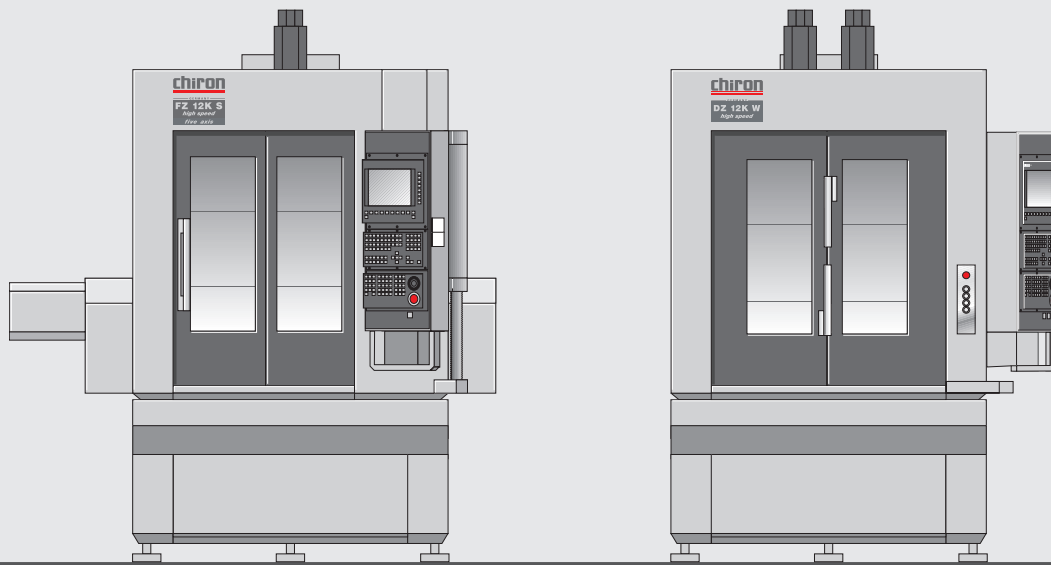


Technical data



12 Series

Quick, compact, single and multi-spindle
precision machining centers

Machining center with fixed table

Technical data	FZ 12K S	FZ 12K S five axis	DZ 12K S MAGNUM five axis	FZ 12K S with swivel head
Drilling capacity in St 60 with insert drill	Ø 25 mm	Ø 25 mm	2 x Ø 25 mm	Ø 18 mm
Thread cutting	M 20	M 20	2 x M 20	M 16
Milling capacity in St 60	150 cm ³ /min	150 cm ³ /min	2 x 150 cm ³ /min	80 cm ³ /min
Tool places	24	48	2 x 16	24
Tool taper	HSK-A 50 / HSK-A 63	HSK-A 50 / HSK-A 63	HSK-A 63	HSK-A50 / HSK-A 63
Max. tool diameter	60 / 85 mm	60 / 85 mm	85 mm	60 / 85 mm
If adjacent places are free	125 mm	125 mm	125 mm	125 mm
Max. tool length	250 mm	250 mm	240 mm	250 mm
Max. tool weight	4 (5) kg	4 (5) kg	5 (8) kg	4 (5) kg
Tool change time approx.	0.9 s	0.6 s	0.9 s	0.6 s
Chip-to-chip time approx.	2.4 s	2.1 s	2.4 s	2.1 s
Infinitely variable speed range up to	12,000 rpm	15,000 rpm	15,000 rpm	12,000 rpm
Spindle drive Siemens/Fanuc	7,4 kW	40 / 11 kW	2 x 40 / 11 kW	36 kW
Max. torque	23 Nm	45 Nm	2 x 45 Nm	29 Nm
Max. thread cutting speed	8,000 rpm	8,000 rpm	8,000 rpm	8,000 rpm
Spindle bearing Ø - front	60 mm	60 mm	60 mm	50 mm
Tool clamping	11,000 N	11,000 N	11,000 N	11,000 N
Range from spindle to cover	285 - 605 mm	285 - 605 mm	285 - 605 mm	280 - 600 mm
Clearance from spindle face to table surface	240 - 600 mm	200 - 560 mm	200 - 560 mm	240 - 600 mm
Travel X / Y / Z axis	550 / 320 / 360 mm	550 / 400 / 360 mm	550 / 400 / 360 mm	550 / 320 / 360 mm
Feed force X / Y / Z axis	3,000 / 3,000 / 4,000 N	3,000 / 3,000 / 4,000 N	3,000 / 3,000 / 4,000 N	3,000 / 3,000 / 4,000 N
Rapid feed rate X / Y / Z axis	40/ 40 / 60 m/min	75 / 75 / 75 m/min	75 / 75 / 75 m/min	75 / 75 / 75 m/min
Acceleration X / Y / Z axis	7 / 7 / 10 m/s ²	10 / 15 / 20 m/s ²	10 / 10 / 15 m/s ²	10 / 12 / 15 m/s ²
Swivel head				
NC positioning axis	–	–	–	-10° up to +100°
Resolution	–	–	–	0.001°
Repeatability	–	–	–	± 2.5°
Drive torque	–	–	–	1,600 Nm
Fixed table				
Fixed table, clamping surface	820 mm x 440 mm	–	–	820 mm x 440 mm
T slots	2 x 18 H12	–	–	2 x 18 H12
Aligning groove and center hole	1 x 18 H8	–	–	1 x 18 H8
Table load capacity	500 kg	–	–	500 kg
2-axis NC tilt rotary table				
NC-tilting rotary table	–	± 120°	± 120°	–
Face plate diameter	–	280 mm	2 x 245 mm	–
Dowel and bolt hole pattern	–	M 16 x Ø 15 H7 x 50 mm	M 16 x Ø 15 H7 x 50 mm	–
Max. transport load	–	320 / 100 kg	2 x 200 kg	–
Speed 4th/5th axis	–	50/200 rpm // 50 / 1,000 rpm	200 rpm // 1,000 rpm	–
Direkt path measuring system on 4th and 5th axis	–	± 5° / ± 5°	± 5° / ± 5°	–
Media connectors at the adapter face plate	–	6	2 x 6	–
Cooling unit, tank capacity	100 l	100 l	100 l	100 l
Total power requirement, approx.	13 kVA	37 kVA	40 kVA	37 kVA
Machine weight approx.	6.5 t	6.5 t	6.8 t	6.5 t
Floor space approx.	5.0 m ²	6.0 m ²	6.0 m ²	5.0 m ²
Pneumatic connection	6 bar	6 bar	6 bar	6 bar
Technology package "Milling from bar"				
NC rotary table, speed max.	–	–	–	45 rpm
autom. collet chuck clamping up to	–	–	–	Ø 100 mm
NC slide for bar feed, max. stroke	–	–	–	400 mm
NC indexing device with clamping vise for processing	–	–	–	6th side
Technology package "Turning from bar"				
Turning spindle with collet chuck holder	–	–	–	14.1 kW
Infinitely variable speed range up to	–	–	–	4,500 rpm
Max. torque	–	–	–	90 Nm
Max. bar passage	–	–	–	Ø 65 mm
NC slide for bar feed, max. stroke	–	–	–	400 mm
NC indexing device with clamping vise for processing	–	–	–	6th side

Options	FZ 12K S	FZ 12K S five axis	DZ 12K S MAGNUM five axis	FZ 12K S with swivel head
High Speed Package				
Increased speed range up to	15,000 rpm	–	–	–
Tool taper	HSK-A 50	–	–	–
Max. torque Siemens / Fanuc	45 Nm	–	–	–
Spindle drive Siemens / Fanuc	40 / 11 kW	–	–	–
Spindle ramp time to max. speed, approx.	0.6 s	–	–	–
Tool change time approx.	0.6 s	–	–	–
Chip-to-chip time approx.	2.1 s	–	–	–
Rapid feed rate X / Y / Z axis	75 / 75 / 75 m / min	–	–	–
Acceleration X / Y / Z axis	10 / 15 / 20 m/s ²			
High Speed Plus Package				
Increased speed range up to	24,000/30,000/40,000 rpm	24,000/30,000/40,000 rpm	24,000 rpm	24,000 rpm
Tool taper	HSK-A 50/HSK-A 40/HSK-E 40	HSK-A 50/HSK-A 40/HSK-E 40	2 x HSK-A 50	HSK-A 50
Max. torque	29 / 11 / 9 Nm	29 / 11 / 9 Nm	2 x 29 Nm	29 Nm
Spindle drive	36 / 9 / 18 kW	36 / 9 / 18 kW	2 x 36 kW	36 kW
Spindle ramp time to max. speed, approx.	0.7 s / 1.9 s / –	0.7 s / 1.9 s / –	0.7 s	0.7 s
Further Options				
Travel Y axis	400 mm	–	–	360 mm
Tool places	48 / 64 / 105 / 177	64 / 105 / 177	je 2 x 24 / 32 / 51 / 87	48 / 64 / 105 / 177
Coolant through the spindle up to 150 bar	•	•	•	•
Chip conveyor, ejection height 490 / 1,050 mm	•	•	•	•
Coolant system	•	•	•	•
NC rotary table	•	–	–	•
NC rotary table with basic device, free bridge dimension 620 mm	•	–	–	–
2-spindle, 2-axis NC rotary table for 5-axis machining	•	•	•	–
Zero point clamping system integrated in adapter face plate	–	•	•	–
Face plate	–	Ø 450 mm	–	–
Tool life monitoring	•	•	•	•
CHIRON Thermo Control	•	•	•	•
CHIRON Laser Control	•	•	•	•
Tool breakage monitoring	•	•	•	•
Stationary 3D probing system	•	•	•	•
Probes	•	•	•	•
Direct path measuring system	•	standard	standard	•
Mist collection unit for work area	•	•	•	•
Connection for central mist collection	•	•	•	•
Oil package	•	•	•	•
Machining with minimal lubrication	•	•	•	•
Pneumatic connection for clamping devices	•	•	•	•
Hydraulic unit and connection for clamping devices	•	•	•	•
Automatic doors	•	•	•	•
Handwheel	•	•	•	•
Multi spindle head adapter	•	•	•	–
Central lubrication	•	•	•	•
Robot interface	•	•	•	•
MPC (Multi Pallet Changer)	•	•	•	•
Flexcell Uno / Duo	•	•	•	•

Machining center with workpiece changer

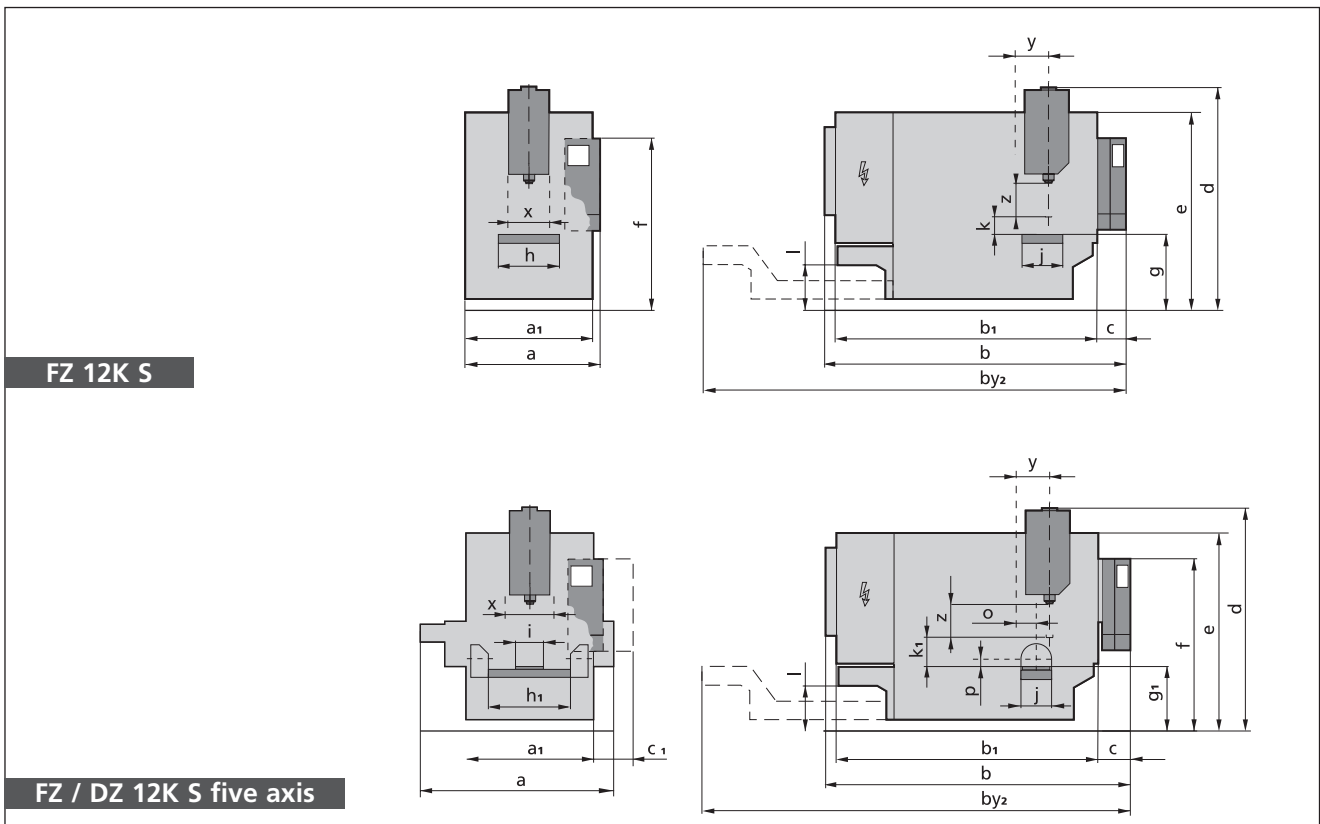
Technical data	FZ 12K W	DZ 12K W	TZ 12K W	FZ 12 W MAGNUM
Drilling capacity in St 60 with inserted drill	Ø 25 mm	2 x Ø 25 mm	4 x Ø 12 mm	Ø 25 mm
Thread cutting	M 20	2 x M 20	4 x M 8	M 20
Milling capacity in St 60	150 cm ³ /min	2 x 150 cm ³ /min	4 x 30 cm ³ /min	150 cm ³ /min
Tool places	24	2 x 12	4 x 8	20
Tool taper	HSK-A 50 / HSK-A 63	HSK-A 50 / HSK-A 63	HSK-A 40	ISO/CAT 40 / HSK-A 63
Max. tool diameter	60 / 85 mm	60 / 85 mm	50 mm	65 mm
If adjacent places are free	125 mm	125 mm	50 mm	150 mm
Max. tool length	250 mm	250 mm	250 mm	variable
Max. tool weight	4 (5) kg	4 (5) kg	3.0 kg	2.5 (5) kg
Tool change time approx.	0.9 s	1.0 s	3.6 s	0.9 s
Chip-to-chip time approx.	2.4 s	2.7 s	5.9 s	2.4 s
Infinitely variable speed range up to	12,000 rpm	12,000 rpm	15,000 rpm	10,500 rpm
Spindle drive	7.4 kW	2 x 7.4 kW	4 x 14 kW	9.5 kW
Max. torque	23 Nm	2 x 23 Nm	4 x 15 Nm	60 Nm
Max. speed thread cutting	8,000 rpm	8,000 rpm	8,000 rpm	5,000 rpm
Spindle bearing Ø - front	60 mm	60 mm	40 mm	70 mm
Tool clamping	11,000 N	11,000 N	8,600 N	mechanically locked
Clearance from spindle face to table surface	240 - 600 mm	240 - 600 mm	240 - 600 mm	190 - 615 mm
Travel X / Y / Z axis	550 / 320 / 360 mm	550 / 320 / 360 mm	550 / 320 / 360 mm	550 / 300 / 425 mm
Feed force X / Y / Z axis	3,000 / 3,000 / 4,000 N	3,000 / 3,000 / 4,000 N	3,000 / 3,000 / 4,000 N	3,000 / 3,000 / 4,000 N
Rapid feed rate X / Y / Z axis up to	40/ 40 / 60 m/min	40/ 40 / 60 m/min	40/ 40 / 60 m/min	40/ 40 / 40 m/min
Acceleration X / Y / Z axis	7 / 7 / 10 m/s ²	7 / 7 / 10 m/s ²	7 / 7 / 10 m/s ²	5 / 5 / 5 m/s ²
Workpiece changing device with speed control	0° / 180°	0° / 180°	0° / 180°	0° / 180°
Clamping surface	2 x 660 mm x 350 mm	2 x 660 mm x 350 mm	2 x 660 mm x 350 mm	2 x 660 mm x 350 mm
Table hole pattern	M 16 x Ø 15 H7 x 50 mm	M 16 x Ø 15 H7 x 50 mm	M 16 x Ø 15 H7 x 50 mm	M 16 x Ø 15 H7 x 50 mm
Workpiece changing time approx.	2.,0 s	2.0 s	2.0 s	2.9 s
Max. table load capacity per table side	400 kg	400 kg	400 kg	100 (150) kg
Chip conveyor, ejection height	490 mm	490 mm	490 mm	–
Cooling unit, tank capacity	100 l	500 l	500 l	125 l
Total power requirement, approx.	13 kVA	16 kVA	37 kVA	10 kVA
Machine weight approx.	7.5 t	7.7 t	7.7 t	3.5 t
Floor space	6.0 m ²	6.0 m ²	6.7 m ²	4.2 m ²
Air connection	6 bar	6 bar	6 bar	6 bar

Options	FZ 12K W	DZ 12K W	TZ 12K W	FZ 12 W MAGNUM
High Speed Package				
Increased speed range up to	15,000 rpm	15,000 rpm	18,000 rpm	–
Tool taper	HSK-A 50 / HSK-A 63	HSK-A 50 / HSK-A 63	HSK-A 40	–
Max. torque Siemens / Fanuc	45 Nm	45 Nm	4 x 15 Nm	–
Spindle drive Siemens / Fanuc	40 / 11 kW	2 x 40 / 11 kW	4 x 14 kW	–
Tool change time approx.	0.6 s	0.7 s	3.2 s	–
Chip-to-chip time approx.	2.1 s	2.4 s	5.5 s	–
Rapid feed rate X / Y / Z axis	75 / 75 / 75 m/min	75 / 75 / 75 m/min	75 / 75 / 60 m/min	–
Acceleration X / Y / Z axis	10 / 15 / 20 m/s ²	10 / 15 / 15 m/s ²	7 / 10 / 15 m/s ²	–
High Speed Plus Package				
Increased speed range up to	24,000 rpm / 30,000 rpm	24,000 rpm	36,000 rpm	–
Tool taper	HSK-A 50 / HSK-A 40	HSK-A 50	HSK-A 32	–
Max. torque	29 Nm / 11 Nm	2 x 29 Nm	4 x 15 Nm	–
Spindle drive	36 kW / 9 kW	2 x 36 kW	4 x 14 kW	–
Spindle ramp up time to max. speed approx.	1.9 s	0.7 s	1.6 s	–
Optional spindle drive				
Drilling capacity in St 60	–	–	–	36 Nm
Thread cutting	–	–	–	M 27
Milling capacity in St 60	–	–	–	250 cm ³ /min
Increased spindle drive	–	–	–	18 kW
Speed range up to	–	–	–	10,500 rpm
Max. torque	–	–	–	140 Nm
Coolant through the spindle	–	–	–	20 bar
Further Options				
Travel Y axis	400 mm	400 mm	400 mm	–
Tool places	32 / 48 / 64 / 105 / 177	2 x 24 / 2 x 32 / 2 x 51 / 2 x 87	4 x 8	–
Max. tool Ø	125 mm	125 mm	–	–
Coolant through the spindle up to 150 bar	•	•	•	–
Chip conveyor, ejection height	1,050 mm	1,050 mm	1,050 mm	850 / 1,050 mm
Chip conveyor with coolant system	–	–	–	•
Coolant system	•	•	•	–
NC rotary table	•	•	•	•
NC rotary table with basic device	•	•	•	•
Workpiece changer with integrated NC rotary table	•	•	•	–
Workpiece changer with two integrated trunions	•	•	•	–
Workpiece changer with two integrated 1-spindle-2axis tables	•	•	–	–
Workpiece changer with two integrated 2-spindle-2axis tables	•	•	–	–
Tool life monitoring	•	•	•	•
CHIRON Thermo Control	•	•	•	•
CHIRON Laser Control	•	•	•	•
Stationary 3D probing system	•	•	•	•
Probes	•	•	•	•
Direct path measuring system	•	•	•	•
Mist collection unit for work area	•	•	•	•
Connection for central mist collection	•	•	•	•
Oil package	•	•	•	•
Machining with minimal lubrication	•	•	–	•
Pneumatic connection for clamping devices	•	•	•	•
Hydraulic unit and connection for clamping devices	•	•	•	•
Automatic doors	•	•	•	•
Handwheel	•	•	•	•
Central lubrication	•	•	•	•
Robot interface	•	•	•	•
Tool measurement and management	•	•	–	•
Tool breakage monitoring	•	•	–	•

Dimensions

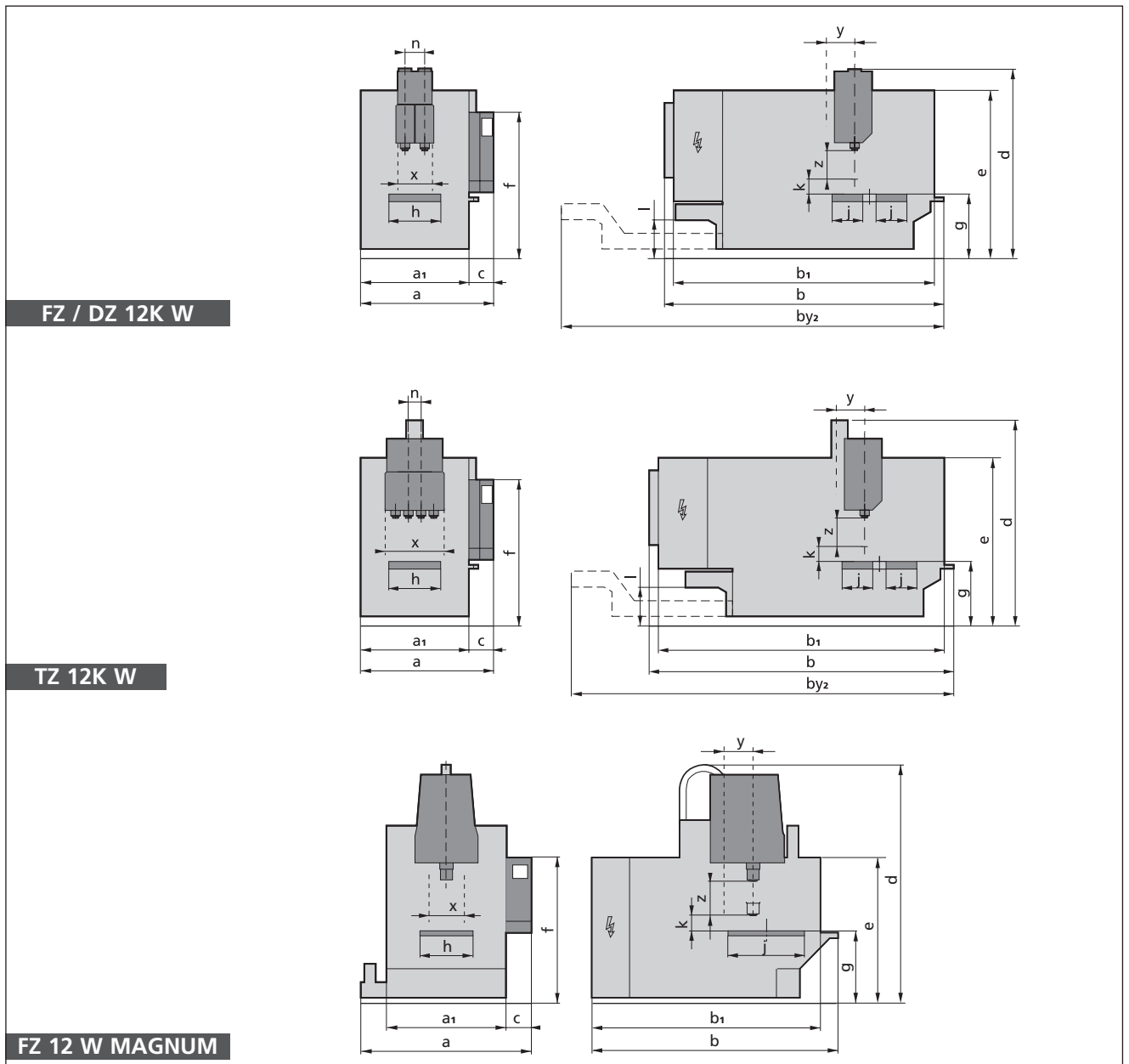
Machining center with fixed table	FZ 12K S	FZ 12K S five axis	DZ 12K S MAGNUM five axis	FZ 12K S with swivel head
a Total width	1,489 mm	2,097 mm	2,097 mm	1,489 mm
a ₁ Enclosure width	1,375 mm	1,375 mm	1,375 mm	1,375 mm
b Total depth	3,137 mm	3,202 mm	3,202 mm	3,137 mm
b ₁ Enclosure depth	2,667 mm	2,667 mm	2,667 mm	2,667 mm
by ₂ Overall depth with extended chip conveyor	4,641 mm	4,697 mm	4,697 mm	4,641 mm
c Depth of control panel	315 mm	380 mm	380 mm	315 mm
c ₁ Control panel, swivelled	–	436 mm	436 mm	–
d Total height max.	2,650 mm	2,650 mm	2,650 mm	2,650 mm
e Enclosure height	2,140 mm	2,140 mm	2,140 mm	2,140 mm
f Height of control panel	1,860 mm	1,860 mm	1,860 mm	1,860 mm
g Height clamping surface	770 mm	–	–	770 mm
g ₁ Height adapter face plate / clamping surface	–	810 mm	810 mm	–
h Length clamping surface	820 mm	–	–	820 mm
h ₁ Bridge dimension	–	600 mm	600 mm	–
i Ø adapter face plate / clamping surface	–	280 mm	280 mm	–
j Depth clamping surface	440 mm	313 mm	313 mm	440 mm
k Clearance from spindle face to clamping surface	240 mm	–	–	240 mm
k ₁ Clearance from spindle face to adapter face plate	–	200 mm	200 mm	–
l Ejection height chip conveyor min.	490 mm	490 mm	490 mm	490 mm
o Clearance from Y-travel zone to center of rotation	–	235 mm	235 mm	–
p Clearance from adapter face plate to center of rotation	–	100 mm	100 mm	–
x Travel X axis	550 mm	550 mm	550 mm	550 mm
y Travel Y axis	320 mm / 400 mm*	400 mm	400 mm	320 mm / 400 mm*
Z Travel Z axis	360 mm	360 mm	360 mm	360 mm

* Option



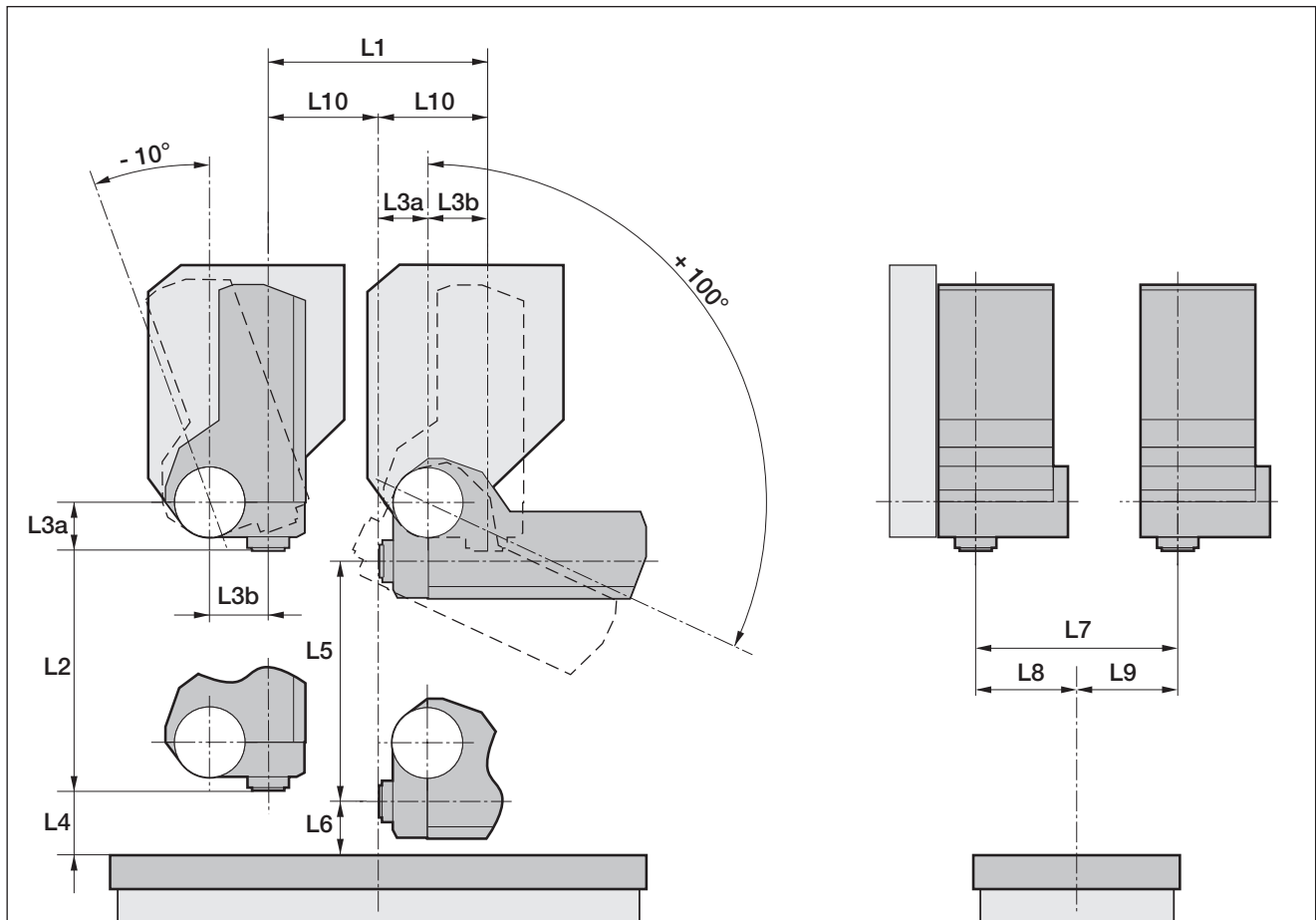
Machining center with workpiece changer	FZ 12K W	DZ 12K W	TZ 12K W	FZ 12 W MAGNUM
a Total width	1,704 mm	1,704 mm	1,704 mm	2,158 mm
a ₁ Enclosure width	1,375 mm	1,375 mm	1,375 mm	1,500 mm
b Total depth	3,592 mm	3,592 mm	3,937 mm	3,070 mm
b ₁ Enclosure depth	3,317 mm	3,317 mm	3,612 mm	2,850 mm
by ₂ Overall depth with extended chip conveyor	5,097 mm	5,097 mm	5,442 mm	–
c Depth of control panel	329 mm	329 mm	329 mm	319 mm
d Total height max.	2,650 mm	2,650 mm	2,650 mm	2,960 mm
e Enclosure height	2,140 mm	2,140 mm	2,140 mm	1,800 mm
f Height of control panel	1,860 mm	1,860 mm	1,860 mm	1,800 mm
g Height clamping surface	770 mm	770 mm	770 mm	900 mm
h Length clamping surface	660 mm	660 mm	660 mm	660 mm
j Depth clamping surface	2 x 350 mm	2 x 350 mm	2 x 350 mm	2 x 350 mm
k Clearance from spindle face to clamping surface	240 mm	240 mm	240 mm	190 mm
l Ejection height chip conveyor min.	490 mm	490 mm	490 mm	850 mm
n Spindle distance in X	–	250 mm	160 mm	–
x Travel X axis	550 mm	550 mm	550 mm	550 mm
y Travel Y axis	320 mm / 400 mm*)	320 mm / 400 mm*)	320 mm / 400 mm*)	300 mm
Z Travel Z axis	360 mm	360 mm	360 mm	425 mm

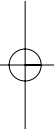
*) Option



Machining center with swivel head

Machining center with swivel head	FZ 12K S with swivel head
L ₁ Travel X axis	550 mm
L ₂ Travel Z axis, vertical	360 mm
L _{3a} Vertical distance from spindle face to swivel axis	130 mm
L _{3b} Horizontal distance from spindle face to swivel axis	140 mm
L ₄ Clearance from spindle face to table surface	240 mm
L ₅ Travel Z axis, horizontal	360 mm
L ₆ Clearance from spindle axis to table surface	230 mm
L ₇ Travel Y axis	320 mm
L ₈ Clearance from reference point to table center	200 mm
L ₉ Clearance from table center to end of travel path Y	120 mm
L ₁₀ Clearance from table center to end of travel path X, 0°	275 mm





12 series – Options

High Speed Package
High Speed Plus Package
Linear Speed Package
Technology Package "Milling from bar"
Technology Package "Turning from bar"
Travel Y axis up to 400 mm
Tool places up to 177 tools
Coolant through the spindle up to 150 bar
Chip conveyor, ejection height 490 mm / 1,050 mm
Coolant treatment
NC rotary table
NC rotary table with basic device
2-spindle, 2-axis NC rotary table for 5-axis machining
Workpiece changer with integrated NC rotary table
Workpiece changer with two integrated 2-spindle-2axis tables
Zero-point clamping systems integrated in the faceplate
Adapter face plate
Workpiece gripper in main spindle
Tool life monitoring
CHIRON Thermo Control
CHIRON Laser Control
Tool breakage monitoring
Stationary 3D probing system
Probe
Direct path measuring system
Work area mist collection
Connection for central mist collection
Oil package
Machining with minimal lubrication
Pneumatic connection for clamping devices
Hydraulic unit and connection for clamping devices
Automatic doors
Handwheel
Multi spindle head adapter
Central lubrication system
Robot interface
Workpiece transport and magazining devices
MPC (Multi Pallet Changer)
Flexcell Uno / Duo

Basic series

08 MAGNUM Series

Fast, compact milling centers for high precision and diverse applications

12 Series

Fast, compact single and multi-spindle precision machining centers

15 Series

Fast, powerful, single and twin-spindle precision milling centers for profitable series production

18 Series

Powerful, single and twin-spindle machining centers for high-speed machining and heavy cutting

MILL Series

Universal precision machining centers as well for combined milling and turning machining

BIG MILL Series

High-precision machining centers for heavy cutting and large workpieces

Flexible production systems

FLEXCELL UNO / DUO

Robot-automated 6-side complete machining

MPC

Pallet automation

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