250 | 40 | 250 |
| ND 63/160 | 63 | 160 |
| ND 100/100 | 100 | 100 |
| ND 160/63 | 160 | 63 |
| ND 250/40 | 250 | 40 |
| ND 400/25 | 400 | 25 |
| ND 630/16 | 630 | 16 |
| ND 1000/10 | 1000 | 10 |
| ND 1600/6,3 | 1600 | 6,3 |
| ND 40/400 | 40 | 400 |
| ND 25/1100 | 25 | 1100 |
| ND 40/630 | 40 | 630 |
| ND 100/250 | 100 | 250 |
| ND 63/400 | 63 | 400 |
| ND 160/160 | 160 | 160 |
| ND 250/100 | 250 | 100 |
| ND 400/63 | 400 | 63 |
| ND 630/40 | 630 | 40 |
| ND 1000/25 | 1000 | 25 |
| ND 1600/16 | 1600 | 16 |
| ND 2500/10 | 2500 | 10 |

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Pumps

Three-plunger crank units and pumps

The PT and T three-plunger crank units and pumps are designed to pump both neutral liquids and aggressive liquids, which are neutral to the materials of the hydraulic portion, with the kinematic viscosity of not more than 800 mm²/sec (8 St) at a temperature depending on the make of 243 K to 473 K (minus 30 °C to plus 200 °C). The allowed level of nonabrasive solid particles in the pumped fluid is not more than 0.2 % w/w; the allowed particle size is not more than 0.2 mm.

These pumps and units are used in operations that require use of high pressures including explosion and fire-risk ones (for instance, hydraulic cleaning of manufacturing equipment). They are also used as feeding pumps in movable steam-generating plants.



| Type | Supply, m ³ /h | | Pressure in pump outlet, MPa |
|----------------|---------------------------|------|------------------------------|
| | min | max | |
| 1.1 PT-25 | 1,0 | 3,2 | 10 |
| 1.3 T-32-2,7 | 3,2 | 5,0 | 40 |
| 1.3 PT - 50 | 8,0 | 20 | 16 |
| 1.3 T-28-2,7 | 2,5 | 4,0 | 50 |
| 2.3 PT-25 | 1,25 | 3,2 | 10 |
| 2.3 PT-36 | 2,5 | 6,3 | 10 |
| 2.3 PT-45 | 4,0 | 10,0 | 10 |
| 2.3 PT-1/40 | 1 | | 40 |
| 2.3 PT-1,6/25 | 1,6 | | 25 |
| 2.3PT-2,5/16 | 2,5 | | 16 |
| 2.3 PT-4/10 | 4 | | 10 |
| 2.3PT -6,3/6,3 | 6,3 | | 6,3 |

| Type | Supply, m ³ /h | | Pressure in pump outlet, MPa |
|----------------|---------------------------|-----|------------------------------|
| | min | max | |
| 2.3 PT-10/4 | 10 | | 4 |
| 2.3PT-12,5/2,5 | 12,2 | | 2,5 |
| 1.3PT-10/20 | 10 | | 20 |
| 1.3 T-6,3/20 | 6,3 | | 20 |
| 1.3T-12,5/10 | 12,5 | | 10 |
| 1.3T-12,5/16 | 12,5 | | 16 |
| 1.3T -16/16 | 16 | | 16 |
| 1.3T -4/16 | 4 | | 16 |
| 1.3T -20/10 | 20 | | 10 |
| ANP 4/63 | 3,5 | | 63 |
| ANP 5/63 | 4,5 | | 63 |
| ANP 6/50 | 6 | | 50 |
| UPG 6/10 | 6 | | 10 |
| UPG 4/16 | 4 | | 16 |

Pumps vacuum (VVN type)

are used for exhausting and pumping out (making a vacuum) air, inert or other aggressive gases insoluble in water in order to make or keep vacuum.

Pumps can be used in chemical, mining and smelting, coal, food, pulp-and-paper industries, agriculture and medicine.



| Type | Supply, m ³ /min | Pressure | | Rotation speed, per min | Power consumption, kW |
|----------|-----------------------------|--------------|------------|-------------------------|-----------------------|
| | | Initial, МПа | Final. МПа | | |
| VVN2-50M | 52,5 | 0,02 | 0,1013 | 600 | 70,8 |

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Pumps

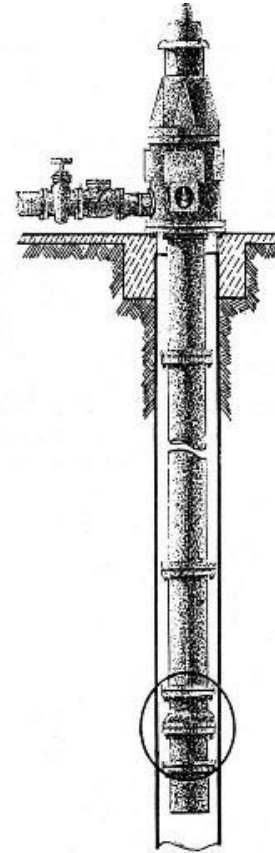
Deep-well pumps

are used for pumping and bailing water, oil, oil-products and other liquids from the submerged tank. Pumped liquids should not be aggressive to ferrous metals and rubber; the content of mechanical additions must be not more than 0.1% (in weight).

Pumping fluid characteristics:

- Water temperature — up to 308 K (35 °C),
- Oil and oil products temperature — from 233 K to 353 K (from minus 40 to plus 80 °C).
- Maximum density for oil products $0,95 \times 10^3 \text{ kg/m}^3$
- Kinematic coefficient of viscosity from $0,01 \times 10^{-4}$ to $0,8 \times 10^{-4} \text{ m}^2/\text{s}$.

Deep-well pumps peculiarity is the fact that pumping part dives to the reservoir and the electric motor is located on above the surface. Their interconnection is made with the set of sections that are located with them by the main shaft. This helps to pump liquids from the reservoirs that are sunken up to 80 meters. Minimum reservoir depth must be more than 200 mm.



| Type | Supply, m ³ /h | Pressure, m | Rotation speed, per min | Power, kW | Max quantity of sections | Dimensions, mm | Weight, kg |
|----------------|---------------------------|-------------|-------------------------|-----------------------|--------------------------|-----------------|------------|
| A20A-18x1 | 600 | 28 | 1470 | 75; 380 | 9 | 27000x1040x1040 | 5765 |
| A20A-18x1-M1 | 600 | 28 | 1470 | 75; 380 | 9 | 26825x1040x1040 | 5580 |
| A20A-18x3 | 600 | 85 | 1470 | 250; 380 or 250; 6000 | 33 | 83310x1040x1040 | 15395 |
| A24A-18x1 | 1200 | 45 | 1470 | | 16 | 43640x1040x1040 | 11460 |
| A20HA-22x3* | 600 | 65 | 1470 | 160; 380/660 | 8 | 11875x1040x1040 | 3715 |
| A20HA-22x3-M1* | 600 | 65 | 1470 | 160; 380/660 | 8 | 13560x1040x1040 | 3840 |

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