

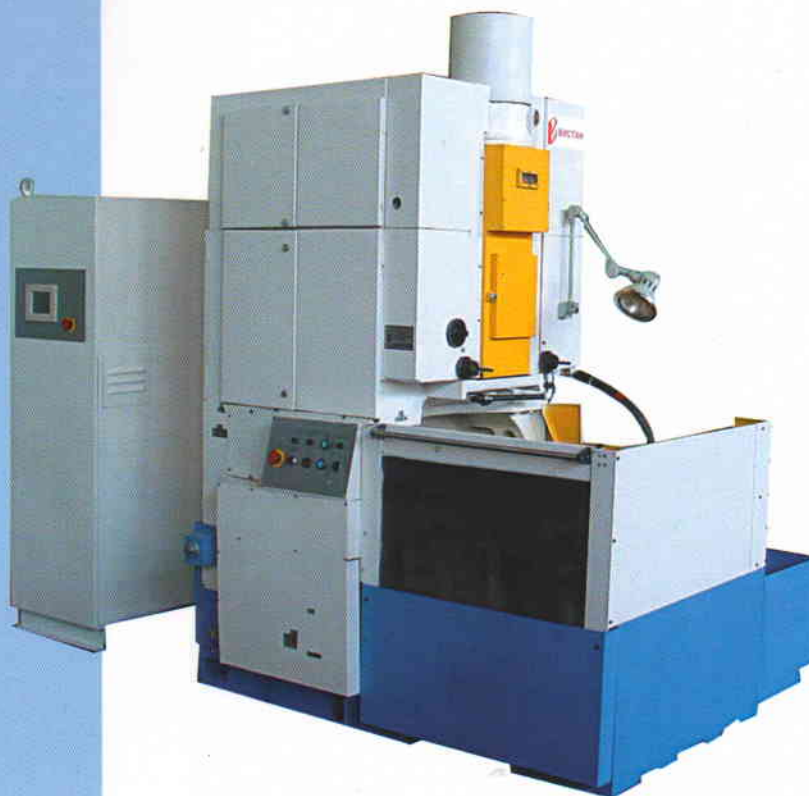
The gear shaping semiautomatic machines are intended for cutting of spur external and internal gears with disk-type gear cutters by method of form-generating.

The semiautomatic machines have the upright arrangement. At idle running the implement from a workpiece is taken away by the tool. The implement from a workpiece at idle running is taken away.

Treatment of one, two and three cuts with the changing of cutting speeds by every cut. The treatment is realized according to semiautomatic cycle. By idle running the tool from a workpiece can be taken away at an angle due to offset of a rack in the cross direction.

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

The semiautomatic machines are equipped with the SIEMENS operator desk, programmable controller and drives.



Model	BCH-150CNC	BCH-180CNC2
Maximal diameter of gears, mm	500	800
Maximal module of gears, mm	8	12
Maximal face width of gears, mm	100	160
Maximal nominal pitch diameter of gear cutter, mm	125	200
Diameter of cylindrical neck of arbor for gear cutter, mm	44,443-0,005	
Diameter of table working surface (of workpiece spindle flange), mm	560	800
Distance between the table axis and the tool axis, mm	0...355	0...700
Distance between the mirror of a table and butt end of a spindle of the tool		
-minimal	120	155
-maximal	270	355
Length of adjusting travel of tool spindle, mm	150	200
Number of double strokes of tool spindle per minute	55...560	30...240
Range of circular feeds when the gear cutter 100, mm/double stroke	0,06...0,6	0,2...1,5
Range of radial feeds, mm/min.	0,02...0,2	0,01...0,5
Power of primary motion drive, KW	15	15
Overall dimensions, mm	2263x1660x2510	3700x1500x3300
Weight of the semiautomatic machine, kg	7500	10450

The semiautomatic machine with horizontal axis of rotation is intended for cutting of spline shafts, spur and helical gears, and also worm-wheels with hobs by method of form-generating.

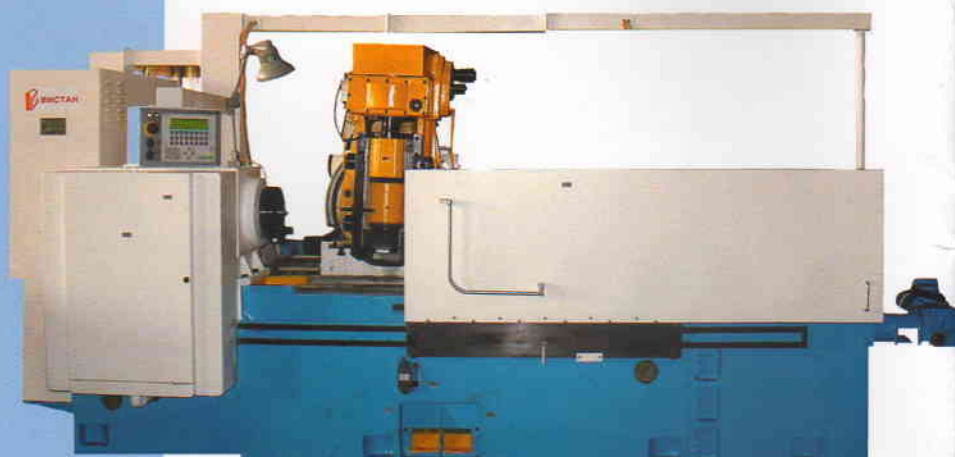
The semiautomatic machines BCH-6A13CNC25-10 are intended for cutting of worm-wheels and lead screws by disk-mill.

To raise the hob life due to using of cutting edges all over the length the hob travels along the axis periodically (shifting).

For the semiautomatic machines BCH-613NC and BCH-620NC are equipped with the SIEMENS operator desk, programmable controller and drives.

The semiautomatic machines BCH-613CNC, BCH-6A13CNC and BCH-620CNC are equipped with the CNC system mod. SINUMERIK 802D by SIEMENS and have the "untied" kinematic chains.

The disk-mills with diameter 130-230 mm and maximum thickness 60 mm are installed on the semiautomatic machines BCH-6A13CNC25-10.



Model	BCH-6A13CNC	BCH-613	BCH-620
Centre height above the bed, mm	230	230	300
Maximal length of the blank, mm	710	710	1000,3000*
Diameters of gears to be treated	125	125	20...200(20...320)
Maximal length of splines to be cut, mm	500	500	820,2500*
Module of gears to be treated, mm	6	6	8,10*
Maximal teeth helix angle of gears to be treated	±45	±45	±45
Maximal diameter of hobs to be installed, mm	160	160	160
Maximal length of hobs to be installed, mm	160	145	200
Maximal travel of hob (shifting), mm	110	75	100
Range of rotational speed of hob spindle, rpm	63...400	63...400	40...400
Range of working axial feeds, mm/min	3,0...700	3,0...700	3,0...700
Range of working radial feeds, mm/min	3,0...500	3,0...500	3,0...500
Diameter of through hole in the workpiece spindle, mm	72	72	90
Speed of saddle rapid travels, mm/min	700	700	700
Speed of column rapid travels, mm/min	500	500	500
Power of primary motion drive, KW	11,2	7,5	18,5;29,3
Total power of electric motors installed, KW	18,8	15,3	30,6;46,11
Weight, kg	4500	5200	8000
Overall dimensions (length x width x height), mm	2790x2180x2000	2600x1910x1950	3640x2190x1970

* - to special order

Semiautomatic machine for pinions teeth chamfering with abrasive wheel

The semiautomatic machine is designed for deburring and chamfering along the teeth contour of bevel of spur and helical with external and internal gears, spur and helical gears, pinion-shafts, worm wheels and sprockets by abrasive wheel.

These semiautomatic machines are manufactured in the following versions:

BCH-5A50-20 – with one spindle for chamfering in one butt-end.

BCH-5A50-2-20 - with two spindles for chamfering in two butt-ends at one time.

The semiautomatic machines BCH-5A50 are equipped with the SIEMENS operator desk and drives and high-speed electric spindle (Germany).

The semiautomatic machines BCH-550 have the relay control circuit. It is equipped with SIEMENS-drive and electric spindle of own production.



Maximal diameter gears, mm	500
Minimal outer diameter, mm	70
Module gears to be treated, mm	1,5...10
Maximal height of gears to be treated, mm	350
Maximal diameter of grinding wheel, mm	125
Diameter of a spindle of the tool, mm	14
Distance between the base of a semiautomatic machine and upper butt-end of a faceplate, mm	910
Distance between the tool axis and front side of the semiautomatic machine, mm	250
Minimal distance between the table and the butt-end of tool, when the under butt-end is treated, mm	150
Maximal vertical travel of wheel-head, mm	300
Rotational speed of grinding wheel, mm	7700
Limits of rotational speed of a table (stageless), mm	0,3...6
Overall dimensions, mm (LxBxH)	1050x870x1400
Weight, kg	350
Power of primary motion drive, kW	0,74

BCH-580, GBCH-580

Gear rounding semiautomatic machine

The semiautomatic machines BCH-580 and GBCH-580 CNC25 are intended for treatment of gears of external and internal gearing with special form end milling cutters.

For BCH-580 the treatment (rounding, chamfering of roofing) is achieved by jaw installation for particular kind of treatment. In standard version the semiautomatic machine BCH-580 is equipped with the jaw for teeth faces rounding. By the special order the jaw for chamfering of spur cylindrical gears of external and internal gearing and for roofing of particular workpiece can be supplied.

For semiautomatic machine GBCH-580 CNC25 the treatment can be choosed on the operator's console monitor.

The semiautomatic machine GBCH-580 CNC25 is equipped with a tailstock allowing treating a shaft. By customer's request the semiautomatic machine should be used for treatment of pinion-shifts. For this work support arm, with the support for upper part of shaft to be treated, to be installed on the semiautomatic machine.



Model	BCH-580	GBCH-580CNC25
The arrangement axes of workpiece about horizon	vertically	horizontally
Maximal diameter workpiece to be treated, mm	320,400*	320,400*
Module of gears to be treated, mm	1,5...6	1...6
Number of teeth to be treated	10...120	6...320
Distance between instrumental centers, mm	-	600
Diameter of mill to be installed, mm	16;13*;18*	16;13*;18*
Distance between the tool axis and butt-end of spindle, mm:		
- minimal	50	10
-maximal	190	210
Maximal length of travel of instrumental head along blank axes, mm	100	500
Rotational travel of instrumental spindle, deg	+5/-20	±30
Diameter of workpiece spindle, mm	250	190
Symbolic size of end of workpiece spindle (GOST 12595-85)	-	6
Diameter of through hole in the workpiece spindle, mm	-	72
Number of instrumental spindle	1	3
Rotational speed of tool spindle, min-1	1075/1630/3258	1...6000
Power of primary motion drive, KW	1,4/1,5/2,1	22
Total power of electric motors installed, KW	4,88	60,17
Number of coordinates to be controlled	-	5
Overall dimensions, mm (LxWxH)	1675x1110x1810	2790x2120x2000
Weight, kg	2950	4500

* - to qualify for order

The gear shaving machines are intended for finishing treatment of teeth of soft cylindrical gears of external gearing in serial mass production. It is provided the possibility of "barrel" and tapered teeth making on the semiautomatic machine.

The rotary guides of table provide the possibility of shaving with longitudinal, diagonal and cross feeds of workpiece. There is possibility of setting-up for in-feed shaving.

The semiautomatic machine BCH-732NC is equipped with the SIEMENS operator desk, programmable controller and drives.

To make barrel and tapered teeth there are synchronous electronic kinematic couplings instead of mechanical on the semiautomatic machine BCH-732 CNC installed. It is equipped with the CNC system mod. SINUMERIK 802D by SIEMENS.

The semiautomatic machine BCH-932NC is intended for the finishing treatment of hardened short spline shafts, spur and helical cylindrical gears with abrasive and diamond-tipped gear hones by method of form-generating, with isolated gear train using longitudinal and diagonal feeds.

The gear honing on the machine is possible when the radial and circumferential loading after "without reverse" method and with reverse of rotation of workpiece and hone to provide the improving of surface roughness after the head treatment and the noise abatement.

It is possible to treat gears with barrel-shaped teeth.

The semiautomatic machine is equipped with the SIEMENS programmable controller and drives.



Model	BCH-732NC	BCH-932NC
Maximal treatment diameter, mm	320	320
Maximal length of blank, mm	500	500
Maximal face width, mm	150	125
Module, mm	8	1,5...8
Maximal nominal pitch diameter of gear-shaving cutter, mm	250	250
Maximal width, mm	40	40
Fit diameter of gear-shaving cutter, mm	63,5	63,5;100
Maximal angular displacement of gear-shaving cutter head from the mid-position, deg.	30	25
Maximal travel length of table, mm	150	140
Maximal cross travel of table, mm	25	-
Maximal vertical travel of table, mm	165	-
Distance between the tool spindle axis and the workpiece spindle axis, mm	120...285	130...285
Maximal angular displacement of tables guides from the mid-position, deg.	-30...+90	-
Maximal value of template travel from the zero position, mm	15	-
Maximal angular displacement of template, deg.	45	45
Range of rotational speed of tool spindle, rpm	56...360	160...1000
Range of speeds of table horizontal travels, mm/min.	15...300	-
Range of table radial feeds, mm	0,01...0,04 (0,02...0,04)*	-
Maximal value of the removed allowance, mm	-	250...1250
Limits of rotational speed of left head's spindle, mm	-	50...400
Limits of table feeds, mm/min	-	1...5
Number of the double motions of a table for a cycle	-	630
Maximal value of the radial weighting, H	-	160
- when the normal shaving	0,4	
- when the plunge-cut shaving	0,3	
Range of values of unloading rebound, mm	0,01...0,04(0,02...0,04)*	-
Total power, KW	6,7	10,4
Overall dimensions (length x width x height), mm	1750x2200x2120	1600x1000x2200
Weight of the semiautomatic machine, kg	4700	3150

* - for BC-E02B-02

The spline grinding semiautomatic machine is designed for the high-performance finishing processing of spur and helical gears by continuous flow forming of grinding worm grinding wheel by the speed up to 60 m/s.

The processing is carried out by the pendulum or lifting grinding method. By the pendulum grinding the worm grinding wheel is supplying after each grinding passage in the upper and lower extreme points to the workpiece for the calculated value. Thus the rough grinding is performing. After that before the finishing the tangential shift of the worm wheel is performed. The new sections of the grinding wheel are introducing in the processing area. The shifting-grinding (diagonal) grinding is performed unlike pendulum grinding in fewer passes. In most cases in one or two passes: all allowances for roughing and high precision processing is realized during the single finishing pass.

The spline grinding semiautomatic machine can provide the processing of cog-wheels with longitudinal teeth modification (barrel form, taper form) and grinding with various adjustments by the radial wheel feed (Z axis).

The cleaning of lubricant-coolant liquid is carried out by 2-stage system. During the first stage the separation of the chips with the abrasive powder is carried out by magnetic separator. During the second stage the lubricant-coolant liquid is filtered by the paper filter with automatic paper feed.

The fence of the working area is made in the cabinet form with electric blocking of doors.

The rotational sharpened roller with diamond coating provides the adjustment of the worm wheel with profile angle of 15-30 degrees. The various modifications of the left and right profile of the worm wheel are possible.

The automatic feed into the engagement with the grinding wheel during the adjustment, as well as the automatic feed into the engagement of the grinding wheel with the workpiece simplifies the process of machine service. The high speed and precision generating module in combination with flexible control system provides the high level of spin-grinding of gears with optimal quality and economic results. CNC system «SINUMERIK 840Ds» is a good basis for integration into the flow forming process of gear grinding, as well as into the structure of the machine maintenance and engineering software.

For all basic coordinates the roller guides and roller backlash-free ball screw nuts are installed, which provide the smooth movement and precision.

As an additional option we can delivered the following accessories:

- Internal cooling of the tool holder with simultaneous automatic balancing of worm wheel by the coolant;
- Installation of oil mist and fumes remove systems with subsequent electrostatic condensation of coolant liquid.

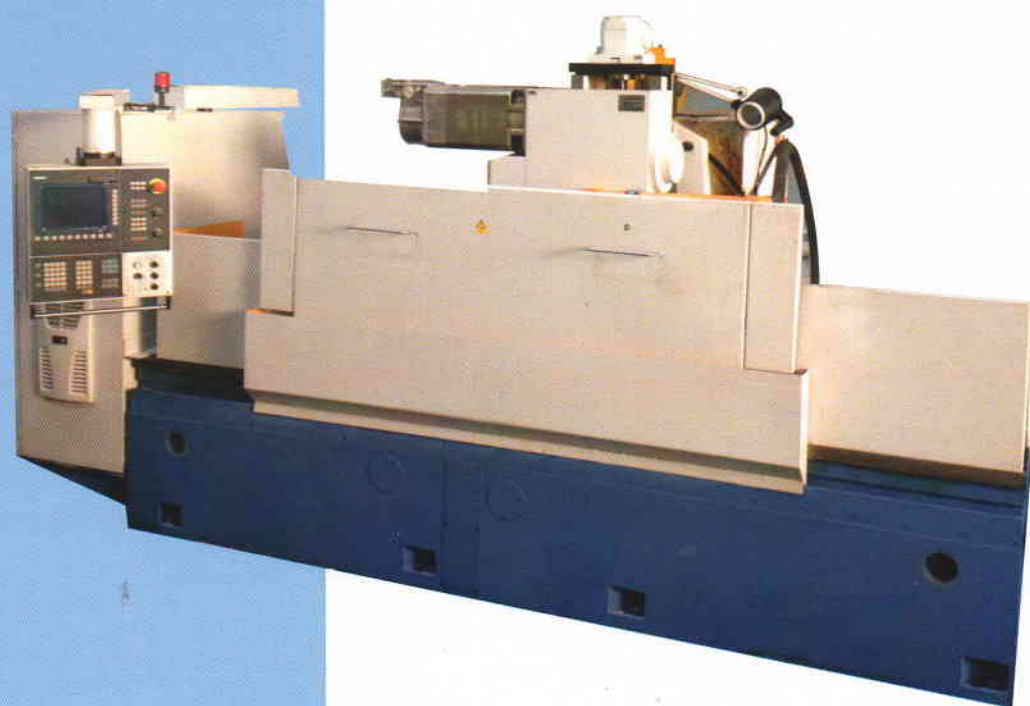


Maximal diameter of cog-wheel, mm	400
Maximal module of gears, mm	8
Maximal angulation of support, grad	±35
Maximal diameter worm wheel, mm	300
Minimal diameter worm wheel, mm	210
Maximal length worm wheel, mm	180
Diameter of bore of a tool holder, mm	160h5
Diameter of spindle of workpiece, mm	250
Maximal vertical travel of support (axis Z), mm	450
Maximal travel of main carriage along an axis of a worm wheel (a shifting, axis Y), mm	350
Limits of interaxial distance (axis X), mm	70-480
Maximal rotational speed spindle of workpiece (axis C), min-1	650
Maximal rotational speed spindle of tool (axis B), min-1	10000
Positioning accuracy, micron	±5
The number of the managed coordinates	10
The number of at the same time managed coordinates	5
Limits of feed on axes X, Z, mm/min.	1-1000
Limits of feed on axes Y, Z1, mm/min.	1-1000
Power drive of main motion, KW	26,4
Power drive of rotation of workpiece, KW	27
Total power, KW	93
Overall dimensions (together with separately located units and electric equipment) (length x width x height), mm	4300x4275x3200
Weight of the semiautomatic machine (together with separately located units and electric equipment), kg	12000

The rod-milling semiautomatic machine with CNC (model BCH-6PCNC) is intended for handling straight and helical laths by method of single division for single and serial production.

Mathematical software allows you to control semiautomatic machine interactively.

The semiautomatic machine with 4 simultaneously controlled axes is equipped with CNC Sinumerik 840D and SIEMENS drives.



Maximal length workpiece, mm	2100
Maximal module of cutting rack, mm	10
Maximal teeth helix angle of gears, grad	25
Maximal width workpiece, mm	120
Maximal diameter of mill	200
Length travel of mill (axis X), mm	2100
Vertical travel of mill (axis Z), mm	300
Cross travel of mill (axis Y), mm	400
Limits of rotational speed of mill's spindle, min-1	20...200
Speed travel along axis:	
X, mm/min	2000
Y, mm/min	5...1000
Z, mm/min	20...1000
Total power, KW	27
Overall dimensions (length x width x height), mm	4650x1979x2670
Weight of the semiautomatic machine, kg	12000

Gear-hobbing semiautomatic machines for treatment of conic gears

The gear-hobbing semiautomatic machine is intended for fair and draft cutting of conic wheels with straight cogs. The processing is realized two coupled by gear-cutting heads by method of a running-in or cutting-in, and also by the combined method.

- The semiautomatic machine GBCH-232 CNC has classical configuration of gear-cutting machines for cutting of conic wheels:

- The semiautomatic machine GBCH-232 CNC is equipped with the CNC system SINUMERIK 828D by SIEMENS with use of 4 controlled axes that provides the "untied" kinematics – synchronous rotation of cradle and rotation of workpiece, the movement of table, radial cutting-in.

- The rotating speed regulation of mill spindle is realized by the CNC system stepless according to the technological program.

- For increase in the general reduction of drives and decrease of dimensions of engines in a drive's design the high-precision planetary reducers with a reduction 1:5 and 1:10 are used.

- The removal of shaving wash-out, collecting in the box for shaving acceptance is realized by the magnetic conveyor with cleaning of lubricant-coolant liquid.

- The clutch of blank is realized by a hydraulic cylinder with a controllable clamping force.

- The semiautomatic machine has the centralized lubrication system.



Maximal outer diameter of gear, mm	320
Maximal module, mm	8
Maximal outside conical distance, mm	160
Maximal width of gear ring of wheel, mm	50
Maximal height of gear, mm	18
Number of gear of the cut wheels Installation angle of a block, grad	10...150
Distance between spindle butt-end and centre of machine, mm	4...90
Maximal shift of an axis of turn of a block of a workpiece from zero situation (shift of table), mm	60...360
- on a cradle	25
- from a cradle	25
Outer diameter of a conic hole of a spindle's block of a workpiece by GOST 17547-80, mm	100
Diameter of a cylindrical hole of a spindle's block of a workpiece	80
on length from a spindle butt-end 500 mm, mm	278
Rated diameter of gear-cutting heads by GOST 24904-81, mm	60
Maximal angle of swing of a cradle, gradAngle of divorce of supports, grad	0...10
Angular feed rate by running, gradMain drive (1PH8107 "SIEMENS"):	0,3...9
- power, KW	10
- rated moment, Nm	135
Rotating speed of tool spindlesNumber of installed electric motors	30...120
Total power, KW	7
Overall dimensions (length (with open door) x width x height), mm	25,02
Weight of the semiautomatic machine, kg	2450x2740x2000
	7500



PRODUCT RANGE OF JSC "VISTAN"

CENTERLESS CYLINDRICAL GRINDING SEMIAUTOMATIC MACHINES

BCA-180NC	d processing 0,5-10 mm	3E180B*
BCA-183NC	d processing 2.0-40 mm	3E183BM*
BCA-184NC	d processing 4.0-80 mm	3E184BM*
BCA-185NC	d processing 8.0-160 mm	3E185BM*
BCA-184KNC	d processing 5.0-80 mm	3E184SHV*

UNIVERSAL CENTRING CYLINDRICAL GRINDING SEMIAUTOMATIC MACHINES

BCA-1U52NC	d=10-250, L=1000mm (outer grinding)
ВШ-152УВН*	
BCA-1U52-01NC	d=10-250, L=1000mm (outer, inner grinding)
ВШ-152УВН-01*	
BCA-1R52NC	d=10-250, L=1000mm (outer grinding)
ВШ-152РВН*	
BCA-1R52-01NC	d=10-250, L=1000mm (outer, inner, face grinding)
ВШ-152РВН-01*	

HORIZONTAL MACHINING CENTRE

BCM-206BM13CNC table 630×800, 30 tools SIEMENS 2206BMF4-13*

ENGINE LATHES

16BT20П-21	d=500mm, L=1000mm
16BT20П-22	d=500mm, L=1500mm
BCT-625-21CNC	d=320mm, L=1000mm
BCT-625-22CNC	d=320mm, L=1500mm

BENCH-TYPE MACHINE TOOLS, TYPE «MINICS»

BCT-028	Universal bench-type lathe machine	BSH-028*
BCM-008	Bench-type drilling machine	KC-8-01*
BCH-12	Bench-type threading machine	BC-12M*
BCM-029	Bench-type drilling-milling machine	BSH-029*

OTHER MACHINES

BSH-041	Rough-grinding machine
BSH-042	Hacksaw-cutting-off machine

ROD-MILLING SEMIAUTOMATIC MACHINE

BCH-6PCNC	m=10, L=2100mm
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GEAR HOBBING SEMIAUTOMATIC MACHINES

53B30П	m=6, D=320
BCH-332 NC21 (53B30П-02)	m=6, D=320
53B30П-10	m=6, D=320
BCH-332NC	m=6, D=320
BCH-332CNC	m=6, D=320
BCH-350NC	m=10, D=500
BCH-3A50CNC	m=10, D=500

GEAR SPLINEHOBBING SEMIAUTOMATIC MACHINES BCH-

613NC	m=6, D=125, L _{grinding} =500
BCH-613CNC	m=6, D=125, L _{grinding} =500
BCH-620NC	m=8, D=200, L _{grinding} =820
BCH-620CNC	m=8, D=200, L _{grinding} =820
BCH-6A13CNC	10 lead screw, worm D=125, L=500

GEAR SHAPING SEMIAUTOMATIC MACHINES

BCH-123CNC	m=5, D=200
BCH-150CNC	m=10, D=500
BCH-180CNC	m=12, D=800

GEAR DEBURRING SEMIAUTOMATIC MACHINES

BCH-5A50-20	m=10, D=500	one spindle
BCH-5A50-2-20	m=10, D=500	two spindle

GEAR ROU

NDING AND SHAPING SEMIAUTOMATIC MACHINE

BCH-580, GBCH-580	m=6, D=320
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GEAR SHAVING MACHINES

BCH-732NC	m=8, D=320	SIEMENS
BCH-732CNC	m=8, D=320	SIEMENS

GEAR HONING SEMIAUTOMATIC MACHINE

BCH-932NC	m=8, D=320	SIEMENS
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GEAR GRINDING SEMIAUTOMATIC MACHINE

BCH-840CNC	m=8, D=400	SIEMENS
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GEAR-HOBBING SEMIAUTOMATIC MACHINE FOR TREATMENT OF CONIC WHEELS

GBCH-232CNC	m=8, D=320	SIEMENS
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