

TECHNICAL DATA M35-G MILLTURN

CNC-TURNING-BORING-MILLING CENTRE, M35-G MILLTURN WITH COUNTER-SPINDLE, BOTTOM SLIDE AND CONTROL **SINUMERIK 840D pl**

WORKING RANGE

| | | |
|-------------------------------------|----|----------|
| center distance | mm | 1800 |
| max. turning diameter | mm | 520 |
| swing over bed | mm | 520 |
| Z-axis travel | mm | 1500 |
| X-axis travel | mm | 600 |
| distance between spindle flanges A8 | mm | 310-1810 |

TURNING SPINDLE LEFT//RIGHT

| | | |
|-------------------------------------|----|------------|
| spindle head according to DIN 55026 | | L // R |
| spindle diameter in front bearing | mm | A8 // A8 |
| spindle bore | mm | 160 // 160 |
| | | 77 // 77 |

MAIN DRIVE LEFT//RIGHT

| | | |
|--------------------------|-----|------------------------|
| Built in motor | | L // R |
| drive power 40%(100%) ED | kW | 33 (29) // 33 (29) |
| speed range | RPM | 0-4000 // 0-4000 |
| max. torque 40%(100%) ED | Nm | 630 (550) // 630 (550) |

C-AXIS

| | | |
|---------------------------------|-----|------------------------|
| smallest programmable increment | deg | L // R |
| speed range | RPM | 0,0001 // 0,0001 |
| max. torque 40%(100%) ED | Nm | 0-100 // 0-100 |
| clamping torque with disk brake | Nm | 630 (550) // 630 (550) |
| | | 2000 // 2000 |

TURNING-BORING-MILLING-UNIT (TBM-unit)

| | | |
|-----------------------------------|-----|-----------------|
| single tool holder | | |
| drive power 100% ED | kW | 15 |
| speed range | RPM | 9000 |
| max. torque 40%(100%) ED | Nm | 125 |
| max. B-axis torque not indexed | Nm | 900 |
| Y-axis travel | mm | 250 [-100/+150] |
| B-axis swiveling range | deg | +/-110 |
| tool system | | C6 |
| spindle diameter in front bearing | mm | 80 |

ADDITIONAL COOLING of the TBM-unit by a closed loop cooling system with a separate heat exchanger.

FEED DRIVES

| | | |
|---------------------------|-------|----|
| feed force Z-axis 100% ED | kN | 10 |
| feed force X-axis 100% ED | kN | 7 |
| feed force Y-axis 100% ED | kN | 12 |
| rapid traverse: Z-axis | m/min | 40 |
| X-axis | m/min | 30 |
| Y-axis | m/min | 15 |

BALL SCREW SPINDLES

| | | |
|--------|----|-------|
| Z-axis | mm | 50x20 |
| X-axis | mm | 50x16 |

TOOL MAGAZINE

| | | |
|---|----|-----------|
| tool places (coded) | | 80 |
| max. tool diameter, adjacent place free | mm | 160 |
| adjacent place occupied | mm | 90 |
| max. length of tool 80 | mm | 450 / 250 |
| max. weight of tool | kg | 15 |
| max. tilting torque in the gripper slot | Nm | 20 |

DIMENSIONS

| | | |
|--|----|----------|
| length (incl. tool magazine and chip conveyor) | m | 8,3 |
| width/height | m | 4,0/3,25 |
| weight total | to | 15-20 |

ELECTRIC CONNECTION DATA

| | | |
|---------------------------------|--------|----------|
| connection power 29kW | kW/kVA | 105/110 |
| operating voltage | V/cps | 3x400/50 |
| connection power - light cable | kW | 1 |
| operating voltage - light cable | V/cps | 230/50 |

The short circuit power at machine power connection point according to EN 50178 is minimum 5,6 MVA.

The machine can be connected directly to the customer's 3 phase power supply in case the starpoint of the power source (e.g. central transformer) is grounded and a conductor (PE or PEN) to the grounding of the power source is available at the connecting point of the machine TN-net).

All other types of electrical supply (IT, TT-net) must be connected via an isolating transformer with the starpoint grounded.

For the power supply of the low voltage consumers of the machine a separate cable has to be provided at the connecting point of the machine.

BASE MACHINE

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|------------|---|
| M301/01-03 | Bed M35-G, genuine 60° slanted heavy duty grey cast iron casting, stick slip free roller guideways for upper and lower slides, incl. leveling pads. |
| M014/01-20 | Visiport window (1 piece) usable in each sliding door. |
| M302/01-01 | Headstock left M35/M35-G, 33/29kW built-in-motor, spindle nose A8, integrated C-axis and high resolution encoder. |
| M302/01-03 | Disc brake for C-axis 29kW (left or right), mounted directly to the spindle, disc brake is absolutely backlash free and can be engaged for heavy milling or off center drilling operations, clamping torque 2000Nm. |
| M302/22-01 | Headstock right M35-G, 33/29kW built-in-motor, spindle nose A8, integrated C-axis function and high resolution encoder. |
| M302/01-03 | Disc brake for C-axis 29kW (left or right), mounted directly to the spindle, disc brake is absolutely backlash free and can be engaged for heavy milling or off center drilling operations, clamping torque 2000Nm. |
| M303/01-03 | Compound slide top M35-G stick-slip free roller guideway system in X- & Z-axis, linear scale in X air pressurized, rotary encoder in Z, safety clutches at all feed drives |
| M305/01-02 | Turning-Boring-Milling-Unit M35, M35-G, Capto C6, 20kW/165Nm (40%), 15kW/125Nm (100%), 9000min-1, milling spindle and motor thermally separated, chilled units, high torque by gear, backlash free B-axis, direct measuring system. |
| M305/03-02 | 80-station tool magazine, tool size 63, ATC above left headstock, integrated tool shank flushing, wear free disk magazine with closed tool pockets, tool set up from the front of the machine also during machining. |
| M309/00-03 | Chip conveyor M35-G discharging to the right, hinge belt type with inclination to the dropping height, wiper plate on return belt below dropping point, conveyor removable through front |

| | |
|--------------|---|
| M409/30-03 | Coolant unit with filtration by slant bed paper band filter, filter fineness ca.40µm, filter capacity ca.200 liter/min, standard coolant pump 10bar/55 liter/min. |
| M009/02-01 | Oil-Skimmer, depth of immersion 700mm |
| M006/43-10 | Signal lamp - 3 color |
| M306/01-01 | CNC control SINUMERIK 840D Siemens hard-and software, WFL-software package, rigid tapping as well as coordinate transformation, with 15" TFT-color display, CNC-keyboard "QWERTY" (alphanumeric keyboard arrangement). incl. manual encoder |
| M006/52-12 | Display text in English language |
| M006/44-09 | Function manual retraction of tools when trapped in angular (B-axis) position upon emergency stop, power failures leading to machine stop, etc. without referencing the machine axes. |
| M006/44-11 | Telediagnosis system, with the modem connected the control screen can be viewed by WFL engineers in Linz/Austria in order to help for trouble shooting, at programming problems, etc. |
| M006/44-12 | Modem for telediagnosis system M006/44-11. The modem can be connected to the serial interface of the machine control and a telephone line (analog, ISDN not possible) |
| M000/51-02 | Documentation ENGLISH on DVD, comprising: technical description, assembly drawings with spare parts designation, circuit diagrams, maintenance manuals, programming and operating manuals. programming and operating manuals, etc. |
| M317-03-02 | HGV packaging, M35/M35-G. |
| K317-200X001 | Delivery M3x/2000 to a customer in E1, CIP according Incoterms 2010, not included unloading and put to the place of installation. |
| M017-01-01 | Transport & safety devices (returnable packaging) Transport frames & transport securing devices are loaned by WFL. They are to be returned by the customer at its own expense. |

INCLUDED MACHINE OPTIONS

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| M313/00-01 | Steady rest slide on the bottom guideways, numerically controlled, linear ball bearings for friction free motion, steady rest movement by rack and pinion system, stroke control by encoder. |
| M313/06-02 | Self-centering steady rest, 45-310mm SMW SR5 Premium-Line, excenter adjustment of rollers, central lubrication and roller flushing Arm-/width/ roller OD: 75/29/62mm, max. 20kN/roller, incl. holder, HSN2. |
| M307/02-01 | Drill breakage monitoring within the tool magazine area with end switch. |
| M308/01-03 | Hollow-center chucking cylinder left, VNK - 200/ 67 - SO, with safety valve system and stroke control. |
| M308/03-01 | Power-operated wedge bar 3-jaw chuck KNCS-N 315-91 make SMW with quick jaw change, incl. one set of base- and soft top jaws each. |
| M308/01-02 | Full center chucking cylinder right, SIN - SM 150 with safety valve system and stroke control for power operated chucks. |
| M308/02-01 | Power-operated wedge bar 3-jaw chuck KNCS-N 260-78 make SMW with quick jaw change, incl. one set of base- and soft top jaws each. |
| M309/03-01 | Coolant flushing equipment for the chuck used to clean the clamping device at a counter spindle machine or at automatic loading and unloading. |
| M309/40-02 | High-pressure coolant pump for internal coolant supply through Turning-Drilling-Milling unit, pressure ca. 80bar, capacity ca. 21 liter/min, suitable for gun drilling applications. |
| M314/04-02 | Mechanical mist extraction unit. Fumes generated by the cutting process in the working area are extracted and fluid particles are separated in a mechanical process, capacity ca. 2300m ³ /hour. |

INCLUDED SOFTWARE & CONTROL OPTIONS

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|------------|---|
| M007/01-10 | Autom. workpiece measurement by means of a radio probe (Marposh) in the TBM-unit, resolution +/-1µm, suitable for unidirectional probing 2x180°, standard probing cycles for diameter & length measurements as well as one probe with two styluses. |
| M007/52-01 | Extended package of measuring cycles for circumferential orientation of workpieces and for gaging in 3D-inclined measuring mode. Automatic search and orientation by component features. |
| M306/54-03 | Workpiece handling package between left & right spindle, take over with or without axial pressure synchronous spindles, cutting off or finish machining at barfeed operations and tailstock function for the right hand headstock. |
| M006/54-11 | Letter engraving software. Canned cycle for engraving letters onto even surfaces of workpieces with a small tool in the TBM-unit in any B-axis position. With M006/54-02 Transmit also on cylindrical OD's. |
| M006/55-01 | Tool management system, automatic use of sister tools upon end of tool life; tool life prewarning; tool set up for external magazine simultaneously to machining, auto-tool-pocket search. |
| M006/55-02 | Tool data archive for tool data import and export of tools not stored in or removed from the tool magazine. For set up these tools are just issued with a tool identification number. Reduces the risk of input errors. |
| M007/53-04 | Recording of the results of measurements on the hard disc of the control. |
| M006/56-03 | CrashGuard® Anti-collision system for automatic or manual (JOG) machine operations by 3D-machine-modelling in real time (patent pending). Recommended: M019/01-05 additional training. |
| M007/56-02 | Process- and Tool breakage monitoring "ADVANCED" with teach in mode or individual input of max. force values on specific operations. Automatic machine shut down upon overload of an axis or spindle or in case of a tool breakage. |