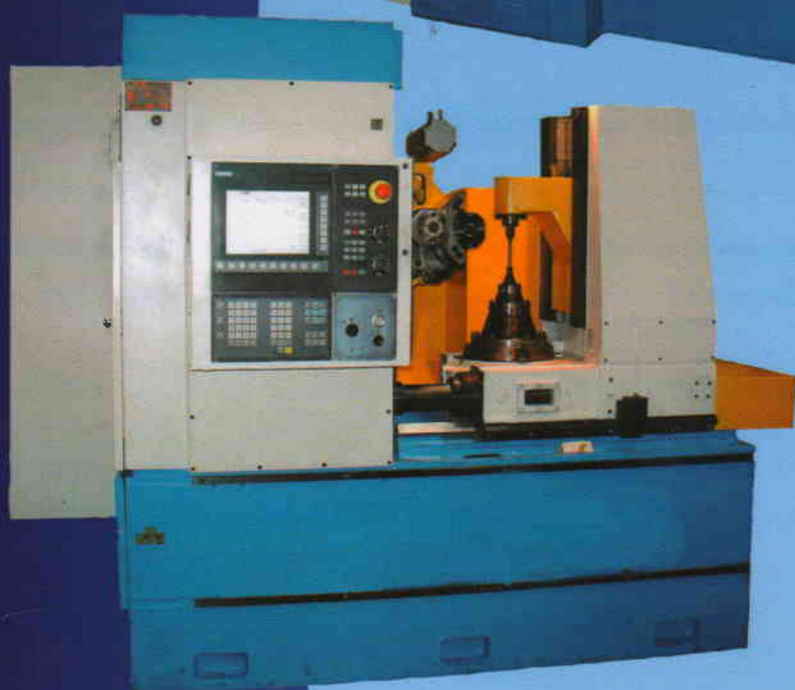
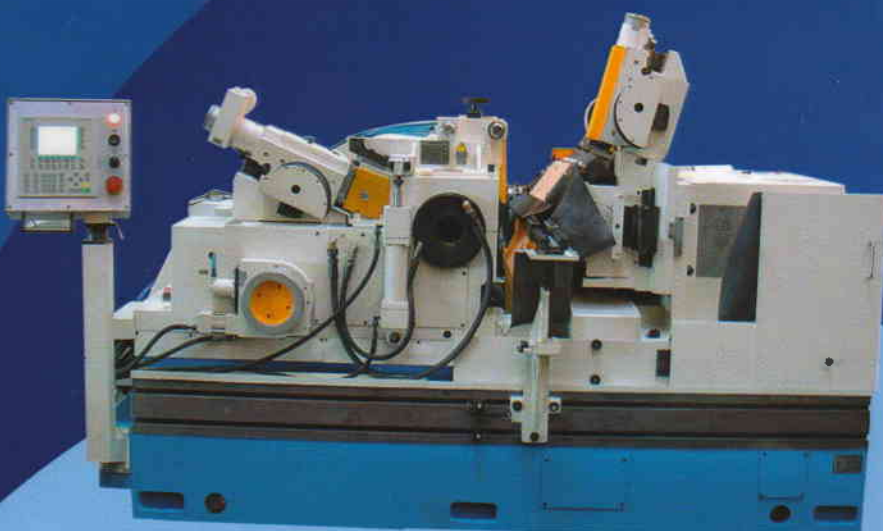




**GRINDING MACHINES
LATHES
MACHINES FOR PROCESSING OF COGS
THE MULTIOPERATIONAL
PROCESSING CENTERS**



The Joint-Stock Company «VISTAN» is one of the oldest machine-tool factories in the Republic of Belarus.

The factory history takes its origin from an army workshop founded in 1914. In April 1918 the workshop reorganized into an agriculture machinery factory. First machines were assembled in 1932.

In 1999 Vitebsk special design bureau for gear grinding and sharpening machines became a part of the factory, we started to solve the issues of long-term designing and operational development of new machinery operatively.

In May 2002 RUE «Vitebsk Machine-Tool Plant Comintern» is joined to our factory. As a result of above reorganization the range of machinery was extended. The enterprise became the largest-scale manufacturer of machine tool production in CIS-countries.

Technological supplying of motor and tractor, bearing, electro technical, aerospace and other leading branches of machine-tool building complex guide manufacturing program of Machine-Tool Plant «VISTAN».

A high level of the technical equipment and organization of production, strict technological discipline, constant use and introduction of the modern achievements of domestic and foreign manufacture of machine-tool, it's all provide production of the competitive machines.



opportunities of these systems that's why the plant started to manufacture the machine mod. BCH-732CNC. In this machine the traditional mechanism of barrel formation is replaced with electronic mechanism about what the main customers of machines of this group asked many times.

Considering the leader tendencies of world machine-tool building industry, since 2007 JSC «VISTAN» started to manufacture the gear spline-hobbing semiautomatic machines mod. BCH-620CNC and gear shaping semiautomatic machines mod. BCH-180CNC (diameter for treat 800 mm), in 2008 – the gear-hobbing semiautomatic machines mod. 3A50CNC with electronic and drive connections instead of mechanical links.

Since 2011 all machines for processing of cogs can be made in such design on request of the customers

In 2012 our plant started to manufacture the spline grinding semiautomatic machines mod. BCH-840CNC and rod-milling semiautomatic machines mod. BCH-6PCNC.

In 2014 our plant started to manufacture the gear rounding semiautomatic machines mod. GBCH-580CNC25.

In 2015 our plant started to manufacture the gear-hobbing semiautomatic machines mod. GBCH-232 CNC for treatment of conic wheels with straight cogs.

The high cost of the new domestic and import equipment has forced many enterprises of the Republic of Belarus and Russia to order to our plant renovation and modernization of the working equipment. In recent years the plant has mastered the renovation of all types of machines for processing of cogs and centerless cylindrical grinding semiautomatic machines.

The combination of opportunities of reliable mechanics and modern electronics in our machines will provide you the advantages to competitors.

Dear customers, we invite you to mutually beneficial cooperation!

Best regards,
Director of JSC «VISTAN»
V.M. Kalinenka

The centerless cylindrical grinding semi-automatic machines by JSC «VISTAN» are well known among the customers. Thousands of machines work successfully practically in all industries as CIS-countries, and foreign countries.

The unified control system on the basis of the programmable controller with the translation of feed gearing of the grinding wheel head are introduced, also rotation of the main wheel, automatic editing of wheels on modern frequency and the servo mechanism. These control system is applied to all models, as for cut-in and through grinding. Operator's panels with programmable controllers are used as main element of control desk.

In 2006 new generation of the centerless cylindrical grinding semiautomatic machines (models BCA-183NC, BCA-184NC, BCA-184KNC, BCA-185NC) is put on manufacture.

Today in our program we have 10 models of the basic semiautomatic machines with processing diameter 0,5-160 mm.

Developing the program of the equipment for finishing treatment, the plant successfully works at the market with centering cylindrical grinding semiautomatic machines.

From this group of the equipment the machines mod. BSH-152UBI(RBI) which industrial release is begun since 1999 are in the steadiest demand in the market of the equipment. Considering wishes of customers, the plant since 2001 has begun delivery of these machines in different modifications depending on their function, a complete set and the sizes of a table (center-to-center

distance). It has allowed making them more competitive at the price. Since 2006 the plant has started the production cylindrical grinding machines with control by the programmable controller and the operator's panel, with the servo-motor of feeding (mod. BCA1U(R)BNC).

Our factory begun the manufacture of spindle heads in cooperation with Gomel machine tool units plant, Ryazan machine tool and produce universal engine lathes mod. 16BT20P-21, 16BT20P-22 with centre-to-centre distance 1000mm and 1500mm accordingly.

In 2003 JSC «VISTAN» produced the first batch of CNC engine lathes mod. BCT-625-21 CNC with maximal processing diameter 320 mm and with centre-to-centre distance 1000 mm, which have a high demand.

In 2001 the plant upgraded the machines like «the machining centre» had applied CNC system by «SIEMENS» to increase their competitiveness.

After analysis of «narrow» places and problems on manufacture of cogwheels at the large enterprises of the auto-tractor industry the plant has made modernization of the own machines and has engineered new models of machines for satisfaction of inquiries of the customer.

As a result of such actions the plant started to manufacture new gear spline-hobbing machines mod. BCH-613NC, BCH-620CNC, gear shaping machines mod. BCH-123NC, BCH-150NC, BCH-180 CNC.

The tendency of application of modern control systems and drives which was in recent years allows to use more widely all

GRINDING MACHINES

Centerless cylindrical grinding semiautomatic machines

BCA-180NC	
BCA-183NC, BCA-184NC,	
BCA-184KNC, BCA-185NC.....	4

Universal centering cylindrical grinding semiautomatic machines

BCA-1U52NC, BCA-1R52NC,	
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MACHINES FOR PROCESSING COGSI

Gear-hobbing semiautomatic machines for the processing of conic gears

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Gear-hobbing semiautomatic machines for treatment of conic wheels

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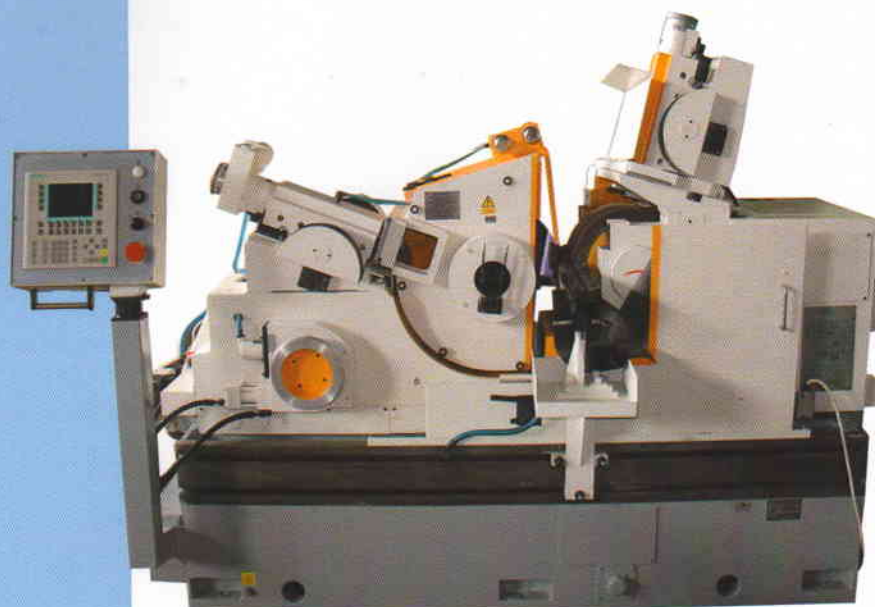
The semiautomatic machines are intended for grinding of smooth, stepped, conical and shaped surfaces of bodies-of-rotation type by method of plunge-cut or through-feed grinding. Work pieces of cast iron, steel, non-ferrous metals and their alloys before and after heat treatment, as well as work pieces of various nonmetallic materials with the corresponding selection of abrasive tool and work rest blade material are being ground. The special automatic machines can be produced on the base of the semiautomatic machines equipped with loading-unloading device.

High productivity, accuracy treatment and quality of work pieces surface are provided by availability of reliable and precision spindles: the working spindle is in high-precision antifriction bearings, the grinding spindle is in hydrodynamic bearings. Feed of grinding wheel on the work piece with the compensation of remoualling of abrasive layer when dressing, as well as minor setting-up are provided by electromechanical mechanism of feeds with the servo drive (except of BCA-180NC). The machines are equipped with systems of automatic dressing of grinding wheels.

Availability of programmable controller with the electronic operator's panel enables to carry out monitoring and controlling of operation of the machines efficiently.

The machines are completed with the «SIEMENS» or «MITSUBISHI» control systems and electric drives in consultation with the Customer.

The semiautomatic machines can be issued on the relay control scheme of 3E-series.



Model		BCA-180NC (3E180B)	BCA-183NC (3E183BM)	BCA-184NC (3E184BM)	BCA-184KNC (3E184SHB)	BCA-185NC (3E185BM)
Diameter of grinding	mm	0,5...10	2...40	4...80	5...80	8...160
Maximal length of blank to be treated						
- the through-feed grinding without special attachments	mm	68	170	260	320	360
- the plunge-cut grinding with the nominal height of the wheel	mm	38	155	245	495	315
Grinding wheel:						
- maximal diameter	mm	200	400	500	500	600
- maximal width	mm	40(63*)	160	250	500	250(320*)
- perforation	mm	76	203	305	305	305
Circumferential speed of grinding wheel	m/s	35	35	35	35	35
Power drive	KW	2,2	11	30	45	37
Leading wheel:						
- maximal diameter	mm	150	300	350	350	400
- maximal width	mm	40(63*)	160	250	500	250(320*)
- perforation	mm	51	127	203	203	203
Rotational speed of regulating wheels spindle						
- when the grinding	rpm	5/250	15/150	12/150	10/150	10/150
- when the dressing	rpm	380	300	300	300	300
Power of primary motion drive	KW	0,25	1,1	2,2	2,2	2,2
Discontinuity of the minimum subadjustment movements	mcm	-	±1,0	±1,0	±1,0	±1,0
Angulation of head of the leading wheel in vertical plane (max)	grad	±6	±8	±8	±6	±8
Total consumed power	KW	3,79	17,6	38,52	54,66	45,3
Weight of the machine	kg	1230	4580	6740	10860	9100

* for special order

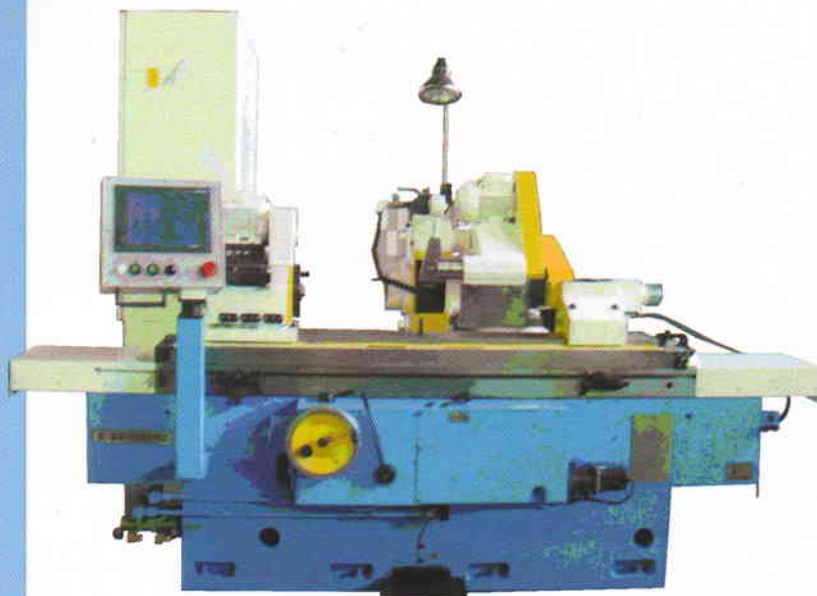
The semiautomatic machine is intended for grinding of outer surfaces of various materials bodies-of-rotation by method of plunge-cut and traverse grinding of parts in centers and in chuck.

It is additionally possible the machining of inner surfaces of bodies-of-rotation in manual control on the semiautomatic machine model BCA-1U52-01 NC.

Also it is additionally possible the machining of face flat surfaces in manual control and of inner surfaces of bodies-of-rotation on the semiautomatic machine model BCA-1R52-01 NC.

The spindle of grinding wheel is made in hydrodynamic sliding bearings. The spindle of inner-grinding stock is made in high-accuracy antifriction bearings. The table is traveled by the hydraulic cylinder. The machine has a cast bed and base.

The semiautomatic machines are completed with "SIEMENS" or "TOSHIBA" programmable systems and electric drives. The semiautomatic machines BSH-152 are manufactured on the relay control scheme with electric drives for workpieces by "TOSHIBA".



Model	BCA-1U52NC	BCA-1U52-01NC	BCA-1R52NC	BCA-1R52-01NC
Diameter of workpiece to be installed in the centers, mm				
- maximal	(200)250	(200)250	(200)250	(200)250
- minimal	10	10	10	10
Maximal length of workpiece to be installed in the centers, mm	1000	1000	1000	1000
Diameter of workpiece to be installed in the chuck, mm				
- maximal	200	200	200	200
- minimal	22	22	22	22
Maximal length of the blank to be installed				
- in the chuck, mm	250	250	250	250
- in the chuck with the enclosed rest, mm	350	350	350	350
Diameter and height of grinding wheel for:				
- external grinding, mm	500/80	500/80	400/50	400/50
- internal grinding, mm	-	16/20;20/20;40/40;50/40	-	16/20;20/20;40/40;50/40
- face grinding, mm	-	-	-	250/25
Diameter and length of inner surface to be ground, mm	-	20-160/120	-	20-160/120
Maximal swivel angle of upper table, deg.				
- clockwise	6	6	6	6
- counter clockwise	9	9	9	9
Maximal swivel angle of wheelhead, deg.				
- clockwise	5	5	90	90
- counter clockwise	5	5	180	180
Maximal swivel angle of work head, deg.				
- counter clockwise	90	90	90	90
- when the operation with the sine fixture counterclockwise	30	30	30	30
Maximal weight of blank to be installed, kg				
When the operation in the centers				
- fastened quill	160	160	160	160
- when the external and internal grinding in a chuck	40	40	40	40
- when the internal grinding in a chuck with the enclosed rest		60		60
Taper in quill of workhead	Morse 5	Morse 5	Morse 5	Morse 5
Taper in quill of tailstock	Morse 4	Morse 4	Morse 4	Morse 4
Circumferential speed of grinding wheel, m/sec.				
- external grinding	43	43	38	38
- face grinding	-	24	-	24
Limits of workpiece rotational speeds (steplessly), rpm	50-500	50-500	50-500	50-500
Power of grinding wheel drive, kW	5,5	5,5	4	4
Power of inner-grinding wheel drive, kW	-	1,1	-	1,1
Total power of installed electric motors, kW	10,49	11,59	8,91	10,09
Overall dimensions, mm:				
- length	2950	2950	2950	2950
- width	2295	2295	2295	2295
- height	2480	2480	2480	2480
Weight of the machine, kg	6000	6000	6000	6000

Note: the size in parentheses technologically possible, but for this size norms of accuracy and the roughness of a sample product established to GOST don't extend.

The high accuracy universal engine lathes are intended for broad range of turning works: outer turning and boring of inner cylindrical and conical surfaces, drilling, core-drilling and reaming as well as cutting of external and internal metric, inch, modular and pitch threads.

Design of the machines and their structural features provide high-quality treatment of parts of various materials by advanced cutting tools at optima cutting speeds.

Design features: high precision spindle with the $\varnothing 55$ mm hole, 4-positions rigid tool post, heat treated ground bed guides to provide long service life and raised treatment accuracy, mechanical friction clutch, pneumatic loading of tailstock, the apron has an its own drive of carriage and support rapid travel, enables to operate with the rests with the automatic feeds switching off when the contact with the rest at the moment of load increasing on neck pinion, guards of cutting and chuck zones, electrical and mechanical interlocking's guarantee the safety operating a machine.



Standard delivery set:

1. Three-jaw chuck
2. Rotating center
3. Lathe center with the Morse taper
4. Set of accessories
5. Documentation

Additionally for extra payment at the Customer's request:

1. Driver plate
2. Follower rest
3. Rear tool post
4. Holder for the centering tool
5. Bushing rest
6. Micrometrical multi-positional stop of cross stroke
7. Micrometrical stop of cross stroke
8. Micrometrical rigid stop of longitudinal stroke
9. Steady rest
10. Set of change gears (when the straight threads cutting).

Maximal diameter of blank to be treated, mm	
- above bed	500
- above support	275
Maximal length of blank to be installed, mm	1000, 1500*
Diameter of spindle hole, mm	57
Maximal height of cutting tool to be installed on the machine, mm	25
Maximal travel length of support tool slide, mm	150
Maximal length of carriage travel:	
Longitudinal (cross), mm	935, 1435*, (285)
Maximal travel of tailstock quill, mm	150
Limits of spindle rotational speeds, rpm	12,5-1600**
Number of speeds of forward (reverse) rotation spindle	24 (12)
Limits of support working feeds, mm/rev	
- longitudinal	0,05...2,8
- cross	0,025...1,4
Number of support longitudinal (cross) feeds	24 (24)
Limits of pitches of threads to be cut:	
- metric, mm	0,5...112
- inch; number of threads per 1"	56...0,5
- modular, module	0,5...112
Pitch, pitch	56...0,5
Speed of support rapid travels, m/min	
- longitudinal	3,8
- cross	1,9
Spindle maximal torque, Knm	1,0
Power of primary motion drive, KW	11,0***
Overall dimensions of the machine, mm:	
- length	2800, 3300*
- width	1265
- height	1505
Weight of the machine, kg	3000, 3250*
Accuracy class	II

* - for 16BT20P-22 machines

** - on customer's demand at additional expense the machine is completed with a set of pulleys and the table for providing limits of frequencies of rotation of a spindle 16...2000min-1

*** - for special order - 7,5 KW

The machine is intended for turning in semiautomatic cycle of outer and inner surfaces of bodies-of-rotation parts with step and curvilinear profile of different complexity.

Nodular cast iron bed with heat treated ground guides provide long service life and raised treatment accuracy.

Primary motion drive includes primary motion motor 12 KW and spindle head with three ranges of rotational speeds provide maximal spindle torque up to 800 Nm. Selection of range of spindle rotational speeds is provided according to program.

Treatment in manual and in automatically mode is supported by CNC system, operated on the base of continued cycles.

The machine is equipped with the SIEMENS CNC system SINUMERIC 802D.



Standard delivery set:

1. Three-jaw chuck
2. Tailstock with electromechanical head of quill feeding
3. Accessories
4. Lathe center
5. Rotating center

Additionally on order:

1. Steady rest
2. Follower rest
3. Chip disposal conveyer with coolant pump.

Maximal diameter of blank to be installed, mm	500
Maximal diameter of blank to be treated, mm	
- above bed	320
- above support	200
Maximal length of blank to be installed, mm	1000, 1500*
Maximal height of the cutter established in a capstan, mm	25
Maximal length of carriage longitudinal travel (axis Z), mm	905, 1405*
Maximal length of support cross travel (axis X), mm	285
Maximal travel of tailstock quill, mm	150
Limits of spindle rotational speeds, rpm	22...1800
Number of ranges of spindle rotational speeds	3
Limits of speeds of support working feeds, mm/min:	
- longitudinal (axis Z)	3,5...5000
- cross (axis X)	1,75...2500
Limits of steps of the cut carvings, mm	0,5...56
Speed of quick travel, mm/min	
- linear (axis Z)	7500
- cross (axis X)	5000
Maximal torsion torque on a spindle, Nm	800
Power of primary motion drive, KW	12
Total power of installed drive, KW	18,94
Overall dimensions of the machine, mm:	
- length	3500, 4000*
- width	1655
- height	1830
Weight of the machine, kg	3300, 3600*
Number of coordinates to be controlled	2
Number of coordinates to be controlled simultaneously	2
Discretization of a task of movement on coordinates, mm	
- linear (axis Z)	0,001
- cross (axis X)	0,001
Accuracy class according to GOST 8-82	IT

* - for BCT-625-22CNC machines

The semiautomatic machines with upright axis of work piece for treatment of spur and helical gears, sprockets, worm wheels with hobs by method of form-generating. The semiautomatic machine has a configuration with upright axis of work piece and with movable table. The hydraulic cylinder of blank's clamping is built into the table spindle. Adjustment of rotational speed of hob spindle as well as of values of axial and radial feeds is realized with frequency converters-powered servomotors steplessly. High static and dynamic rigidity due to rational shape of column and support carriage guides as well as rigidity increase of main shape-creating units. To use full length of hob cutting edge its periodical travel along the axis (shifting) is provided.

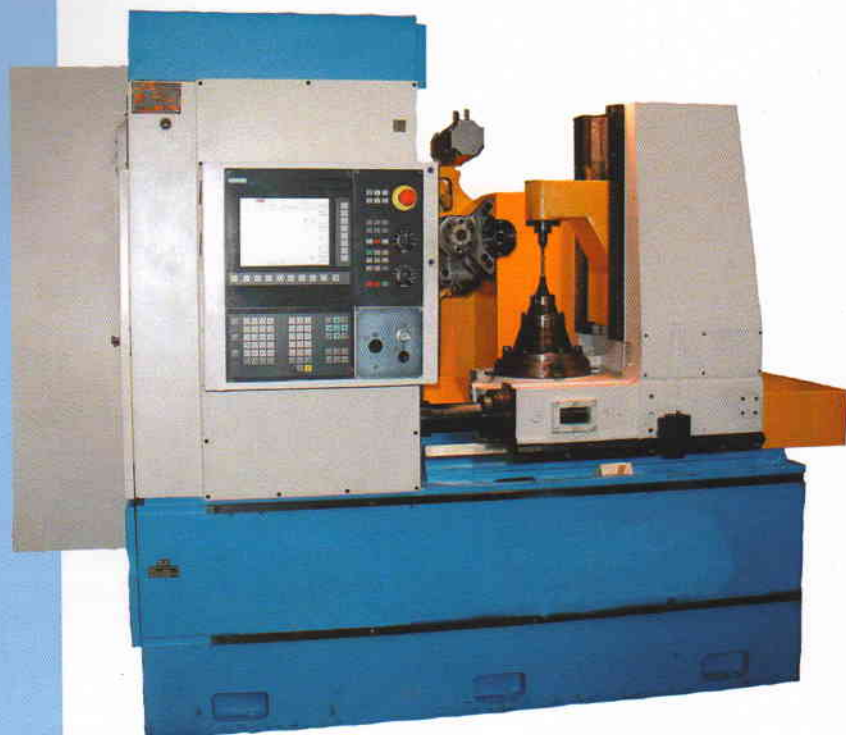
The semiautomatic machine 53B30P is equipped with the relay control system.

The semiautomatic machine 53B30P-02 is equipped with the SIEMENS programmable controller and drives.

The semiautomatic machine BCH-332NC2 is equipped with the SIEMENS programmable controller and drives.

The semiautomatic machine BCH-332CNC 2 is equipped with the CNC system mod. SINUMERIK 802D and with the SIEMENS drives.

The semiautomatic machines BCH-332 have a protection of a work zone of room type.



Model	BCH-332NC21	BCH-332NC22,CNC
Maximal outer diameter of gear to be cut, mm	320	320
Maximal module to be treated, mm	6	6
Maximal helix angle of teeth to be cut, deg.	±60	±45
Maximal width of face to be cut (of spur gear), mm	220	220
Maximal width of face to be cut (of helical gear), mm	150/100	150/100
Diameters of table, mm	250	250
Distance between the tool axis and the table axis, mm	30...250	25...250
Maximal dimensions of hobs to be installed, mm		
- diameter	160	160
- length	140	140
Maximal hob travel along the axis (shifting), mm	75	120
Number of coordinates to be controlled	-	3
Number of coordinates to be controlled simultaneously	-	2
Range of numbers of hob revolutions, rpm	50...500	50...500
Range of upright feeds, mm/min.	0,63...7,3	3...750
Range of radial feeds, mm/min.	1...16	3...600
Power of primary motion drive, KW	4,0/4,75	5,5
Total power of installed drive, KW	8,97	13,29
Overall dimensions (length x width x height), mm	2300x1300x1950	2680x1510x1915
Weight of the semiautomatic machine, kg	5100	6500

BCH-350NC, BCH-350CNC, BCH-3A50CNC

Gear hobbing semiautomatic machine with increased accuracy

The gear-hobbing semiautomatic machine with up-right axis of workpiece is designed for treatment of spur and helical gears, sprockets, worm wheels with hobs by method of form-generating.

The semiautomatic machine is made in upright arrangement with movable front column and stationary table.

Adjustment of rotational speed of hob spindle as well as of values of axial and radial feeds is realized with frequency converters-powered asynchronous or servomotors (depending on version) steplessly.

High static and dynamic rigidity due to rational shape of column and support carriage guides as well as rigidity increase of main shape-creating units.

To use full length of hob cutting edge its periodical travel along the axis (shifting) is provided.

The semiautomatic machine has the centralized lubrication system.

The semiautomatic machine BCH-350NC is equipped with the SIEMENS operator desk, programmable controller and drives.

The semiautomatic machine BCH-350CNC, BCH-3A50CNC is equipped with the CNC system mod. SINUMERIK 802D by SIEMENS and have the "untied" kinematic chains.

The semiautomatic machine BCH-3A50CNC is equipped with the thor-engine therefore this machine has very high accuracy rating of processing and high productivity.

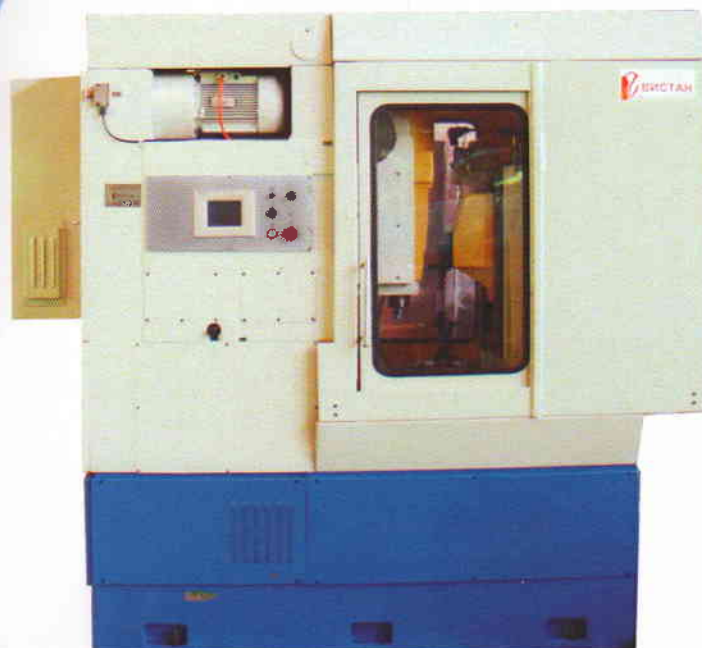


Model	BCH-350NC	BCH-350CNC
Maximal diameter of spur gear to be treated, mm	500	
Maximal module to be treated, mm	10	
Maximal helix angle of teeth to be cut, deg.	±45	
Maximal width of the cut wheel wreath, mm	220	
Diameter of workpiece spindle, mm	250	
Distance between the tool axis and the table axis, mm: minimal/maximal	30...350	
Maximal diameter of hobs to be installed, mm		
- diameter	160	
- length	230	
Maximal hob travel along the axis (shifting), mm	170	
Range of numbers of hob revolutions, rpm	75...400	
Range of axial feeds, mm/rev.	3...500	
Range of radial feeds, mm/min.	3...400	
Number of coordinates to be controlled	3	
Number of coordinates to be controlled at the same time	1	
Power of primary motion drive, KW	18,5	
Total power of installed drive, KW	27,94	
Overall dimensions (length x width x height), mm	3485x2160x2335	
Weight of the semiautomatic machine, kg	8500	

The vertical gear shaping semiautomatic machines are intended for cutting of spur external and internal gears by method of form-generating. The machine has configuration with upright axis of workpiece and with movable table for changing of spacing on centres.

The control of operational cycle of the gear shaping semiautomatic machines is realized with the help of «SIEMENS» programmable controller.

The semiautomatic machines BCH-123CNC is equipped with the SIEMENS operator desk, programmable controller and drives.



Maximal diameter of gears, mm	250
Maximal module of gears, mm	5
Maximal face width of gears, mm	60
Maximal nominal pitch diameter of gear cutter, mm	100
Diameter of cylindrical neck of arbor for gear cutter, mm	44,45(31,75)
Diameter of table working surface (of workpiece spindle flange), mm	250
Distance between the table axis and the tool axis, mm	-60...160
Length of adjusting travel of tool spindle, mm	110
Number of double strokes of tool spindle per minute	200...1000
Range of circular feeds, mm/min	20...450
Range of radial feeds, mm/min.	0,5...80
Number of coordinates to be controlled(X,B)	2
Discontinuity coordinate X, mKm	5
Discontinuity coordinate Y, arc/sec	7
Power of primary motion drive, KW	15
Power of main drives, KW	4
Total power of drives, KW	7,37
Overall dimensions, mm	2500x1500x2000
Weight of the semiautomatic machine, kg	4500