



# **SREDNEVOLZHSKY STANKOZAVOD**

**FINE SOLUTIONS  
IN THE SPHERE OF METALWORKING!**



**RUSSIAN METAL-CUTTING  
MACHINE WITH  
INNOVATIVE TECHNOLOGIES**

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## ZAO «SREDNEVOLZHISKY STANKOZAVOD»

ZAO «Srednevolzhsky Stankozavod» which historically was a leader of the machine tool industry in Russia, is still one of the leading manufacturers of various types of lathe machines:

- multi-purpose turning-screw lathes (16B16, 1A616, and SAMAT);
- mini CNC lathe machines (SAMAT «Vector»);
- chuck-and-center CNC lathe machines (16B16T1 and 1716PF3);
- lathe centers (1716PF4);
- backing-off lathes 1E811S1 and 1E812S1; and
- special lathes (special lathes KT131 and automatic transfer lines KT554, and semi-automatic screw lathes 1B922).

In addition to producing new machines, ZAO «Srednevolzhsky Stankozavod» provides general maintenance and renewal of metal-cutting equipment.

All operations are made with the use of primary production capacities and modern metal-working process solutions. This guarantees a high quality of produced and repaired equipment and ensures meeting the precision standards and manufacturing capabilities' enhancement by means of modern control and gear systems.

When required we are ready to provide all spare parts, tools, and accessories (SPTA) necessary for the smooth operation of your equipment.



The products of ZAO «Srednevolzhsky Stankozavod» meet EU standards



A member of the Russian Association of manufacturers of machine-tool products «Stankoinstrument»



A member of The Union of Machine Engineers of Russia, All-Russian Public Organization



A member of «Souzagromach», the Union of manufacturers of agricultural machinery and equipment for the agro-industrial complex



A supplier of the training production equipment within the framework of the priority national project «Образование»



## CNC LATHE 1716PF3 LATHE CENTRE 1716PF4

CNC lathe machine 1716PF3 is used for lathe work; its lathe center 1716PF4 is equipped with a power tool and controlled C-axis, which allows it to perform milling, drilling, and tapping on radial and face surfaces



### DEFAULT CONFIGURATION:

- CNC controller (NC-210, NC-230);
- k-drive «KEB»;
- three-jawed collet chuck with fasteners and power gear;
- set of toolholders for full loading of the toolhead;
- set of milling, drilling, and tapping heads for full loading of the toolhead;
- headstock and tailstock centers; and
- set of tools and spare part for machine maintenance.

### CUSTOMIZED CONFIGURATION (on extra payment):

- chip conveyor;
- design with customer-selected gears and NC units: «FANUC», «SIEMENS» etc.;
- set of chucks for live tools;
- extra set of toolholders;
- tool measuring device;
- blank measuring device;
- tool fixtures; and
- extra set of tools and spare part for machine maintenance.

## RUSSIAN METAL-CUTTING MACHINE

### ADVANTAGES:

- accuracy of blank machining as per DIN 8605;
- slideways coated with antifriction material (filled fluorine plastic), which ensures high smoothness and stability of carriage movement;
- 12-position turret head with separate coolant supply;
- installation of a rotating tool;
- ability to combine lathe, milling, and drilling works, which not only provides a significant increase of productivity, but also saves time on the production cycle and transportation of blanks between different machines;
- ability to program from the control panel or from an external device;
- ability to operate several machines at a time; and
- belt conveyor for chip removal.

### SPECIFICATIONS:

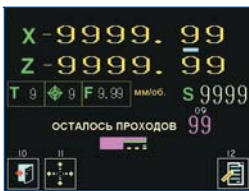
	1716PF3	1716PF4
Maximum diameter of a blank installed above the bed, mm	380	
Maximum length of a blank installed, mm	750	
CNC controller	NC-210 (or FANUC, SIEMENS) *	NC-230 (or FANUC, SIEMENS) *
Maximum carriage travel, mm		
- longitudinal Z	760	
- cross X	230	
Rapid traverse speed:		
- Z, mm/min	10000	10000
- X, mm/min	10000	10000
- C, RPM	–	27
Torque of feed drive motors, Nm		
- longitudinal	23	
- cross	23	
Drive power, kW		
- primary motion	11-15	11-15
- live tool	–	2,2
Spindle rotation frequency limits, min <sup>-1</sup>		
- main spindle	10-4000	10-4000
- milling and drilling spindle	–	5-2000
Maximum allowable spindle torque, Nm	320	
Number of positions of turret head:	12	12
- incl. power-driven	–	6
Time for tool exchange, sec	3,0	
Positioning precision:		
- along X and Z-axis, mm	0,01/0,02	0,01/0,02
- along C-axis, deg.	–	0,001
Repeatability of carriage motion, mm:		
- along X-axis	0,02	
- along Z-axis	0,04	
Machine size, (not more than):		
- length, mm	3650	
- width, mm	1850	
- height, mm	1900	
Machine weight, kg	4500	4600

\* on request



## MULTIPURPOSE MINI-CNC LATHES «VECTOR»

The machine is used for various rough and finish work and for cutting threads for one-offs and small-batches. Maintaining all the advantages of a multi-purpose machine, it enables one to operate in microcycles – conical and spherical profile processing, cutting threads, multiple-pass cycle, etc. – and no special skills in software engineering are needed. You can operate in both manual and training modes. In the training mode all movements that the tool made while processing the first part are stored and repeated automatically while processing other parts.



The multiscreen touch control panel



### DEFAULT CONFIGURATION:

- MDI control system based on an OM-RON programmable controller;
- 4-position tool post with manual control;
- three-jawed self-centering collet chuck, diameter 200 mm;
- live center, Morse 5;
- thrust centers, Morse 4 and 5; and
- set of tools and spare parts for machine maintenance.

### CUSTOMIZED CONFIGURATION (on extra payment):

- adjustment to a specific part range;
- traveling and fixed rests;
- back tool post;
- tool post of «Multifix» type;
- drilling chuck; and
- three-jawed self-centering lathe chuck, diameter 160 and 250 mm.

## RUSSIAN METAL-CUTTING MACHINE

### ADVANTAGES:

- accuracy of blank machining as per DIN 8605;
- maintains the simplicity of operation of a common lathe machine;
- touch panel with intuitive interface;
- no special skills in software engineering needed;
- precision servofeeds;
- optimization of cutting speeds by infinitely-variable control of spindle rotation speed;
- training / repeat mode increases capacity and saves time on program preparation (which is written after machining the first part); and
- ability to operate in micro cycles (outside and inside machining, tapping, conical and curved profile processing, and electronic gauge) in a wide range of parts without any mechanical adjustments.

### SPECIFICATIONS:

	SAMAT 400			
	XC	SC	MC	LC
Maximum diameter of a blank installed above the bed, mm	400			
Maximum diameter of a blank installed above the carriage, mm	220			
Installed blank length, mm	500	750	1000	1500
Spindle hole diameter, mm	45			
Height of a tool in the tool post, mm	25			
Spindle taper	Morse 6			
Taper in the tailstock sleeve	Morse 5			
Number of spindle speeds	stepless			
Spindle rotation frequency limits, RPM	20-2500			
Maximum spindle torque, Nm	400			
Feed limits, mm/rev::				
- longitudinal	0,01-10,00			
- cross	0,005-5,00			
Rapid traverse speed in auto/manual modes, mm/min:				
- longitudinal	7000 / 6000			
- cross	3500 / 3000			
Displacement resolution in manual mode, mm:				
- longitudinal	0,01			
- cross	0,005			
Pitch thread limits:				
- metric thread, pitch per mm	0,25-56			
- inch thread, threads per inch	28-1			
Power of primary motion electric motor, kW	5,5/7,5*			
Machine size, (not more than):				
- length, mm	2350	2600	2850	3350
- width, mm	1220	1220	1220	1220
- height, mm	1595	1595	1595	1595
Machine weight, kg	1915	1950	2000	2100

\* on request



ZAO «SREDNEVOLZHSKY STANKOZAVOD»

## MULTIPURPOSE TURNING-SCREW LATHES SAMAT 400 XV, SV, MV, LV; SAMAT 400 S/S

The standard configuration of the machine ensures optimum multi-purpose equipment parameters of ruggedness and convenience of control, fixing device, and tool layout.

The machines are used in batch and small-batch production at production plants and private factories.



### DEFAULT CONFIGURATION:

- 4-position tool post with manual control;
- three-jawed self-centering lathe chuck, diameter 200 mm;
- fixed stop of longitudinal travel;
- live center, Morse 5;
- thrust centers, Morse 4 and 5;
- set of spare gear wheels; and;
- set of tools for machine maintenance.

### CUSTOMIZED CONFIGURATION (on extra payment):

- traveling and fixed rests;
- back tool post;
- taper bar;
- stop drum;
- carriage travel DRO unit;
- drilling chuck;
- three-jawed self-centering lathe chuck, diameter 160 and 250 mm;
- four-jawed lathe chuck, diameter 250 mm; and;
- extra set of gear wheels.

## RUSSIAN METAL-CUTTING MACHINE

### ADVANTAGES:

- accuracy of blank machining as per DIN 8605;
- micro-accurate processing allows machining without finishing in most cases;
- ability to perform various rough and finish work and cutting metric, inch, and worm threads;
- primary motion drive based on frequency converters provides stepless regulation of spindle rotation frequency;
- noise suppression;
- wide range of longitudinal and cross feeds;
- quick travel of carriage at free movement; and
- machine of SAMAT 400S/S type enables one to perform ultra-accurate operations with both standard tools and tools from composite material.

### SPECIFICATIONS:

	SAMAT 400				SAMAT 400 S/S
	XV	SV	MV	LV	
Maximum diameter of a blank installed above the bed, mm	400				
Maximum diameter of a blank installed above the carriage, mm	220				
Maximum diameter of a blank installed in the GAP*, mm	550				-
Length of a blank installed, mm	500	750	1000	1500	750
Spindle hole diameter, mm	45				
Height of a tool in the tool post, mm	25				
Spindle taper	Morse 6				
Taper in the tailstock sleeve	Morse 5				
Number of spindle speeds	stepless				
Spindle rotation frequency limits, min <sup>-1</sup>	12-2200				16-2800
Feed limits, mm/rev:					
- longitudinal	0,05-2,80				
- cross	0,025-1,40				
Pitch thread limits:					
- metric thread, pitch per mm	0,25-56				0,25-14
- inch thread, threads per inch	112-0,5				112-1,5
- module thread, in modules	0,25-56				0,25-14
- worm thread, in pitches	112-0,5				112-2
Accuracy of geometric shape of a blank surface, mm					
- consistency of diameter in cross section at 200 mm length	0,005				0,001
- consistency of diameter in longitudinal section	0,012				0,003
Surface roughness after finishing	Ra1,25				Ra 0,63
Straightness of face surface, mm	0,01				0,0025
Power of primary motion electric motor, kW	5,5/7,5*				5,5
Machine size, (not more than):					
- length, mm	2020	2270	2580	3000	2270
- width, mm	1110	1110	1110	1050	1110
- height, mm	1505	1505	1505	1450	1505
Machine weight, kg	2040	2085	2130	2550	2100

\* on request



## CNC CHUCK-AND-CENTER LATHE 16B16T1

The machines are used in small-, medium-, and large-batch production for lathe work in semi-automatic and automatic modes, if equipped with automatic workpiece input.



### DEFAULT CONFIGURATION:

- CNC controller (NC-201M);
- three-jawed self-centering wedge bar chuck diameter 200 mm;
- pneumatic chucking cylinder;
- live center, Morse 5;
- 8-position turret head of U16-520 type; and;
- set of tools and spare parts for machine maintenance.

### CUSTOMIZED CONFIGURATION (on extra payment):

- fixed rest;
- design with customer-selected gears and CNC controller: «FANUC», «SIEMENS», etc.
- bar design (up to a diameter of 42 mm); and;
- device connected with the CNC system for measuring tool overhang.

## RUSSIAN METAL-CUTTING MACHINE

### ADVANTAGES:

- accuracy of blank machining as per DIN 8605;
- various lathe work, including curved- and stepped-profile processing and cutting different types of threads in a semi-automatic cycle;
- a tool post with eight positions (an ability to install the number of tools appropriate for integrated part machining or for complex tool adjustments);
- precision servofeeds;
- CNC controller programmable both from the operator's position and from external devices;
- pneumatic mechanical collet chuck;
- electromechanical adjustable clamping of a part with the tailstock center;
- cabinet enclosure of the machine's working zone; and
- ability to operate several machines at a time.

### SPECIFICATIONS:

Maximum diameter of a blank installed above the bed, mm	400
Maximum diameter of a blank installed above the carriage, mm	135
CNC controller	NC-201M (or FANUC, SIEMENS)
Installed blank length, mm	750
Spindle hole diameter, mm	45
Height of a tool in the tool post, mm	25
Number of tool head positions	8
Spindle taper	Morse 6
Taper in the tailstock sleeve	Morse 5
Spindle rotation frequency limits, rev/min	20-3200
Maximum spindle torque, Nm	460
Feed limits, mm/rev: - longitudinal - cross	0,01-20,00 0,005-10,00
Rapid traverse speed, mm/min: - longitudinal - cross	10000 5000
Pitch thread limits, mm	0,05-40
Displacement resolution, mm: - longitudinal - cross	0,001 0,0005
Power of primary motion electric motor, kW	7,5/11*
Machine size, (not more than): - length, mm - width, mm - height, mm	2900 1370 1740
Machine weight, kg	2620

\* on request



## 8-POSITION TOOL HEAD

A tool head with eight positions and horizontal rotation axis is used for the exchange and precise positioning of a cutting tool consistent with the program of CNC machines.

A tool disk fixed on the spindle's front face is able to hold up to eight lathe tools mounted across the axis of the machine centers or four lathe tools and four boring tools positioned parallel to the axis of the machine centers. Boring tools or end tools (drill tools and reamers) are mounted in special tool holders and hubs.

### ADVANTAGES:

- capability of installation in a majority of CNC lathe machines (16K20, 16A20, etc.);
- simplicity and structural reliability;
- high precision of positioning; and
- capability of processing both inner and outer surfaces.



Number of tool positions	8
Size of tools installed:	
- lathe tools, mm	25x25x150
- boring tools, mm	25x150
- end tool	Morse cone 1,2,3, and 4
Precision of positioning, mm	0,01
Time of position exchange, sec	
- during move to the nearest position	3
- during move to the furthest position	6
Maximum cutting force, kgf	800
Machine size, mm	412x299x343
Weight, kg	60
Power line current	AC, 3-phase
Current frequency, Hz	50
Voltage, V	380
Control voltage, V	24
Type of electric motor for the head drive	AIR56V4U3 / AIR63V4U3
Electric motor power, kW	0,18/0,37
Electric motor rotation frequency, rev/min	1500
Electric motor nominal current, A	0,65

#### **BACKING-OFF LATHES 1E811 and 1E812**

Are used in small-batch and one-off production for backing off single-start and multiple-start left and right gear hobs, disk cutters, and other tools with teeth that are backed off radially, angularly, or axially with a lathe tool or grinding wheel.

#### ADVANTAGES:

- capability of producing A-class hobs;
- combining of lathe machining of teeth and finishing hobs; and
- machining of shaped elements in cam gears of various applications.

#### **SEMI-AUTOMATIC SCREW LATHES 1B922, 1B922G, 1B922D, and 1B922E.**

Are used in large-batch and mass production for cutting short screw threads using the method of multiple consecutive tool cutting on rotary bodies in an automatic cycle.

#### ADVANTAGES:

- capability to combine lathe machining and thread cutting in an automatic cycle;
- capability to cut multiple-start threads;
- use of modern cutting tools, including leaves; and
- capability to operate several machines at a time.

#### **SPECIAL AUTOMATIC LATHES KT131 AND AUTOMATIC LINES KT554**

Are used in large-batch and mass production for lathe machining of rotary bodies with a linear and curved profile from smooth and cylindrical workpieces, and also for slotting or cutting no more than three flutes or faces.

#### ADVANTAGES:

- configuration from two KT 131 automatic lathes installed in tandem and connected with a reloader makes a KT554 automatic line for lathe machining of one part from two sides;
- use of modern metal-cutting tools;
- protection of cabinet from chips and coolant; and
- capability to operate several machines at a time.



## SERVICE MAINTENANCE; PRE-SALES, INTERMEDIATE AND POST-WARRANTY REPAIRS

Total overhaul of metal-cutting machines is done on site. The overhaul is provided with high quality due to the use of primary production capacities and modern metalworking process solutions, which guarantees the quality of repaired equipment and ensures meeting the precision standards and enhancement of manufacturing capabilities by means of modern control and gear systems.

### SCOPE OF WORK DONE DURING TOTAL OVERHAUL:

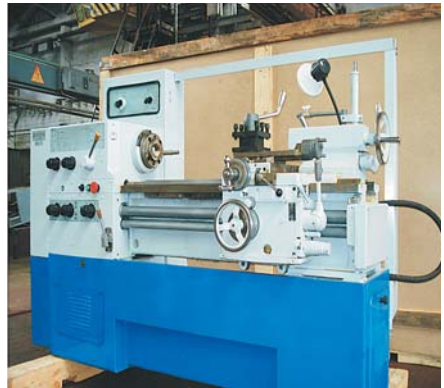
- Dismantling of the machine to pieces and identification of defects in the pieces and main parts of the machine;
- Regrinding of the slideways;
- Saddle regrinding, rescraping, inserting a new cotter key into the saddle-carrier “joint,” and exchange of mud-scrappers, felt seals, and rubber seals;
- Exchange of cross feed bolt and nut;
- Revision of headstock: regrinding of the spindle cone and the chuck seat cone, exchange of head bearings, exchange of gear wheels if necessary, and accuracy normalization;
- Repair of the carriage group;
- Repair of the apron and feed gear box;
- Lubrication station repair;
- Tailstock revision: regrinding of the sleeve taper or installing a new sleeve;
- Installation of an Omron frequency converter and foot mounting of an AIR-112M4 electrical motor with appropriate changes in the electrical circuitry;
- Testing and handing over the machine in accordance with specifications; and
- Overall painting of the machine.

**Depending on the type of machine the list of work can differ.**

**The specific scope of work shall be determined together with the Customer based on the results of the machine inspection and compilation of a discrepancy list.**



Lathes 16B16A before repair



Lathes 16B16A after repair

The latest technical solutions implemented in the modernization process allow for increased functionality and stability of the machine.

**The scope of work during the modernization process includes the following steps:**

1. Development and approval of the Technical Task together with the technical specialists of the Customer;
2. Development of the project for the machine's modernization, considering all aspects of the future machine: electrical parts, electronics, hydraulics, pneumatics, cooling system, mechanical parts, lubrication system, chip removal, and protective enclosures and covers;
3. Compilation of a list of purchased items, parts, and apparatuses and accessories, according to the modernization project;
4. Performing the scope of work on the total overhaul, check of the machine's configuration, and preparation of attaching and installation points for new parts;
5. Machine assembly and manufacturing of control cabinets and control panels;
6. NC (logic unit) programming and adjustments of drives;
7. Inspection of all parts of the machine and checking of its controllability from the NC system;
8. Software engineering and selection of tools, and mode for machining the test workpiece for the customer;
9. Preparation of all the technical documentation for the Customer – schematics, drawings, specifications, instructions, etc.;
10. Filling the machine with process liquids and preparing the test program for all movements and 24-hour idle running;
11. Clearing the identified deficiencies;
12. Handing over the machines to the Customer – processing of the test part, demonstration of new capabilities, and control of accuracy and repeatability while processing a trial lot of parts; and
13. Draining of process liquids. Preparation of the machine for transportation. Packing and preservation for storage, if necessary..

**As a result the customer shall only install the machine on the prepared pedestal and set it to work.**

**The guarantee on the machine after total overhaul or modernization shall be 1 YEAR.**



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