



JSC "SMNPO - Engineering"

# CENTRIFUGES



 **FRUNZE**

catalog  
of products



The centrifuges are among the principal types of equipment manufactured by JSC "SMNPO - Engineering". Their manufacture was started by the Company in 1902. At that time they were as low-speed suspended basket, and of simple design. The basket was driven by bevel pinions. The train of several centrifuges was driven by transmission with common drive of steam-engine.

In the 1930s the Company mastered the production of centrifuges with individual electric drive, and in 1940 the first automatic centrifuge of АГ-1800 type was manufactured.

In the 1950—1960s four-cascade continuous-action centrifuges for refined sugar production were designed and manufactured. Two-cascade centrifuges of ФГП-400, 630, 800 types were supplied for production of copper vitriol, sodium chloride, ammonium sulphate, and for by-product coke plants. The whole range of centrifuges made of titanium was mastered by the Company.

In 1961 the Company's experts developed new design of automated suspended centrifuge for sugar industry with basket capacity of 500 kg per cycle. It was a step forward in national centrifuge engineering. Further development of these machines, many years experience of their manufacture and operation allowed to design new, more powerful and reliable centrifuges of ФПН-1250 type with basket capacity of 800 and 1000 kg, as well as to develop fundamentally new design of inertial continuous-action centrifuge of ФПИ-1321 type. The manufacture of centrifuges for sugar industry covers the larger part of centrifuges supplied by the Company. By the late 1980s their output was increased up to 560 pcs. per year. At present more than 12,000 centrifuges are being operated at sugar-refineries in many CIS countries.

In the 1960s the process of deep modernization of earlier mastered centrifuges, increase of their technical level and quality improvement, mastering and manufacturing of new types was begun:

- continuous-action sediment scroll-discharge centrifuges of ОГШ and ФГШ type designed for coal-water separation at the coal-cleaning plants, oil removal from paraffin at the oil-and-chemical plants, polyethylene and titanium white production;

- air-tight centrifuges for operation in the dangerously explosive production plants;

- settling centrifuges for treatment of industrial and domestic effluents;

- clay separators for drill mud cleaning in the oil and gas wells.

Automatic filtering and settling centrifuges manufactured by JSC "SMNPO-Engineering" are in operation in chemical, biological, chemical-recovery coke, food and other branches of industry of the CIS (Sumy Chemical Plant, BEREZNIKIAZOT, Tambov Production Enterprise PIGMENT, Sterlitamak Production Enterprise SODA, Ufa Oil Refinery, Volgograd Production Enterprise CHIMPROM, Novo-Neftekamsk Iodine and Bromine Plant, Novosibirsk Tin and Zink Plant, Achinsk Alumina Refinery) and far-abroad countries.

Continuous action centrifuges are widely used in chemical, oil refining and food branches of the industry, as well as in the waste water treatment plants of big towns and factories, at hemotransfusion stations, slaughtering and meat processing plants, fishing fleet (waste water treatment plants of Sumy Chemical Plant, Sumy Slaughtering and Meat Processing Plant; Moscow, St. Petersburg, Ivanovo, Sochi, as well as Soligorsk Potassium Plant and Berezniki Potassium Plant, etc.).

In the 1970s our company mastered a large variety of the multi-cascade centrifuge with pusher discharge of sediment of ФГП type having diameter of the 1st cascade basket of 400 to 1450 mm.

The centrifuge of FGP type is mainly used in the production of chemical fertilizers. Berezniki and Solikamsk potassium production plants of Russia and BELARUSPOTASSIUM Company were equipped with these centrifuges.

**At present JSC "SMNPO - Engineering" produces nearly all centrifuge types known in the world engineering, including modern heavy-duty automatic centrifuges with continuous cycle, high-speed tubular centrifuges, etc.**

**These centrifuges are completed with modern energy-saving variable speed electric drives, frequency converters and regeneration units manufactured by "Siemens", automatic control systems based on state-of-the-art programmable controllers and other technical means produced by "Schneider Electric".**

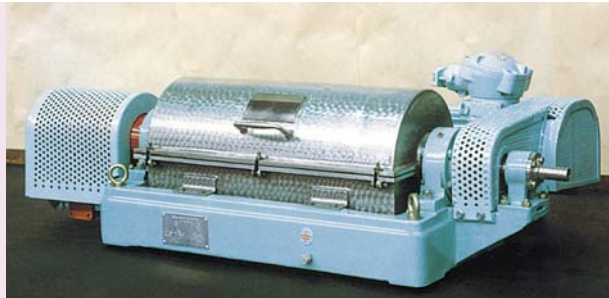
## SETTLING, FILTERING AND COMBINED CENTRIFUGES WITH SEDIMENT SCROLL-DISCHARGE

They are designed for continuous separation of liquid non-uniform suspensions containing solid phase, the density of which is higher than the liquid one.

Due to high efficiency, simple design, continuous production process, minimum service, these centrifuges

are used in various technological processes of chemical, oil-refining, pharmaceutical, meat and milk, fish-processing and other branches of industry.

Heavy-duty centrifuges are used for dewatering of sewage sediments of industrial and municipal effluents.



Centrifuge type	Max. rotational speed, rpm	Separation factor	Ratio of basket operation length to internal diameter (the largest)	Motor power, kW			Overall dimensions (with vibration isolation), mm			Weight, kg	
				centrifuge drive	auxiliary drive	pump	length	width	height	centrifuge	centrifuge with set
ОГШ-202К-03	6000	4000	3,1	5,5		-	1490	860	590	440	490
ОГШ-202К-05	6000	4000	3,1	5,5		-	1490	860	590	425	475
ОГШ-202К-07	6000	4000	3,1	5,5		-	1490	860	590	440	490
ОГШ-207К-04	5800	3760	3,1	7,5		-	1710	1170	708	730	890
ОГШ-207К-08	5800	3760	3,1	7,5		-	1710	1170	708	730	890
ОГШ-321У-01*	4250	3231	1,8	11	1,5	-	1640	1110	660	560	750
ОГШ-321К-01*	4250	3231	1,8	11	1,5	-	1640	1110	660	560	750
ОГШ-352К-01	4250	3533	1,8	7,5		-	1745	1180	725	773	1020
ОГШ-352К-09	4250	3533	1,8	7,5		-	1745	1180	725	773	1020
ОГШ-352К-04*	4100	3285	2,9	22	5,5	-	2175	1484	810	900	1140
ОГШ-352К-07*	4250	3533	1,8	15	5,5	-	1880	1550	845	760	1010
ОГШ-352К-14	4000	3127	4	37		-	2700	1600	1000	1370	1580
ОГШ-353К-09*	4050	3209	2,85	22	5,5	0,55	2630	1860	1135	1520	2870
ОГШ-501У-01	3000	2515	1,86	30		0,25	2505	1965	1020	2360	3020
ОГШ-501У-02	2690	2020	3,6	55		0,25	3580	2120	1220	3000	4600
ОГШ-501К-06	2800	2190	1,86	30		0,25	2585	2100	1080	2360	3200
ОГШ-501К-10*	2690	2020	3,6	55	5,5	0,27	3580	2120	1220	3000	4600
ОГШ-501К-11	3000	2515	1,86	30		0,25	2505	1965	1020	2360	3020
ОГШ-502К-12	3000	2515	1,86	30		0,25	2505	1965	1020	2360	3020
ОГШ-502К-15	2300	1477	1,86	30/18,5		-	2440	1810	1090	2420	2606
ОГШ-501К-13	2800	2190	1,86	30		0,25	2345	1965	976	2200	2520
ОГШ-631К-06	2400	2016	3,76	75		0,27	4685	2400	1300	6600	7500
ОГШ-631У-02	2400	2016	3,76	75		0,27	4685	2400	1300	6600	7500
ОГШ-802К-07	1850	1530	2,2	90		0,25	4370	2770	1395	8500	9000
ОГШ-1001У-01	1000	616	3,6	110		0,27	6730	3460	1885	16500	17700
ГШ-1371К-01	650	320	0,8	315		3	5285	3800	2156	19000	20500
РГШ-352К-01	3600	3127	4,0	30	5,5	0,25	2705	1600	985	1700	1800
ФГШ-401К-02	2575	1500	-	15		-	1650	1400	1285	1450	1585
ФГШ-401К-05	3000	2010	-	18,5		-	1512	1440	1220	1130	1325
Clay separator ГЦ-2У	2600	1887	1,86	30	3,0	-	2575	1850	1200	2800	-

Centrifuge version:

ОГШ — settling; КГШ — combined (settling and filtering);  
РГШ — separating; ФГШ — filtering.

Charging method:

by gravity from accumulator tank or under pressure from metering pump.

Note:

\*центрифуги могут быть укомплектованы дополнительным приводом.

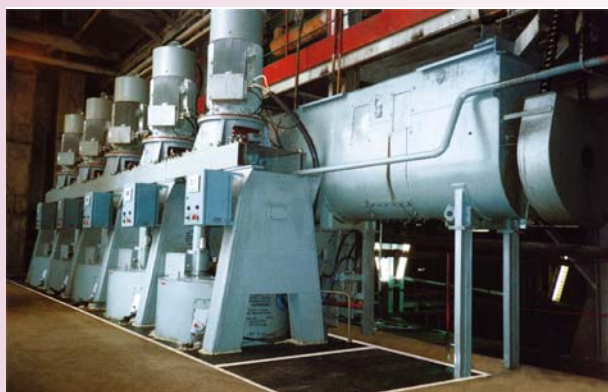
Automated numerically controlled ФПН type and continuous-action ФПИ type centrifuges are designed for masecuite separation at different stages of beet sugar production, cane raw sugar processing as well as during refined sugar production.

Possibility for adjusting the duration of operations comprising production cycle that enables optimum conditions for a specific product of processing is provided in ФПН type centrifuges.

The distinguishing feature of ФПН and ФПИ type design is vertical arrangement for shaft rotation axis of

basket which is suspended in ball pivot by the top end; this ball pivot is located more higher than center of gravity in rotary system. This feature ensures the basket self-alignment, dynamically stable operation of the centrifuge, and as a consequence, low dynamic loads on building structures.

Advantages of ФПН type centrifuges in comparison with batch centrifuges are continuity of filtration process and centrifugation products bleeding, simplicity of design, low specific power consumption.



Centrifuge type	Basket diameter, mm	Basket rotational speed, rpm	Separation factor	Max. allowable charging, kg	Motor power, kW	Basket capacity, l	Overall dimensions, mm			Centrifuge and motor weight, kg
							length	width	height	
ФПН-1251Т-01	1250	1000	700	800	special mode	530	2400	2110	4935	5950
ФПН-1251Л-07*	1250	1000	700	1000	~130	700	2420	2290	5130	8000
ФПН-1251Л-08	1250	1000	700	1000	variable	700	2470	2425	5145	6440
ФПН-1251Л-09*	1250	1000	700	1000	speed mode	630	2470	2425	5320	6340
					110					
ФПИ-1321К-01	1320	1760	2283	-	75	-	3000	2500	4000	5200
		1500	1658						4075	4860
ФПН-1541Л-01*	1540	1000	860	1500	250	964	2290	2200	5500	9910

Centrifuge version:

ФПН — filtering numerically controlled;

ФПИ — filtering continuous-action.

Charging method:

ФПН, ФПИ — by gravity.

Discharging method:

ФПН — peeler; ФПИ — inertial.

Note:

\*These centrifuges are completed with modern energy-saving variable speed electric drives manufactured by "Siemens" and automatic control systems based on programmable controller produced by "Schneider Electric".

They are designed for separation of suspensions in the wide range of dispersion and concentrations of solid phase. They are used in chemical industry for treatment of suspensions containing soluble crystals of solid phase: potassium chloride and sodium chloride, copper sulphate, ammonium carbonate and others. Depending on technological purpose the Company manufactures the centrifuges of ФГН and ОГН types.

Filtering centrifuges (ФГН type) are designed for separation of suspensions with solid phase having crystalline structure or granular structure with particle size of 30—150 μm.

Settling centrifuges (ОГН type) are designed for sep-

aration of difficult-to-filter suspensions with medium and fine grain (particle size of 5, 40 μm), when high content of liquid phase in received sediment is allowed, and use of filtering surfaces is impossible.

The advantages of these centrifuges are the following: simple design, automatic control, and possibility for processing suspensions of wide range of solid phase concentration and particle sizes, high quality of solid phase washing (ФГН-type centrifuges).

This equipment can be operated in explosion-hazardous premises of B-Ia, B-IIa class, as well as in the rooms with increased humidity.



Centrifuge type	Basket diameter, mm	Basket rotational speed, rpm	Separation factor	Max. allowable charging, kg	Motor power, kW	Basket capacity, l	Overall dimensions (with vibration isolation), mm			Weight, kg	
							length	width	height	centrifuge	centrifuge with vibration isolation
ФГН-633Т-03	630	2500	2200	62	22	45,6	2270	1700	1880	1100	4000
ФГН-633К-03	630	2500	2200	62	22	45,6	2270	1700	1880	1170	4250
ФГН-903Т-01	900	1730	1505	195	30	148	2400	2920	2700	2275	7890
ФГН-903К-05	900	1730	1505	195	30	148	2400	2920	2700	2850	8705
ФГН-903К-06	900	1730	1505	195	30	148	2400	2920	3520	2850	8705
ОГН-903К-02	900	1730	1508	195	30	145	2250	2300	2700	2850	8700
ОГН-903Т-02	900	1700	1450	150	30	130	3180	2370	2350	2790	4330
ФГН-1253Т-03	1250	1230	1060	450	40	346	4500	3150	3980	4180	7300*
ФГН-1253К-03	1250	1230	1060	450	40	346	4500	3150	3350	5180	8500*
ФГН-1253Г-01	1250	1010	710	450	40	346	4500	3150	3980	5500	8500*
ФГН-1801К-05	1800	740	550	1080	75	910	5160	4500	4200	9425	12745*
ФГН-2001К-01	2000	740	610	1700	75	1305	4140	4660	4550	12200	17230*
ФГН-2001К-02	2000	740	610	1700	75	1305	4140	4660	4550	12200	17230*
ОГН-2003К-01	2000	760	640	1500	75	1250	4950	4600	4550	12600	16950*
ФГН-2003Т-01	2000	800	715	1700	75	1370	4960	4800	4415	8100	11980*

Centrifuge version:  
Charging method:  
Note:

ФГН — filtering; ОГН — settling.  
by gravity from accumulator tank or under pressure from metering pump.  
\*Centrifuge weight is given without base plate.

## FILTERING

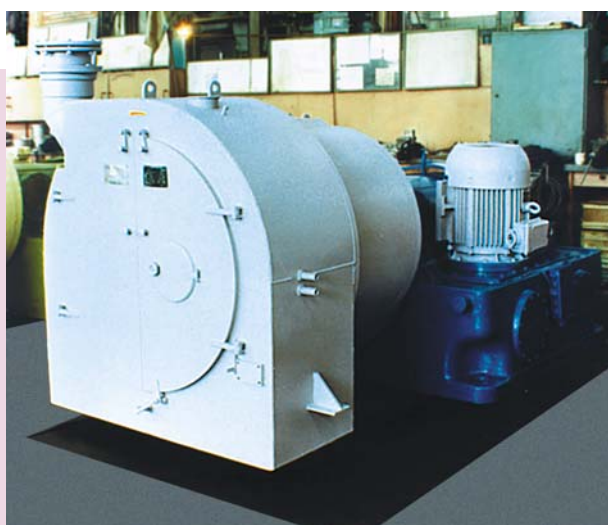
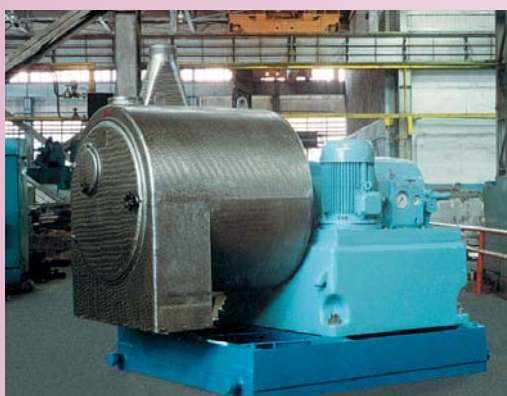
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### RECIPROCATING-PUSHER DISCHARGE CENTRIFUGES

They are designed for separation of well-to-filter concentrated suspensions with coarse and medium crystalline solid phase, rapidly losing fluidity, with about 50% solid phase content. They are also used for separation of suspensions with medium abrasive solid phase basically consisting of crystalline products (ammonium sulphate, copper sulphate, copper vitriol, sodium chloride, sodium nitrate, potash, carbamide, alum, sodium sulphate), short-fibered materials (acetyl and ethyl cellulose, nitrocellulose) and amorphous products.

This type centrifuges are widely used in chemical, metallurgical, metal mining, sugar industries and other branches of industry.

The advantages of this type centrifuges are the following: design compactness, easy of service, continuity of production process of suspension separation, possibility of sediment washing, high degree of drying, high efficiency, possibility to connect to automatic or continuous-action production lines.



Centrifuge type	Max. rotational speed, rpm	Separation factor	Motor power, kW		Overall dimensions (with vibration isolation), mm			Weight, kg	
			centrifuge drive	pump	length	width	height	centrifuge	centrifuge with vibration isolation
1/2ФГП-401K-04	1600	570	11	7,5	2100	1860	2630	1760	2320
1/2ФГП-401K-05	1600	570	11	7,5	2100	1860	2630	1760	2320
1/2ФГП-401T-06	1600	570	11	7,5	2100	1860	2630	1580	2130
1/2ФГП-631K-01	1300	595	11	7,5	2230	1735	2850	2270	2840
1/2ФГП-631K-02	1300	595	11	7,5	2230	1735	2850	2270	2840
1/4ФГП-651Y-03	850	523	30	22	3224	1813	1994	5500	5500
1/2ФГП-809K-05	1200	644	30	22	3240	2260	2820	5340	6690
1/2ФГП-801K-06	1200	644	30	22	3240	2235	2700	5230	6350
1/2ФГП-801K-07	1200	644	30	22	3240	2235	2700	5230	6350
1/2ФГП-801K-10	120	644	30	22	2960	2225	2690	5100	6070
1/2ФГП-1201T-01	750	377	37	37	3600	2990	3630	8156	17220
1/2ФГП-1201K-03	750	377	37	37	3600	2990	3630	9010	18876
1/2ФГП-1201K-04	750	377	37	37	3600	2990	3630	9010	18876
1/2ФГП-1451K-01	650	343	75	75	4400	3100	4000	15880	27450

Charging method: by gravity from accumulator tank or under pressure from metering pump.

They are designed for clarification of suspensions containing no more than 2% of highly refined solid phase (varnishes, enamels, vaccines, oils, etc.) and for separation of stable emulsions (separation of water from transformer oil or different greases, etc.) with ratio of components density more than 1.06.

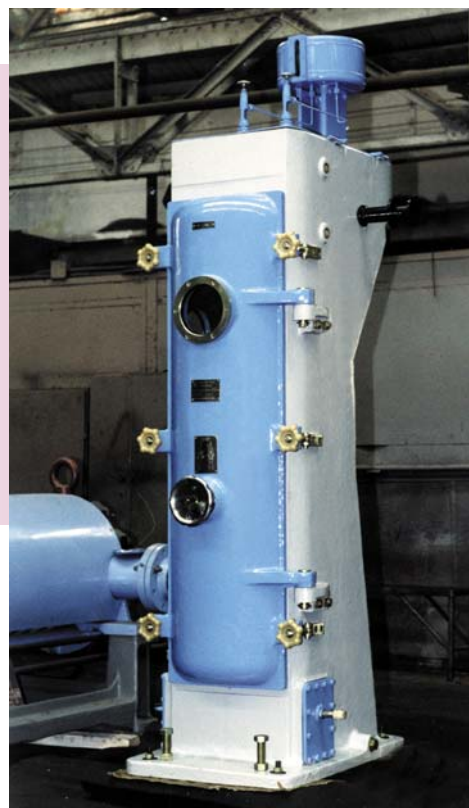
These centrifuges are used in pharmaceutical industry for vaccines and sera, in microbiology, for oil purification, etc.

The centrifuges of OTP-102K-01 and OTP-151K-01 types are batch machines with clarifying tubular bowl, and are designed for fine clarification of suspensions with

fine dispersed solid phase; the content of which does not exceed 2 % and solid and liquid phase density ratio is no less than 1.06.

The centrifuges of PTP-102K-01 and PTP-151K-01 types are machines with separating bowl, designed for continuous (if no solid phase) separation of emulsions with heavy and light phase density ratio within 1.06, 1.20.

In the case of separation of emulsions containing solid particles, the centrifuges of PTP-type are required to be stopped periodically for bowl cleaning.



Centrifuge type	Bowl diameter, mm	Bowl rotational speed, rpm	Separation factor	Max. allowable charging, kg	Motor power, kW	Bowl capacity, l	Overall dimensions (with vibration isolation), mm			Centrifuge and motor weight, kg
							length	width	height	
OTP-102K-01	105	17000	16940	8,5	3	6	970	470	1830	385
PTP-102K-01	105	17000	16940	8,5	3	6	970	470	1830	385
OTP-151K-01	150	13530	15250	20	7,5	11,8	1156	633	2805	920
PTP-151K-01	150	13530	15250	20	7,5	10,0	1156	633	2805	950

Centrifuge version:  
Charging method:  
Discharge method:

OTP — clarifying; PTP — separating.  
OTP, PTP — under pressure.  
OTP, PTP — manual.



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