

Homag Holzbearbeitungssysteme AG · Homagstr. 3-5 · D-72296 Schopfloch

Testprint Order Confirmation

Stiles Machinery Inc.
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GRAND RAPIDS MI 49512
USA

Date : 04.05.2009 / EB
Execution : 1

For further questions quote
Order number : 037167
Customer : PRINCIPLE FIXTU
Machine number : 0-201-03-7167

Customer number : 70734
Your order number : PO 26673
Your order date : 05.08.2004
Competent person : J. Baumann
Techn. Reference : H. Schweizer

G.00 OPTIMAT BOF311/40/R HOMAG - PROCESSING CENTRE - OPTIMAT

Trimming and boring centre with electronic control for batchwise production of furniture parts, solid wood or similar material.
Including 1 main spindle.

SHORT DESCRIPTION OF THE BASIC EQUIPMENT:

- clamping table
- control POWER CONTROL with PC85
- main spindle 7,5 kW vector-regulated
- plate-type tool changer 12 tools

BASIC MACHINE:

- machine bed in heavy, stable construction with compact linear guidance system.
Backlash-free pretensioned rack and pinion gears and digital AC-servo motors in X and Y-axis
- unit carrier with linear guidance system, recirculating ball screw and digital AC-servo motor for positioning of the Z-axis, travel 535 mm

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Aktiengesellschaft mit Sitz in D-72296 Schopfloch; Registergericht Stuttgart HRB 440325
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Vorsitzender des Aufsichtsrats: Torsten Grede

Banken

BW-Bank, Stuttgart
Commerzbank AG, Villingen
Deutsche Bank AG, Stuttgart
Dresdner Bank AG, Karlsruhe
HypoVereinsbank AG, Freiburg
Kreissparkasse, Freudenstadt

Biz

600 501 01
694 400 07
600 700 70
660 800 52
680 201 86
642 510 60

Kto

4901040
1542000
053943700
607839400
7602855
308733

SWIFT

SOLA DE ST
COBA DE FF 694
DEUT DE SS
DRES DE FF 660
HYVE DE MM 357
SOLA DE S1 FDS

IBAN

DE56 6005 0101 0004 9010 40
DE50 6944 0007 0154 2000 00
DE19 6007 0070 0053 9437 00
DE77 6608 0052 0607 8394 00
DE82 6802 0186 0007 6028 55
DE53 6425 1060 0000 3087 33

Vertriebs- u. Service NL Bayern

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- manual centralized lubrication for all drives and linear guidances

GRID-GROOVED CLAMPING TABLE "R"

- clamping table with grooved aluminium continuous casting profile for putting on templates and workpieces
- single-circuit vacuum system integrated in the table for clamping the templates and workpieces
- the workpieces are put against detachable guide rails in the cross grooves
- without template and clamping device
- grid table with grooved surface designed to permit insertion of a rubber gasket or a flexible vacuum plug-in module for putting on and clamping the workpieces instead of templates (option)
- grid dimensions
 - grid 30 mm
 - width of groove 7 mm
 - depth of groove 7 mm
 - distance between suction places 120 mm
 - additional grooves in X direction for mechanical fixing elements, distance 30 mm
- 4 plug-in connections with single-circuit compressed-air system for connecting pneumatic clamping elements
- workpieces with extreme dimensions have to be clamped, using templates or mechanical fixtures
- the machine zero point is placed at the left front side
- the workpieces are put on by hand from the front side
- stop pins for grid table are optionally possible (sales no. 7302)
- table designed for alternate operation
- operation area and position of stop pins accord. to Technical Data

LACQUERING:

- HOMAG structure lacquer grey RDS 240 80 05

ELECTRIC EQUIPMENT:

- separate switch cabinet

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- control panel 180 swivelling, mounted at the switch cabinet
- installed according to European Norm EN 60204
- connection cables to the machine according to layout plan
- operating voltage 400 volt, 50/60 Hz
- country-specific adaptation of operating voltage by transformer (sales no. 6103)
- control voltage 24 volt
- FI-safety switching only permitted in connection with an all-mains sensitive/-selective FI-safety switch; if the performance of this device is not sufficient, a differential current monitor is recommended to be provided by the customer
- permissible environmental temperature:
+ 5 degrees up to + 35 degrees Celsius

POWER CONTROL:

Hardware:

- control POWER CONTROL PC85 with PLC-control (IEC 61131)
- modern control system on the basis of an industrial PC with operating system Windows NT
- Pentium III processor with 850 MHz and 512 MByte RAM
- 1 hard disk fixed
- 1 hard disk in change frame for data securing
- 1 CD-ROM drive 32 x
- 1 floppy drive 1.44 MByte
- TFT flat screen with PC keyboard and mouse
- digital drive technology via optical fiber
- peripheral, digital field bus system
- network connection ETHERNET via additional card and network software (option)
- no-break power supply (USV)

Software:

- operating system Windows NT 4.0 US
- virus protection
- 1:1 securing (Cloning)
- operation menu-guided with Windows standard
- PC85 CNC-kernel with:
 - control for continuous line operation in all axes
 - look-ahead-function for optimum speeds at the transition points

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- dynamic look-ahead-control for accurate contours
- PC85 software kit with graphic operating programs:
 - woodWOP for graphic and interactive creation of CNC-programs incl. postprocessor
 - graphic tool data base
 - CNC-operation
 - graphic representation of the clamping places
 - error messages in plain text
 - up to 24-digit alphanumeric program names
 - diagnostic system woodScout is possible (as option)
 - Schuler MDE Basic
- woodDesign for office PC:
Software with modern 3D surface for the interactive creation of corpus furniture with release of woodWOP programs including components for the individual processing steps which will be processed one after the other
- Interferences in the machine control by non authorized persons release HOMAG from any warranty commitments and product liability.

BASIC EQUIPMENT:

- Remote diagnosis via modem
Invoicing accord. to separate teleservice contract
- for BOF311/30 + 40
1 water-ring vacuum pump with 100 m³/h (corresponds to an output of a 140 m³/h rotary slide-valve vacuum pump) for clamping system
- all path axes are driven via AC-servo motors and regulated according to feed
- pneumatic connection R 1/2 inch, 7 bar
- max. path-feed rate:
 - 60 m/min in X- and Y-direction
 - 30 m/min in Z-direction
- machine output depends on the individual processing steps

SAFETY AND PROTECTION FACILITIES:

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- operating area shielded by safety mats
- safety barrier for right-hand machine side with safety door and integrated switch cabinet
- further requested safety facilities such as lateral wall left-hand side and back wall have to be additionally sold on request
- all machines destined for EC member countries are fitted with CE-plate in accordance with EC-Machine Directive 98/37/EC, Appendix IIA
- Attention: It is not allowed to run the ----- machine without full safety barriers
- wood dust protection max. 2 mg/m³, subject to the required extraction capacity being provided by the customer according to the suction plan
- technical documentation in duplicate

TECHNICAL DATA:

- workpiece length
for BOF311/40/R
max. 4040 mm in single operation
max. 1400 mm in alternate operation
max. 1575 mm in alternate operation
for trimming works with tool
diameter 25 mm
- workpiece width stop at the front side:
(operator's side)
 - max. 1525 mm for trimming works with tool
diameter 25 mm
 - max. 1450 mm for all units
- workpiece width stop at the rear side:
(auxiliary stops table rear side)
 - max. 1730 mm for trimming works with tool
diameter 25 mm
 - max. 1600 mm for all units
- workpiece thickness
 - max. 210 mm
 - up to max. 60 mm without any restriction
for units and suction
- the indicated workpiece dimensions can not be equated with the max. possible processing sizes per unit - see separate tables

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- the min. workpiece size depends on the clamping devices used, as well as on the surface and contour of the workpiece
- as the case may be - clarification with HOMAG
- working height grid table 850 mm
- floor conditions have to correspond to the foundation plan

SPECIAL NOTE:

- In case of a large-surface clamping of open pore panels (e.g. uncoated chip boards or MDF) a more powerful vacuum system is necessary
- As the case may be - clarification with HOMAG

MAIN SPINDLE 7,5 KW LIQUID-COOLED

- For HSK F63 - DIN 69893
- Incl. spacial suction for all tools and units
- Vector-regulated asynchronous motor 7,5 kW, liquid-cooled
- Tool weight max. 5 kg including chuck
- Tool length max. 200 mm calculated from lower edge of motor spindle
- Tool diameter:
 - max. 180 mm for trimming tools
 - max. 200 mm for sanding tools
- Frequency inverter for electronic regulation of revolutions
- number of revolutions steplessly programmable from 0 - 18000 rpm
- Total turning moment from 0 - 12000 rpm
- Total nominal power from 12000 rpm on
- In case of reducing the number of revolutions the power is decreased accordingly
- Without chuck and tools

SPINDLE RETURN TRAVERSE STROKE

- enables the use of the boring head with panel sizing tool remaining in the main spindle
- tool length incl. tool chuck up to max. 150 mm

PLATE-TYPE TOOL CHANGER 12 TOOLS

- for tools and units with HSK F63
- The following tools/units can be inserted:

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- 12 x diameter max. 135 mm or
- 6 x diameter max. 180 mm and
- 6 x diameter max. 85 mm

PROGRAMMING ACCORDING TO CNC-DRAWINGS:

- programming and run-in for 2 workpieces
- condition: CNC-dimensioned workpiece drawings as well as test material (panels and edging material) to be provided by the customer
- one workpiece must be fully processed in one cycle

Note:

- machine without vacuum pump
- machine without programming according to CNC-drawings
- operating voltage 480V/60Hz

G.0001 Number : 0847 1 off
INSTALLATION ACCORDING TO UL SPECIFICATIONS
installed according to UL specifications

G.0004 Number : 7002 1 off
AUTOMATIC CENTRAL LUBRICATION CANTILEVER OPTIM.
- instead of manual central lubrication
- for all linear guidances and drives

G.0007 Number : 7150 4 off
VACUUM CLAMP FOR GRID TABLE 200X170X36
- vacuum clamping element for inlaying in the grooves of the grid table

G.0010 Number : 7152 2 off
VACUUM CLAMP FOR GRIDTABLE 170X80X36
- vacuum clamping element for inlaying in the grooves of the grid table

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- G.0013 Number : 7302 11 off
REFERENCE STOPS FOR MATRIX TABLE
individually selectable, control of final
positions, electropneumatically controlled,
stroke 50 mm.
- G.0016 Number : 7336 1 off
VACUUM SYSTEM 4 INCH NESTING B_/32-42/52/60/R
- extension of the vacuum system from 2 inch to
4 inch connection cross section
- additional 1 inch end plugs in the clamping
table for maximum vacuum capacity when using
air permeable intermediate panels
- G.0019 Number : 7385 20 off
GASKET DIAM. 8 MM FOR MATRIX TABLE
Sponge-rubber gasket for creating variable
vacuum clamping surfaces on a matrix table.
Price per metre.
- G.0022 Number : 1 off
KABELABDECKUNGEN
Standardlänge Schaltschrank - Maschine
- F.01 Number : 7407 1 off
BORING HEAD 17 SPINDLES VERTICAL
- 1 motor 4 kW, frequency-controlled
- Number of revolutions 4500-6000 rpm,
selectable by programme
- For vertical borings, adjusting stroke 50 mm
- 17 spindles up to max. 35 mm bore diameter
- Each spindle can be called up individually
- Gantry: 7 spindles in X direction
 11 spindles in Y direction
- Cantilever: 11 spindles in X direction
 7 spindles in Y direction
- Spindle distance 32 mm
- Total borer length 70 mm
- Shank diameter 10 x 20 mm
- With clamping surface and adjusting screw
- Rotation direction: left/right-hand rotation,
alternately

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- Without tools
- Prepared for the installation of max. 2 adapter units

F.0101 Number : 7417 1 off
ADAPTER BORING HEAD HORIZONTAL 4 SPINDLES +
SAW RIGID

- for mounting on the boring head 12/17 spindles vertical
- drive via boring head
- for horizontal borings in 4 directions (X+/X-/Y+/Y-)
- rotations max. 6000 1/min
- retraction stroke 65 mm in Z direction
- drill chuck diam. 10 x 20 mm
- total drill length 70 mm
- bore diameter max. 10 mm
- spindle exit Y+ and X+ alternatively prepared for mounting a saw for easy grooving works
- saw blade diam. 125 mm
- saw blade width max. 6 mm
- chuck flange diam. 30 mm
- 4 countersunk head screws M5
- limb diameter 48 mm LL
- without tools
- rotations max. 8000 1/min
- when mounting on the boring head 12 or 17 spindles, the diameters of 2 vertical borers are restricted

F.0104 Number : 7423 1 off
ADAPTER CUTTER SPINDLE

- for mounting on the boring head
- for simple trimming e.g. trimming in opposite movement at a cross edge or corner rounding
- retraction stroke 50 mm
- rotation max. 13000 rpm
- performance 4 kW
- feed max. ca. 5 m/min
- workpiece thickness max. 40 mm
- tool chuck spring chuck ER32/
DIN 6499 diam. 20 mm
- tool diameter max. 20 mm
- total tool length max. 110 mm
- rotation direction right-hand/left-hand

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freely programmable

- without tools
- in case of machines with outrigger an extension of the working area of approx. 300 mm in Y-direction is obtained through the installation of the adapter cutter spindle (panel stop is at table rear edge)
- for panels with extreme dimensions, sales no. 7375: plug-in console, is recommended

F.04 Number : 7425 1 off
MEASURING SENSING SYSTEM FOR UNIT BEAM
 Installed at unit beam with pneumatic retraction cylinder.
 Measuring sensing system for determination of an actual scale relevant to processing in X, Y, or Z.
 The position data are calculated by formula stored in NC-program.

F.07 Number : 7429 1 off
MAIN SPINDLE 14,5 KW CONTROLLED INSTEAD OF 7,5 KW
 - three-phase current vector-regulated, asynchronous motor
 - 14,5 kW in case of S1, liquid-cooled
 - frequency inverter for electronic regulation of the number of revolutions
 - stepless range of number of revolutions
 - programmable from 0 - 18000 rpm
 - full torque from 0 - 12000 rpm

F.0701 Number : 7436 1 off
NUMBER OF REVOLUTIONS 24000 RPM FOR MAIN SPINDLE 14,5 kW
 Only tools which are suitable for the corresponding number of revolutions are allowed to be used.

F.0704 Number : 7443 1 off
C-AXIS WITH UNIT INTERFACE FOR OPTIMAT
 - for connecting the processing units
 - incl. interface pneumatic and swivelling

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drive C-axis with torque taking and 3-point-
support device

- drive for all units with swivelling axis
- unlimited swivelling range
- tubeless compressed-air guidance
- prepared for later installation of the
electric/electronic interface

F.10 Number : 7450 1 off
TOOLCHANGER FOR 18 TOOLS IN LIEU OF 12 TOOLS
OPTIMAT

The following tool- and unit equipments are
possible:

- 18 x diameter max. 130 mm or
 - 9 x diameter max. 180 mm and
 - 9 x diameter max. 70 mm
- max. diameter for sanding tools 200 mm

F.13 Number : 7511 1 off
SAWING AND SNIPPING UNIT FOR TOOL-CHANGER

- For automatic change-over into the main
spindle
- For grooving and cutting from top at any
angle to the workpiece as well as rectangular
notchings
- Snipping of projecting edges and severance
cuts up to max. 50 mm workpiece thickness
- Rotations max. 9000 rpm.
- Chuck flange diameter 30 mm with 4 counter-
sunk screws M5
- Reference diameter 52 mm LL
- with separating and snipping saw diameter
180x30x3,2; t=54
- saw blade thickness max. 10 mm for grooving
- saw blade diameter max. 200 mm
- Unlimited swivelling via c-axis
- max. torque 12 Nm

- troublesome processings may perhaps be
effected in several processing steps
- max. chopping cross section of the chip
board: 120 mm² for approx. 10 m/min
- max. chopping cross section solid/hardwood:
70 mm² for approx. 10 m/min

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F.16 Number : 7523 1 off
DRILLING/TRIMMING UNIT 4 SPNDLS F. TOOL-CHANGER
 For automatic change-over into the main spindle
 For horizontal boring and simple trimming,
 such as grooving, oblong holes, notching and
 trimming of edges. Spindle exits to four sides.
 Collet chuck ER25 DIN 6499 up to a shaft
 diameter of max. 16 mm.
 Tool projection max. 50 mm.
 Rotations max. 13500 rpm
 Standard collet chuck diameter 10 mm.
 Unlimited swivelling via C-axis
 Without tools

F.19 Number : 7529 1 off
LOCK CASE TRIMMING UNIT 2 SPINDLES D=16/20
 - For automatic change-over into the main
 spindle
 - With 2 spindles e.g. for cutting out lock
 cases and face plate horizontally, suitable
 for doors, paling borings etc.
 - With integrated blow-out nozzle
 - Spindle exits to 2 sides with opposite
 turning movement:
 - 1x Weldon clamping chuck, diam. 20 mm
 incl. reducing sleeve for tool diam. 16 mm
 total tool length max. 180 mm
 tool projection max. 135 mm
 - 1x collet chuck ER16 DIN 6499,
 with diam. 10 mm
 total tool length max. 70 mm
 tool projection max. 40 mm
 - Rotations max. 12000 rpm.
 - Without tools
 - Unlimited swivelling via C-axis

F.22 Number : 7549 2 off
SANDING UNIT WITH BLOWING NOZZLE F.TOOL-CHANGER
 for automatic change-over into the main spindle
 Including clamping chuck for tool, shaft dia-
 meter 25 mm. Tool diam. max. 158 mm.
 Rotary head swivelling from 0-360 degrees.
 Compressed-air connection for blowing nozzle.
 The blowing nozzle can be adapted to the

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abrasive-wheel profile. Exact profile drawing necessary.
Without abrasive wheel. Per tool.

H.01 Number : 7883 1 off
LASER PROJECTION SIMPLE UP TO ../52/..
For vacuum clamp positioning up to a table size of ../50/..
HeNe-laser 5 mW with deflector
for showing the trimming contour programmed in woodWOP or the position of the suction cups fixed in woodWOP by the programmer.
Software included.
Projection accuracy +/-1mm per metre projection distance. Distortions occur in case of projection-line lengths larger than 12 m (developed view of projection picture).
The laser projection system is subject to a drift caused by heat and must therefore be periodically newly adjusted.
Incl. installation plate with adjusting device.
Installation of the laser has to be done by the customer himself, fixing it centrically above the clamping table.
Necessary hall height for:
- B../30/ ca. 4600 mm
- B../40/ ca. 5400 mm
- B../50/ ca. 6150 mm
If the hall's ceiling is subject to a considerable distortion due to heat, the system must be fixed to a holder on the hall's floor.
If environmental temperatures of more than 40 degr. Celsius are to be expected, a suitable unit-cooling device is to be provided by the customer.
See technical data for exact mounting height.

E.01 Number : 6172 1 off
AIR CONDITIONING FOR SWITCH CABINET
will be necessary if the environmental temperature at the machine is higher than 35 degrees C or machines with servo-drives and frequency-adjusted drives.

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E.04 Service: 6383 1 time
 DIAGNOSIS SYSTEM WOODSCOUT
 Software kit for the graphical diagnosis of the machine condition. With the woodScout system it is possible to systematically eliminate troubles, which leads to a considerable increase of the plant availability.
 - Graphical PLC diagnosis in different levels
 - Learning system due to the possibility of entering the reasons for disturbances and the measures to eliminate them
 - Optimum support for the elimination of machine down-times

E.07 Service: 6530 1 time
 NETWORK CONNECTION ETHERNET
 enables the machine to be connected to local network EtherNet.

 Hardware for NCxx-control:
 - EtherNet card with AUI-connection (10 Base-5)
 - without cable
 - integrated in the machine control

 Hardware for PC-based control (PCxx):
 - EtherNet-card with RJ45-connection (10/100 Base-T) for twisted-pair cable
 - without cable
 - integrated in the PC of the machine control

The network connection for an office PC is to be provided by the customer.

Possible types of data communication:
- data communication via FTP. The machine represents the FTP-server. The TCP/IP protocol is installed on the machine. The network address (IP-address) of the machine and the address of a possible Gateway-PC are configured on site or via modem.
- in case of machines with PC-based control (PCxx), data communication can also be effected by the microsoft-network. A drive of the machine can be connected with the

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office PC. Also possible is that a shared drive of a server is connected by the machine. The configuration of sharing a drive and/or connecting a server drive is effected on site or via modem.

For another kind of data communication (e.g. machine with PC-based control as NOVELL-Client) an extended configuration of the machine network can be realized as additional service in agreement between HOMAG and the network administrator provided by the customer.

E.10

Service: 6620 1 time
WOODWOP PACKAGE AV-PC BOF CANTILEVER OPTIMAT+PM

This software kit enables interactive graphic creation of CNC programs for CNC control PC83/85.

The kit comprises the following functions:

- comfortable, completely menu-related control surface
- contour creation via integrated contour drawing program/dimension input by absolute values or by variables for simple variant creation (variant programme)
- menu-related call of individual processings/ graphic representation of programmed work-piece directly at input on screen
- automatic mirroring of the parts
- incl. postprocessor for creation of programs in DIN 66025
- incl. interface for taking over drawing data from CAD systems in DXF format for further processing.
Certain drawing guidelines, such as layer-occupation, must be adhered to.
- licence is valid for several installations within one production location
- post-processor for a machine within one production location
- precondition: office PC with Windows 98, ME, 2000, NT4 or XP