

MB 4SV | Art. no.: 3338458

Milling machine
with electronically controllable
drive and digital display



Small drilling and milling machine with electronically infinitely variable drive

Facts that impress in terms of quality, performance and price

- ▶ Two-speed transmission ratio
- ▶ MT2 tool holder
- ▶ The drill head can be tilted by 45°, enabling milling and drilling work at any angle
- ▶ Simple and clear control panel
- ▶ With 24V low voltage
- ▶ Feed spindles can be adjusted backlash-free using adjustable spindle nuts
- ▶ Solid cross table, precisely surface-machined with T-slots
- ▶ Adjustable limit stops
- ▶ Fine feed



Arguments,...



CONTROL UNIT

- Simple and clear operating unit with speed display
- Touch on/off switch
- Potentiometer
- Emergency stop button



CROSS TABLE

- › Solid and generously dimensioned cross table with precision surface finish and T-slots
- › Adjustable limit stops
- › Longitudinal scale inset in cross table



UNIVERSAL MACHINE SUBSTRUCTURE MSM 1 AND CHIP TRAY

- › Optionally available
- › Informations see page 155

Technical data and accessories

Model	MH 15V
Article no.	3338110
Output	
Electrical connection	230 V / 1 Ph ~50 Hz
Motor power	500 W
Drilling/milling output	
Drilling performance in steel (S235JR)	Ø 13 mm
Continuous drilling performance in steel (S235JR)	Ø 11 mm
Maximum cutting head size	Ø 50 mm
Maximum end mill size	Ø 13 mm
Spindle	
Spindle sleeve stroke	50 mm
Spindle seat	MT2
Spindle - column distance	145 mm
Drawbar	M 10
Drilling/milling head	
Spindle speeds	90 - 2250 min ⁻¹
Gearbox stages	2-speed, electronic speed control
Swivel range	± 90°
Cross table	
Cross table x width	400 x 120 mm
T-slot size / spacing / count	10 mm / 35 mm / 3
Clearance spindle to cross table	250 mm
Traverse paths	
X axis	240 mm
Y axis	135 mm
Z axis	150 mm
Dimensions and weight	
Length x width x height approx.	504 x 515 x 800 mm
Net weight approx.	58.5 kg

Scope of delivery

› Drill chuck 1-13 mm
› Taper shank
› T-slot nut
› Operating tool

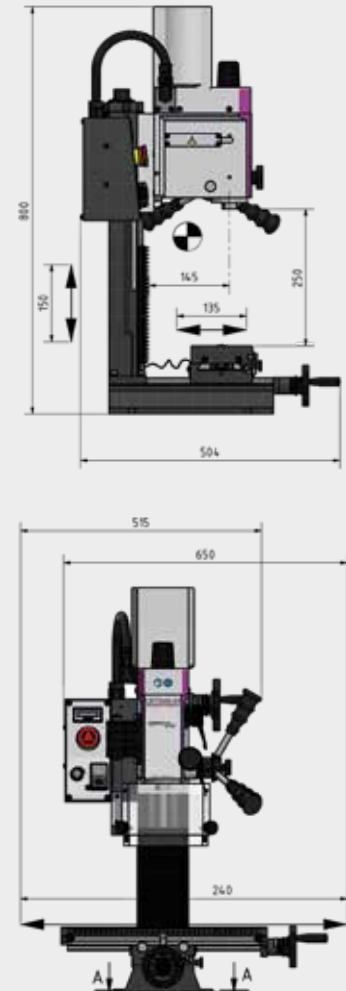
Accessories

Designation	Article no.
Collet set MT2/ M10, 5-part direct tensioning	3351980
Collet set ER 25, 15-part	3441109
Collet chuck set MT2/ ER 25	3352052
Collet chuck set MT2/ ER 32	3352053
End mill set HSS TiN-coated 12-part	3352250
End mill set HSS TiN-coated 20-part	3352255
Quick-action drill chuck DKC 13/ 0 - 13 mm	3050632
Assortment of clamping tools size 8	3352015
T-slot nut M 8 / 10 mm	3353020
Universal coolant unit 230 V	3351999
Coolant mist lubricator MMC 1 with magnetic holder	3356663
KMS 2 coolant hose	3356660

More accessories and information about accessories from page 158 onwards
For a large selection of machine vices, see from page 155 onwards

*The machine complies with the DIN EN 55011 standard: Class C2. Important information on operating machines with frequency converters can be found on the reverse side

Dimensions



Digital position display

Designation	Article no.
Digital position display DRO 5	3383975
Factory assembly DRO 5	9000420
Magnetic strip per metre	3383980

Information on the digital position indicator see page 233

Machine base

Designation	Article no.
Universal machine substructure MSM 1	3353000
Chip tray	3352999
Levelling platen SE 1 (4 units required)	3381012

Information on the universal machine base MSM 1 see page 169

Sturdy drilling and milling machines with electronically infinitely variable drive. OPTImill BF 20LVario with longer cross table.

Facts that impress in terms of quality, performance and price

- ▶ Feed spindles can be adjusted backlash-free using adjustable spindle nuts
- ▶ Sturdy dovetail guide, precision ground and shaved with adjustable V-ledges
- ▶ EMC filter (to protect sensitive electronics against interference from conducted interference signals class B)
- ▶ All guideways are ground and visibly scraped (oil pockets for lubrication)
- ▶ Precision workmanship
- ▶ Two-speed gear ratio for powerful transmission of motor output
- ▶ Powerful DC motor with permanent current monitoring
- ▶ Two-row angular contact ball bearings in the axes, adjustable without play
- ▶ Safety electrical system 24-volt version
- ▶ Gaiter as guide protection
- ▶ Clockwise/anticlockwise rotation
- ▶ Drilling/milling head can be tilted by $\pm 90^\circ$, for milling and drilling work in any angular position
- ▶ Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

Back again
The original



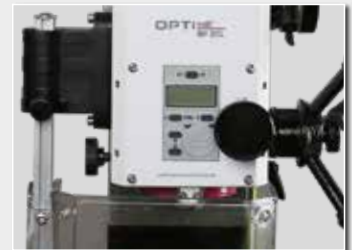
Fig.: OPTImill BF 20Vario with optional accessories milling

Arguments,...



Z-column and X-axis

- ▶ Prepared 9 mm wide groove for retrofitting the magnetic tapes by simply gluing them in place



Spindle sleeve stroke indicator

- ▶ Digital
- ▶ Display accuracy 0.01 mm
- ▶ mm/inch switchable



Operating panel

- ▶ Clearly-arranged

Technical specifications, accessories and dimensions

Model	BF 20Vario	BF 20LVario
Article no.	3338120	3338122
Output		
Electrical connection	230 V / 1 Ph ~50 Hz	
Motor power	850 W	
Drilling/milling output		
Drilling performance in steel (S235JR)	Ø 16 mm	
Continuous drilling capacity steel (S235JR)	Ø 12 mm	
Cutter head size max.	Ø 63 mm	
Maximum end mill size	Ø 20 mm	
Spindle seat		
Spindle sleeve stroke	50 mm	
Spindle seat	MT 2 / M10	
Spindle - column distance	185 mm	
Drilling/milling head		
Swivel range	± 90°	
Spindle speeds	90 - 1480 min ⁻¹ / 150 - 3000 min ⁻¹	
Gearbox stages	2-speed, electronic speed control	
Cross table		
Table length	500 mm	700 mm
Table width	180 mm	
T-slot size / spacing	12 mm / 63 mm	
Cross table load capacity max.	55 kg	
Traverse paths		
X-axis	280 mm	480 mm
Y-axis	175 mm	
Z-axis	280 mm	
Dimensions and weight		
Length	745 mm	950 mm
Width x height max.	565 x 935 mm	
Total weight	103 kg	112 kg

Scope of delivery

- > Tapered mandrel MT2/B16 M 10
- > Drawbar M10
- > Operating tool

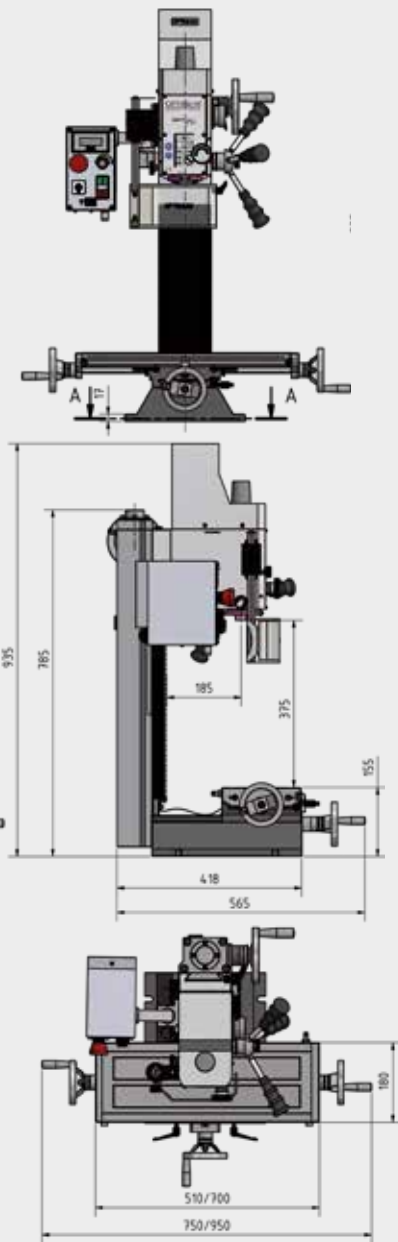
Accessories

Designation	Article no.
Collet set MT2/ M10, 5-part direct tensioning	3351980
Collet set ER 25, 15-part	3441109
Collet chuck set MT2/ ER 25	3352052
Collet chuck set MT2/ ER 32	3352053
End mill set HSS TiN-coated 12-part	3352250
End mill set HSS TiN-coated 20-part	3352255
Quick-action drill chuck DKC 13/ 0 - 13 mm	3050632
Assortment of clamping tools size 8	3352015
T-slot nut M 8 / 10 mm	3353020
Universal coolant unit 230 V	3351999
Coolant mist lubricator MMC 1 with magnetic holder	3356663
KMS 2 coolant hose	3356660

More accessories and information about accessories from page 158 onwards
For a large selection of machine vices, see from page 155 onwards

*The machine complies with the DIN EN 55011 standard: Class C2. Important information on operating machines with frequency converters can be found on the reverse side

Dimensions



Digital position display

Designation	Article no.
Digital position display DRO 5	3383975
Factory assembly DRO 5	9000420
Magnetic strip per metre	3383980

Information on the digital position indicator see page 233

Machine base

Designation	Article no.
Universal machine substructure MSM 1	3353000
Chip tray	3352999
Levelling platen SE 1 (4 units required)	3381012

Information on the universal machine base MSM 1 see page 169

Sturdy drilling and milling machines with electronically infinitely variable drive and manual spindle sleeve feed

Facts that impress in terms of quality, performance and price

- ▶ Precision workmanship
 - ▶ Excellent concentricity thanks to tapered roller bearings, ≤ 0.015 mm measured in the spindle sleeve
 - ▶ Motor with two-speed gear ratio for powerful transmission of motor output
 - ▶ Powerful DC motor with permanent current monitoring
 - ▶ Air filter for motor
 - ▶ New electrics with improved motor protection (extended PCB and PCB for EMC)
 - ▶ Safety electrical system 24-volt version
 - ▶ Control electronics with integrated relay control
 - ▶ Solid and generously dimensioned cross table with precision surface finish with T-slots and adjustable wedge bars
 - ▶ Adjustable limit stops
 - ▶ Sturdy dovetail guide with adjustable V-ledges
 - ▶ Feed spindle play adjustable and re-adjustable
 - ▶ Emergency stop button
 - ▶ Drill and milling head can be tilted by $\pm 60^\circ$
 - ▶ Right-/left-hand rotation
 - ▶ Machine lamp
- ▶ Two-row angular contact ball bearings in the axes, adjustable without play
 - ▶ Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out
 - ▶ Preparation for mounting the DRO5 digital position display on the X and Y axis (slot prepared for retrofitting magnetic strips)
 - ▶ Lockable main switch

MH 20VL

- ▶ Greater travel in the X-axis

MH 20VLD

- ▶ Digital position display DRO 5



Fig.: MH 20VL with optional chuck and cutter.

Arguments,...



ENERGY CHAIN

- › cable guidance easy on material



FEED

- › Manual spindle sleeve feed with the fine feed



HEAT SINK

- › Heat sink for cooling the electronics
- › Good heat transfer capability



CONTROL PANEL

- › Clearly-arranged control panel with user-friendly foil keyboard
- › Easily readable digital display for speed and drilling depth



MH 20VLD DIGITAL POSITION DISPLAY DRO 5

- › Four-line LCD display

Technical specifications, accessories and dimensions

Model	MH 20V	MH 20VL
Article no.	3338131	3338132

Model		MH 20VLD
Article no.	-	3338133

Output		
Electrical connection	230 V / 1 Ph ~50 Hz	
Motor power	750 W	
Drilling/milling output		
Drilling performance in steel (S235JR)	Ø 16 mm	
Continuous drilling performance in steel (S235JR)	Ø 12 mm	
Maximum cutting head size	Ø 52 mm	
Maximum end mill size	Ø 20 mm	
Spindle		
Spindle sleeve stroke	50 mm	
Spindle sleeve diameter	Ø 60 mm	
Spindle seat	MT2	
Drawbar	M10	
Spindle - column distance	170 mm	
Drilling/milling head		
Spindle speeds	100 - 3000 min ⁻¹	
Gearbox stages	2-speed, electronic speed control	
Swivel range	± 60°	
Cross table		
Cross table x width	510 x 180 mm	700 x 180 mm
T-slot size / spacing / count	12 mm / 63 mm / 3	
Cross table load capacity max.	40 kg	50 kg
Clearance spindle to cross table	255 mm	
Traverse paths		
X axis	280 mm	480 mm
Y axis	175 mm	
Z axis	210 mm	
Dimensions and weight		
Length x width x height approx.	750 x 650 x 820 mm	770 x 714 x 917 mm
Net weight approx.	94 kg	99 kg

Scope of delivery

- > Tapered mandrel MT2/B16
- > Drawbar M10
- > Operating tool

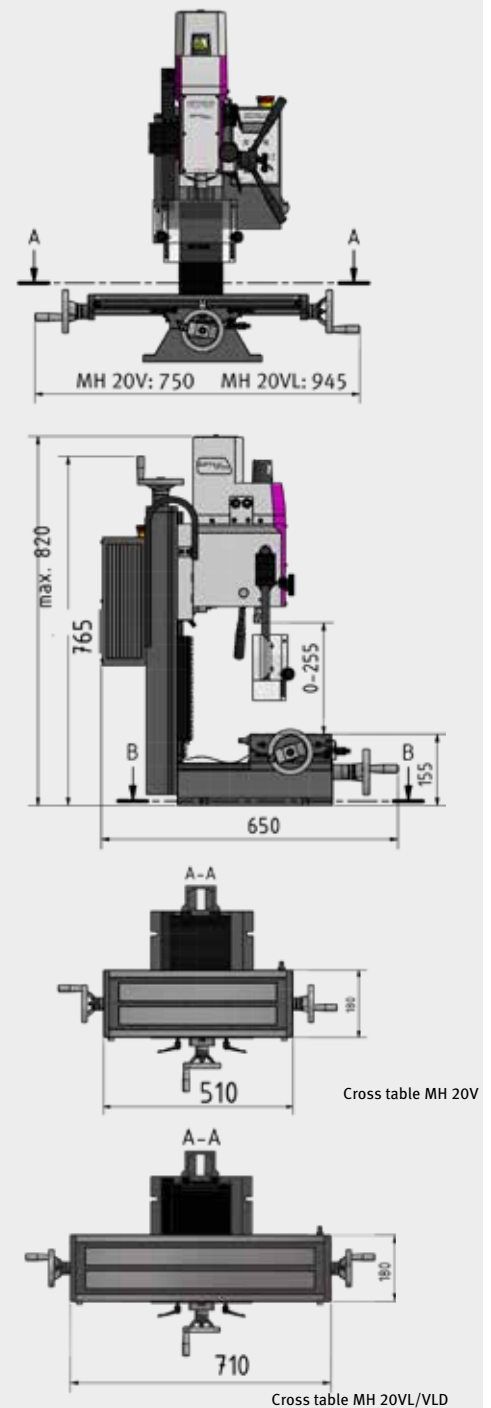
Accessories

Designation	Article no.
Collet set MT2/ M10, 5-part direct tensioning	3351980
End mill set HSS TiN-coated, 12-part	3352250
End mill set HSS TiN-coated, 20-part	3352255
Collet set ER 25, 15-part	3441109
Quick-action drill chuck DKC 13/ 0 - 13 mm	3050632
Assembly kit for DRO5 on MH20V	3383990
Universal machine substructure MSM 1	3353000
Chip tray	3352999

More accessories and information about accessories from page 158 onwards
Information on the universal machine base **MSM 1** see page 169

Note: The machines (frequency converters) comply with the DIN EN 55011 standard: class C2
Important information on operating machines with frequency converters see page 333

Dimensions



Vices

Designation	Article no.
FMS 100	3354100
FMSN 100	3354110
VMQ 80	3354180
VMQ 100	3354181
MV3-75	3354175
ZAS 50	3354170

Information can be found on page 155 onwards

Sturdy drilling/milling machines with continuously variable electronic speed control. OPTImill MH 22VD with digital position display DRO 5

Facts that impress in terms of quality, performance and price

- ▶ Precision workmanship
- ▶ Excellent concentricity thanks to tapered roller bearings, ≤ 0.015 mm measured in the spindle sleeve
- ▶ Motor with two-speed gear ratio for powerful transmission of motor output
- ▶ Powerful DC motor with permanent current monitoring
- ▶ Safety electrical system 24-volt version
- ▶ Control electronics with integrated relay control
- ▶ Solid and generously dimensioned cross table with precision surface finish with T-slots and adjustable wedge bars
- ▶ Adjustable limit stops
- ▶ Sturdy dovetail guide with adjustable V-ledges
- ▶ Fine feed
- ▶ Emergency stop button
- ▶ Drill and milling head can be tilted by $\pm 60^\circ$
- ▶ Right-/left-hand rotation
- ▶ Machine lamp
- ▶ Bore for easy oiling of the trapezoidal spindle
- ▶ Two-row angular contact ball bearings in the axes, adjustable without play
- ▶ Feed spindle play adjustable and re-adjustable
- ▶ Height-adjustable protective screen with microswitch against flying chips and parts, for maximum protection of the user
- ▶ X, Y and Z axis with slot prepared for retrofitting of the magnetic strips
- ▶ Gaiter as guide protection

MH 22VD

- ▶ Digital position display DRO 5
- ▶ Quick tool change system



Fig.: MH 22VD with optional milling cutter

Arguments,...



ENERGY CHAIN

- › cable guidance easy on material



MECHANICAL QUICK-CHANGE CLAMPING SYSTEM

- › Milling head equipped with collet for pull studs BT20x45°
- › Easy to change by unlocking the mechanical safeguard and moving the sleeve lever upward



CONTROL PANEL

- › Clearly-arranged control panel with user-friendly foil keyboard
- › Easily readable digital display for speed and drilling depth

MH 22VD: DIGITAL POSITION DISPLAY

- › Four-line LCD display



FEED

- › Manual spindle sleeve feed with the fine feed

Technical specifications, accessories and dimensions

Model	MH 22V
Article no.	3338135
Model	MH 22VD
Article no.	3338136
Output	
Electrical connection	230 V / 1 Ph ~50 Hz
Motor power	950 W
Drilling/milling output	
Drilling performance in steel (S235JR)	Ø 20 mm
Continuous drilling performance in steel (S235JR)	Ø 16 mm
Maximum cutting head size	Ø 52 mm
Maximum end mill size	Ø 12 mm
Spindle	
Spindle sleeve stroke	40 mm
Spindle sleeve diameter	Ø 60 mm
Spindle seat	BT 20
Spindle - column distance	170 mm
Drilling/milling head	
Spindle speeds	90 - 3000 min ⁻¹
Gearbox stages	2-speed, electronic speed control
Swivel range	± 60°
Cross table	
Cross table x width	700 x 180 mm
T-slot size / spacing / count	12 mm / 63 mm / 3
Cross table load capacity max.	50 kg
Clearance spindle to cross table	360 mm
Traverse paths	
X axis	480 mm
Y axis	175 mm
Z axis	270 mm
Dimensions and weight	
Length x width x height approx.	745 x 650 x 950 mm
Net weight approx.	120 kg

Scope of delivery

- › Operating tool

Accessories

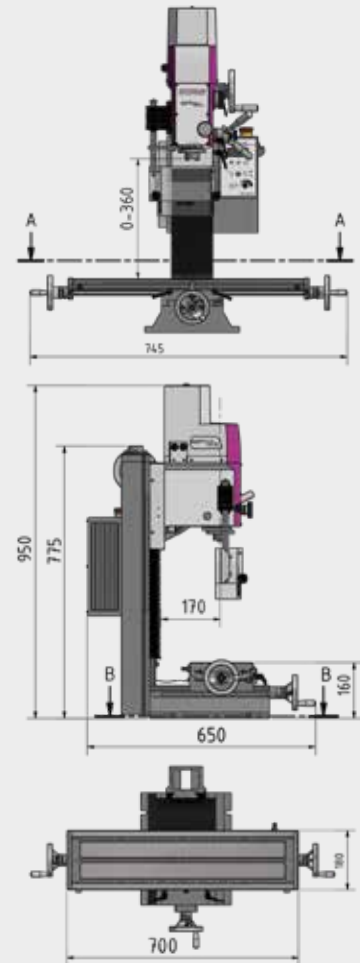
Designation	Article no.
Collet chuck ER 16	3352741
Collet chuck spanner ER 16	3352742
Collet set ER 16, 12-part, 1 - 10 mm	3440282
Milling head holder Ø 16 mm BT 20	3352728
End mill set HSS TiN-coated	3352250
Quick-action drill chuck DKC 13/ 0 - 13 mm	3050632
Chuck adapter BT 20 - B16	3352727
Weldon holder Ø 6 mm BT 20	3352732
Weldon holder Ø 8 mm BT 20	3352734
Weldon holder Ø 10 mm BT 20	3352736
Weldon holder Ø 12 mm BT 20	3352738
Pull stud BT 20(Optimum custom-made, no standard BT 20 pull stud)	3352726
Assembly kit for DRO5 for MH22V	3383990
Machine mobile base MSM 1	3353000
Chip tray	3352999

More accessories and information about accessories from page 158 onwards

For a large selection of machine vices, see from page 155 onwards

Note: The machines (frequency converters) comply with the DIN EN 55011 standard: class C2
Important information on 'Operating machines with frequency converters' on page 333

Dimensions



Starter set

Designation	Article no.
Starter set BT 20	3353281
› 1 piece cutter head holder Ø 16 mm	
› 2 Weldon holders each, Ø 6 mm / Ø 8 mm	
› 1 Weldon holders each, Ø 10 mm / Ø 12 mm	
› 1 unit tool fitting BT20/B16	
› 11 units pull studs	
› 1 piece quick-action drill chuck 1 - 13 mm	
› 1 unit facing and copying blade head	
› 2 units collet chuck ER 25	
› 1 piece collet spanner ER 25	
› 12-part collet set ER 25	

Vices

Designation	Article no.
FMS 100	3354100
FMSN 100	3354110
VMQ 80	3354180
VMQ 100	3354181
MV3-75	3354175
ZAS 50	3354170

Information can be found on page 155 onwards

Sturdy milling machines with continuously variable electronic speed control. OPTImill MH 25SPV with stepper motors and DRO 5 digital position display

Facts that impress in terms of quality, performance and price

- ▶ Inverter motor
- ▶ Precision workmanship
- ▶ Clearly-arranged control panel with user-friendly foil keyboard
- ▶ Particularly smooth action
- ▶ Counterweight facilitates Z axis adjustment
- ▶ Variable speed control
- ▶ Easy tool changing thanks to tool quick clamping system
- ▶ Feed spindles can be adjusted thanks to adjustable spindle nuts
- ▶ Sturdy dovetail guide, precision ground and shaved with adjustable V-ledges
- ▶ Angular ball bearings on the axes
- ▶ Height-adjustable, large protective screen with micro switch
- ▶ Gear head can be tilted+ 45°
- ▶ Right-/left-hand rotation

MH 25PV:

- ▶ Easily readable speed display in milling head
- ▶ Slot prepared for easy retroactive mounting of magnetic strips

MH 25SPV:

- ▶ Continuously variable feed on all axes
- ▶ Rapid motion X/Y axis for fast positioning
- ▶ Digital 3-axis position display DRO 5
- ▶ Feed cut-off at end position
- ▶ Transportable control panel
- ▶ The feed switches off when the spindle is stationary
- ▶ Limit switches for all three axes



SIEMENS INVERTER SINAMICS V20

- ▶ The inverter is equipped with an energy-optimised control method and automatic flux reduction to increase energy efficiency
- ▶ Wider voltage range, advanced cooling and painted electronic components increase the robustness of the inverter

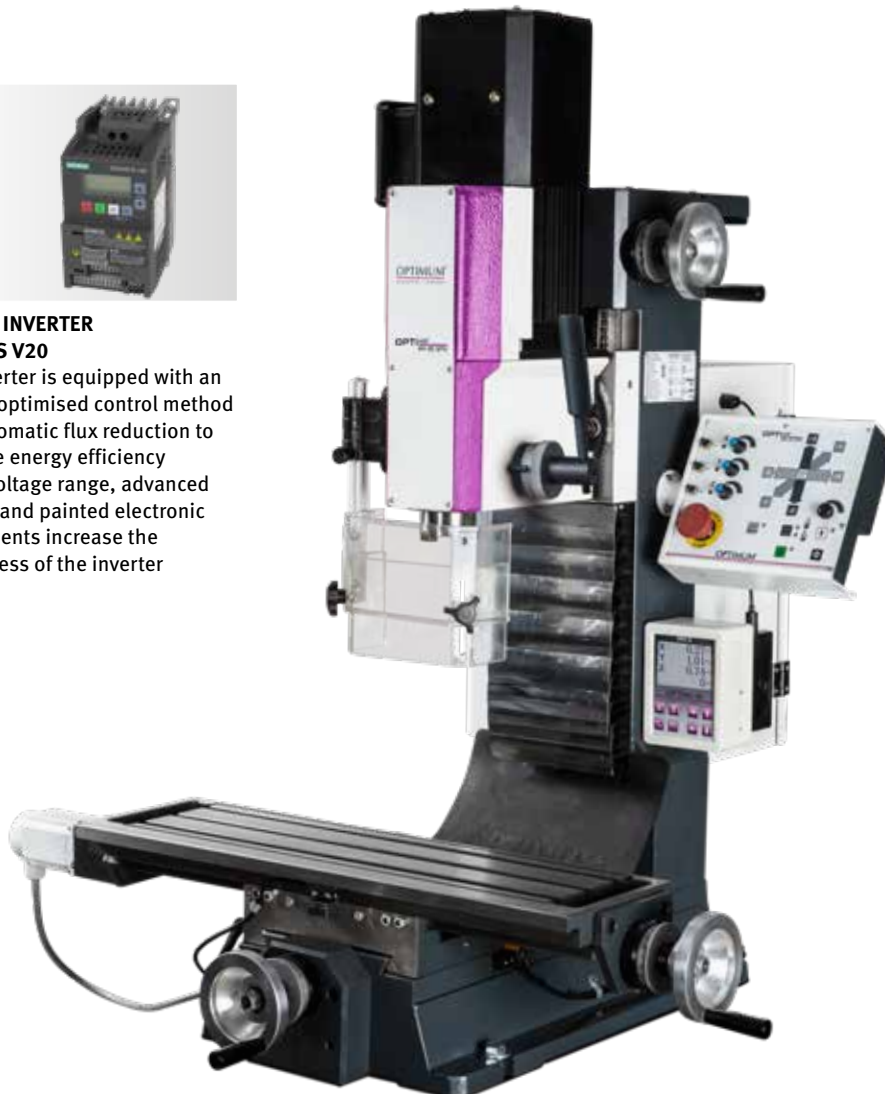


Fig.: MH 25SPV

Arguments,...



ENERGY CHAIN

- › cable guidance easy on material



CONTROL PANEL

- › User-friendly membrane keyboard with touch and switch control
- › Easy to clean
- › Excellent operability

MH 25SPV

- › High mobility thanks to the control panel being removable from its holder



MH 25PV



MECHANICAL QUICK-CHANGE CLAMPING SYSTEM

- › Milling head equipped with collet for pull studs BT30x45°
- › Easy change via a handle

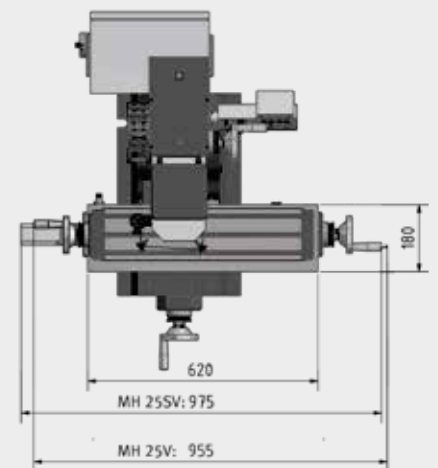
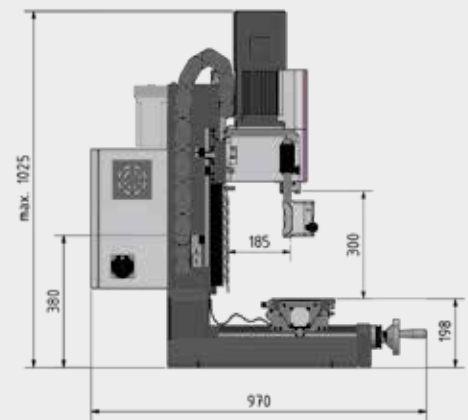
Technical specifications, accessories and dimensions

Model	MH 25PV	MH 25SPV
Article no.	3338156	3338161
Output		
Electrical connection	230 V / 1 Ph ~50 Hz	
Total rated value	2 kW	
Milling spindle		
Drive motor	1.5 kW	
Drive motor torque	10 Nm	
Drilling/milling output		
Cutter head size max.	Ø 50 mm	
Maximum end mill size	Ø 25 mm	
Spindle		
Spindle sleeve stroke	60 mm	
Spindle seat	BT 30	
Spindle - column distance	185 mm	
Drilling/milling head		
Spindle speeds	200 - 4000 min ⁻¹	
Gearbox stages	Electronic speed control	
Swivel range	45°	
Cross table		
Cross table x width	620 x 180 mm	
T-slot size / spacing / count	12 mm / 50 mm / 3	
Cross table load capacity max.	30 kg	
Clearance spindle to cross table	300 mm	
Traverse paths		
X axis	manual 400 mm	automatic ~380 mm manual 400 mm
Y axis	manual 210 mm	automatic ~130 mm manual 210 mm
Z axis	manual 210 mm	automatic ~130 mm manual 210 mm
Torque		
X/Y/Z axis	-	2.2 / 2.2 / 4.2 Nm
Travel speeds		
X axis	-	150 - 930 mm/min.
Y axis	-	100 - 580 mm/min.
Z axis	-	80 - 450 mm/min.
Dimensions and weight		
Length x height approx.	970 x 1025 mm	
Width approx.	955 mm	975 mm
Net weight approx.	192 kg	200 kg

Accessories

Designation	Article no.
Collet chuck ER 32	3353304
Collet chuck spanner ER 32	3353307
Collet set ER 32, 3- 20 mm	3441122
Milling head holder Ø 22 mm	3353306
Quick-action drill chuck 1.5 - 16 mm	3536303
Weldon holder Ø 6 mm	3353310
Weldon holder Ø 8 mm	3353311
Weldon holder Ø 10 mm	3353312
Weldon holder Ø 12 mm	3353313
Weldon holder Ø 16 mm	3353314
Weldon holder Ø 20 mm	3353315
Adapter BT 30/MT2	3353305
Assembly and tool adjustment gauge	3536203
Pull stud 40 x 45° M12	3353302
Pull stud DIN2080 M12	3536177
Assortment of clamping tools SPW 10, 58-part	3352076
Universal substructure MSM2 (for information see page 169)	3353009

Dimensions



Starter set

Designation	Article no.
Starter set BT 30	3353282
<ul style="list-style-type: none"> › Milling head holder Ø 22 mm › Drill chuck 1 - 13 mm › 2 Weldon Ø 6 mm and 20 mm › 1 piece each of Weldon Ø 8 / 10 / 12 / 16 mm › Adapter BT 30/MT2 › 4 units collet chuck ER 32 › Collet key ER 32 › 18-part collet set ER 32 › Height-adjuster › Assembly and tool adjustment gauge › 14 units pull studs › Taper squeegee 	

Vices

Designation	Article no.
FMS 100	3354100
VMQ 80	3354180
MV3-75	3354175
ZAS 50	3354170

Information can be found on page 155 onwards

Drilling and milling machines with electronically controllable drive and digital display

Facts that impress in terms of quality, performance and price

- ▶ Direct spindle drive, electronically adjustable
- ▶ Precision workmanship
- ▶ Powerful servo drive motor with high torque (maintenance-free)
- ▶ Solid and generously dimensioned cross table with precision surface finish with T-slots and adjustable wedge bars
- ▶ Adjustable limit stops
- ▶ Sturdy dovetail guide with adjustable V-ledges
- ▶ Right-left rotation
- ▶ Thread tapping
- ▶ Elegant, slim, modern design
- ▶ LED machine lamp
- ▶ Fine feed
- ▶ Emergency stop button
- ▶ Drilling and milling head can be tilted by $\pm 90^\circ$
- ▶ Height-adjustable protective screen with microswitch against flying chips and parts, for maximum protection of the user



Fig.: MH 2DV



Fig.: MH 3DV

Arguments,...



DIGITAL DISPLAY

- 1 Operating mode selection: Thread tapping
- 2 Zero point setting (start of workpiece)
- 3 Setting the drilling and thread depth
- 4 Enter button
- 5 Push-button start
- 6 Push-button stop
- 7 Rotational direction switch
- 8 LED machine light

INLINE SPINDLE DRIVE



Very quiet



No more gearbox therefore extremely smooth running

Technical specifications, accessories and dimensions

Model	MH 2DV*	MH 3DV*
Article no.	3337126	3337130
Output		
Electrical connection	230 V / 1 Ph ~50 Hz	
Motor power	1.5 kW	2.2 kW
Drilling/milling output		
Drilling performance in steel (S235JR)	Ø 16 mm	Ø 28 mm
Continuous drilling performance in steel (S235JR)	Ø 13 mm	Ø 25 mm
Maximum cutting head size	Ø 63 mm	Ø 75 mm
Maximum end mill size	Ø 20 mm	Ø 30 mm
Spindle		
Spindle sleeve stroke	70 mm	100 mm
Spindle sleeve diameter	Ø 60 mm	Ø 68 mm
Spindle seat	MT 2	MT 3
Drawbar	M10	M 12
Drilling/milling head		
Spindle speeds	200 - 3000 min ⁻¹	120 - 3000 min ⁻¹
Gearbox stages	2-speed, electronic speed control	
Cross table		
Cross table x width	700 x 180 mm	750 x 210 mm
T-slot size / spacing / count	12 mm / 63 mm / 3	
Cross table load capacity max.	50 kg	
Traverse paths		
X axis	480 mm	450 mm
Y axis	175 mm	200 mm
Z axis	280 mm	450 mm
Dimensions and weight		
Length x width x height approx.	956 x 591 x 998 mm	850 x 830 x 1350 mm
Net weight approx.	118 kg	270 kg

Machine base

Machine base	Art. no.
MSM 1 (MH2DV)	3353000
Chip tray (MH2DV)	3352999
MSM 3 (MH3DV)	3353014
Vibration damping machine foot SE 55(4 units required)	3352981

Accessories

Designation	Article no.
Collet set MT2/ M10, 5-part direct tensioning	3351980
Collet set ER 25, 15-part	3441109
Collet chuck set MT2/ ER 25	3352052
Collet chuck set MT2/ ER 32	3352053
End mill set HSS TiN-coated 12-part	3352250
End mill set HSS TiN-coated 20-part	3352255
Quick-action drill chuck DKC 13/ 0 - 13 mm	3050632
Assortment of clamping tools size 8	3352015
T-slot nut M 8 / 10 mm	3353020
Universal coolant unit 230 V	3351999
Coolant mist lubricator MMC 1 with magnetic holder	3356663
KMS 2 coolant hose	3356660

More **accessories** and **information about accessories** from page 158 onwards
For a large selection of **machine vices**, see from page 155 onwards

Vices

Designation	Article no.
FMS 100	3354100
FMSN 100	3354110
VMQ 80	3354180
VMQ 100	3354181
MV3-75	3354175
ZAS 50	3354170

Information can be found on page 155 onwards

Universal precision drilling and milling machines with two-stage drive motor with manual gearbox.

OPTImill MB 4D with digital position display DRO6

Facts that impress in terms of quality, performance and price

- ▶ Heavy, solid cast design
- ▶ Quality industrial electric motor
- ▶ Smooth running due to ground gearwheels running in an oil bath
- ▶ Clockwise/anticlockwise rotation
- ▶ Solid and generously dimensioned cross table with precision surface finish with T-slots and adjustable wedge bars
- ▶ Drill depth stop
- ▶ Manual sleeve feed with fine feed
- ▶ Feed spindle play adjustable and re-adjustable
- ▶ Operation-friendly control panel with emergency stop shock switch
- ▶ Column with hand-honed dovetail guide
- ▶ Height-adjustable, large protective screen with micro switch
- ▶ Wide speed range from 95 - 3200 min⁻¹ thanks to 2 switchable speeds, electronically adjustable

MB 4D **New**

- ▶ Digital position display DRO 6
- ▶ Magnetic measuring system in three axes



Fig.: MB 4D

Arguments,...



THREAD TAPPING MODE

- › Motor is activated by moving the spindle sleeve lever downwards.
- › When the set depth is reached, the spindle reverses direction.
- › The tap turns out of the workpiece again
- › When the spindle sleeve is completely retracted to the switching point again, the rotation of the spindle is stopped.



GEARHEAD

- › The drilling/milling head can be tilted 45° to the left and right.



FEED

- › Manual spindle sleeve feed with the fine feed



CONTROL AND INDICATING ELEMENTS

- › Digital display X, Y and Z axes
- › Touch operation
- › User-friendly and clearly arranged control panel with emergency stop switch

Technical specifications, accessories and dimensions

Model	MB 4
Article no.	3338451
Model	MB 4D
Article no.	3338448
Output	
Electrical connection	400 V / 3 Ph ~50 Hz
Motor power	1.1 / 1.5 kW
Drilling/milling output	
Drilling performance in steel (S235JR)	Ø 32 mm
Continuous drilling performance in steel (S235JR)	Ø 28 mm
Maximum cutting head size	Ø 63 mm
Maximum end mill size	Ø 28 mm
Spindle	
Spindle sleeve stroke	120 mm
Spindle seat	MT4
Spindle sleeve diameter	75 mm
Spindle - column distance	275 mm
Drawbar	M16
Drilling/milling head	
Spindle speeds	95 - 3200 min ⁻¹
Gearbox stages	2 x 6 speeds
Tiltable	± 45°
Cross table	
Cross table x width	800 x 240 mm
T-slot size / spacing / count	14 mm / 63 mm / 3
Cross table load capacity	80 kg
Clearance spindle to cross table	460 mm
Traverse paths	
X axis	450 mm
Y axis	195 mm
Z axis	430 mm
Dimensions and weight	
Length x width x height approx.	1155 x 775 x 1420 mm
Net weight approx.	320 kg

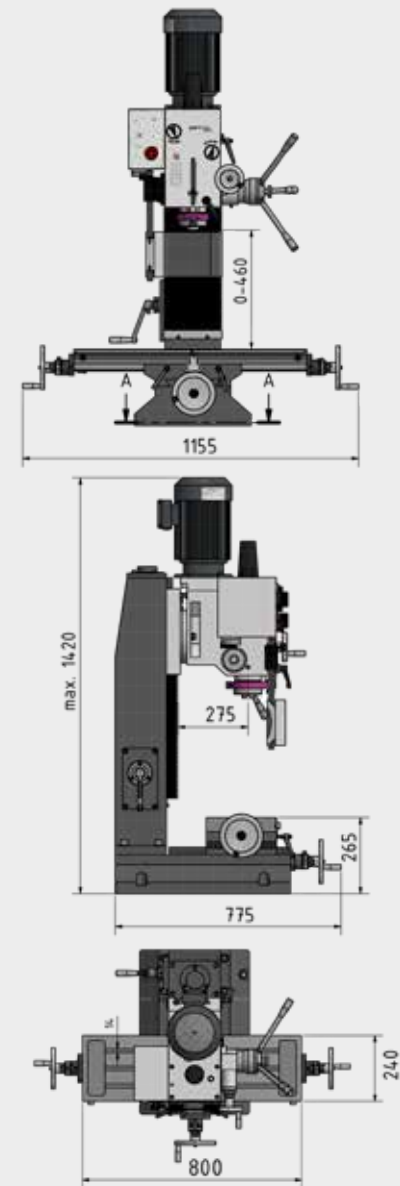
Accessories

Designation	Article no.
Collet chuck MT4/M16	3352094
End mill set HSS TiN-coated 12-part	3352250
End mill set HSS TiN-coated 20-part	3352255
Copy and planer cutter MT4 Ø 63 mm	3350214
Boring head set MT4/B16	3352125
Drill chuck taper mandrel MT4 / B16	3350304
Tapping chuck MT4/ M3 - M12	3050709
Tapping chuck MT4/ M8 - M20	3050710
Parallel shim set, 18-part	3536191
Height-adjustable tailstock RST 1	3356155
Hold-down clamp 14 mm	3352031
Assortment of clamping tools SPW 12, 58-part	3352077
Universal table feed V 99S (for information see page 167)	3352021
Assembly kit V 99S for the X-axis	3352035
Universal coolant unit 230 V	3351999
Coolant mist lubricator MMC 1 with magnetic holder	3356663
KMS 2 coolant hose	3356660
Steel chassis MSM 3	3353014
Vibration damping machine base SE 55 (4 units required)	3352981

More accessories and information about accessories from page 158 onwards

Coolant accessories see page 93

Dimensions



Scope of delivery

- > Adapter MT4/MT3
- > Tightening rod M16
- > Mounting MT4/22 mm
- > Operating tool

Vices

Designation	Article no.
FMS 100	3354100
FMS 125	3354125
FMSN 125	3354120
VMQ 100	3354181
MV3-75	3354175
DAS 100	3355500
ZAS 50	3354170

Information can be found on page 155 onwards

Universal precision drilling/milling machines with servo drive.
OPTImill MB 4 SVD with digital display DRO 6 and magnetic measuring system

Facts that impress in terms of quality, performance and price

- ▶ Precision workmanship
- ▶ Thread tapping function
- ▶ Servo drive
- ▶ Solid and generously dimensioned cross table with precision surface finish with T-slots and adjustable wedge bars
- ▶ Adjustable limit stops
- ▶ Sturdy dovetail guide with adjustable V-ledges
- ▶ Right-left rotation
- ▶ LED machine lamp
- ▶ Fine feed
- ▶ Emergency stop button
- ▶ Drilling and milling head can be tilted by $\pm 45^\circ$
- ▶ Height-adjustable protective screen with microswitch against flying chips and parts, for maximum protection of the user



Arguments,...



DIGITAL DISPLAY

- 1 Pushbutton for spindle rotation "ON"
- 2 Spindle rotation direction selection
- 3 Lighting on/off
- 4 Pushbutton for spindle rotation "OFF"
- 5 Push button for thread tapping
- 6 Zero point set
- 7 Setting the thread depth
- 8 Enter button



CONTROL CABINET

- › Standards-compliant setup
- › Signal transmission via network cable with diagnostic function



FEED

- › Manual spindle sleeve feed with the fine feed

Technical specifications, accessories and dimensions

Model	MB 4SV
Article no.	3338458
Model	MB 4SVD
Article no.	3338459

New

Output	
Electrical connection	230 V / 3 Ph ~50 Hz
Motor power	3 kW
Drilling/milling output	
Drilling performance in steel (S235JR)	Ø 32 mm
Continuous drilling performance in steel (S235JR)	Ø 28 mm
Maximum cutting head size	Ø 63 mm
Maximum end mill size	Ø 26 mm
Spindle	
Spindle sleeve stroke	120 mm
Spindle sleeve diameter	75 mm
Spindle - column distance	275 mm
Spindle seat	MT 4
Drawbar	M16
Drilling/milling head	
Spindle speeds	60 - 3000 min ⁻¹
Gearbox stages	2 stages, electronically adjustable
Tilttable	± 45°
Cross table	
Cross table x width	800 x 240 mm
T-slot size / spacing / count	14 mm / 63 mm / 3
Cross table load capacity	80 kg
Clearance spindle to cross table	460 mm
Traverse paths	
X axis	450 mm
Y axis	200 mm
Z axis	430 mm
Dimensions and weight	
Length x width x height approx.	1155 x 980 x 1360 mm
Net weight approx.	320 kg

Accessories

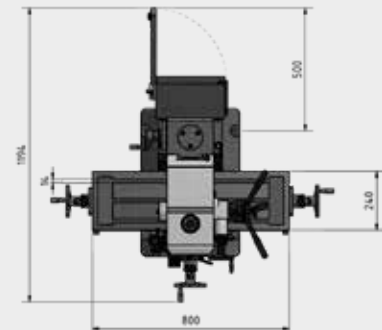
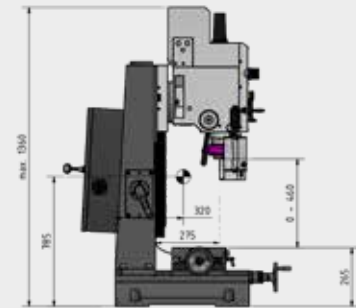
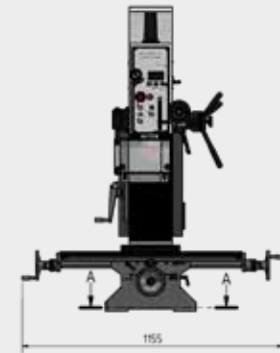
Designation	Article no.
Collet chuck MT 4/M16	3352094
End mill set HSS TiN-coated 12-part	3352250
End mill set HSS TiN-coated 20-part	3352255
Copy and planer cutter MT 4 Ø 63 mm	3350214
Bore head set MT 4/B16	3352125
Arbour for drill chuck MT 4/B16	3350304
Thread cutting chuck MT 4/ M3 - M12	3050709
Thread cutting chuck MT 4/ M8 - M20	3050710
Parallel shim set, 18-part	3536191
Height-adjustable tailstock RST 1	3356155
Hold-down clamp 14 mm	3352031
Assortment of clamping tools SPW 12, 58-part	3352077
Universal table feed V 99S (for information see page 167)	3352021
Assembly kit V 99S for the X-axis	3352035
Universal coolant unit 230 V	3351999
Coolant mist lubricator MMC 1 with magnetic holder	3356663
KMS 2 coolant hose	3356660
Steel chassis MSM 3	3353014
Vibration damping machine base SE 55 (4 units required)	3352981

More accessories and information about accessories from page 158 onwards

Coolant accessories see page 93

Note: The machines (frequency converters) comply with the DIN EN 55011 standard: class C2
Important information on operating machines with frequency converters see page 333

Dimensions



Scope of delivery

- › Adapter MT4 / MT 3
- › Drawbar M16
- › Mounting MT4/22 mm
- › Operating tool

Vices

Machine vices	Article no.
FMS 100	3354100
FMS 125	3354125
FMSN 125	3354120
VMQ 100	3354181
MV3-75	3354175
DAS 100	3355500
ZAS 50	3354170

Information can be found on page 155 onwards

Universal precision drilling/milling machines with manual gearbox. OPTImill MH 35V with electronically controlled drive

Facts that impress in terms of quality, performance and price

- ▶ Excellent concentricity thanks to tapered roller bearings, ≤ 0.015 mm measured in the spindle sleeve
- ▶ Solid and generously dimensioned cross table with precision surface finish and T-slots
- ▶ Control panel with user-friendly dirt and water resistant foil keyboard
- ▶ Easily readable digital display
- ▶ Drill depth stop
- ▶ Right-/left-hand rotation
- ▶ Thread tapping mode
- ▶ Rotary pushbutton on control panel for adjusting the drilling depth, optionally in mm or inches, with zero point
- ▶ Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out
- ▶ Tilttable gear head $\pm 30^\circ$
- ▶ Feed spindle play adjustable and re-adjustable
- ▶ Heavy, stable and solid column made of high-quality grey cast iron, with ground and honed dovetail guide for high stability and precision as well as adjustable V-ledges
- ▶ Z axis with slatted, stainless steel protective cover
- ▶ Optional, solid, heavy steel base MSM 3 (article no.: 3353014) provides stability

Updated version

- ▶ The machine base is reinforced and moulded into a wedge shape at the front to create additional rigidity at the rear by using more material. The entire table can be milled over
- ▶ Very stable Z-column connection

MH 35G:

- ▶ Two-speed industrial motor and 6 additional gears

MH 35V:

- ▶ 6 speeds, electronically controlled
- ▶ Digital speed display



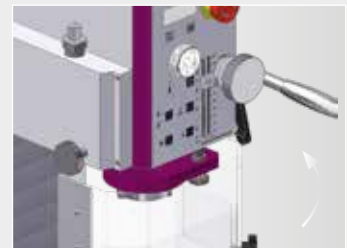
Fig.: MH 35G

Arguments,...



ENERGY CHAIN

- › cable guidance easy on material



QUICK-CHANGE CLAMPING SYSTEM

- › mechanical
- › Easy to change by unlocking the mechanical safeguard and moving the sleeve lever upward



DIGITAL DISPLAY

- › Depth selection optionally in mm or inch and zero point freely adjustable via the display
- › Speed display



MACHINE FOOT

- › The machine base is reinforced and moulded into a wedge shape at the front to create additional rigidity at the rear by using more material. The entire table can be milled over
- › Very stable Z-column connection

Technical specifications, accessories and dimensions

Model	MH 35G	MH 35V*
Article no.	3338166	3338171
Output		
Electrical connection	400 V / 3 Ph ~50 Hz	
Motor power	1.1 / 1.5 kW	1.5 kW
Drilling/milling output		
Drilling performance in steel (S235JR)	Ø 32 mm	
Continuous drilling performance in steel (S235JR)	Ø 28 mm	
Maximum cutting head size	Ø 80 mm	
Maximum end mill size	Ø 28 mm	
Spindle		
Spindle sleeve stroke	90 mm	
Spindle seat	BT 30	
Spindle sleeve diameter	68 mm	
Spindle - column distance	215 mm	
Drilling/milling head		
Spindle speeds	220 - 3100 min ⁻¹	50 - 3260 min ⁻¹ 6 stages
Gearbox stages	2 x 6 speeds	electronically adjustable
Swivel range	± 30°	
Cross table		
Cross table x width	750 x 210 mm	
T-slot size / spacing / count	12 mm / 63 mm / 3	
Cross table load capacity max.	170 kg	
Clearance spindle to cross table max.	440 mm	
Traverse paths		
X axis	450 mm	
Y axis	200 mm	
Z axis	460 mm	
Dimensions and weight		
Length x width x height approx.	850 x 1030 x 1340 mm	
Net weight approx.	318 kg	

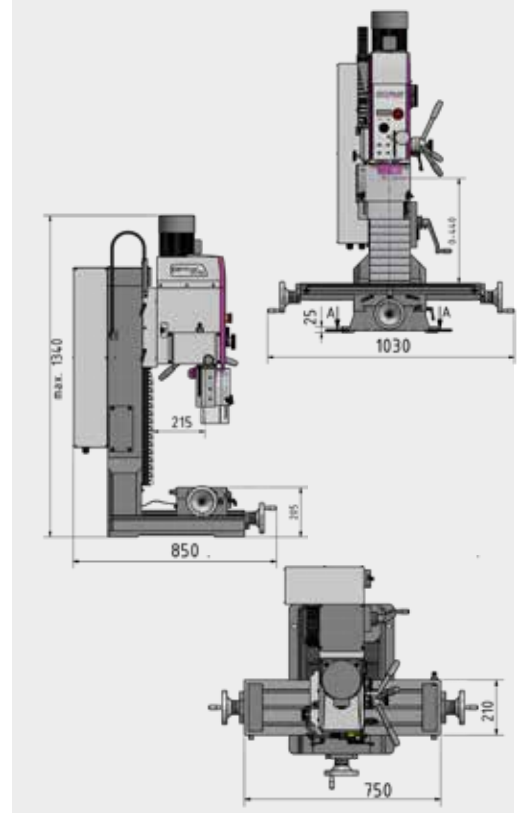
Accessories

Designation	Article no.
Collet chuck ER 32	3353304
Collet chuck spanner ER 32	3353307
Collet set ER 32, 3- 20 mm	3441122
Chuck adapter BT 30/B16	3353308
Milling head holder BT 30 Ø 22 mm	3353306
Quick-action drill chuck 1 - 13 mm	3536333
Weldon holder Ø 6 mm	3353310
Weldon holder Ø 8 mm	3353311
Weldon holder Ø 10 mm	3353312
Weldon holder Ø 12 mm	3353313
Weldon holder Ø 16 mm	3353314
Weldon holder Ø 20 mm	3353315
Adapter BT 30/MT2	3353305
Height-adjuster	3536290
Assembly and tool adjustment gauge	3536203
Pull stud 40 x 45° M12	3353302
Assortment of clamping tools SPW 10, 58-part	3352076
Universal table feed V 99S (for information see page 167)	3352021
Assembly kit V 99S for the X-axis	3352035
Steel chassis MSM 3	3353014
Vibration damping machine base SE 55 (4 units required)	3352981

More accessories and information about accessories from page 158 onwards

* Note: The machines (frequency converters) comply with the DIN EN 55011 standard: class C2
Important information on 'Operating machines with frequency converters' on page 333

Dimensions



Scope of delivery

› Operating tool

Starter set

Designation	Article no.
Starter set BT 30	3353282
› Milling head holder Ø 22 mm	
› Quick-action drill chuck 1 - 13 mm	
› 2 pieces each of Weldon Ø 6 mm and 20 mm	
› 1 piece each of Weldon Ø 8 / 10 / 12 / 16 mm	
› Adapter BT 30/MT2	
› 4 units collet chuck ER 32	
› Collet key ER 32	
› 18-part collet set ER 32	
› Height-adjuster	
› Assembly and tool adjustment gauge	
› 14 units pull studs	
› Taper squeegee	

Vices

Designation	Article no.
FMS 125	3354125
VMQ 100	3354181
MV3-75	3354175
DAS 100	3355500
ZAS 50	3354170

Information can be found on page 155 onwards

Universal precision drilling-milling machines with manual gearbox and motorised Z-axis height adjustment.

OPTImill MH 50V with electronically controlled drive

Facts that impress in terms of quality, performance and price

- ▶ Excellent concentricity thanks to tapered roller bearings, ≤ 0.015 mm measured in the spindle sleeve
- ▶ Gears in oil bath with ground, hardened gear wheels
- ▶ Control panel with user-friendly dirt and water resistant foil keyboard
- ▶ Rotary pushbutton on control panel for adjusting the drilling depth, optionally in mm or inches, with zero point
- ▶ Easily readable digital display
- ▶ Easily readable sleeve display in milling head
- ▶ Drill depth stop
- ▶ Right-/left-hand rotation
- ▶ Thread tapping mode
- ▶ Electrical milling head height adjustment
- ▶ Manual fine feed
- ▶ Heavy, sturdy and solid columns made of premium cast material with ground and shaven dovetail guide for excellent stability and precision
- ▶ Tiltable gear head $\pm 30^\circ$
- ▶ Z axis with slatted, stainless steel protective cover
- ▶ Adjustable V-ledges
- ▶ Feed spindle play adjustable and re-adjustable
- ▶ Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

- ▶ Optional, solid, heavy steel base MSM 4 (article no.: 3353015) provides stability

Updated version

- ▶ The machine base is reinforced and moulded into a wedge shape at the front to create additional rigidity at the rear by using more material. The entire table can be milled over
- ▶ Very stable Z-column connection

MH 50G:

- ▶ Two-speed industrial motor and 6 additional gears

MH 50V:

- ▶ 6 speeds, electronically controlled
- ▶ Digital speed display



Fig.: MH 50V



SIEMENS INVERTER SINAMICS V20

- › The inverter is equipped with an energy-optimised control method and automatic flux reduction to increase energy efficiency
- › Wider voltage range, advanced cooling and painted electronic assemblies

Arguments,...



ENERGY CHAIN

- › cable guidance easy on material



MECHANICAL QUICK-CHANGE CLAMPING SYSTEM

- › The milling head is equipped with collet for pull stud BT40x45°
- › Easy to change by unlocking the mechanical safeguard and moving the sleeve lever upward



DIGITAL DISPLAY

- › Depth selection optionally in mm or inch and zero point freely adjustable via the display
- › Rev counter (MH 50V only)



MACHINE FOOT

- › The machine base is reinforced and moulded into a wedge shape at the front to create additional rigidity at the rear by using more material. The entire table can be milled over
- › Extended machine table
- › Very stable Z-column connection

Technical specifications, accessories and dimensions

Model	MH 50G	MH 50V*
Article no.	3338181	3338186
Output		
Electrical connection	400 V / 3 Ph ~50 Hz	
Motor power	1.5 / 2.2 kW	2.2 kW
Drilling/milling output		
Drilling performance in steel (S235JR)	Ø 38 mm	
Continuous drilling performance in steel (S235JR)	Ø 32 mm	
Maximum cutting head size	Ø 80 mm	
Maximum end mill size	Ø 32 mm	
Spindle		
Spindle sleeve stroke	115 mm	
Spindle seat	BT 40	
Spindle sleeve diameter	Ø 80 mm	
Spindle - column distance	285 mm	
Drilling/milling head		
Spindle speeds	225 - 3260 min ⁻¹	50 - 3260 min ⁻¹
Gearbox stages	2 x 6 speeds	6 stages electr. adjustable
Swivel range	± 30°	
Cross table		
Cross table x width	1000 x 240 mm	
T-slot size / amount / distance	14 mm / 3 / 80 mm	
Cross table load capacity max.	175 kg	
Clearance spindle to cross table max.	545 mm	
Traverse paths		
X axis manual	650 mm	
Y axis manual	295 mm	
Z axis	manual 465 mm / automatic ~385 mm	
Dimensions and weight		
Length x width x height approx.	1210 x 1020 x 1645 mm	
Net weight approx.	518 kg	

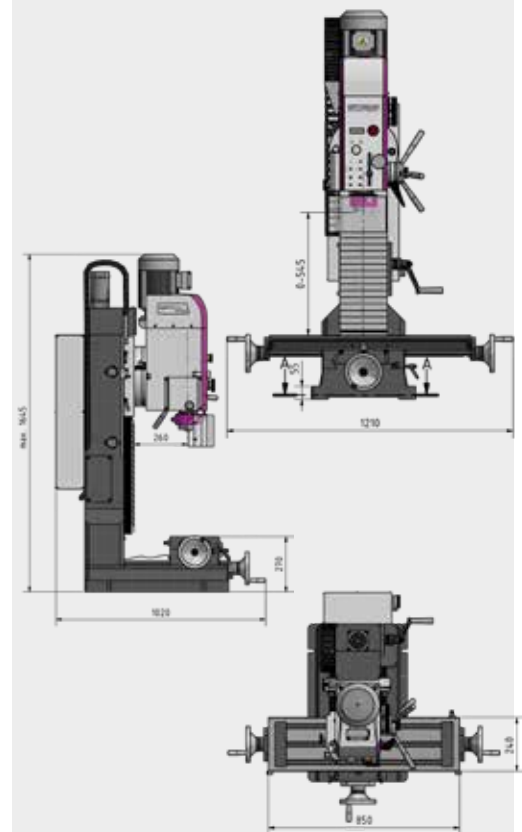
Accessories

Designation	Article no.
Collet chuck ER 32	3353334
Collet chuck spanner ER 32	3353307
Collet set ER 32, 3- 20 mm	3441122
Milling head holder Ø 27 mm	3353336
Quick-action drill chuck 1.5 - 16 mm	3536303
Weldon holder Ø 6 mm	3353340
Weldon holder Ø 8 mm	3353341
Weldon holder Ø 10 mm	3353342
Weldon holder Ø 12 mm	3353343
Weldon holder Ø 16 mm	3353344
Weldon holder Ø 20 mm	3353345
Adapter BT 40/MT3	3353335
Assortment of clamping tools SPW 16, 58-part	3352079
Height-adjuster	3536290
Assembly and tool adjustment gauge	3536203
Taper squeegee	3353331
Pull stud 40 x 45° M16	3353332
Universal table feed V 99S (for information see page 167)	3352021
Assembly kit V 99S for the X-axis	3352036
Steel chassis MSM 4	3353015
Vibration damping machine base SE 55 (4 units required)	3352981

More accessories and information about accessories from page 158 onwards

* Note: The machines (frequency converters) comply with the DIN EN 55011 standard: class C2
Important information on 'Operating machines with frequency converters' on page 333

Dimensions



Scope of delivery

› Operating tool

Starter set

Designation	Article no.
Starter set BT 40	3353284
› Milling head holder Ø 27 mm	
› Quick-action drill chuck 1 - 13 mm	
› 2 Weldon Ø 6 mm and 20 mm	
› 1 piece each of Weldon Ø 8 / 10 / 12 / 16 mm	
› Adapter BT 40/MT3	
› 4 units collet chuck ER 32	
› Collet key ER 32	
› 18-part collet set ER 32	
› Height-adjuster	
› Assembly and tool adjustment gauge	
› 14 units pull studs	
› Taper squeegee	

Vices

Designation	Article no.
FMS 125	3354125
FMSN 125	3354120
VMQ 100	3354181
MV3-75	3354175
DAS 100	3355500
ZAS 50	3354170

Information can be found on page 155 onwards

DRILLING AC-
CESSORIES

CORE DRILLING

THREAD TAP-
PING

MILLING

TURNING

MEASURING

SAWS

GRINDING

POLISHING

SHEET METAL WORK-
ING

LIGHTING

COOLING