OPTIMUM®
MASCHINEN - GERMANY

MILLING MACHINES

BENCH MILLING MACHINES



DIY

Small drilling-milling machine with electronically infinitely variable drive
for model makers

Facts that impress in terms of quality, performance and price

- Versatile deployment options
- Excellent concentricity thanks to tapered roller bearings, ≤ 0.015 mm measured in the spindle sleeve
- Two-speed transmission ratio
- Tool holder MT 2
- EMC filter class C1
- Safety electrical system 24-volt version
- Simple and clearly-arranged operating unit with on/off switch, potentiometer and emergency-stop shock switch
- Infinitely variable speed from 100 to 3 000 rpm
- Stable column with dovetail guide, adjustable on all 3 axes via wedge bars
- Column can be displaced laterally to extend the range of applications
- Drilling/milling head pivots laterally on both sides through ± 90° to allow for drilling and milling work at angles as required
- 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
- All travel can be read off on scales
- Neat milling surface thanks to individually clamping guides
- Precise feed thanks to positioning capable scale rings on all handwheels
- Inexpensive, lasting value

Universal machine substructure MSM 1 and chip tray



› Optionally available
› Substructure dimensions 420 x 340 x 800 mm
› Chip tray dimensions 720 x 470 x 30 mm
Information on page 153

Cross table



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



Fig.: BF 16 Vario with optional accessories

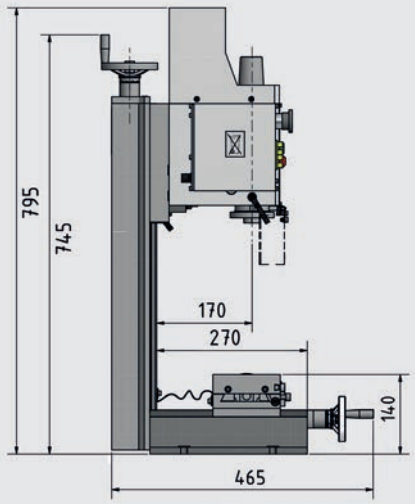
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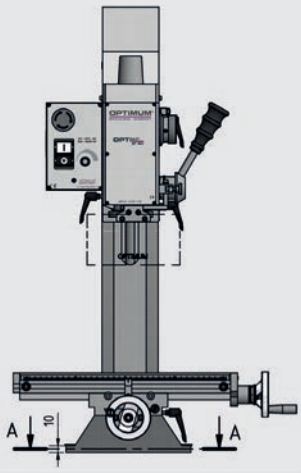
VARIO

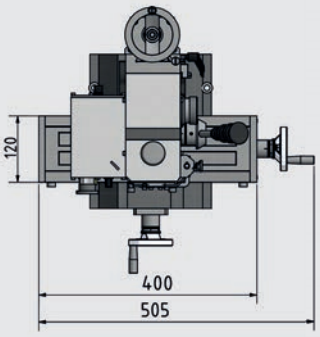
Technical specifications, accessories and dimensions

Model	BF 16 Vario
Article no.	3338116
Power	
Electrical connection	230 V / 1 Ph ~50 Hz
Motor power	500 W
Drilling/milling capacity	
Drilling performance in steel (S235JR)	Ø 16 mm
Continuous drilling performance in steel (S235JR)	Ø 12 mm
Cutter head size max.	Ø 52 mm
End mill size max.	Ø 20 mm
Spindle	
Spindle sleeve stroke	50 mm
Spindle seat	MT 2 / M10
Throat	170 mm
Drawbar	M 10
Drilling/milling head	
Spindle speeds	100 - 3 000 rpm
Gearbox stages	2-speed, electronic speed control
Pivot 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	275 mm
Traverse paths	
X axis	220 mm
Y axis	160 mm
Z axis	210 mm
Dimensions and weight	
Length x width x height	505 x 465 x 795 mm
Net weight	62 kg

Dimensions







Accessories	Article no.
Digital position display DRO 5	3383975
Factory assembly DRO 5	9000420
Magnetic strip per metre	3383980
Information on the **digital position display** on page 231	
Universal substructure MSM 1	3353000
Chip tray	3352999
Levelling platen SE 1 (4 pcs. required)	3381012
Information on the **universal substructure MSM 1** on page 143	

Accessories	Article no.
Collet set MT 2/M10, 5-part **direct clamping**	3351980
Collet set ER 25, 15-part	3441109
Collet chuck set MT 2/ ER 25	3352052
Collet chuck set MT 2/ ER 32	3352053
HSS cutter set TiN-coated **12-part**	3352250
HSS cutter set TiN-coated **20-part**	3352255
Quick-action drill chuck DKC 13 / 0-13 mm	3050632
Clamping tool assortment SPW 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
Coolant hose KMS 2	3356660

More **accessories** and **information on accessories** from page 142
For a large selection of **machine vises** see from page 139

Scope of delivery

- Tapered mandrel MT 2/B16
- Drawbar M10
- Operating tool

Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C1
Important information on operation of machines with frequency converters page 323

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

MH 20VL with longer travel on the X axis.
MH 20VLD with digital position display DRO 5

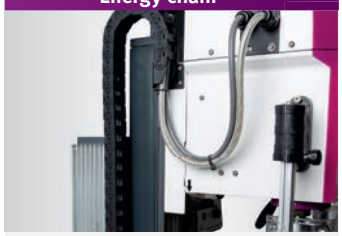
Facts that impress in terms of quality, performance and price

- 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
- 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
- Clearly-arranged control panel with user-friendly foil keyboard
- Easily readable digital display for speed and drilling depth
- 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 wedge bars
- Feed spindle play adjustable and re-adjustable
- Emergency stop button
- ±60° tiltable drilling/milling head
- 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 20VLD

- With digital position display DRO 5

Energy chain



› cable guidance easy on material

Feed



› Manual fine feed

Heat sink



› Heat sink for cooling the electronics
› Good thermal conductivity



Fig.: MH 20VL with optional accessories

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DRO VARIO

Technical specifications, accessories and dimensions

Model	MH 20V	MH 20VL
Article no.	3338131	3338132
Model		**MH 20VLD**
Article no.	-	3338133

Power		
Electrical connection	230 V / 1 Ph ~50 Hz	
Motor power	750 W	
Drilling/milling capacity		
Drilling performance in steel (S235JR)	Ø 16 mm	
Continuous drilling performance in steel (S235JR)	Ø 12 mm	
Cutter head size max.	Ø 52 mm	
End mill size max.	Ø 20 mm	
Spindle		
Spindle sleeve stroke	50 mm	
Spindle sleeve diameter	Ø 60 mm	
Spindle seat	MT 2	
Drawbar	M10	
Throat	170 mm	
Drilling/milling head		
Spindle speeds	100 - 3 000 rpm	
Gearbox stages	2-speed, electronic speed control	
Pivot 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	
Max. load of cross table	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	750 x 650 x 820 mm	770 x 714 x 917 mm
Net weight	94 kg	99 kg

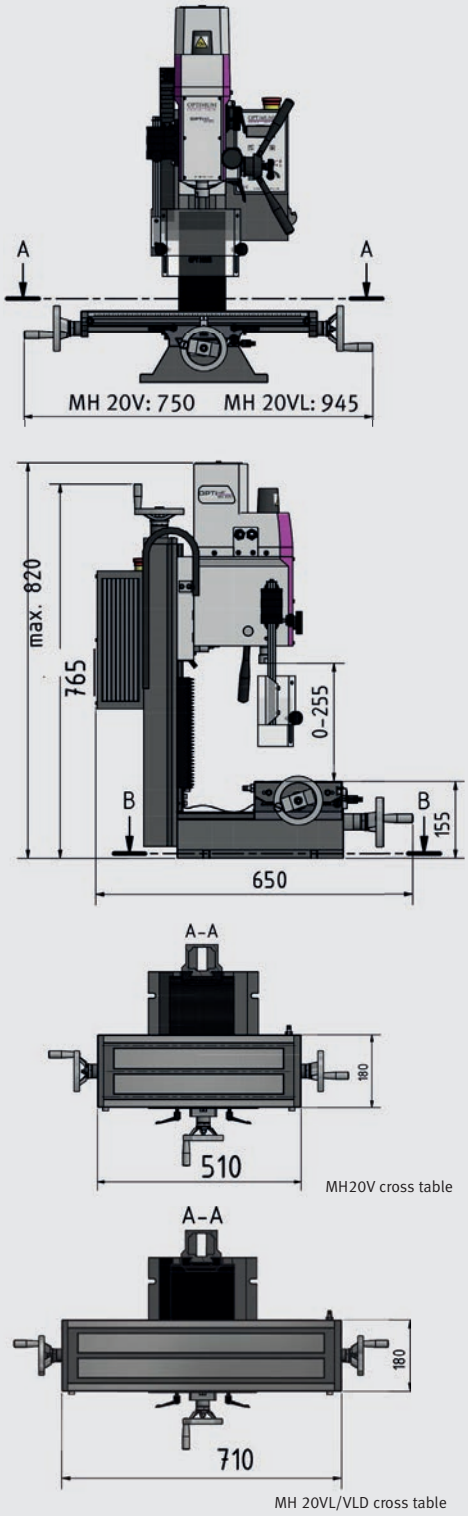
Accessories	Article no.
Quick-action drill chuck DKC 13 / 0-13 mm	3050632
Collet set MT 2/M10, 5-part **direct clamping**	3351980
Collet set ER 25, 15-part	3441109
HSS end mill set TiN-coated, **12-part**	3352250
HSS end mill set TiN-coated, **20-part**	3352255
Assembly kit for DRO5 on MH20V	3383990
Machine base vibration damper SE 55 (4 pieces required)	3352981
Universal substructure MSM 1	3353000
Chip tray	3352999

More **accessories** and **information on accessories** from page 142
Information on the **universal substructure MSM 1** on page 143

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

For more **information** see from page 139

Dimensions



Scope of delivery

- Tapered mandrel MT 2/B16
- Drawbar M10
- Operating tool

Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C2
Important information on operation of machines with frequency converters page 323

Sturdy drilling-milling machines with electronically infinitely variable drive.

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
- Clearly-arranged control panel with user-friendly foil keyboard
- Easily readable digital display for speed and drilling depth
- 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 wedge bars
- Fine feed
- Emergency stop button
- ±60° tiltable drilling/milling head
- 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 for best possible user protection against chips and parts being flung out
- X, Y and Z axis with slot prepared for retrofitting of the magnetic strips
- Gaiter as guide protection
- Mechanical quick change clamping system

MH 22VD

- With digital position display DRO 5

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

Energy chain



› cable guidance easy on material

MH 22VD: DRO 5



› Four-line LCD display
› User-friendly menu navigation



Fig.: MH 22VD with optional accessories

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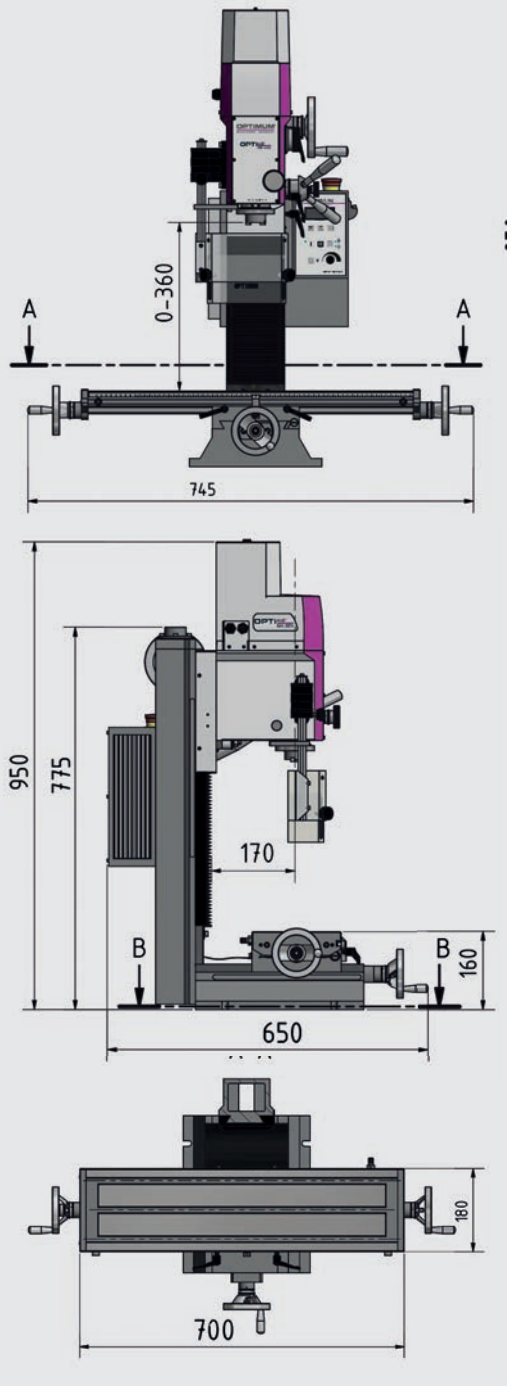
DRO VARIO

Technical specifications, accessories and dimensions

Model	MH 22V
Article no.	3338135
Model	**MH 22VD**
Article no.	3338136

Power	
Electrical connection	230 V / 1 Ph ~50 Hz
Motor power	950 W
Drilling/milling capacity	
Drilling performance in steel (S235JR)	Ø 20 mm
Continuous drilling performance in steel (S235JR)	Ø 16 mm
Cutter head size max.	Ø 52 mm
End mill size max.	Ø 12 mm
Spindle	
Spindle sleeve stroke	45 mm
Spindle sleeve diameter	Ø 60 mm
Spindle seat	BT 20
Throat	170 mm
Drilling/milling head	
Spindle speeds	90 - 3 000 rpm
Gearbox stages	2-speed, electronic speed control
Pivot range	± 60°
Cross table	
Cross table x width	700 x 180 mm
T-slot size / spacing / count	12 mm / 63 mm / 3
Max. load of cross table	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	745 x 650 x 950 mm
Net weight	120 kg

Dimensions



Accessories	Article no.
BT20 starter set (Information page 154)	3353281
Cutter head holder Ø 16 mm BT 20	3352728
Drill 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
Collet chuck holder ER 16	3352741
Collet chuck spanner ER 16	3352742
Collet set ER 16, 12-part , 1 - 10 mm	3440282
Pull stud Optimum BT 20	3352726
Quick-action drill chuck DKC 13 / 0-13 mm	3050632
HSS cutter set TiN-coated	3352250
Assembly kit for DRO5 for MH22V	3383990
Machine base vibration damper SE 55 (4 pieces required)	3352981
Machine substructure MSM 1	3353000
Chip tray	3352999

More **accessories** and **information on accessories** from page 142
Information on the **universal substructure MSM 1** on page 143

Scope of delivery

› Operating tool

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

For **more information** see from page 139

Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C2
Important information on operation of machines with frequency converters page 323

Sturdy drilling-milling machines with electronically infinitely variable drive.

MH 25SV with stepper motors and digital position display DRO 5

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 adjustment of the Z-axis
- Infinitely 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 wedge bars
- Angular ball bearings on the axes
- ± 45° tiltable gear head
- Right-/left-hand rotation
- Height-adjustable, large protective screen with micro switch

MH 25V:

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

MH 25SV:

- 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

Operating panel

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



› Control panel MH 25SV
› High mobility by removing the control panel from the holder



› MH 25V operating panel

Energy chain



› cable guidance easy on material

SIEMENS inverter



SINAMICS V20
› Energy-saving features
› Advanced cooling
› Painted electronics assemblies

Mechanical quick-change clamping system



› Milling head equipped with collet for pull studs BT30x45°
› Easy to change by unlocking the mechanical safeguard and moving the sleeve lever upward

Fig.: MH 25SV

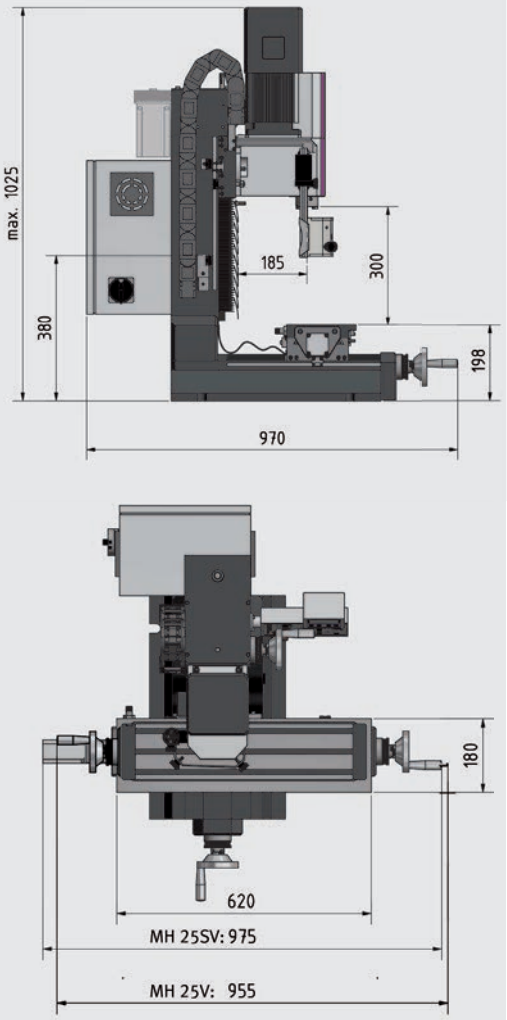
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Technical specifications, accessories and dimensions

DRO VARIO

Model	MH 25V	MH 25SV
Article no.	3338155	3338160
Power		
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 capacity		
Cutter head size max.	Ø 50 mm	
End mill size max.	Ø 25 mm	
Spindle		
Spindle seat	BT 30	
Throat	185 mm	
Drilling/milling head		
Spindle speeds	200 - 4 000 rpm	
Gearbox stages	Electronic speed control	
Pivot range	45°	
Cross table		
Cross table x width	620 x 180 mm	
T-slot size / spacing / count	12 mm / 50 mm / 3	
Max. load of cross table	30 kg	
Clearance spindle to cross table	300 mm	
Traverse paths		
X axis	manual Ø 400 mm	automatic ~380 mm manual Ø 400 mm
Y axis	manual Ø 210 mm	automatic ~130 mm manual Ø 210 mm
Z axis	manual Ø 270 mm	automatic ~190 mm manual Ø 270 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	970 x 1 025 mm	
Width	955 mm	975 mm
Net weight	192 kg	200 kg

Dimensions



Accessories	Article no.
Cutter head holder Ø 22 mm	3353306
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
BT 30 - MT 2 adapter	3353305
Collet chuck holder ER 32	3353304
Collet chuck spanner ER 32	3353307
Collet set ER 32	3441122
Height-adjuster	3536290
Assembly and tool adjustment gauge	3536193
Pull stud 40 x 45° M12	3353302
Pull stud DIN2080 M12	3536177
Clamping tool assortment SPW 10, 58 parts	3352016
Universal substructure MSM2 (Information page 153)	3353009

More **accessories** and **information on accessories** from page 142

Accessories	Article no.
Starter set BT 30	3353282
› Cutter head holder Ø 22 mm	
› Drill chuck 1 - 13 mm	
› 2 pcs. Weldon Ø 6 mm and 20 mm	
› 1 pc. each Weldon Ø 8 / 10 / 12 / 16 mm	
› Adapter sleeve BT 30 / MT 2	
› 4 pcs. collet chuck holder ER 32	
› Collet spanner ER 32	
› 18-part collet set ER 32	
› Height-adjuster	
› Assembly and tool adjustment gauge	
› 14 pcs. pull studs	
› Taper squeegee	

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

For **more information** see from page 139

Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C2
Important information on operation of machines with frequency converters page 323

CRAFTSMEN

Universal precision drilling-milling machine with two-stage drive motor and manual gearbox for optimum power transmission

Facts that impress in terms of quality, performance and price

- Heavy, solid cast design
- Two-stage industrial quality electric motor
- High running smoothness due to ground gear wheels running in an oil bath
- Solid and generously dimensioned cross table with precision surface finish with T-slots and adjustable wedge bars
- Drill depth stop
- Thread tapping function
- 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
- Large speed range from 95 - 3 200 rpm thanks to 12 switchable speeds

Thread tapping mode



› The motor is activated by moving the spindle sleeve down
› When the set depth is reached, the direction of rotation of the spindle is reversed
› The machine 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

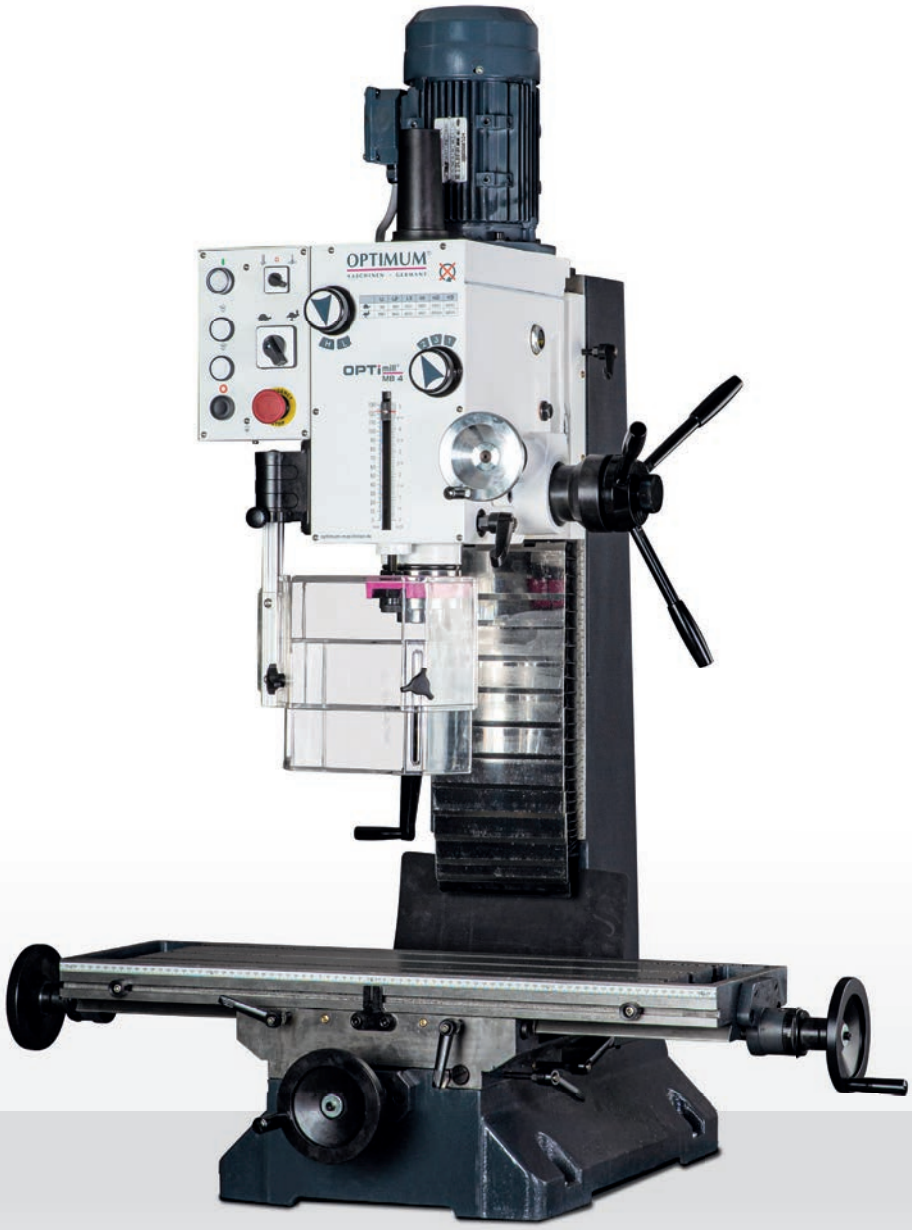


Fig.: MB 4 with optional accessories

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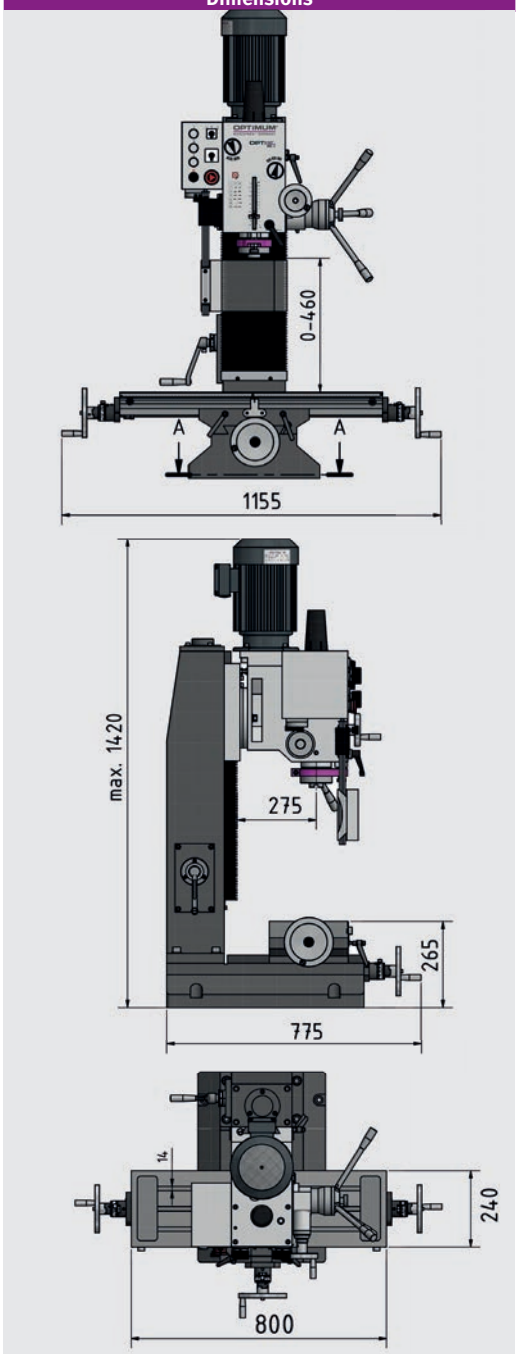
Technical specifications, accessories and dimensions

Model	MB 4
Article no.	3338451
Power	
Electrical connection	400 V / 3 Ph ~50 Hz
Motor power	1.1 / 1.5 kW
Drilling/milling power	
Drilling performance in steel (S235JR)	Ø 32 mm
Continuous drilling performance in steel (S235JR)	Ø 28 mm
Cutter head size max.	Ø 63 mm
End mill size max.	Ø 28 mm
Spindle	
Spindle sleeve stroke	120 mm
Spindle seat	MT 4
Spindle sleeve diameter	75 mm
Throat	275 mm
Drawbar	M16
Drilling/milling head	
Spindle speeds	95 - 3 200 rpm
Gearbox stages	2 x 6 stages
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 bearing 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	1 155 x 775 x 1 420 mm
Net weight	320 kg

Accessories	Article no.
NEW **Parallel shim** set, 18-part	3536191
Horizontal-vertical rotary indexing table RT 100	3356110
Horizontal-vertical rotary indexing table RT 150	3356150
Horizontal-vertical rotary indexing table RTE 165	3356365
Height-adjustable tailstock RST 1	3356155
Clamping tool assortment SPW 12, 58 parts	3352017
T-slot nut M 12 / 14 mm	3353025
Hold-down clamp 14 mm	3352031
HSS cutter set TiN-coated **12-part**	3352250
HSS cutter set TiN-coated **20-part**	3352255
Copy and face milling cutter MT 4 Ø 63 mm	3350214
Boring head MT 4/B16	3352125
Arbour for drill chuck MT 4/B16	3350304
Collet chuck holder MT 4/M16	3352094
Tapping chuck MT 4/ M3 - M12	3050709
Tapping chuck MT 4/ M8 - M20	3050710
Steel substructure MSM 3	3353014
Machine base vibration damper SE 55 (4 pieces required)	3352981
Universal table feed V 99S (information page 151)	3352021
Assembly kit V 99S - X axis	3352035
Universal coolant unit 230 V	3351999
Coolant mist lubricator MMC 1 with magnetic holder	3356663
Coolant hose KMS 2	3356660

More **accessories** and **information on accessories** from page 142
Coolant accessories from page 320

Dimensions



Scope of delivery

- Reduction sleeve MT 4 - MT 3
- Drawbar M16
- Operating tool

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

For **more information** see from page 139

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

Facts that impress in terms of quality, performance and price

- High concentricity due 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
- ± 30° tiltable gear head
- 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 wedge bars
- Feed spindle play adjustable and re-adjustable
- Z axis with slatted, stainless steel protective cover
- Optional, solid, heavy steel substructure MSM 3 (Article no.: 3353014) ensures stability

MH 35G:
- Two-speed industrial motor and 6 additional gears

MH 35V:
- 6 gearbox stages, electronically controlled
- Digital speed display

Energy chain



› cable guidance easy on material

MH 35V with SIEMENS inverter



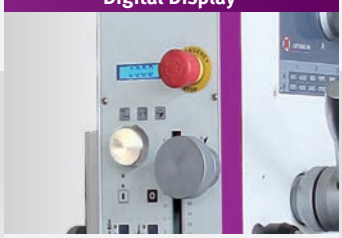
SINAMICS V20
› Energy-saving features
› Advanced cooling
› Painted electronics assemblies

Mechanical quick-change clamping system



› The milling head is equipped with a collet for the pull stud BT30x45°
› 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 35V only)



Fig.: MH 35V

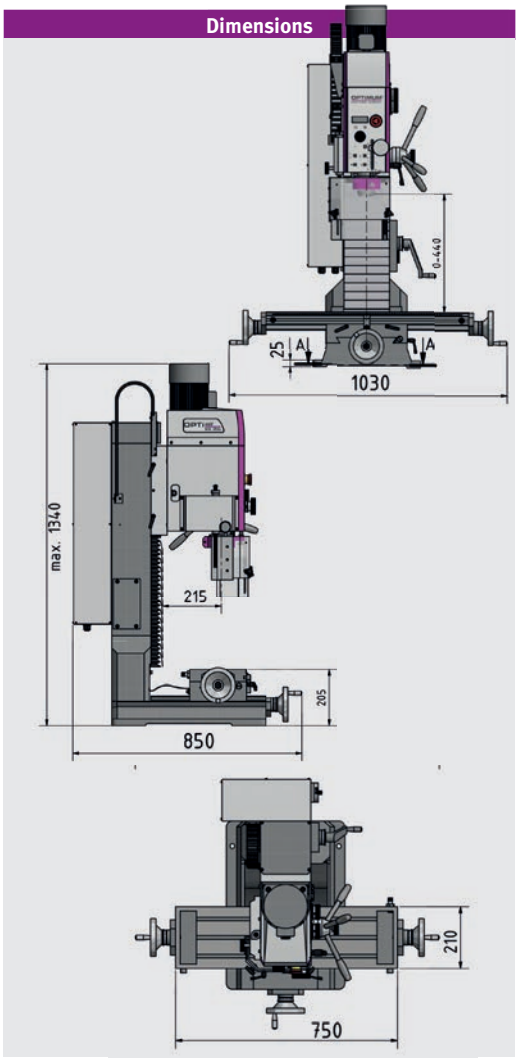
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VARIO

Technical specifications, accessories and dimensions

Model	MH 35G	MH 35V**
Article no.	3338165	3338170
Power		
Electrical connection	400 V / 3 Ph ~50 Hz	
Motor power	1.1 / 1.5 kW	1.5 kW
Drilling/milling capacity		
Drilling performance in steel (S235JR)	Ø 32 mm	
Continuous drilling performance in steel (S235JR)	Ø 28 mm	
Cutter head size max.	Ø 80 mm	
End mill size max.	Ø 28 mm	
Spindle		
Spindle sleeve stroke	90 mm	
Spindle seat	BT 30	
Spindle sleeve diameter	68 mm	
Throat	215 mm	
Drilling/milling head		
Spindle speeds	220 - 3 100 rpm	50 - 3 260 rpm
Gearbox stages	2 x 6 stages	6 stages electronically controlled
Pivot range	± 30°	
Cross table		
Cross table x width	750 x 210 mm	
T-slot size / spacing / count	12 mm / 63 mm / 3	
Max. load of cross table	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	850 x 1 030 x 1 340 mm	
Net weight	318 kg	

Dimensions



Accessories	Article no.
Drill chuck adapter BT 30/B16	3353308
Cutter 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
BT 30 - MT 2 adapter	3353305
Collet chuck holder ER 32	3353304
Collet chuck spanner ER 32	3353307
Collet set ER 32	3441122
Height-adjuster	3536290
Assembly and tool adjustment gauge	3536193
Taper squeegee	3353301
Pull stud 40 x 45° M12	3353302
Universal table feed V 99S (information page 151)	3352021
Assembly kit V 99S - X axis	3352035
Clamping tool assortment SPW 10, 58 parts	3352016
Steel substructure MSM 3 (information page 153)	3353014
Machine base vibration damper SE 55 (4 pieces required)	3352981

More **accessories** and **information on accessories** from page 142

** Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C2
Important information on operation of machines with frequency converters page 323

Scope of delivery
› Operating tool

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

For **more information** see from page 139

Accessories	Article no.
Starter set BT 30	3353282
› Cutter head holder Ø 22 mm	
› Quick-action drill chuck 1 - 13 mm	
› 2 pcs. each Weldon Ø 6 mm and 20 mm	
› 1 pc. each Weldon Ø 8 / 10 / 12 / 16 mm	
› BT 30 - MT 2 adapter	
› 4 pcs. collet chuck holder ER 32	
› Collet spanner ER 32	
› 18-part collet set ER 32	
› Height-adjuster	
› Assembly and tool adjustment gauge	
› 14 pcs. pull studs	
› Taper squeegee	

Universal precision drilling-milling machines with manual gearbox and motorised Z-axis height adjustment. MH 50V with electronically controlled drive

Facts that impress in terms of quality, performance and price

- High concentricity due 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
- ± 30° tiltable gear head
- Z axis with slatted, stainless steel protective cover
- Adjustable wedge bars
- 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 substructure MSM 4 (Article no.: 3353015) ensures stability

MH 50G:

- Two-speed industrial motor and 6 additional gears

MH 50V:

- 6 gearbox stages, electronically controlled
- Rev counter

Energy chain



› cable guidance easy on material

MH 50 V with SIEMENS inverter



SINAMICS V20

› Energy-saving features
› Advanced cooling
› Painted electronics assemblies

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)



Fig.: MH 50G

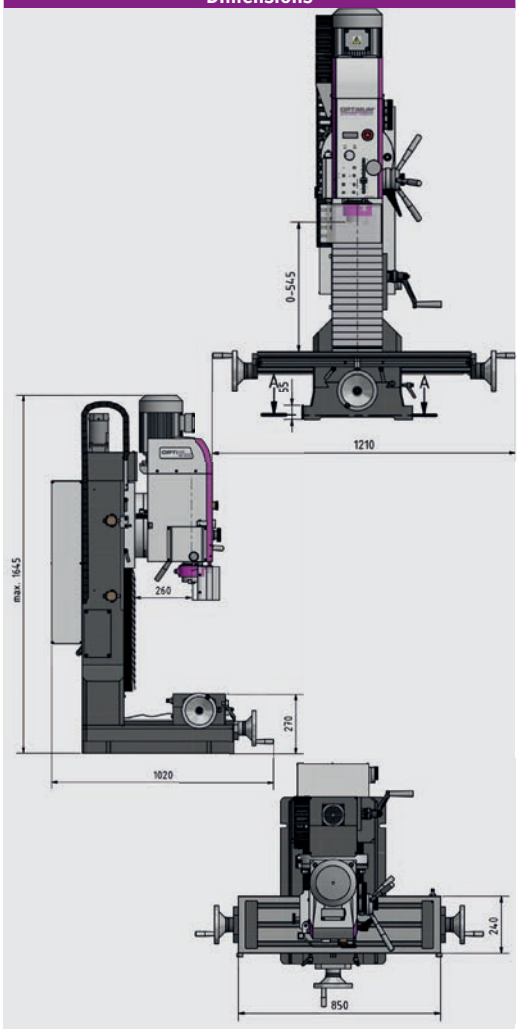
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VARIO

Technical specifications, accessories and dimensions

Model	MH 50G	MH 50V**
Article no.	3338180	3338185
Power		
Electrical connection	400 V / 3 Ph ~50 Hz	
Motor power	1.5 / 2.2 kW	2.2 kW
Drilling/milling capacity		
Drilling performance in steel (S235JR)	Ø 38 mm	
Continuous drilling performance in steel (S235JR)	Ø 32 mm	
Cutter head size max.	Ø 80 mm	
End mill size max.	Ø 32 mm	
Spindle		
Spindle sleeve stroke	115 mm	
Spindle seat	BT 40	
Spindle sleeve diameter	Ø 80 mm	
Throat	260 mm	
Drilling/milling head		
Spindle speeds	225 - 3 260 rpm	50 - 3 260 rpm
Gearbox stages	2 x 6 stages	6 stages electronically controlled
Pivot range	± 30°	
Cross table		
Cross table x width	850 x 240 mm	
T-slot size / amount / distance	18 mm / 3 / 80 mm	
Max. load of cross table	175 kg	
Clearance spindle to cross table max.	545 mm	
Traverse paths		
X axis manual	520 mm	
Y axis manual	260 mm	
Z axis	manual 465 mm / automatic ~385 mm	
Dimensions and weight		
Length x width x height max.	1 210 x 1 020 x 1 645 mm	
Net weight	518 kg	

Dimensions



Accessories	Article no.
Cutter 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
BT 40 - MT 3 adapter	3353335
Collet chuck holder ER 32	3353334
Collet chuck spanner ER 32	3353307
Collet set ER 32	3441122
Height-adjuster	3536290
Assembly and tool adjustment gauge	3536193
Taper squeegee	3353331
Pull stud 40 x 45° M16	3353332
Universal table feed V 99S (information page 151)	3352021
Assembly kit V 99S - X axis	3352036
Clamping tool assortment SPW 16, 58 parts	3352019
Steel substructure MSM 4 (information page 153)	3353015
Machine base vibration damper SE 55 (4 pieces required)	3352981

More **accessories** and **information on accessories** from page 142

Scope of delivery

› Operating tool

Accessories	Article no.
BT 40 starter set	3353284
› Cutter head holder Ø 27 mm	
› Quick-action drill chuck 1 - 13 mm	
› 2 pcs. Weldon Ø 6 mm and 20 mm	
› 1 pc. each Weldon Ø 8 / 10 / 12 / 16 mm	
› Adapter sleeve BT 40 / MT 3	
› 4 pcs. collet chuck holder ER 32	
› Collet spanner ER 32	
› 18-part collet set ER 32	
› Height-adjuster	
› Assembly and tool adjustment gauge	
› 14 pcs. pull studs	
› Taper squeegee	

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

For **more information** see from page 139

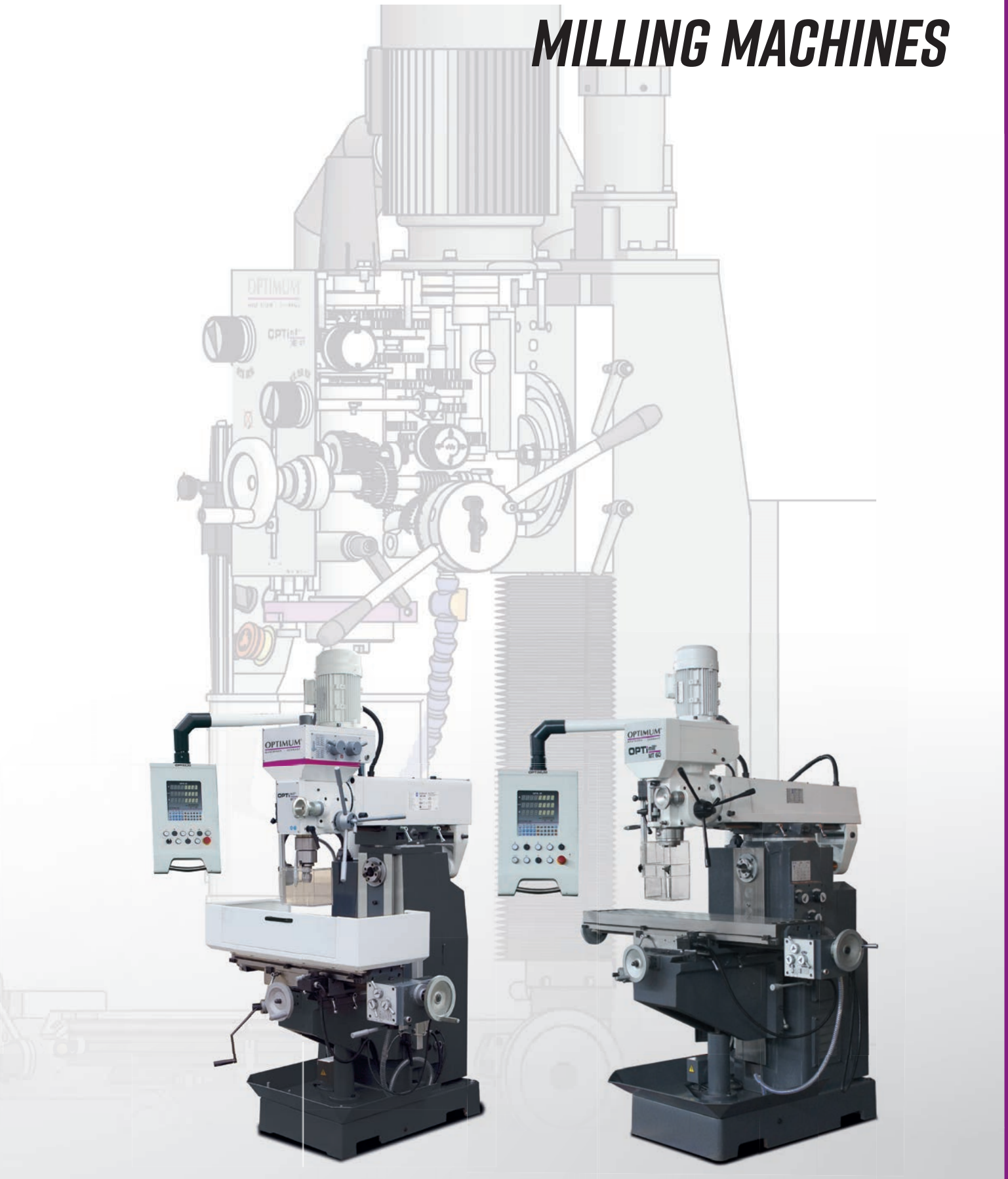
** Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C2
Important information on operation of machines with frequency converters page 323

UNIVERSAL MILLING MACHINES



Visit our exhibition in Hallstadt/Bamberg

MILLING MACHINES



Universal drilling-milling machines with digital position display DRO 5
and machine base made of cast iron. **MB 4PV with continuously variable electronically controlled drive**

Facts that impress in terms of quality, performance and price

- Heavy, solid cast design
- High running smoothness due to ground gear wheels running in an oil bath
- Solid and generously dimensioned cross table with precision surface finish and T-slots
- ± 45° tiltable gear head
- Adjustable wedge bars
- Drill depth stop
- Right-/left-hand rotation
- Drilling/Thread cutting function
- Automatic sleeve feed with manual fine feed
- Motorised positioning of the Z axis
- Coolant system
- Solid column with hand-scraped dovetail guide for highest stability and greatest possible precision
- Feed spindle play adjustable and re-adjustable
- Height-adjustable, large protective screen with micro switch
- Machine lamp
- Solid cast machine chassis with chip channel

MB 4P:
- Two-stage industrial quality electric motor
- Large speed range from 95 - 3 200 rpm thanksto 12 switchable speeds

MB 4PV:
- Single-stage quality industrial electric motor
- Wide speed range from 60 - 2 760 rpm due to 2 infinitely variable gearbox stages
- S INAMICS V20 inverter by SIEMENS

Automatic spindle sleeve feed



› The sleeve moves downwards at the set feed speed and switches off again at the set drilling depth on the scale ring. The sleeve then moves back to its starting position

Digital position display DRO 5



› Four-line LCD display
› User-friendly menu navigation

SIEMENS inverter



SINAMICS V20
› Energy-saving features
› Advanced cooling
› Painted electronics assemblies

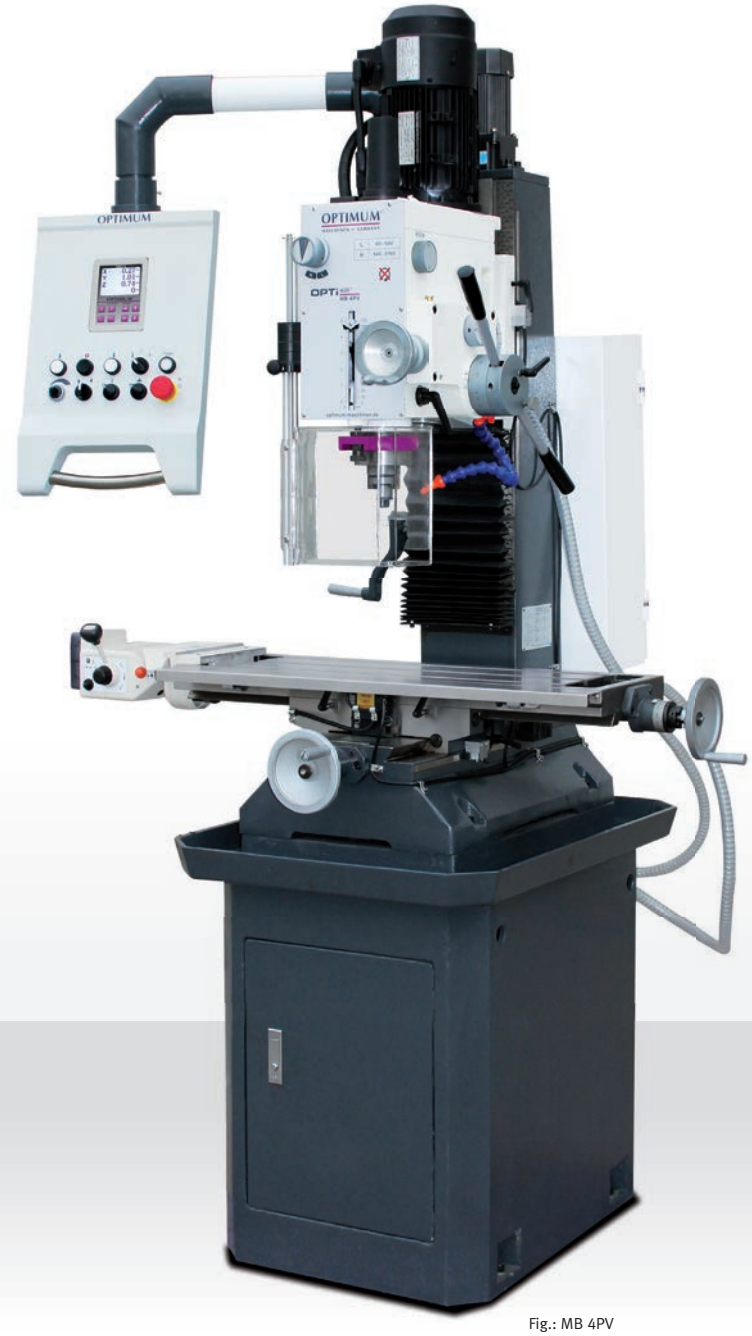


Fig.: MB 4PV

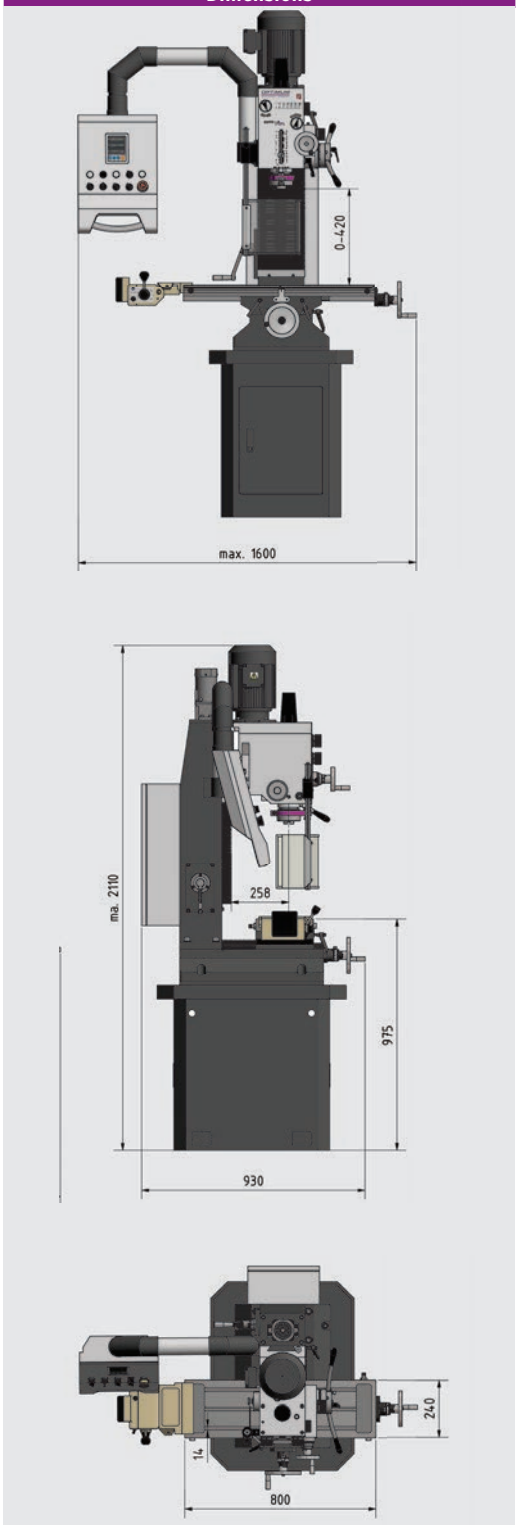
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DRO VARIO

Technical specifications, accessories and dimensions

Model	MB 4P	MB 4PV**
Article no.	3338460	3338466
Power		
Electrical connection	400 V / 3 Ph ~50 Hz	400 V / 3 Ph ~50 Hz
Motor power	1.1 / 1.5 kW	1.5 kW
Coolant pump motor	100 W	
Drilling/milling capacity		
Drilling performance in steel (S235JR)	Ø 32 mm	Ø 24 mm
Continuous drilling performance in steel (S235JR)	Ø 28 mm	Ø 20 mm
Cutter head size max.	Ø 63 mm	Ø 63 mm
End mill size max.	Ø 28 mm	Ø 26 mm
Spindle		
Spindle sleeve stroke	120 mm	
Spindle sleeve diameter	75 mm	
Spindle seat	MT 4	
Throat	258 mm	
Drawbar	M16	
Drilling/milling head		
Spindle speeds	95 - 3 200 rpm	60 - 2 760 rpm
Gearbox stages	2 x 6 stages	2 stages, electr. controlled
Pivot range	± 45°	
Cross table		
Clearance spindle to cross table max.	420 mm	
Cross table x width	800 x 240 mm	
T-slot size / spacing / count	14 mm / 80 mm / 3	
Automatic spindle sleeve feed	0.1 / 0.18 / 0.26 mm/rev	
Traverse paths		
X axis	manual 560 mm / automatic ~480 mm	
Y axis manual	195 mm	
Z axis manual	350 mm	
Dimensions and weight		
Length x width x height	1 600 x 930 x 2 110 mm	
Net weight	495 kg	

Dimensions



Accessories	Article no.
Parallel shim set, 20-part	3354001
NEW **Parallel shim** set, 18-part	3536191
Horizontal-vertical rotary indexing table RT 150	3356150
Horizontal-vertical rotary indexing table RTE 165	3356365
Clamping tool assortment SPW 12, 58 parts	3352017
HSS cutter set TiN-coated 12-part	3352250
HSS cutter set TiN-coated 20-part	3352255
Copy and face milling cutter MT 4	3350214
Machine base vibration damper SE 55 (4 pieces required)	3352981
Boring head MT 4	3352125
Arbour for drill chuck MT4	3350304
Collet chuck holder MT 4/M16	3352094
Tapping chuck MT 4/ M3 - M12	3050709
Tapping chuck MT 4/ M8 - M20	3050710

More **accessories** and **information on accessories** from page 142
Coolant accessories from page 320

Scope of delivery

- Machine substructure
- Morse taper MT 3/B16
- Reduction sleeve MT 4 - MT 3
- Drawbar M16
- Operating tool

** Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C2
Important information on operation of machines with frequency converters page 323

CRAFTSMEN

Universal drilling/milling machine
with table feed on X and Y axis

Facts that impress in terms of quality, performance and price

- Vibration absorbing cast design
- Gears in oil bath with ground, hardened gear wheels
- Coolant system
- LED lamp
- Solid and generously dimensioned cross table with precision surface finish with T-slots and adjustable wedge bars
- Adjustable guide rails
- Adjustable limit switch cut-off on the X axis
- Mechanical sleeve feed for drilling via sleeve lever
- Right-/left-hand rotation
- Coupling for switching from manual coarse feed to manual fine feed
- Operation-friendly control panel
- Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

Feed



› Table feed of the X and Y axis with speed adjustment

Cross table



› The cross table (X axis) can be rotated by ± 45°

Milling head



› Large throat of the Y axis spindle head support from 250 - 650 mm
› Inclination range of the spindle head ± 45°

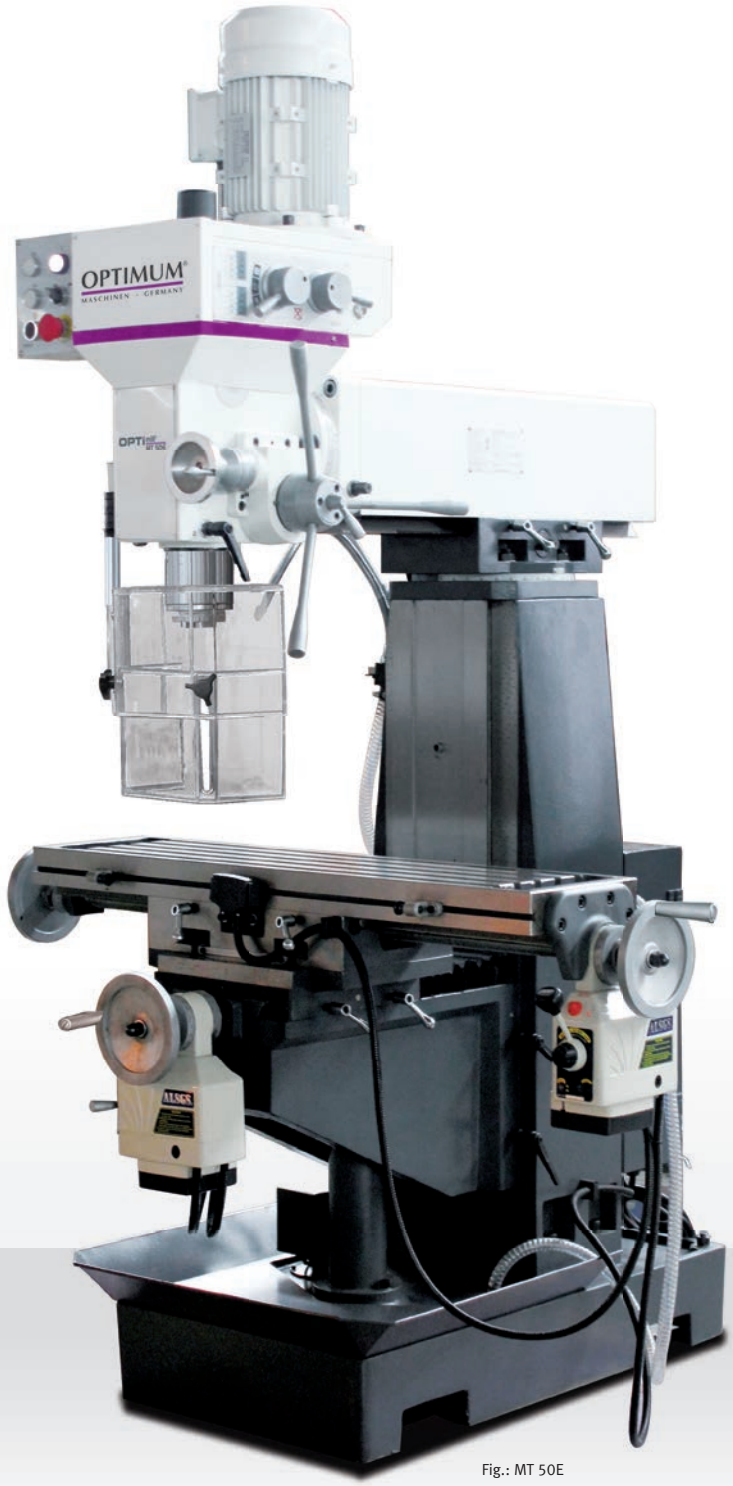


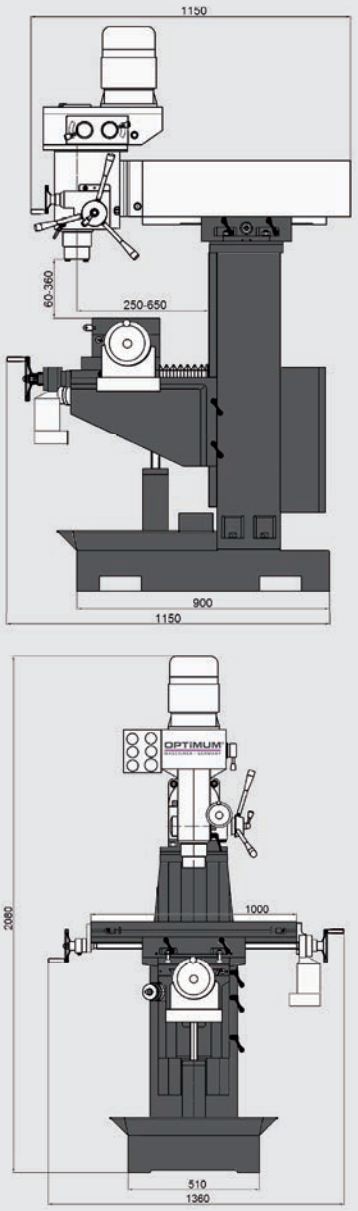
Fig.: MT 50E

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Technical specifications, accessories and dimensions

Model	MT 50E
Article no.	3336010
Power	
Electrical connection	400 V / 3 Ph ~50 Hz
Drive motor	0.85 / 1.5 kW
Coolant pump motor	40 W
Drilling/milling capacity	
Drilling performance in steel (S235JR)	Ø 30 mm
Continuous drilling performance in steel (S235JR)	Ø 25 mm
Cutter head size max.	Ø 63 mm
End mill size max.	Ø 25 mm
Spindle	
Spindle sleeve stroke	120 mm
Spindle seat	ISO 40 DIN 2080
Clearance spindle to cross table	60 - 360 mm
Throat	250 - 650 mm
Drawbar	M16
Drilling/milling head	
Spindle speeds	115 - 1 750 rpm
Gear / motor stages	4-speed / 2-speed
Milling head pivot range	± 45°
Cross table	
Cross table x width	1 000 x 240 mm
Max. load of cross table	150 kg
T-slot size / quantity	14 mm / 4
Swivel range	± 45°
Traverse paths	
X axis	manual Ø 580 mm automatic ~500 mm
Y axis	manual Ø 230 mm automatic ~150 mm
Z axis manual	320 mm
Dimensions and weight	
Length x width x height	1 360 x 1 150 x 2 080 mm
Net weight	760 kg

Dimensions



Accessories	Article no.
Parallel shim set, 20-part	3354001
NEW **Parallel shim set,** 18-part	3536191
Horizontal-vertical rotary indexing table RT 150	3356150
Horizontal-vertical rotary indexing table RT 200	3356200
Horizontal-vertical rotary indexing table RTE 165	3356365
Horizontal-vertical rotary indexing table RTU 165	3354165
Clamping tool assortment SPW 12, 58 parts	3352017
HSS cutter set TiN-coated **12-part**	3352250
HSS cutter set TiN-coated **20-part**	3352255
Workpiece support WPS-4	3354264
Precision machine shoe SEU1 (4 pieces are required)	3352985
Drill chuck holder (arbour) ISO 40/ M16 / B16	3352070
Collet chuck set 18-part ISO 40	3352056
Copy and face milling cutter ISO 40 DIN 2080	3350216
Precision boring head ISO 40	3352128
Hold-down clamp set of 2	3352031

More **accessories** and **information on accessories** from page 142
Coolant accessories from page 320

Scope of delivery

- Key type drill chuck 3 - 16 mm / B18
- Arbor for drill chuck ISO 40 / B18
- T-slot nuts
- Push-out tool
- Adapter sleeve ISO 40 / MT 3
- Reduction sleeve MT 3 - MT 2
- Operating tool

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

For **more information** see from page 139

CRAFTSMEN

Universal precision drilling/milling machine for horizontal and vertical milling work. With digital 3-axis position display DPA 2000

Facts that impress in terms of quality, performance and price

- Heavy, solid design using premium vibration-absorbing grey cast material
- Gears in oil bath with ground, hardened gear wheels
- Coolant system
- Halogen machine lamp with tight beam
- Solid and generously dimensioned cross table with precision surface finish with T-slots and adjustable wedge bars
- Cross table can be rotated ± 45° on both sides
- ± 45° tiltable gear head
- Right-/left-hand rotation
- X axis can be moved optionally wit the hand wheel or the table feed unit
- Automatic end position cut-off on X axis
- Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

Horizontal milling position



› With arrester and collet for disc milling cutter
› Rotate through ± 180° for horizontal milling

OPTI Operating panel



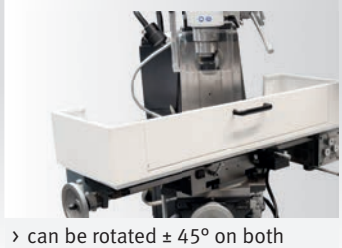
› Integrated switch panel
› Integrated digital position display DPA 2000
› Pivots to left and right side of machine

Cross table housing



› Fold-up type
› Removable

Cross table



› can be rotated ± 45° on both sides



Fig.: MT 50

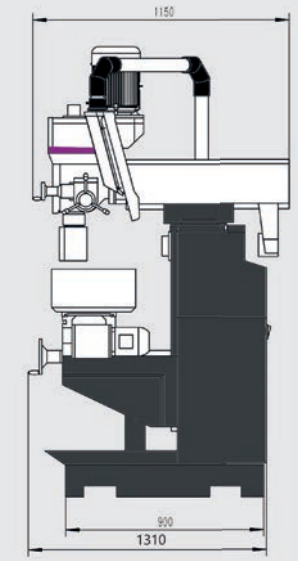
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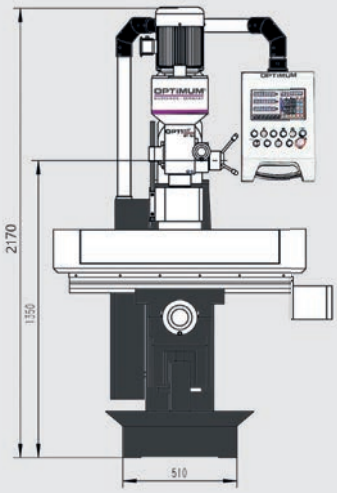
DRO

Technical specifications, accessories and dimensions

Model	MT 50
Article no.	3336005
Power	
Electrical connection	400 V / 3 Ph ~50 Hz
Total rated value	4.5 kW
Vertical drive motor	1.1 / 2.2 kW
Horizontal drive motor	1.5 kW
Coolant pump motor	40 W
Drilling/milling capacity	
Drilling performance in steel (S235JR)	Ø 30 mm
Cont. drilling performance steel (S235JR)	Ø 25 mm
Cutter head size max.	Ø 100 mm
End mill size max.	Ø 25 mm
Spindle	
Spindle sleeve stroke	120 mm
Spindle seat	ISO 40 DIN 2080
Clearance spindle to cross table	60 - 390 mm
Vertical	
Spindle speeds	115 - 1 750 rpm
Gearbox stages	8 stages
Swivel range milling head	± 45°
Throat	240 - 650 mm
Horizontal	
Spindle speeds	60 - 1 350 rpm
Gearbox stages	9 stages
Throat	0 - 185 mm
Cross table	
Cross table x width	1 000 x 240 mm
Max. load of cross table	160 kg
T-slot size / quantity	14 mm / 4
Rotating cross table	± 45°
Traverse paths	
X axis	manual 580 mm / automatic ~500 mm
Table feed X axis (8 stages)	24 - 720 mm/min
Y axis manual	200 mm
Z axis manual	340 mm
Dimensions and weight	
Length x width x height	1 290 x 1 090 x 2 170 mm
Net weight	820 kg

Dimensions





Scope of delivery
› Key type drill chuck 1 - 16 mm / B18
› Arbor for drill chuck ISO 40 / B18
› Horizontal milling spindle Ø 22 mm /Ø 27 mm
› Adapter sleeve ISO 40 / MT 3
› Adapter sleeve ISO 40 / MT 2
› Tie rod vertical and horizontal
› T-slot nuts
› Push-out tool
› Operating tool

Accessories	Article no.
Milling table feed V250 for the Y axis	3352030
Factory assembly V250	9000489
Horizontal-vertical rotary indexing table RT 150	3356150
Horizontal-vertical rotary indexing table RT 200	3356200
Horizontal-vertical rotary indexing table RTE 165	3356365
Horizontal-vertical rotary indexing table RTU 165	3354165
Clamping tool assortment SPW 12, 58 parts	3352017
HSS cutter set TiN-coated **12-part**	3352250
HSS cutter set TiN-coated **20-part**	3352255
Workpiece support WPS-4	3354264
Precision machine shoe SEU1 (4 pieces are required)	3352985
Collet chuck set 18-part ISO 40	3352056
Copy and face milling cutter ISO 40 DIN 2080	3350216
Precision boring head ISO 40	3352128

More **accessories** and **information on accessories** from page 142
Coolant accessories from page 320

Machine vices	Article no.
FMS 125	3354125
FMSN 125	3354120
VMQ 100	3354181
MV3-75	3354175
MV3-125	3354178
DAS 100	3355500
ZAS 50	3354170

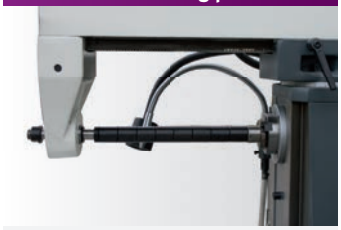
For **more information** see from page 139

Universal milling machine for horizontal and vertical milling work.
With digital 3-axis position display DPA 21

Facts that impress in terms of quality, performance and price

- Heavy, solid design using premium vibration-absorbing grey cast material
- Coolant system
- Solid and generously dimensioned cross table with precision surface finish with T-slots and adjustable wedge bars
- Right-/left-hand rotation
- Switch on automatic sleeve feed (drilling) via the sleeve feed lever or manual feed of the sleeve with the fine feed handwheel
- X axis can be moved optionally wit the hand wheel or the table feed unit
- Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

Horizontal milling position



› With arrester and collet for disc milling cutter
› Rotate through ± 180° for horizontal milling

Milling head



› Spindle head carrier moves to front and rear
› Throat of Y-axis spindle head carrier 200 - 550 mm
› Inclination range of the spindle head ± 45°

Digital position display DPA 21



› User-friendly membrane keyboard, splash water protected, sealed and dazzle free
› Greater operation accuracy
› Reduction of error quota
› Clearly-arranged keyboard layout

OPTI Operating panel

› Integrated switch panel
› Integrated digital position display
› Pivots and swivels



Fig.: MT 60

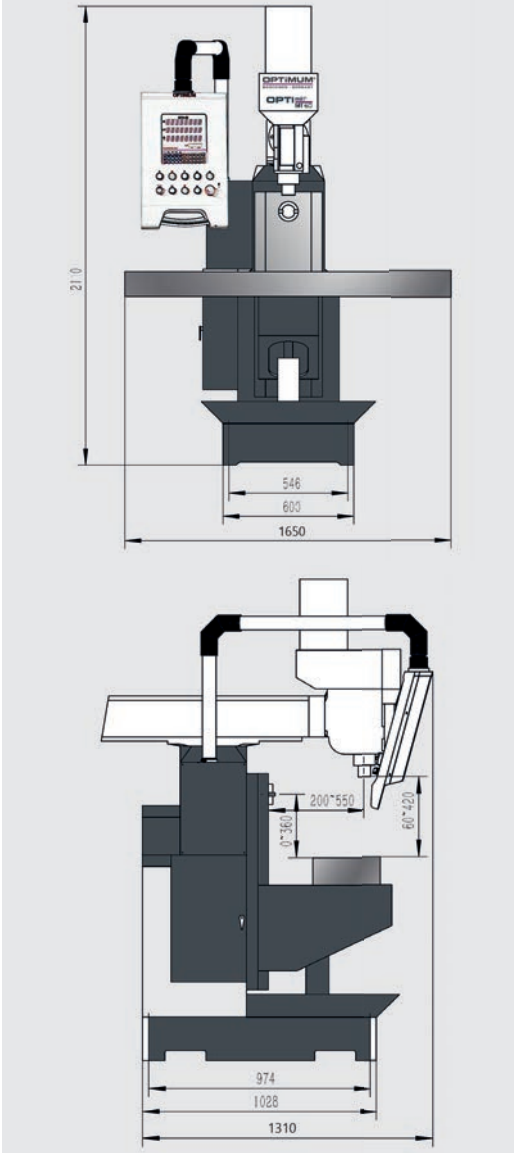
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Technical specifications, accessories and dimensions

DRO

Model	MT 60
Article no.	3336090
Power	
Electrical connection	400 V / 3 Ph ~50 Hz
Total rated value	5 kW
Horizontal and vertical drive motor	2.2 kW
Coolant pump motor	40 W
Drilling/milling capacity	
Drilling performance in steel (S235JR)	Ø 30 mm
Cont. drilling performance steel (S235JR)	Ø 25 mm
Cutter head size max.	Ø 100 mm
End mill size max.	Ø 25 mm
Spindle	
Spindle sleeve stroke	120 mm
Spindle sleeve diameter	Ø 90 mm
Spindle seat	ISO 40 DIN 2080
Clearance spindle to cross table	60 - 420 mm
Drawbar	M16
Vertical	
Spindle speeds	90 - 2 000 rpm
Gearbox stages	8 stages
Milling head pivot range	± 45°
Throat	220 - 550 mm
Automatic spindle sleeve feed	3 stages: 0.08 / 0.25 / 1 mm/rev
Horizontal	
Spindle speeds	40 - 1 300 rpm
Gearbox stages	9 stages
Throat	35 - 370 mm
Cross table	
Cross table x width	1 270 x 280 mm
Max. load of cross table	150 kg
T-slot size / spacing / count	14 mm / 50 mm / 4
Traverse paths	
X axis	manual 750 mm / automatic ~680 mm
Y axis manual	230 mm
Z axis manual	360 mm
Dimensions and weight	
Length x width x height	1 650 x 1 310 x 2 160 mm
Net weight	1 300 kg

Dimensions



Scope of delivery

- Key type drill chuck Ø 3 - 16 mm / B18
- Tapered shank for drill chuck ISO 40 / B18
- Adapter sleeve ISO 40 / MT 3
- Reduction sleeve MT 3 - MT 2
- Arbour with counter-bearing ISO40 Ø 22 mm
- Arbour with counter-bearing ISO40 Ø 27 mm
- Drawbar horizontal and vertical
- Operating tool

Accessories	Article no.
Milling table feed V 250 for the Y axis	3352030
Factory assembly V 250	9000489
Horizontal-vertical rotary indexing table RT 150	3356150
Horizontal-vertical rotary indexing table RT 200	3356200
Horizontal-vertical rotary indexing table RTE 165	3356365
Horizontal-vertical rotary indexing table RTU 165	3354165
Clamping tool assortment SPW 12, 58 parts	3352017
HSS cutter set TiN-coated 20-part	3352255
Precision machine shoe SEU1 (4 pieces are required)	3352985
Drill chuck holder (arbour) ISO 40/M16 / B16	3352070
Collet chuck set 18-part ISO 40	3352056
Copy and face milling cutter ISO 40 DIN 2080	3350216
Precision boring head ISO 40	3352128

More **accessories** and **information on accessories** from page 142

Machine vices	Article no.
FMS 125	3354125
FMSN 125	3354120
VMQ 100	3354181
MV3-75	3354175
MV3-125	3354178
DAS 100	3355500
ZAS 50	3354170

For **more information** see from page 139

MULTIFUNCTIONAL MILLING MACHINES



Visit our exhibition in Hallstadt/Bamberg

MILLING MACHINES



CRAFTSMEN

Multifunctional drilling-milling machines with mechanically infinitely variable drive. With digital 3-axis position display DPA 2000

Facts that impress in terms of quality, performance and price

- Solid design using premium cast meehanite
- High concentricity due to tapered roller bearings ≤ 0.01 mm measured in the spindle sleeve
- X and Y axis with adjustable 55° dovetail guide
- Y axis with adjustable flat guide
- Coolant system
- Digital position display DPA 2000
- Solid and generously dimensioned cross table with precision surface finish and adjustable stops
- ± 45° tiltable drilling-milling head
- 3-stage automatic spindle sleeve feed, 0.04 - 0.15 mm/rev
- Precision micro feed
- Adjustable drilling depth stop with millimetre scale, can be read off on front
- Right-/left-hand rotation
- Continuously variable speed control
- Milling spindle with precision bearing
- Mechanical spindle brake
- Central lubrication
- Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

Feed



› Motorised feed on X, Y and Z axes

Operating panel

› Integrated switch panel
› Integrated digital position display DPA 2000 with speed display
› Rotatable and tiltable

Milling head



› The spindle head can be swivelled forwards or backwards through 45° and swivelled through 90° to the right or left

Central lubrication



› Reduces maintenance overhead
› Reduces wear
› Improves effectiveness and machine service life



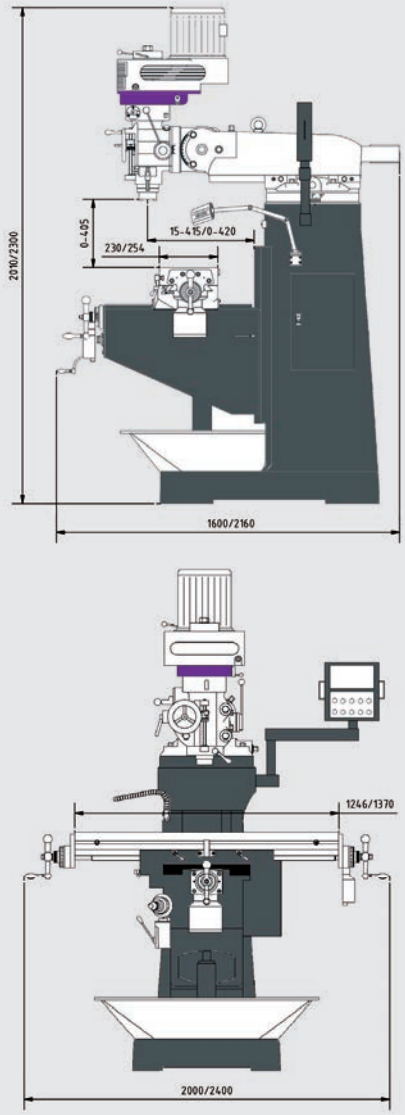
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Technical specifications, accessories and dimensions

DRO

Model	MF 2-B		MF 4-B	
Article no.	3348330		3348340	
Power				
Electrical connection	400 V / 3 Ph ~50 Hz			
Total rated value	3 kW			
Drive motor	2.2 kW			
Coolant pump motor	90 W			
Drilling/milling capacity				
Drilling performance in steel	Ø 24 mm			
Cont. drilling performance steel	Ø 20 mm			
Cutter head size max.	Ø 76 mm			
End mill size max.	Ø 25 mm			
Spindle				
Spindle sleeve stroke	127 mm			
Spindle sleeve diameter	86 mm			
Spindle seat	ISO 40 DIN 2080			
Clearance spindle to cross table	405 mm			
Throat	15 - 415 mm		0 - 420 mm	
Drilling/milling head				
Spindle speeds	60 - 4 200 rpm			
Gearbox stages	2 stages, mechanically infinitely variable			
Milling head traverse path	312 mm		470 mm	
Horizontal swivel range	± 90°			
Vertical pivot range	± 45°			
Automatic spindle sleeve feed	3 stages: 0.038 / 0.076 / 0.152 mm/rev			
Cross table				
Cross table x width	1 246 x 230 mm		1 370 x 254 mm	
Max. load of cross table	200 kg		300 kg	
T-slot size / spacing / count	16 mm / 63 mm / 3			
Traverse paths	manual	autom.	manual	autom.
X axis (Cross table)	690 mm	~610 mm	820 mm	~740 mm
Y axis (Cross table)	310 mm	~230 mm	410 mm	~330 mm
Z-axis (Cross table mount)	390 mm	~310 mm	400 mm	~320 mm
Dimensions and weight				
Length x width x height	2 000 x 1 600 x 2 010 mm		2 400 x 2 160 x 2 300 mm	
Net weight	1 000 kg		1 260 kg	

Dimensions



Accessories	Article no.
NEW **Parallel shim** set, 18-part	3536191
Horizontal-vertical rotary indexing table RT 150	3356150
Horizontal-vertical rotary indexing table RT 200	3356200
Horizontal-vertical rotary indexing table RTE 165	3356365
Horizontal-vertical rotary indexing table RTU 165	3354165
Clamping tool assortment SPW 14, 58 parts	3352018
HSS cutter set TiN-coated **12-part**	3352250
HSS cutter set TiN-coated **20-part**	3352255
Precision machine shoe SEU1 (4 pieces are required)	3352985
Precision quick-action drill chuck 1 - 10 mm; B16	3050610
Drill chuck holder (arbour) ISO 40/ M16 / B16	3352070
Collet chuck set 18-part ISO 40	3352056
Copy and face milling cutter ISO 40 DIN 2080	3350216
Precision boring head ISO 40	3352128
Compressed air tool clamping system ISO 40 (see page 150)	3352394
Factory assembly compressed air tool clamping system ISO 40 (Order without assembly: Adjustment work may occur)	9000490

More **accessories** and **information on accessories** from page 142

Scope of delivery

› Chip tray
› Toolbox with operating tools

Machine vices	Article no.
ZAS 50	3354170
HMS 125	3355127
FMS 125 (MF 2-B)	3354125
FMS 150 (MF 4-B)	3354150
FMSN 125 (MF 2-B)	3354120
FMSN 150 (MF 4-B)	3354130
VMQ 125 (MF 2-B)	3354182
VMQ 150 (MF 4-B)	3354183
MV3-75	3354175
MV3-125	3354178
DAS 100	3355500

For **more information** see from page 139

INDUSTRY

Multifunctional drilling-milling machines for professional deployment.

Electronically infinitely variable drive with frequency inverter "made in EU" and digital 3-axis position display DPA 21

Facts that impress in terms of quality, performance and price

- Heavy, solid design using premium cast meehanite
- High concentricity due to tapered roller bearings ≤ 0.01 mm measured in the spindle sleeve
- X and Z axis with adjustable dovetail guide
- Coolant system
- Digital position display DPA 21
- Solid and generously dimensioned cross table with precision surface finish and adjustable stops
- Spindle head: ± 45° up/down tiltable and ± 90° left/right tiltable.
- Automatic spindle sleeve feed
- Adjustable drilling depth stop with millimetre scale, can be read off on front
- Clockwise/anti-clockwise rotation for thread cutting
- Central lubrication
- Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

MF 2V:

- Y axis with adjustable dovetail guide

MF 4V:

- Y axis with flat guide
- Large Y axis travel of 400 mm
- Motorised table height adjustment (Z axis)

SIEMENS inverter SINAMICS G110M



Compressed air tool clamping system

› optional (Article No. 3352394)
› Short change times through single-handed operation
› Low air consumption

X axis



› Motorised table feed
› Continuously variable speed control
› Rapid traverse
› Right-/left-hand rotation

Dig. Position display DPA 21



› User-friendly membrane keyboard, splash water protected, sealed and dazzle free

OPTI Operating panel

› Integrated switch panel
› Integrated digital position display
› Swivels and pivots



YouTube

Follow this for the video presentation of our Optimum milling machine MF 4V

Fig.: MF 4V with optional compressed air changer

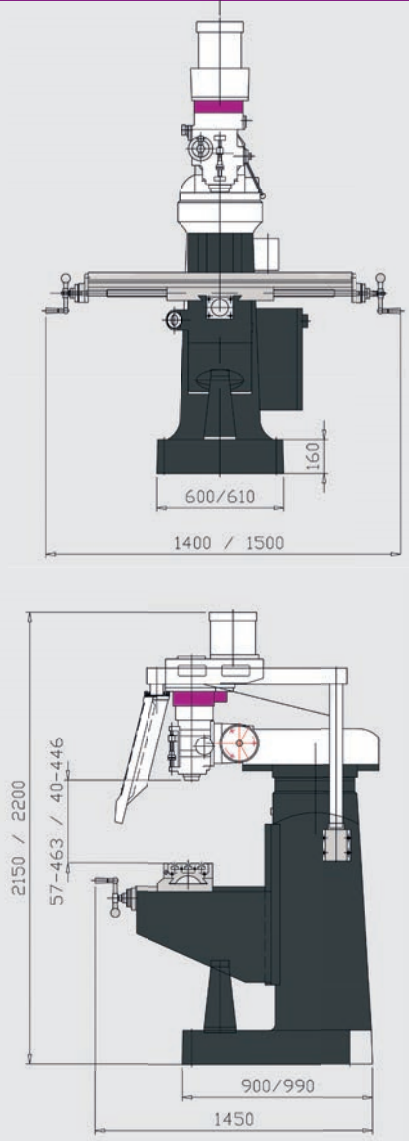
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Technical specifications, accessories and dimensions

DRO VARIO

Model	MF 2V	MF 4V
Article no.	3336030	3336050
Power		
Electrical connection	400 V / 3 Ph ~50 Hz	
Total rated value	2.2 kW	4.5 kW
Drive motor	1.5 kW	3 kW
Coolant pump motor	100 Watts	
Drilling/milling capacity		
Drilling performance in steel (S235JR)	Ø 24 mm	Ø 32 mm
Cont. drilling performance steel	Ø 20 mm	Ø 28 mm
Cutter head size max.	Ø 76 mm	Ø 100 mm
End mill size max.	Ø 18 mm	Ø 20 mm
Spindle		
Spindle sleeve stroke	127 mm	
Spindle seat	ISO 40 DIN 2080	
Clearance spindle to cross table	57 - 463 mm	40 - 446 mm
Throat	213 - 533 mm	200 - 680 mm
Drilling/milling head		
Spindle speeds	10 - 5 100 rpm	9 - 6 750 rpm
Gearbox stages	6 stages, Electronically controlled	8 stages, Electronically controlled
Tilt range / swivel range	± 45° / ± 90°	
Automatic spindle sleeve feed	3 stages: 0.038 / 0.076 / 0.152 mm/rev	
Cross table		
Cross table mounting surface L x W	1 245 x 230 mm	1 370 x 254 mm
Max. load of cross table	230 kg	275 kg
T-slot size / spacing / count	16 mm / 63 mm / 3	
Traverse paths		
X axis (cross table)	manual Ø 800 mm / automatic ~730 mm	manual Ø 900 mm / automatic ~800 mm
Y axis(cross table)	manual Ø 305 mm	manual Ø 320 mm
Y axis (milling head)	manual Ø 320 mm	manual Ø 480 mm
Z axis (cross table)	manual Ø 406 mm	manual Ø 400 mm / automatic ~365 mm
Dimensions and weight		
Length x width x height	1 400 x 1 450 x 2 150 mm	1 500 x 1 450 x 2 200 mm
Net weight	950 kg	1 150 kg

Dimensions



Accessories	Article no.
NEW **Parallel shim set,** 18-part	3536191
Horizontal-vertical rotary indexing table RT 150	3356150
Horizontal-vertical rotary indexing table RT 200	3356200
Horizontal-vertical rotary indexing table RTE 165	3356365
Clamping tool assortment SPW 14, 58 parts	3352018
HSS cutter set TiN-coated **12-part**	3352250
HSS cutter set TiN-coated **20-part**	3352255
Precision machine shoe SEU1 (4 pieces are required)	3352985
Drill chuck holder (arbour) ISO 40/ M16 / B16	3352070
Collet chuck set 18-part ISO 40	3352056
Copy and face milling cutter ISO 40 DIN 2080	3350216
Precision boring head ISO 40	3352128
Universal table feed V250S (see page 151)	3352025
Factory assembly universal table feed V250S	9000489
Compressed air tool clamping system ISO 40 (see page 150)	3352394
Factory assembly compressed air tool clamping system ISO 40 (Order without assembly: Adjustment work may occur)	9000490

More **accessories** and **information on accessories** from page 142

Scope of delivery

- Chip tray
- Operating tool

Machine vices	Article no.
ZAS 50	3354170
HMS 125	3355127
FMS 125 (MF 2-B)	3354125
FMS 150 (MF 4-B)	3354150
FMSN 125 (MF 2-B)	3354120
FMSN 150 (MF 4-B)	3354130
VMQ 125 (MF 2-B)	3354182
VMQ 150 (MF 4-B)	3354183
MV3-75	3354175
MV3-125	3354178
DAS 100	3355500
HCV 105	3536210
HCV 125	3536214

For **more information** see from page 139

** Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C2
Important information on operation of machines with frequency converters page 323

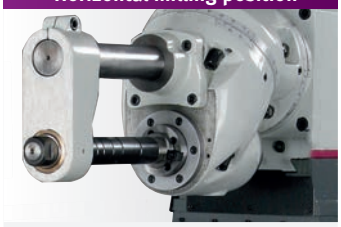
INDUSTRY

Versatile and easy retooling.
The universal milling machine for workshops

Facts that impress in terms of quality, performance and price

- Versatile range of applications
- Rugged machine construction
- Heavy, solid design using premium cast meehanite
- High running smoothness due to ground gear wheels running in an oil bath
- Rugged adjustable flat bed guide on the Y and Z axis
- Central lubrication
- Generously dimensioned, decoupled hand wheels with scales
- LED machine lamp
- Coolant system
- Digital position display DPA 2000
- Easy operation of the switching elements
- X and Y axis table feed
- Z axis with electrical table height adjustment
- Solid and generously dimensioned cross table with precision surface finish with re-adjustable wedge bars and adjustable stops
- Vertical and horizontal milling position
- Milling head with two axes of rotation, thus pivots and rotates to any spatial angle
- Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

Horizontal milling position



› With arrester and collet for disc milling cutter
› Adjustable plain bearing

Milling head



› The milling head has two rotary axes
› By turning the rear and the front part of the milling head, a certain angle can be set in the vertical position of the milling head to the feed axis of the cross table

Digital position display DPA 2000



› Clear reduction of manufacturing times
› Greater operation accuracy
› Reduction of error quota
› Clearly-arranged keyboard layout

OPTi Operating panel

› Integrated switch panel
› Integrated digital position display
› Rotates about its own axis



Fig.: MT 100

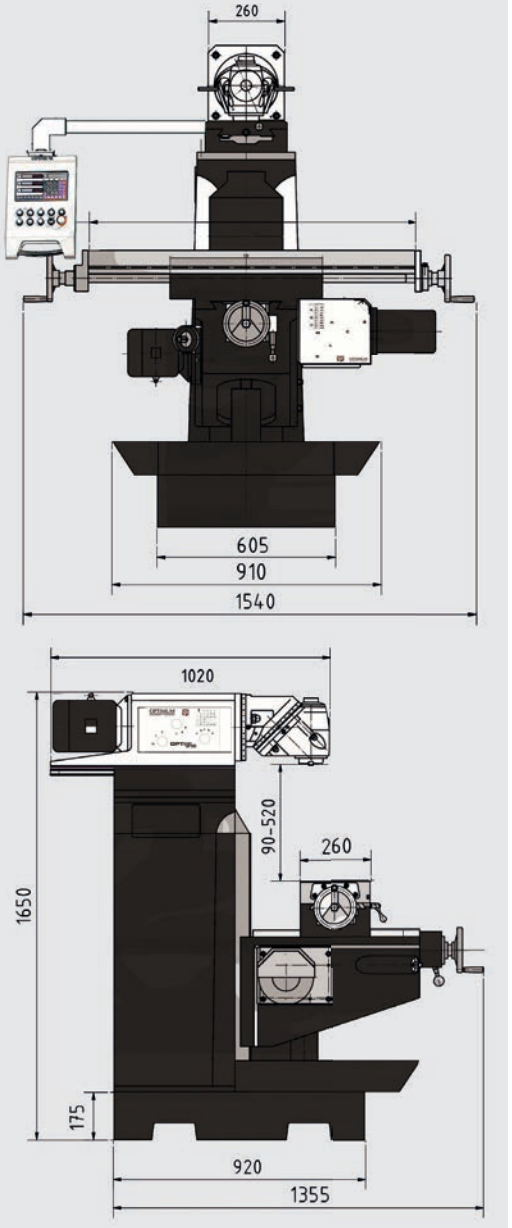
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DRO

Technical specifications, accessories and dimensions

Model	MT 100
Article no.	3336110
Power	
Electrical connection	400 V / 3 Ph ~50 Hz
Total rated value	3.36 kW
Drive motor	2.2 kW
Feed motor output X-Y axis	370 Watts
Feed motor output Z-axis	750 Watts
Coolant pump motor	40 Watts
Drilling/milling capacity	
Cutter head size max.	Ø 85 mm
End mill size max.	Ø 20 mm
Spindle	
Spindle seat	ISO 40 DIN 2080
Drawbar	M16
Clearance spindle to cross table	90 - 520 mm
Throat	60 - 500 mm
Vertical	
Spindle speeds	45 - 1 600 rpm
Gearbox stages	11 stages
Milling head forward tilt	90°
Rotation of milling head	360°
Cross table	
Cross table x width	1 120 x 260 mm
Max. load of cross table	350 kg
T-slot size / spacing / count	14 mm / 63 mm / 3
X axis (cross table)	
Travel	manual 600 mm / automatic ~480 mm
Table feed automatic	24 - 402 mm/min
Y axis(cross table)	
Travel	manual Ø 270 mm
Z axis (cross table)	
Travel	manual 380 mm / automatic ~340 mm
Table feed automatic	24 - 402 mm/min
Dimensions and weight	
Length x width x height	1 540 x 1 355 x 1 650 mm
Net weight	1 300 kg

Dimensions



Accessories	Article no.
NEW **Parallel shim set**, 18 parts	3536191
Horizontal-vertical rotary indexing table RT 200	3356200
Horizontal-vertical rotary indexing table RTE 165	3356365
Horizontal-vertical rotary indexing table RTU 165	3354165
Universal dividing head TA 125	3356125
HSS cutter set TiN-coated **12-part**	3352250
HSS cutter set TiN-coated **20-part**	3352255
Clamping tool assortment SPW 12, 58 parts	3352017
Precision machine shoe SEU1 (4 pieces are required)	3352985
Precision quick-action drill chuck 1 - 10 mm; B16	3050610
Drill chuck holder (arbour) ISO 40/ M16 / B16	3352070
Collet chuck set 18-part ISO 40	3352056
Precision boring head ISO 40	3352128
Copy and face milling cutter ISO 40 DIN 2080	3350216

More **accessories** and **information on accessories** from page 142
Coolant accessories from page 320

Scope of delivery
› Horizontal milling spindle Ø 32 mm
› Ø 32 mm milling arbor
› Operating tool

Machine vices	Article no.
HMS 125	3355127
FMS 150	3354150
FMSN 150	3354130
VMQ 125	3354182
MV3-75	3354175
MV3-125	3354178
DAS 100	3355500
HCV 105	3536210
HCV 125	3536214

For **more information** see from page 139

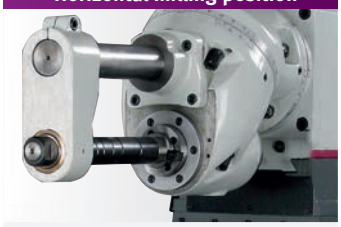
Versatile and easy retooling.

The universal milling machine with servo-motorised feed.

Facts that impress in terms of quality, performance and price

- Versatile range of applications
- Rugged machine construction
- Heavy, solid design using premium cast meehanite
- High running smoothness due to ground gear wheels running in an oil bath
- All guides hardened and adjustable using wedge bars
- Rugged flat bed guide on the Y and Z axis
- Central lubrication
- Generously dimensioned, decoupled hand wheels with scales
- LED machine lamp
- Coolant system
- Easy operation of the switching elements
- X, Y and Z axis table feed
- Feed system controllable by servomotor in fixed steps
- Solid and generously dimensioned cross table with precision surface finish with re-adjustable wedge bars and adjustable stops
- Vertical and horizontal milling position
- Milling head with two axes of rotation, thus pivots and rotates to any spatial angle
- Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

Horizontal milling position



› With arrester and collet for disc milling cutter
› Adjustable plain bearing

Milling head



› The milling head has two rotary axes
› By turning the rear and the front part of the milling head, a certain angle can be set in the vertical position of the milling head to the feed axis of the cross table.

Dig. Position display DPA 21



› User-friendly membrane keyboard
› Clear reduction of manufacturing times
› Greater operation accuracy
› Reduction of error quota

OPTI Operating panel

› Integrated switch panel
› Integrated digital position display
› Rotates about its own axis

YouTube
Follow this for the video presentation of our Optimum milling machine MT 130S



Fig.: MT 130S

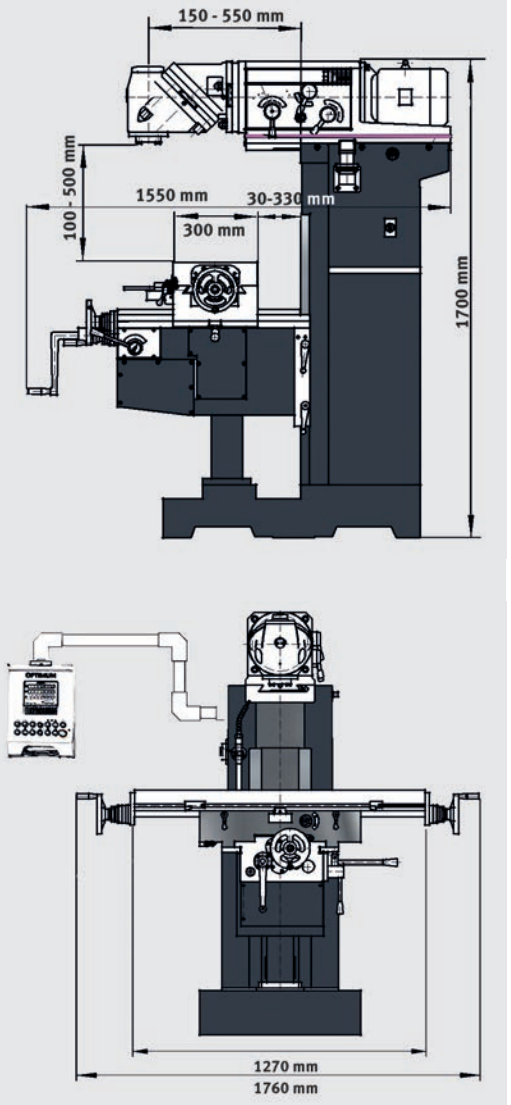
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DRO

Technical specifications, accessories and dimensions

Model	MT 130S
Article no.	3344110
Power	
Electrical connection	400 V / 3 Ph ~50 Hz
Total rated value	6 kW
Drive motor	3 kW
Feed motor output	3 kW
Coolant pump motor	60 Watts
Milling capacity	
Cutter head size max.	Ø 100 mm
End mill size max.	Ø 20 mm
Spindle	
Spindle seat	ISO 40 DIN 2080
Drawbar	M16
Clearance spindle to cross table	100 - 500 mm
Throat	150 - 550 mm
Vertical	
Spindle speeds	45 - 1 660 rpm
Gearbox stages	11 stages
Milling head forward tilt	90°
Rotation of milling head	360°
Cross table	
Cross table x width	1 270 x 300 mm
Max. load of cross table	200 kg
T-slot size / spacing / count	14 mm / 80 mm / 3
X axis (cross table)	
Travel	manual 720 mm / automatic ~650 mm
Table feed automatic	30 - 830 mm/min
Rapid traverse	1 335 mm/min
Y axis (cross table)	
Travel	manual 300 mm / automatic ~220 mm
Table feed automatic	30 - 830 mm/min
Rapid traverse	1 335 mm/min
Z axis (cross table)	
Travel	manual 400 mm / automatic ~320 mm
Table feed automatic	23 - 625 mm/min
Rapid traverse	1 000 mm/min
Dimensions and weight	
Length x width x height	1 760 x 1 550 x 1 700 mm
Net weight	1 450 kg

Dimensions



Accessories	Article no.
Horizontal-vertical rotary indexing table RT 150	3356150
Horizontal-vertical rotary indexing table RT 200	3356200
Horizontal-vertical rotary indexing table RTE 165	3356365
Horizontal-vertical rotary indexing table RTU 165	3354165
Clamping tool assortment SPW 12, 58 parts	3352017
HSS cutter set TiN-coated **12-part**	3352250
HSS cutter set TiN-coated **20-part**	3352255
Precision machine shoe SEU1 (4 pieces are required)	3352985
Precision quick-action drill chuck 1 - 10 mm; B16	3050610
Drill chuck holder (arbour) ISO 40/ M16 / B16	3352070
Collet chuck set 18-part ISO 40	3352056

More **accessories** and **information on accessories** from page 142
Coolant accessories from page 320

Scope of delivery

- ISO 40 tapered shank with counter-bearing for horizontal milling
- Ø 32 mm milling arbor
- Operating tool

Machine vices	Article no.
HMS 125	3355127
FMS 150	3354150
FMSN 150	3354130
VMQ 125	3354182
MV3-75	3354175
MV3-125	3354178
DAS 100	3355500
HCV 105	3536210
HCV 125	3536214

For **more information** see from page 139

** Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C2
Important information on operation of machines with frequency converters page 323

Versatile and easy retooling

the universal milling machine for workshops with digital 3-axis position display

Facts that impress in terms of quality, performance and price

- Versatile range of applications
- Rugged machine construction
- Heavy, solid design using premium cast meehanite
- High running smoothness due to ground gear wheels running in an oil bath
- All guides hardened and adjustable using wedge bars
- Rugged flat bed guide on the Y and Z axis
- Central lubrication
- Generously dimensioned, decoupled hand wheels with scales
- LED machine lamp
- Coolant system
- Easy operation of the switching elements
- X and Y axis table feed
- Z axis with electrical table height adjustment
- Solid and generously dimensioned cross table with precision surface finish with re-adjustable wedge bars and adjustable stops
- Vertical and horizontal milling position
- Milling head with two axes of rotation, thus pivots and rotates to any spatial angle
- Counterholder for horizontal milling mounted within easy reach on the rear of the machine
- Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out
- Feed motor with fixed speeds

Horizontal milling position



› With arrester and collet for disc milling cutter
› Adjustable plain bearing

Milling head



› The milling head has two rotary axes
› By turning the rear and the front part of the milling head, a certain angle can be set in the vertical position of the milling head to the feed axis of the cross table.

Digital position display DPA 2000



› Clear reduction of manufacturing times
› Greater operation accuracy
› Reduction of error quota
› Clearly-arranged keyboard layout

OPTI Operating panel

› Integrated switch panel
› Integrated digital position display
› Rotates about its own axis



Fig.: MT 200

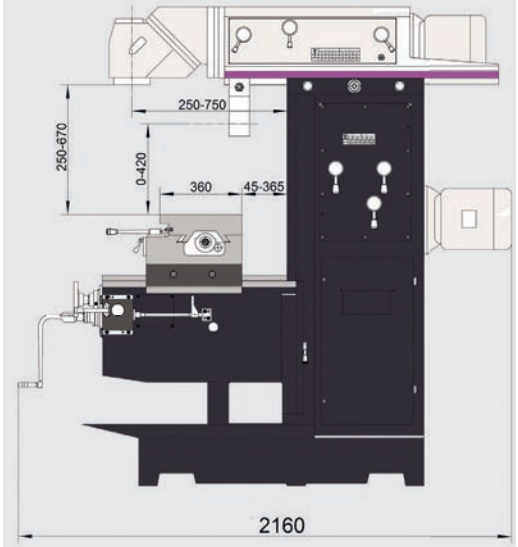
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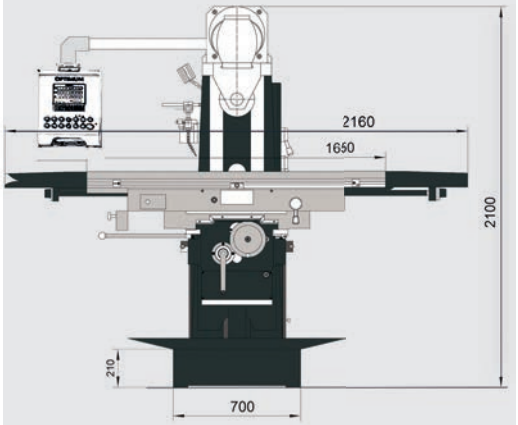
DRO

Technical specifications, accessories and dimensions

Model	MT 200
Article no.	3336120
Power	
Electrical connection	400 V / 3 Ph ~50 Hz
Total rated value	9.2 kW
Drive motor horizontal/vertical	4 kW
Feed motor output	1.1 kW
Coolant pump motor	90 Watts
Milling capacity	
Cutter head size max.	Ø 100 mm
End mill size max.	Ø 20 mm
Spindle	
Horizontal and vertical spindle seat	ISO 50 DIN 2080
Drawbar	M24
Vertical	
Clearance spindle to cross table	250 - 670 mm
Throat	250 - 750 mm
Spindle speeds	60 - 1 750 rpm
Gearbox stages	12 stages
Milling head forward tilt	90°
Rotation of milling head	360°
Horizontal	
Clearance spindle to cross table	0 - 400 mm
Spindle speeds	58 - 1 800 rpm
Gearbox stages	12 stages
Cross table	
Cross table x width	1 650 x 360 mm
Max. load of cross table	450 kg
T-slot size / spacing / count	14 mm / 95 mm / 3
Rotating cross table	35°
X axis (cross table)	
Travel	manual 1 290 mm / autom. ~1 210 mm
Table feed automatic	22 - 380 mm/min.
Table feed, stages	8 stages
Table feed rapid motion	1 290 mm/min.
Y axis(cross table)	
Cross table travel	manual 280 mm / automatic ~200 mm
Table feed automatic	20 - 380 mm/min.
Table feed, stages	8 stages
Table feed rapid motion	1 290 mm/min
Z axis (cross table)	
Travel	manual 400 mm / automatic ~320 mm
Table feed automatic	7 - 127 mm/min.
Table feed, stages	8 stages
Table feed rapid motion	342 mm/min.
Dimensions and weight	
Length x width x height	2 160 x 2 160 x 2 100 mm
Net weight	2 700 kg

Dimensions





Scope of delivery

- Horizontal milling spindle ISO 50 Ø 32 mm
- Horizontal milling spindle ISO 50 Ø 27 mm
- Holder for cutter head ISO 50 Ø 32 mm
- Collet chuck ISO 50 Ø 4 - Ø 26 mm
- Operating tool

Accessories	Article no.
NEW **Parallel shim** set, 18 parts	3536191
Clamping tool assortment SPW 12, 58 parts	3352017
Hold-down clamp set of 2 14 mm/M 12	3352031
Precision machine shoe SEU1 (4 pieces are required)	3352985
Morse cone ISO50 B18 DIN2080	3352067
More **accessories** and **information on accessories** from page 142	

Machine vices	Article no.
HMS 125	3355127
FMS 150	3354150
FMSN 150	3354130
VMQ 125	3354182
MV3-75	3354175
MV3-125	3354178
DAS 100	3355500
HCV 105	3536210
HCV 125	3536214
For **more information** see from page 139	

INDUSTRY

Versatile and easy retooling

the universal milling machine for workshops with digital 3-axis position display

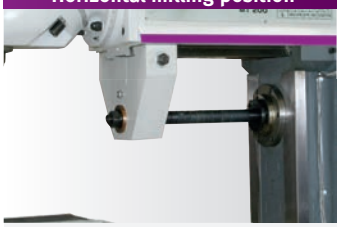
Facts that impress in terms of quality, performance and price

- Versatile range of applications
- Rugged machine construction
- Heavy, solid design using premium cast meehanite
- High running smoothness due to ground gear wheels running in an oil bath
- All guides hardened and adjustable using wedge bars
- Rugged flat bed guide on the Y and Z axis
- Central lubrication
- Generously dimensioned, decoupled hand wheels with scales
- LED machine lamp
- Decoupled hand wheels
- Coolant system
- Digital position display DPA 21
- Easy operation of the switching elements
- Table feed X, Y and Z axis
- Feed system controllable by servomotor in fixed steps
- Solid and generously dimensioned cross table with precision surface finish with re-adjustable wedge bars and adjustable stops
- Horizontal milling position
- Horizontal milling counterholder, attached to rear of machine for easy access
- Milling head with two axes of rotation, thus pivots and rotates to any spatial angle
- Height-adjustable protective screen with microswitch for best possible user protection against chips and parts being flung out

OPTI Operating panel

› Integrated switch panel
› Integrated digital position display
› Rotates about its own axis

Horizontal milling position



› With arrester and collet for disc milling cutter
› Adjustable plain bearing

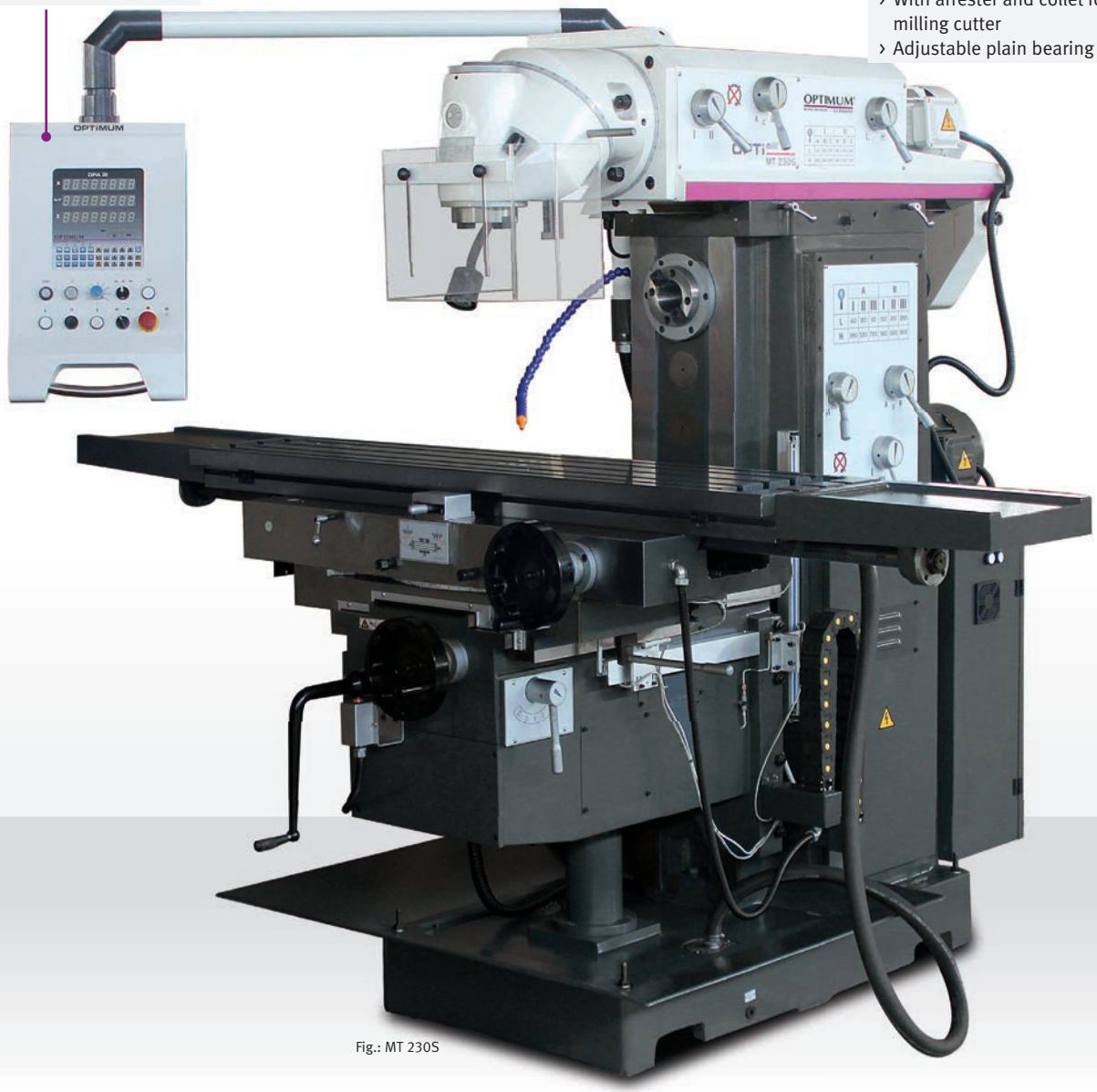


Fig.: MT 230S

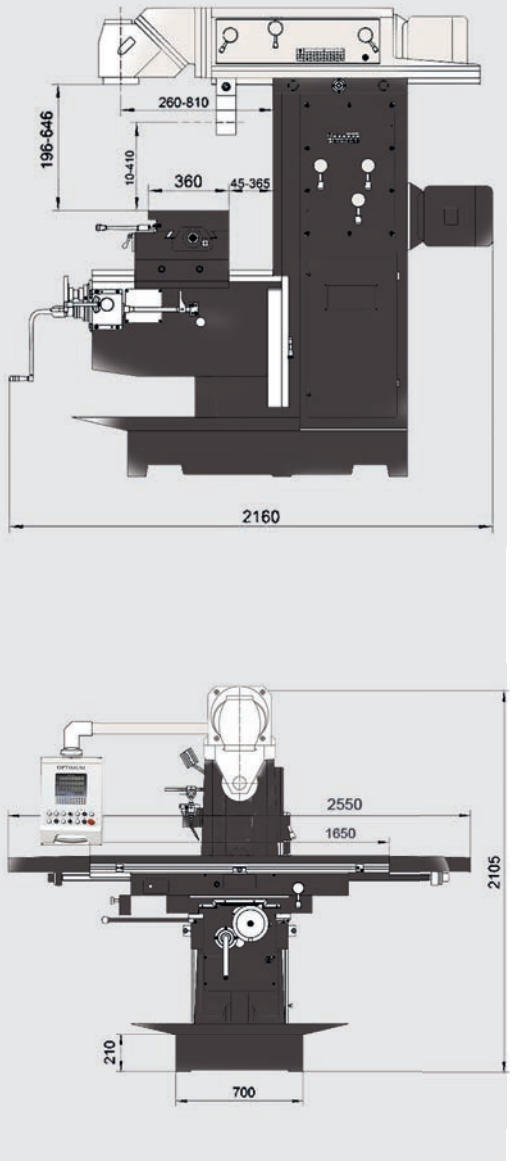
*OPTImill® is a registered brand of Optimum Maschinen Germany GmbH and exclusively used for milling machines

Technical specifications, accessories and dimensions

DRO

Model	MT 230S
Article no.	3344125
Power	
Electrical connection	400 V / 3 Ph ~50 Hz
Total rated value	12 kW
Vertical drive motor	4 kW
Horizontal drive motor	5.5 kW
Coolant pump motor	90 Watts
Milling capacity	
Cutter head size max.	Ø 160 mm
End mill size max.	Ø 25 mm
Spindle	
Spindle seat	ISO 50 DIN 2080
Drawbar	M24
Vertical	
Clearance spindle to cross table	190 - 590 mm
Throat	260 - 810 mm
Spindle speeds	60 - 1 750 rpm
Gearbox stages	12 stages
Milling head forward tilt	90°
Rotation of milling head	360°
Horizontal	
Clearance spindle to cross table	10 - 410 mm
Spindle speeds	60 - 1 800 rpm
Gearbox stages	12 stages
Cross table	
Table length x width	1 650 x 360 mm
Max. load of cross table	400 kg
T-slot size / amount / distance	18 mm / 3 / 80 mm
Rotating cross table	35°
X axis (cross table)	
Travel	manual 1 300 mm / autom. ~1 210 mm
Table feed automatic	30 - 750 mm/min.
Table feed rapid motion	1 200 mm/min
Y axis (cross table)	
Travel	manual 300 mm / automatic ~220 mm
Table feed automatic	20 - 500 mm/min.
Table feed rapid motion	800 mm/min
Z axis (cross table)	
Travel	manual 400 mm / automatic ~320 mm
Table feed automatic	15 - 375 mm/min.
Table feed rapid motion	600 mm/min
Dimensions and weight	
Length x width x height	2 550 x 2 160 x 2 005 mm
Net weight	2 800 kg

Dimensions



Scope of delivery

- Horizontal milling spindle ISO 50 Ø 22 mm
- Horizontal milling spindle ISO 50 Ø 27 mm
- Adapter sleeve ISO 50 (7:24) / MT4
- Drawbar horizontal and vertical M24
- Operating tool

Accessories	Article no.
NEW **Parallel shim** set, 18-part	3536191
Clamping tool assortment SPW 16, 58 parts	3352017
Collet chuck set ISO 50/ER32	3352065
Precision machine shoe SEU1 (4 pieces are required)	3352985
Hold-down clamp set of 2 18 mm/M 16	3352032
Morse cone ISO50 B18 DIN2080	3352067
Precision boring head ISO 50	3352129

More **accessories** and **information on accessories** from page 142

Machine vices	Article no.
FMS 200	3354200
HMS 125	3355127
MV3-75	3354175
MV3-125	3354178
ZAS 50	3354170
DAS 100	3355500
HCV 105	3536210
HCV 125	3536214

For **more information** see from page 139

** Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C2
Important information on operation of machines with frequency converters page 323

Tool milling machines with digital 3-axis position display DP 700 from NEWALL. With inverter drive on feed axes controllable via control panel.

Facts that impress in terms of quality, performance and price

- Versatile range of applications
- Excellent damping characteristics and stability of machine mobile chassis
- All guides hardened, precision ground, and adjustable using wedge bars
- Automatic feed on X, Y and Z axis, continuously adjustable via an electronic joystick on the control panel
- Electrical feed limit shut-off
- Central and clearly arranged control panel with integrated digital position and speed display
- Solid cross table, generously dimensioned with precision surface finish
- Coolant system
- Generously dimensioned hand wheels with scales
- Machine lamp
- Smooth action

MZ 2S:

- Manual centralised lubrication system

MZ 4S:

- Automatic centralised lubrication

Control cabinet



› With components from SIEMENS

Follow this for the video presentation of our Optimum milling machine MZ 4S

Cross table housing

› Supplied pre-assembled on the machine
› Protection against chips and splash water
› Folds away to allow optimal access to the workspace



Fig.: MZ4S

OPTI Operating panel



› Pivotable, central and clearly-arranged overview
› Automatic feed on X, Y and Z axis, continuously adjustable via an electronic joystick on the control panel
› Operating panel Integrated digital position display DP 700

Ball screw



› on all axes
› Higher precision
› Lower reversing play



Fig.: MZ 4S

*OPTImill® is a registered brand of Optimum Maschinen Germany GmbH and exclusively used for milling machines

Technical data and accessories

DRO

Model	MZ 2S	MZ 4S
Article no.	3346235	3346245
Power		
Electrical connection	400 V / 3 Ph ~50 Hz	
Total rated value	4 kW	5.4 kW
Drive motor	2.2 kW	3.75 kW
Motor rapid motion/feed	0.375 kW	0.75 kW
Coolant pump motor	95 W	
Drilling/milling capacity		
Drilling performance in steel (S235JR)	Ø 30 mm	Ø 32 mm
Continuous drilling performance in steel (S235JR)	Ø 26 mm	Ø 28 mm
Cutter head size max.	Ø 100 mm	Ø 100 mm
End mill size max.	Ø 25 mm	Ø 25 mm
Spindle		
Spindle sleeve stroke	120 mm	
Spindle seat	ISO 40 DIN 2080	
Drawbar	M16	
Speed range		
Spindle speeds	50 - 1 890 rpm	30 - 2 250 rpm
Gearbox stages	12 stages	18 stages
Speed range after optional Vario conversion with SIEMENS inverter (to page 136)		
spindle speeds	-	48 - 3 045 rpm
Gearbox stages	-	2 x 6 stages
Vertical		
Vertical rotation area	± 90°	
Distance between spindle nose - cross table	75 - 410 mm	70 - 400 mm
max. throat	100 mm	185 mm
Vertical cross table x width	830 x 250 mm	1 200 x 250 mm
T-slot size / spacing / count	14 mm / 63 mm / 2	14 mm / 63 mm / 3
Horizontal		
Clearance horizontal spindle to cross table	70 - 400 mm	130 - 390 mm
Horizontal cross table x width	750 x 320 mm	900 x 500 mm
Maximum payload	285 kg	360 kg
T-slot size / spacing / count	14 mm / 63 mm / 5	14 mm / 63 mm / 7
Travel during feed		
X axis (Cross table)	manual 400 mm / automatic ~310 mm	manual 600 mm / automatic ~510 mm
Y axis (milling head)	manual 200 mm / automatic ~160 mm	manual 480 mm / automatic ~440 mm
Z axis (Cross table)	manual 335 mm / automatic ~295 mm	manual 390 mm / automatic ~345 mm
Drive speed feed/rapid motion	50 - 450 rpm / 700 rpm	50 - 450 rpm / 780 rpm
Feed speed	10 - 600 mm/min	10 - 600 mm/min
Dimensions and weight		
Length x width x height	1 239 x 1 168 x 1 900 mm	1 610 x 1 825 x 1 885 mm
Net weight	1 400 kg	1 890 kg

Accessories	Article no.
Hydraulic clamping device DIN 69871ex works	3346226
Compressed air tool changer incl. mounting adapter and assembly costs	3346225
Machine base vibration damper SE 55 (4 pieces required)	3352981
More **accessories** and **information on accessories** from page 142	

Angled table	3346221
› Table length x width 375 x 660 mm . Maximum payload 150 kg	
› T-slot size / amount / distance: 12 mm / 8 / 45 mm	
› Dimensions 895 x 433 x 354 mm	
› Weight 140 kg	



Vario conversion can be found on page 136



Scope of delivery
› Adapter ISO 40 / MT 3
› MT 1 and MT 2 shank
› Arbour ISO 40 with counter-bearing 27 mm outer diameter
› Operating tool

Note: The machines comply with (frequency converter) the DIN EN 55011 standard: class C3
Important information on operation of machines with frequency converters page 323

NEW

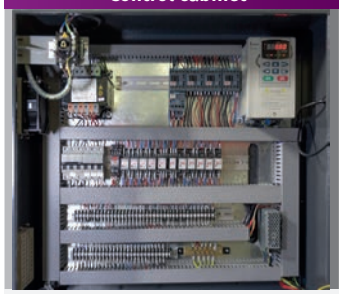
Vario conversion
for MZ 4S milling machine

Vario drive with SIEMENS Sinamics G 110M inverter drive
› With integrated EMC filter
› Low-noise motor operation thanks to high pulse frequency
› Fast current limitation (FCL) for trouble-free operation in case of sudden load peaks





Control cabinet



› Clearly-arranged

Vario conversion for MZ 4S milling machine	3491120
› with SIEMENS G 110M inverter	
› 4 kW motor power	
› Speeds 48 - 3 045 rpm 6 gear stages	